

Scoping Committee Report  
Presented by Douglas and Ellen Cameron  
250 H. St. Box 823  
Blaine WA, 98230  
360-656-6545

Re: Specific Environmental and safety Impacts vs. Westgate Coal Proposal

Oct. 20-12

In studying the environmental impacts of the proposed Westgate Coal Terminal, we have come across some disturbing facts that need to be addressed before any plan of action is undertaken by the coal industry. Our mission is to introduce only the facts to this hearing and to refrain from introducing personal opinions into the equation. We have provided the committee with documented proof of our research with attached reports garnered from a variety of sources.

- (1) Director Sturdevant's Mission Report
- (2) Correspondence From Washington State Ecology Officials (Linda Kent Correspondence)
- (3) Occupational Health and Safety Assn. (OSHA) Report on handling, storage, health hazards and toxic effects of coal and coal dust.
- (4) File Information Concerning Coal Dust Health Hazards by John Cooper, FELA Atty.
- (5) RBK Report On Train Derailments In Washington State.
- (6) Document On Proper Coal Storage
- (7) Recent Report On Coal Dust Storm At B.C. Coal Terminal
- (8) Wikipedia Report on Bulk Cargo Vessels
- (9) CEO Boyce Report
- (10) Coal Train Facts Report, concerning West Coast Coal Exports, The Proposed GPT Facility, Trains, Traffic, Jobs and Local Businesses, Taxpayer Investment, Property Values, Marine Vessel Traffic, Marine Impacts, Fisheries, Quality of Life and Regional Identity, Coal Dust, Derailments, Air Quality, Noise, Public Health, Global impacts

In addition, in Dec. of 2011, Govenor Gregoire launched the Washington Shellfish initiative to restore Washington's shellfish and promote clean water jobs. In 2010, the Dept. of Ecology planted thousands of new oyster smote in Birch Bay and other surrounding bays in hopes of revitalizing the lucrative tourist trade who once relied on these seafood delicacies.

In recent months we have been advised by both marine biologists and marine veterinarians from the University of Washington as to the plight of our endangered, resident Orca whale population who are suffering from lung diseases. In addition, our annual harvest in the sardine industry is rapidly diminishing. Our fishing industry depends upon a clean water source free of toxic agents. WA State Ecology Director Ted Sturdevant's mission message dictates this important point. This logic seems to be in direct opposition to building a coal terminal on Puget Sound that will handle a toxic product, stored on open ground without protection from inclement weather conditions.

We were advised by a Regional Communications Mgr. of the Department of Ecology that there were no laws on the books to prevent coal hauling, cargo vessels from dumping wastewater into Puget Sound. The new law passed recently only applies to cruise ships. Though there is new legislation drafted for protecting Puget Sound, the U.S coast Guard and the EPA

have yet to adopt any federal guidelines to protect these waters. These new guidelines must be enacted by congress. We have seen the effects of ballast dumping in the Great Lakes from foreign cargo ships. In most cases, invasive species of marine animals are often found impossible to eradicate.

The deployment of many large merchant ships that will anchor in our bays and exhaust their bilge, sewage and ballast water into the pristine waters of the Sound will degrade the wetlands, the water resources and harm local marine animals as well. In researching this impact, we were amazed to find such a large body of evidence presented by a host of experts from the many disciplines of science. Such authorities as Dr. Claudia Oakes, who teaches the environmental impacts from coal at a leading university and Dr. Paul Epstein is a leading authority in medicine at Harvard, join others who warn of the dangers of coal toxins introduced into the environment. U.S. Health Officials have determined that formaldehyde, found in coal dust is yet another known carcinogen. FELA investigators who litigate coal industry health lawsuits have a large body of scientific evidence that proves coal dust causes a variety of human illness and is the leading cause of mortality among railroad employees.

It is unclear how many people suffer from related diseases from living in the vicinity of railroads, coal terminals and power plants that burn coal. A broader picture shows a warming planet that is directly linked to elevated levels of carbon and CO-2 in the atmosphere from burning fossil fuels. The proof seems well established that coal is a toxic substance, not conducive to a clean environment or the good health of our citizens. Hundreds of doctors and health officials have signed documents warning state officials of these hazards. Our first concern should be to protect our children and future generations. The elevated levels of asthma, COPD and related lung diseases among children point to toxic elements in our atmosphere.

The thousands of families that live in the Birch Bay area of Blaine, Washington, reside west of the BNSF railroad. Train traffic often blocks vehicular traffic to and from the I-5 corridor which in turn cuts off emergency vehicle access and tsunami escape routes. All three roads leading to and from Birch Bay, namely the Lynden/Birch Bay road, the Custer road and the old Blaine highway route are intersected by BNSF rail lines. To make matters worse, the BNSF spur line that accesses the refineries of this region will also be the route for the proposed Westgate coal trains. This spur cuts diagonally across both the Custer and the Bay roads again.

The proposal of adding thirty coal trains a day to this equation, will block vehicular traffic 24/7 for long periods of time as slow moving coal trains jockey back and forth on a one way track system that has no vehicle overpasses. This will become an intolerable situation and must be addressed. Our local Sheriff has broached the subject of limited access for emergency vehicles to various officials without success. Our communities are growing and the advent of additional coal trains and highway blockages at crossings poses an additional burden upon citizens to find access to and from the workplace. BNSF has no plans to build overpasses and state funding is limited to solve a very expensive plan to access vehicular traffic.

According to Dr. Oakes, there have been no other offers from corporations for adding grain or any other commodity to the proposed terminal in the future. Her estimates based on other terminals of like size, places the workforce at six people upon completion of the terminal at Cherry Point. One must weigh the advantage of a small workforce and a limited tax base to the inconveniences outlined in our research.

In 2011, China opened up passports for their citizens to visit Europe. Last year nearly one million Chinese citizens traveled abroad. They were amazed to find how clear the air was to breathe and the pristine environments found in places such as Switzerland, Austria and other central Euro nations. Many of these people came away with a totally different attitude about their polluted environment at home. Recent articles in scientific journals indicate technology in China is rapidly changing to solar and wind power as opposed to fossil fuels for power generation.

Our Coal Facts Document offers a deeper insight into the need for a different approach to fossil fuel consumption. Thank you for your patience and careful consideration of this rather lengthy document.

Sincerely,

Douglas and Ellen Cameron

A handwritten signature in cursive script that reads "Douglas Cameron".



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## Message from the Director Ted Sturdevant, Ecology Director

### Conversations on Washington's Future

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Feb. 15, 2012

#### **DO WE NEED STATE ENVIRONMENTAL REGULATIONS?**

Washington's future quality of life depends on our ability to find solutions that support a healthy environment, a prosperous economy and strong communities. When we find ways to achieve all three, our state is all the stronger. A fundamental issue, one that deserves thoughtful discussion, is the relationship between environmental regulations and the economy.

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#### **August 2011**

The Department of Ecology plays an important role in protecting Washington's quality of life in the 21st century. Balancing the needs of a growing population with the value Washingtonians place on natural resources is a big job in the best of times — and these are not the best of times. Washington is working its way out of the global recession, and we face ongoing, unresolved challenges to our natural resources — challenges we must meet in order to secure a high quality of life for the century ahead.

Providing clean, abundant water for farms and people and our endangered salmon . . . protecting people and the environment from toxic threats . . . these are just two examples of challenges we face in moving toward economic, community and environmental health.

While I am optimistic that solutions are possible, and that a sustainable quality of life is something we can attain, I'm also realistic about the job ahead. Success is by no means assured, but with our quality of life at stake, failure is not an option.

It will take continued regulation and continued investment, but more fundamentally it will take willpower and collaboration. We have to come together, again and again, to find the solutions that will protect Washington's quality of life — environmental, economic and social — for our generation and those to come. We all have a part in deciding what Washington's future, and our quality of life, will be.

In Washington, we have a rich tradition of finding broadly supported solutions where everyone wins — where the needs of communities and families, the economy and businesses, and of our natural ecosystems are met. If we as a state insist on this path, we will succeed in securing a great quality of life for the century ahead.

Like other Ecology employees, I'm proud to be a part of this work with so many other citizens of our state.

Find out more about [Protecting Washington's Quality of Life in the 21st Century](#).

See [Ecology's mission statement](#) (PDF).

See [previous messages from the director](#).



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## Laws & Rules

### Laws and Rules Protect Washington's Quality of Life

The citizens of Washington, the Legislature and Washington's governors have made it a priority of state government to protect the environment and human health. As a result Washington voters and elected leaders have adopted state laws that reflect the environmental values of Washingtonians — and the unique natural diversity of our state.

Ecology has federal and state authority to implement and enforce environmental laws and rules relating to:

- Protecting our water supplies
- Protecting our air quality
- Managing and reducing waste
- Cleaning up contaminated water and land
- Reducing toxic substances in our environment
- Supporting sustainable communities and natural resources

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#### **CONTACT**

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(2)

**Subject:** RE: Cargo ship wastewater discharge info  
**From:** Kent, Linda (ECY) (lken461@ECY.WA.GOV)  
**To:** enoramac@yahoo.com;  
**Date:** Monday, April 2, 2012 5:12:13 PM

You are welcome. Have a great evening.

*Linda Kent, Olympic and Southwest Regions Communications Mgr. WA State Dept. of Ecology*

**From:** ellen noramac [mailto:enoramac@yahoo.com]  
**Sent:** Monday, April 02, 2012 5:08 PM  
**To:** Kent, Linda (ECY)  
**Subject:** Re: Cargo ship wastewater discharge info

Linda; Thanks so much for your cooperation, hopefully some of the legislation you mention gets through congress. Doug

**From:** "Kent, Linda (ECY)" <lken461@ECY.WA.GOV>  
**To:** "enoramac@yahoo.com" <enoramac@yahoo.com>  
**Cc:** "Butorac, Diane (ECY)" <dbut461@ECY.WA.GOV>  
**Sent:** Monday, April 2, 2012 3:47:40 PM  
**Subject:** Cargo ship wastewater discharge info

Doug:

Here is the information you requested.

We don't know of any new state guidelines in the works at this time for wastewater discharge from cargo ships. There is little discharge on these ships compared to cruise ships because there are very few crew on those ships, whereas the wastewater from cruise ships is considerable.

There are several international and federal rules that deal with discharges. Most recently, the EPA's Vessel General Permit requires monitoring, sampling and management of vessel discharges. There are international regulations on waste management that were approved this year but they still need to be enacted through our federal rule process before they take effect here.

Here is Diane Butorac's phone number, as promised, for if you want some more in depth information: (360) 407-6238.

Regards,  
*Linda Kent*

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## Occupational Safety and Health Guideline for Coal Dust (> 5% SiO2)

### DISCLAIMER:

These guidelines were developed under contract using generally accepted secondary sources. The protocol used by the contractor for surveying these data sources was developed by the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), and the Department of Energy (DOE). The information contained in these guidelines is intended for reference purposes only. None of the agencies have conducted a comprehensive check of the information and data contained in these sources. It provides a summary of information about chemicals that workers may be exposed to in their workplaces. The secondary sources used for supplements III and IV were published before 1992 and 1993, respectively, and for the remainder of the guidelines the secondary sources used were published before September 1996. This information may be superseded by new developments in the field of industrial hygiene. Therefore readers are advised to determine whether new information is available.

[Introduction](#) | [Recognition](#) | [Evaluation](#) | [Controls](#) | [References](#)

### Introduction

This guideline summarizes pertinent information about coal dust for workers and employers as well as for physicians, industrial hygienists, and other occupational safety health professionals who may need such information to conduct effective occupational safety and health programs. Recommendations may be superseded by new developments in these fields; readers are therefore advised to regard these recommendations as general guidelines and to determine whether new information is available.

### Recognition

#### SUBSTANCE IDENTIFICATION

\* Formula  
Not applicable.

\* Structure  
(For Structure, see paper copy)

\* Synonyms  
Sea coal, coal facings, ground bituminous coal, anthracite coal dust, lignite coal dust [Sittig 1991, p. 450; NIOSH 1994a]

\* Identifiers

1. CAS No.: None.
2. RTECS No.: GF8281000 [NIOSH 1995; NIOSH 1994a]
3. DOT UN: 1361 32 [Sittig 1991, p. 450; DOT 1993]
4. DOT label: Flammable solid [Genium 1990]

\* Appearance and odor

Coal dust is an odorless dark brown to black dust created by the crushing, grinding, or pulverizing coal. The coal dust covered by this document contains 5 percent or more free silica [Sittig 1991, p. 450; Genium 1990].

#### CHEMICAL AND PHYSICAL PROPERTIES

\* Physical data

The physical properties of this coal dust vary depending on the specific type of coal.

1. Molecular weight: Varies.
2. Boiling point: Varies.
3. Specific gravity: Varies.
4. Vapor density: Not applicable.
5. Melting/Freezing point: Varies.
6. Vapor pressure: Not applicable.
7. Solubility: Varies.
8. Evaporation rate: Not applicable.

\* Reactivity

1. Conditions contributing to instability: Heat, sparks, open flame, or other ignition sources [Genium 1990; Sittig 1991, p. 450].
2. Incompatibilities: None reported.

3. Hazardous decomposition products: None reported.
4. Special precautions: None reported.

\* Flammability

The National Fire Protection Association has not assigned a flammability rating to coal dust. Other sources rate coal dust as a fire hazard and consider the airborne dust explosion hazard when these substances are exposed to heat or open flame [Genium 1990].

1. Flash point: Data not available.
2. Autoignition temperature: >601 degrees C (>1114 degrees F)-cloud; >200 degrees C (>392 degrees F)-layer [Genium 1990]
3. Flammable limits in air: >0.05 oz./ft(3) [Genium 1990]
4. Extinguishant: For small fires use dry chemical, sand, earth, water spray, or regular foam. Use water spray, fog, or regular foam to fight large fires involving coal dust [DOT 1993, Guide 32].

Fires involving coal dust should be fought upwind from the maximum distance possible. Keep unnecessary people away; isolate the hazard area and deny entry. For a massive fire in a cargo area, use unmanipulated hose holders or monitor nozzles; if this is impossible, withdraw from the area and let the fire burn. Emergency personnel should stay out of low areas. Containers of coal dust should be moved from the fire area if it is possible to do so safely. If this is not possible, cool fire exposed containers from sides with water until well after the fire is out. Stay away from the ends of containers. Firefighters should wear a full set of protective clothing and self-contained breathing apparatus when fighting fires involving coal dust [DOT 1993, Guide 32].

### EXPOSURE LIMITS

\* OSHA PEL

The current Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for the respirable fraction of coal dust (greater than or equal to 5 percent silica) is 10 milligrams per cubic meter (mg/m<sup>3</sup>) / % SiO<sub>2</sub> + 2 as an 8-hour time-weighted average (TWA) concentration [29 CFR 1910.1000, Table Z-3].

\* NIOSH REL

\* The National Institute for Occupational Safety and Health has not established a recommended exposure limit for coal dust.

\* ACGIH TLV

The American Conference of Governmental Industrial Hygienists (ACGIH) has assigned the respirable fraction of coal dust containing greater than 5 percent crystalline silica a threshold limit value (TLV) of 0.1 mg/m<sup>3</sup> (for respirable quartz) as a TWA for a normal 8-hour workday and a 40-hour workweek [ACGIH 1994, p. 17].

\* Rationale for Limits

The ACGIH limit is based on the risk of pneumoconiosis [ACGIH 1991, p. 326].

### Evaluation

### HEALTH HAZARD INFORMATION

\* Routes of Exposure

Exposure to coal dust can occur through inhalation, ingestion, and eye contact.

\* Summary of toxicology

1. Effects on Animals: Coal dust is a tumorigenic agent in experimental animals. Coal dusts were shown to be equivocal tumorigenic agents associated with lymphomas and, at the higher dose, adrenal cortex tumors in rats exposed to either 6.6 or 14.9 mg/m<sup>3</sup> for 6 hours/day intermittently for 86 weeks [NIOSH 1991]. The American Conference of Governmental Industrial Hygienists (ACGIH) considers the toxicity of coal dust with greater than 5 percent silica to be similar to quartz [ACGIH 1991].
2. Effects on Humans: Coal dust causes pneumoconiosis, bronchitis and emphysema in exposed workers. Coal dust causes coal workers' pneumoconiosis (CWP) and progressive massive fibrosis [Hathaway et al. 1991; Rom 1992]. Simple CWP is characterized by development of coal macules, a focal collection of dust laden macrophages with associated reticulin deposits and focal emphysema [Rom 1992]. These lesions may be visible as small opacities (less than 1 cm in diameter) or rays [Hathaway et al. 1991]. Complicated CWP is characterized by lesions consisting of a mass of rubbery well defined black tissue that is often adherent to the cell wall. CWP may be associated with decrements in ventilatory capacity, low diffusing capacity, abnormalities of gas exchange, and premature death. The disease may progress after the cessation of exposure. In X-ray examinations, opacities greater than 1 cm in diameter may be observed [Hathaway et al. 1991]. Coal dust is also recognized as a cause of chronic bronchitis [Rom 1992]. Exposure to coal dust is associated with an increased risk of focal emphysema, which is usually associated with the presence of pneumoconiosis and centrilobular emphysema, which can occur in the absence of pneumoconiosis [Rom 1992]. Workers with rheumatoid arthritis and the simple coalworkers' pneumoconiosis may also have Caplan's Syndrome which involves rapidly developing lung damage [Genium 1990]. ACGIH considers the toxicity of coal dust with greater than 5 percent silica to be similar to quartz [ACGIH 1991].

\* Signs and symptoms of exposure

1. Acute exposure: Symptoms of inhalation of excessive amounts of coal dust include coughing, wheezing, and shortness of breath [Genium 1990].
2. Chronic exposure: Chronic exposure to coal dust may result in symptoms of bronchitis and emphysema [Rom 1992].

### EMERGENCY MEDICAL PROCEDURES

\* Emergency medical procedures: [NIOSH to supply]

Rescue: Remove an incapacitated worker from further exposure and implement appropriate emergency procedures (e.g., those listed on the Material Safety Data Sheet required by OSHA's Hazard Communication Standard [29 CFR 1910.1200]). All workers should be familiar with emergency procedures, the location and proper use of emergency equipment, and methods of protecting themselves during rescue operations.

### EXPOSURE SOURCES AND CONTROL METHODS

The following operations may involve coal dust and lead to worker exposures to this substance:

- The mining and transportation of coal
- Use of coal during operations involving grinding, crushing, or pulverizing

Methods that are effective in controlling worker exposures to coal dust, depending on the feasibility of implementation, are as follows:

- Process enclosure

- Local exhaust ventilation
- General dilution ventilation
- Personal protective equipment

Workers responding to a release or potential release of a hazardous substance must be protected as required by paragraph (q) of OSHA's Hazardous Waste Operations and Emergency Response Standard [29 CFR 1910.120].

Good sources of information about control methods are as follows:

1. ACGIH [1992]. Industrial ventilation—a manual of recommended practice. 21st ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
2. Burton DJ [1986]. Industrial ventilation—a self study companion. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
3. Alden JL, Kane JM [1982]. Design of industrial ventilation systems. New York, NY: Industrial Press, Inc.
4. Wadden RA, Scheff PA [1987]. Engineering design for control of workplace hazards. New York, NY: McGraw-Hill.
5. Plog BA [1988]. Fundamentals of industrial hygiene. Chicago, IL: National Safety Council.

### MEDICAL SURVEILLANCE

OSHA is currently developing requirements for medical surveillance. When these requirements are promulgated, readers should refer to them for additional information to determine whether employers whose employees are exposed to coal dust are required to implement medical surveillance procedures.

#### \* Medical Screening

Workers who may be exposed to chemical hazards should be monitored in a systematic program of medical surveillance that is intended to prevent occupational injury or disease. The program should include education of employers and workers about work-related hazards, early detection of adverse health effects, and referral of workers for diagnosis and treatment. The occurrence of disease or other work-related adverse health effects should prompt immediate evaluation of primary preventive measures (e.g., industrial hygiene monitoring, engineering controls, and personal protective equipment). A medical surveillance program is intended to supplement, not replace, such measures. To detect and control work-related health effects, medical evaluations should be performed (1) before job placement, (2) periodically during the term of employment, and (3) at the time of job transfer or termination.

#### \* Preplacement medical evaluation

Before a worker is placed in a job with a potential for exposure to coal dust, a licensed health care professional should evaluate and document the worker's baseline health status with thorough medical, environmental, and occupational histories, a physical examination, and physiologic and laboratory tests appropriate for the anticipated occupational risks. These should concentrate on the function and integrity of the respiratory system [Sittig 1991, p. 450]. Medical surveillance for respiratory disease should be conducted using the principles and methods recommended by the American Thoracic Society [ATS 1987].

A preplacement medical evaluation is recommended to assess medical conditions that may be aggravated or may result in increased risk when a worker is exposed to coal dust at or below the prescribed exposure limit. The health care professional should consider the probable frequency, intensity, and duration of exposure as well as the nature and degree of any applicable medical condition. Such conditions (which should not be regarded as absolute contraindications to job placement) include a history of other findings consistent with diseases of the respiratory system [Sittig 1991, p. 450].

#### \* Periodic medical evaluations

Occupational health interviews and physical examinations should be performed at regular intervals during the employment period, as mandated by any applicable Federal, State, or local standard. Where no standard exists and the hazard is minimal, evaluations should be conducted every 3 to 5 years or as frequently as recommended by a experienced occupational health physician. Additional examinations may be necessary if a worker develops symptoms attributable to coal dust exposure. The interviews, examinations, and medical screening tests should focus on identifying the adverse effects of coal dust on the respiratory system [Sittig 1991, p. 450]. Current health status should be compared with the baseline health status of the individual worker or with expected values for a suitable reference population.

#### \* Termination medical evaluations

The medical, environmental, and occupational history interviews, the physical examination, and selected physiologic or laboratory tests that were conducted at the time of job placement should be repeated at the time of job transfer or termination to determine the worker's medical status at the end of his or her employment. Any changes in the worker's health status should be compared with those expected for a suitable reference population. Because occupational exposure to coal dust may cause diseases with prolonged latent periods, the need for medical surveillance may extend well beyond the termination of employment [Sittig 1991, p. 450].

#### \* Biological monitoring

Biological monitoring involves sampling and analyzing body tissues or fluids to provide an index of exposure to a toxic substance or metabolite. No biological monitoring acceptable for routine use has yet been developed for coal dust.

### WORKPLACE MONITORING AND MEASUREMENT

Determination of a worker's exposure to airborne respirable coal dust containing greater than 5 percent silica is made using a tared low ash polyvinyl chloride (LAPVC) filter (5 microns), preceded by a 10 mm cyclone. Samples are collected at a maximum flow rate of 1.7 liters/minute until a maximum collection volume of 816 liters is reached. Analysis is conducted by gravimetric analysis (weighing). This method is described in the OSHA Computerized Information System [OSHA 1994] and is fully validated. NIOSH has also published a similar method (Method No. 7603) for respirable sampling of silica in coal mine dust that requires analysis by infrared spectroscopy [NIOSH 1994b].

## Controls

### PERSONAL HYGIENE PROCEDURES

If coal dust contacts the skin, workers should wash the affected areas with soap and water [Genium 1990].

Clothing contaminated with coal dust should be removed immediately, and provisions should be made for the safe removal of the chemical from the clothing. Persons laundering the clothes should be informed of the hazardous properties of coal dust.

A worker who handles coal dust should thoroughly wash hands, forearms, and face with soap and water before eating, using tobacco products, using toilet facilities, applying cosmetics, or taking medication [Genium 1990].

Workers should not eat, drink, use tobacco products, apply cosmetics, or take medication in areas where coal dust handled, processed, or stored [Genium 1990].

### STORAGE

In the event coal dust requires storage, it should be stored in a cool, dry, well-ventilated area in tightly sealed containers that are labeled in accordance with OSHA's Haz

Communication Standard [29 CFR 1910.1200]. Containers of coal dust should be protected from physical damage and ignition sources and should be stored separately from oxidizing agents [Genium 1990].

### SPILLS AND LEAKS

In the event of a spill or leak involving coal dust, persons not wearing protective equipment and clothing should be restricted from contaminated areas until cleanup has been completed. The following steps should be undertaken following a spill or leak:

1. Do not touch the spilled material.
2. Notify safety personnel.
3. Remove all sources of heat and ignition.
4. Use non-sparking tools.
5. Water spray may be used cautiously to wet down the coal dust to reduce raising dust.
6. Collect the spilled material and place the material into a covered metal container for disposal or reclamation [Genium 1990].

### SPECIAL REQUIREMENTS

U.S. Environmental Protection Agency (EPA) requirements for emergency planning, reportable quantities of hazardous releases, community right-to-know, and hazardous waste management may change over time. Users are therefore advised to determine periodically whether new information is available.

#### \* Emergency planning requirements

Coal dust is not subject to EPA emergency planning requirements under the Superfund Amendments and Reauthorization Act (SARA) (Title III) in 42 USC 11022.

#### \* Reportable quantity requirements for hazardous releases

A hazardous substance release is defined by EPA as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of contaminated containers) of hazardous substances. In the event of a release that is above the reportable quantity for that chemical, employers are required to notify the proper Federal, State, and local authorities [40 CFR 355.40].

Employers are not required by the emergency release notification provisions in 40 CFR Part 355.40 to notify the National Response Center of an accidental release of coal dust; there is no reportable quantity for this substance.

#### \* Community right-to-know requirements

Employers are not required by EPA in 40 CFR Part 372.30 to submit a Toxic Chemical Release Inventory form (Form R) to EPA reporting the amount of coal dust emitted or released from their facility annually.

#### \* Hazardous waste management requirements

EPA considers a waste to be hazardous if it exhibits any of the following characteristics: ignitability, corrosivity, reactivity, or toxicity as defined in 40 CFR 261.21-261.24. Under the Resource Conservation and Recovery Act (RCRA) [40 USC 6901 et seq.], EPA has specifically listed many chemical wastes as hazardous. Although coal dust is not specifically listed as a hazardous waste under RCRA, EPA requires employers to treat waste as hazardous if it exhibits any of the characteristics discussed above.

Providing detailed information about the removal and disposal of specific chemicals is beyond the scope of this guideline. The U.S. Department of Transportation, EPA, and State and local regulations should be followed to ensure that removal, transport, and disposal of this substance are conducted in accordance with existing regulations. To be certain that chemical waste disposal meets EPA regulatory requirements, employers should address any questions to the RCRA hotline at (703) 412-9810 (in the Washington, D.C. area) or toll-free at (800) 424-9346 (outside Washington, D.C.). In addition, relevant State and local authorities should be contacted for information on any requirements they may have for the waste removal and disposal of this substance.

### RESPIRATORY PROTECTION

#### \* Conditions for respirator use

Good industrial hygiene practice requires that engineering controls be used where feasible to reduce workplace concentrations of hazardous materials to the prescribed exposure limit. However, some situations may require the use of respirators to control exposure. Respirators must be worn if the ambient concentration of coal dust exceeds prescribed exposure limits. Respirators may be used (1) before engineering controls have been installed, (2) during work operations such as maintenance or repair activities that involve unknown exposures, (3) during operations that require entry into tanks or closed vessels, and (4) during emergencies. Workers should only use respirators that have been approved by NIOSH and the Mine Safety and Health Administration (MSHA).

#### \* Respiratory protection program

Employers should institute a complete respiratory protection program that, at a minimum, complies with the requirements of OSHA's Respiratory Protection Standard [29 CFR 1910.134]. Such a program must include respirator selection, an evaluation of the worker's ability to perform the work while wearing a respirator, the regular training of personnel, respirator fit testing, periodic workplace monitoring, and regular respirator maintenance, inspection, and cleaning. The implementation of an adequate respiratory protection program (including selection of the correct respirator) requires that a knowledgeable person be in charge of the program and that the program be evaluated regularly. For additional information on the selection and use of respirators and on the medical screening of respirator users, consult the latest edition of the NIOSH Respirator Decision Logic [NIOSH 1987b] and the NIOSH Guide to Industrial Respiratory Protection [NIOSH 1987a].

### PERSONAL PROTECTIVE EQUIPMENT

Workers should use appropriate personal protective clothing and equipment that must be carefully selected, used, and maintained to be effective in preventing skin contact with coal dust. The selection of the appropriate personal protective equipment (PPE) (e.g., gloves, sleeves, encapsulating suits) should be based on the extent of the worker's potential exposure to coal dust. There are no published reports on the resistance of various materials to permeation by coal dust.

To evaluate the use of PPE materials with coal dust, users should consult the best available performance data and manufacturers' recommendations. Significant differences have been demonstrated in the chemical resistance of generically similar PPE materials (e.g., butyl) produced by different manufacturers [Mickelsen and Hall 1987]. In addition, the chemical resistance of a mixture may be significantly different from that of any of its neat components [Mickelsen et al. 1986].

Any chemical-resistant clothing that is used should be periodically evaluated to determine its effectiveness in preventing dermal contact. Safety showers and eye wash stations should be located close to operations that involve coal dust.

Splash-proof chemical safety goggles or face shields (20 to 30 cm long, minimum) should be worn during any operation in which a solvent, caustic, or other toxic substance may be splashed into the eyes.

In addition to the possible need for wearing protective outer apparel (e.g., aprons, encapsulating suits), workers should wear work uniforms, coveralls, or similar full-body coverings that are laundered each day. Employers should provide lockers or other closed areas to store work and street clothing separately. Employers should

collect work clothing at the end of each work shift and provide for its laundering. Laundry personnel should be informed about the potential hazards of handling contaminated clothing and instructed about measures to minimize their health risk.

Protective clothing should be kept free of oil and grease and should be inspected and maintained regularly to preserve its effectiveness.

Protective clothing may interfere with the body's heat dissipation, especially during hot weather or during work in hot or poorly ventilated work environments.

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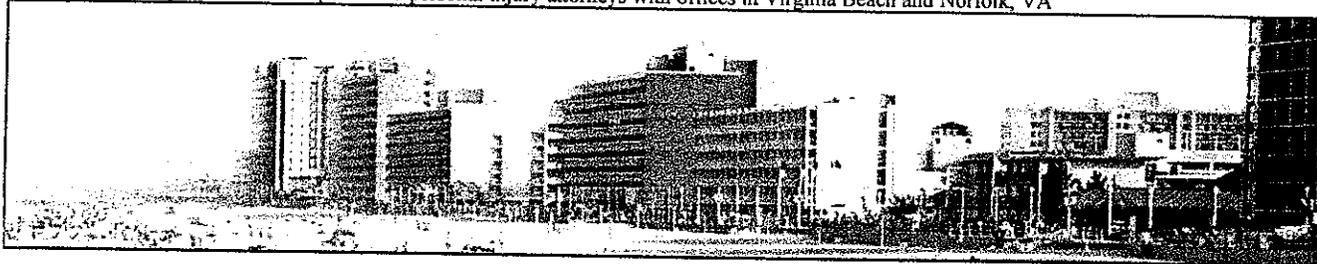
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## Diesel Poses a Cancer Threat to Miners, Railroad Workers and the Public

March 15, 2012

By **John Cooper**, Norfolk Railroad/FELA Accident Injury Attorney

As a FELA attorney who helps railroad engineers and conductors when they get lung cancer from work, I pay attention to diesel exhaust as a safety hazard. Whether you work on the railroad or down a mine, there are a lot of visible threats to your health. There are many invisible ones too.

Heavy diesel fumes may be seen at times but the real danger is the tiny but unseen particles that get stuck in the lungs of workers. [A new study by the National Cancer Institute links diesel fumes to increased lung cancer rates in mines.](#)

See this news clip about the dangers of diesel.



As Virginia Beach personal injury attorneys, we are concerned about the implications of this report for all workers who are exposed to diesel as well as the general public.

The study that began in 1992 looked at 12,350 workers in mines in New Mexico, Wyoming, Ohio and Missouri.

"It was across the United States. We had one salt mine, we had three potash mines, we had three trona mines and one limestone mine," Patricia Schlieff, a statistician for the project, told Essential Public Radio.

"The study findings provide further evidence that exposure to diesel exhaust increases risk of mortality from lung cancer and have important public health implications," the paper said.

The study discovered 198 miners died of lung cancer in the eight mines studied. The miners were exposed to diesel exhaust on a regular basis.

There's now a growing body of research evidence that railroad workers exposed to diesel are also suffering from lung cancer. Research has also highlighted a worrying disease called "diesel asthma."

Diesel fumes are a complex chemical mixture containing hundreds of compounds, including nitrogen, sulfur dioxide, nitrogen oxides, benzene, poly-systematic hydrocarbons and numerous other compounds.

For more than 50 years diesel has fuelled locomotives on the railroads, resulting in railroad workers suffering heavy exposure to its effects. Levels of lung cancer spiked after diesel trains replaced steam trains in the 1950s.

In recent years the Federal Employers' Liability Act (FELA) that permits an injured worker to bring lawsuits against his employers, has been used in cases of railroad workers who have developed lung cancer or asthma linked to diesel fumes.

In April 2008, an Ohio state court jury ordered the rail operator Conrail to pay \$2.6 million to former locomotive engineer Frank Battaglia, for causing his diesel exhaust asthma lung disease. Mr. Battaglia, had worked for more than two decades as an engineer, before he was diagnosed with diesel exhaust fume asthma.

Evidence of diesel asthma has significance beyond the mine and the railroad. The link between the increased use of diesel cars and a rise in asthma in the general population of the United Kingdom was highlighted in a campaign in the British newspaper The Independent.

In a 2002 report the Environmental Protection Agency pointed to a likely correlation between diesel fumes and lung cancer in the United States. The report concluded long-term exposure to diesel "is likely to pose a lung cancer hazard to humans as well as damage the lung in other ways depending on exposure."

The report led the Bush administration to propose reductions in emissions from diesel engines, although critics from the environmental lobby said the policies did not go far enough.

Research suggests the young may be particularly vulnerable from asthma caused by particles in diesel. Researchers in California suggest pollutants in diesel cause as many as 3,500 premature deaths a year in the state.

As experienced Virginia railroad worker lung cancer lawyers, we believe there is an urgent need for further research in this field.

DM

The Norfolk and Virginia Beach based personal injury law firm, Cooper Hurley, handles car, truck, and motorcycle injuries as well as brain injury, wrongful death, railroad workers' injuries (FELA) mesothelioma and medical malpractice. John Cooper and Jim Hurley have over 40 years of combined experience in handling auto injury accident claims. Attorney John Cooper has been named to Virginia "Super Lawyers" since 2010 and has been a member since 2011 of the Multimillion dollar Advocates Roundtable. Cooper Hurley represents people hurt in accidents in Norfolk, Virginia Beach, Portsmouth, Suffolk, Chesapeake, Hampton, Newport News and throughout VA, and always put the best interests of our clients first. The firm is recognized by other lawyers as "AV" by Martindale-Hubbell, a national attorney rating service, for our top level of legal skill and highest ethical standards. If you need help or advice about a serious injury, please call us (757) 455 -0077. For a free consultation with a specialized Hampton Roads, Virginia personal injury lawyer contact us through this website

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Washington Train Accidents

The state of Washington is a state in which many trains pass through. Due to this, many train accidents have occurred in Washington. One tragic accident occurred in Marysville, Washington when a train derailed. The derailment resulted in hazardous materials catching on fire and over 100 homes having to be evacuated. If hazardous materials or a fire that resulted from a train accident caused injury to you or a loved one, we will work with a train accident lawyer in Washington.

According to U.S. Government sources, in 2007 there were 252 reported railroad accidents/incidents in the State of Washington resulting in 194 deaths or injuries. During the ten years of 1998 to 2007 there were 2,833 reported train accidents/incidents causing 2,136 deaths or injuries in the State of Washington.

In 2007 there were also 115 reported on-duty injuries to railroad employees in the State of Washington. For the ten years of 1998 to 2007 there were 1,387 reported on-duty injuries to railroad employees.

The number of reported highway-rail collisions in Washington totaled 47 in the year 2007. These resulted in 20 deaths or injuries in 2007. Over the ten year period of 1998 to 2007 there were 471 reported highway-rail collisions resulting in 145 deaths or injuries.

Have you or someone close to you been hurt in a train accident, railroad crossing accident, or train derailment accident? Are you a Washington train accident lawyer

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Here are some statistics regarding coal trains found recently on the internet:

May 2010, BNSF train derails near Thermopolis WY and falls into the Wind River.

Oct 27, 2010, BNSF train derails at Hamilton MS. Rail cars carrying Hydrogen Peroxide, calls for residential evacuation.

Dec. 14-2010, BNSF train derails at Jamestown N. Dakota, Spilling over a thousand tons of coal.

Mar. 02-2011, BNSF train derails near Chambers Bay at University place WA. Accident spilled Sodium Hydroxide (LYE) onto beach.

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Mar. 21-2011, BNSF train derails in Bismark N. Dakota, 14 cars loaded with coal spill.

Apr. 06-2011, BNSF train derails in Enid OK toppling cars and spilling contents.

Apr. 18-2011, BNSF rear end train wreck kills two BNSF workers.

Apr. 27-2011, BNSF train derails near Houston TX.

May 18-2011, BNSF train derails at Pasco WA and dumps 25,000 gallons of chemicals.

On Oct.11-2011, BNSF sent a letter to their shippers demanding they use a surfactant on coal cars to mitigate coal dust loss in transit. In most cases the loss is some 500 pounds per rail car. BNSF claims coal dust build-up on rail beds doesn't allow water to run off correctly thereby, allowing the rails to go out of gauge and cause derailments. The coal shippers claim BNSF is responsible for track maintenance and refuse to use surfactants claiming they add ten to thirty cents a ton to shipping costs. Both parties asked the Federal Transportation Board for an opinion.

Douglas Cameron

Birch Bay, resident

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# Cleaning up derailed coal in Franklin County town

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Cleaning up derailed coal in Franklin County town

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Posted Tuesday, July 3, 2012 12:19 pm | Updated: 1:11 pm, Tue Jul 3, 2012.

Classifieds

PASCO, Wash. (AP) — A coal train that derailed and spilled 31 cars of the black dusty fuel caused delay in rail traffic in the Eastern Washington town of Mesa, but opponents of increased coal shipment example of a serious risk.

No one was injured and no buildings were damaged Monday evening when the train derailed, said Nelson.



About 50 workers using heavy equipment worked through the night to clear the Burlington Northern spokesman Gus Melonas.

They were able to put one car back on the track, but 30 were too badly damaged. They were pushed removed in a salvage operation expected to take about three weeks, Melonas said.

About 30 trains a day roll through the area, about 20 miles north of the Tri-Cities. About four a day route also is used by the Portland-Chicago Amtrak.

Priority trains would be able to roll through the area on a siding by Tuesday afternoon and the mai said.

The cause of the derailment is under investigation.

The 125-car train with four locomotives was carrying coal from the Powder Basin in Wyoming to Columbia, south of Vancouver.

With a growing demand for coal in Asia, there are a half-dozen proposals for new coal export term are at Cherry Point, Longview and Port of Grays Harbor in Washington state, as well as Coos Bay Columbia River.

Oregon Gov. John Kitzhaber, the U.S. Environmental Protection Agency and the Washington Dep Army Corps of Engineers to thoroughly review the cumulative impacts of exporting large amount: Asia.

Environmental groups oppose the shipments. They site congestion and dust pollution problems wi should consider the effect on climate change from burning North America coal in Asia.

"As more trains come through, the risks of accidents go up," said Shannon Wright, executive direc group that wants studies of the local community impacts of a proposed coal-export terminal at Che

"A close look at the increased risk of train wrecks needs to be studied," as the environmental revie Tuesday.

Deraillments are a serious risk, said Krista Collard, with the Sierra Club's Northwest Beyond Coal

"This is a perfect example of why," she said. "We've been calling for the corps to do a full evaluat and port to plant in Asia."

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Douglas Cameron

Birch Bay, resident

6

Storage piles should be worked to prevent dead pockets of coal, a potential source of spontaneous heating. Storage of coal should be for as short duration as possible. Coal piles should not be located above sources of heat such as, steam lines or manholes. Coal should be piled in layers and compacted to reduce air within the pile.

The coal should be kept as dry as possible (sprinklers are not recommended).

The piles should be constantly monitored for hot spots using temperature detection systems.

When a hot spot occurs a management strategy should be in place to remove the ignited coal. Access should be provided for firefighting at sufficient intervals on the perimeter of an enclosure.

The structure should have minimal surfaces for dust to accumulate inside the dome. For all surfaces where dust may accumulate, adequate dust removal systems should be provided.

Ignition sources should be kept to an absolute minimum. Static electricity hazards should be minimized by the appropriate grounding of all equipment. All machinery and electrical equipment inside the dome should be approved for use in hazardous locations and provided with spark-proof motors.

Provisions should be made to turn off all electrical circuits without the need for personnel to enter dust-producing locations.

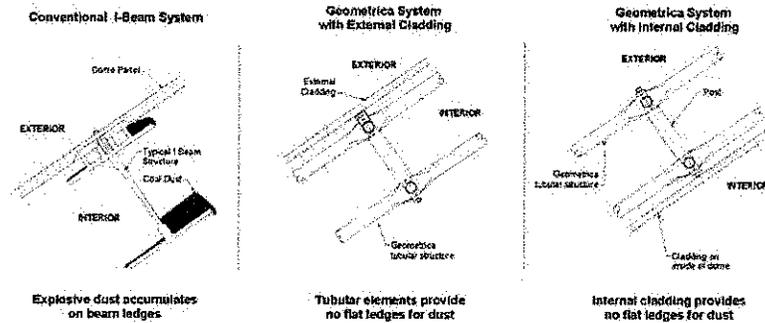
A sufficient ventilation system should be provided to reduce the chance of methane (and, in case of fire, smoke) build up and for explosion venting requirements. Ventilation should be provided at the apex to take advantage of the chimney effect. The structure should also be vented at the perimeter to reduce the damage to the structure due to blast overpressures.



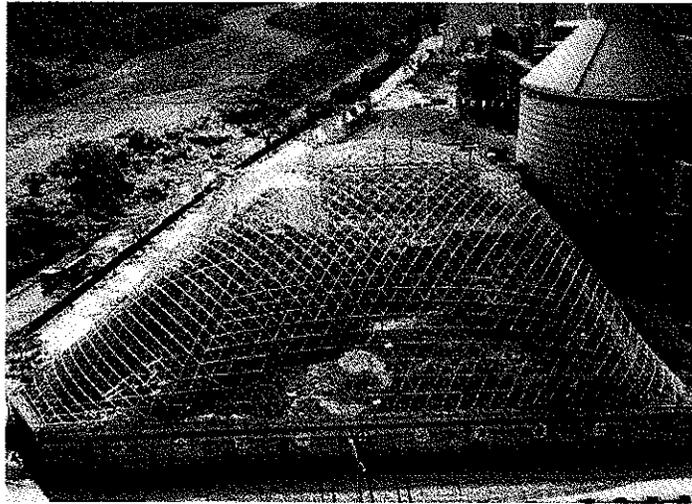
JEA domes for coal and coke storage, Jacksonville, FL

Geometrica offers solutions to meet all the relevant recommendations. A dome protects the pile from rain and wind, which foster spontaneous combustion in open-air piles, and cause air and runoff pollution. Internal cladding prevents dust accumulation on the structure. A breakaway panel may provide for accidental overloading and ventilation at the base, and exhaust fans or ventilation openings insure against methane or smoke buildup.

**Comparison of Dome/Cladding Systems**

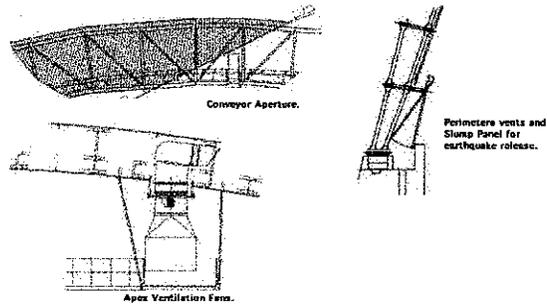


Geometrica has built the largest coal storage domes in the world, as well as domes for every coal pile shape (ring, conical, longitudinal and free-form). Typical coal dome sizes range from a 66m diameter dome over a 15m wall to store 35,000 t to a 125m dome over an 18m wall for 180,000t. Capacity for domes on the ground varies with the shape of the pile, a 35,000t Freedom® required 3500 m<sup>2</sup> of area, while 139,000t, 135m diameter piles have been covered with 144m diameter domes.



Coal may be covered even when in free-form stockpiles

Dome features:



A case study on Geometrica coal storage domes is available here:

Storing Coal For Tai Power. As it appeared on September 2008 at the DCI Magazine.

Español



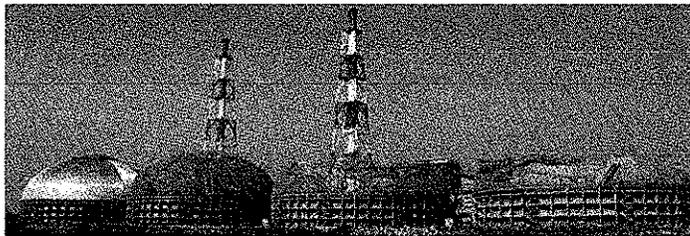
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Geodesic Domes for Storing Coal, Petcoke and Other Combustible Bulk Materials

Coal is often transported long distances, and stocked at various points between the mine and the user. Thus, coal piles come in many shapes, from the huge multiline longitudinal piles frequently found at ports, to ring blending beds at large powerplants, to simple conical or irregular piles common at industrial plants. Although many of the same issues that apply to most other bulk materials are encountered when storing coal, combustibility makes it a special case and deserves careful treatment. The following comments apply also to other combustible materials such as woodchips, grains and sulfur.



Coal Storage Domes, Taiwan

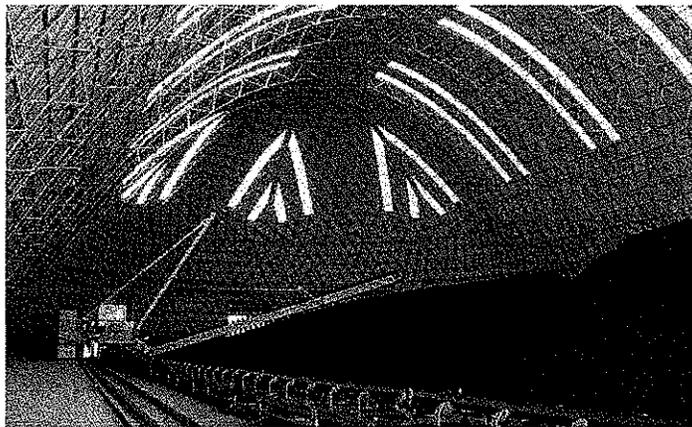
**Hazard Specific to Coal Storage: Explosion**

Occurs with Concurrence of

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Explosive Dust Cloud               <ul style="list-style-type: none"> <li>- Impact</li> <li>- Earthquake</li> <li>- Lightning, blunder, wind</li> <li>- Machinery vibration</li> <li>- Fire fighting</li> <li>- Semic blow</li> <li>- Local hot flare-out</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Ignition               <ul style="list-style-type: none"> <li>- Spontaneous Combustion</li> <li>- Reclaimed hot spot</li> <li>- Conveyed hot material</li> <li>- Smoking, welding</li> <li>- Static or equipment spark</li> <li>- Lightning</li> <li>- Methane flame</li> </ul> </li> </ul> |
|---|--|

The National Fire Protection Association, in its publications NFPA 850 and 120, identifies the hazards associated with storage and handling of coal, and gives recommendations for protection against these hazards. NFPA recommends that storage structures be made of non-combustible materials, and that they are designed to minimize the surface area on which dust can settle, including the desirable installation of the cladding underneath a building's structural elements. The recommendation requires an explanation: First, coal is susceptible to spontaneous combustion due to heating during natural oxidation of new coal surfaces. Second, coal dust is highly combustible and an explosion hazard. If a coal dust cloud is

generated inside an enclosed space, and an ignition source is present, an explosion can ensue. Dust clouds may generate wherever loose coal dust accumulates, such as on structural ledges, if there is a nearby impact or vibration due to wind, earthquake, or even maintenance operations. The table to the left that explosions occur with concurrence of several factors. But because of coal's propensity to heat spontaneously, ignition sources are almost impossible to eliminate in coal storage and handling, and any enclosed area where loose dust accumulates is at great risk. Further, even a small conflagration can result in a catastrophic "secondary" explosion if the small event releases a much larger dust cloud.



Longitudinal storage dome for coal

The standards also recommend several other items, including:

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# Unexpected wind gust stirs up coal dust at Roberts Bank - Ladner 3.0.

THE DELTA OPTIMIST APRIL 13, 2012



An unexpected gust of wind stirred up coal dust at Westshore Terminal Thursday afternoon.

**Photograph by:** Jerry Bierens, for Delta Optimist

What's being described as an "absolute freak incident" at Westshore Terminals coal port Thursday afternoon caused a cloud of coal dust to briefly hover over the area.

Westshore general manager Denis Horgan said Friday that a sudden and unexpected gust of wind sent coal dust flying.

Horgan said the company takes wind very seriously and monitors it throughout the day and there was no indication of any high winds coming on Thursday afternoon.

He said wind speeds were at around 10 kilometres per hour or below throughout the day when, at around 4:20 p.m., a sudden gust of 45 km/h hit the area.

Horgan said the company bases its daily dust control measures on the forecasted wind speeds and with no indication of high winds Thursday Westshore was not prepared for the 45km/h gust.

"It took us totally by surprise."

BNSF trains and Canadian coal trains both dump coal at this terminal. However, Canadian coal trains have priority over U.S. trains which means BNSF trains must wait for their turn while sitting idle on the rail siding just north of Ferndale. These trains often wait for several days while waiting to enter B.C. They can often be seen upon exiting at the southbound Portal exit from I-5.

An examination at this siding found a thick tarry substance between the ties and the rail siding to be poorly maintained. However, the main rail line in this area seems free of coal dust and to be good upkeep.

BNSF officials have determined that the buildup of coal dust doesn't allow water to drain away properly from the rail bed. This allows tracks to go out of gauge and cause derailments. BNSF notified all coal shippers on Oct, 11-2011 to comply with a new ruling and cover their coal products prior to shipment. The coal industry has refused this request citing the spraying of surfactants to mitigate coal dust is too expensive and that BNSF needed to maintain their railroad in a safer manner. The Dept. of Transportation became involved but only issued a letter asking both parties to resolve the dispute to allow coal to be shipped safely. Meanwhile, BNSF derailments continue across the U.S.

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# Bulk carrier

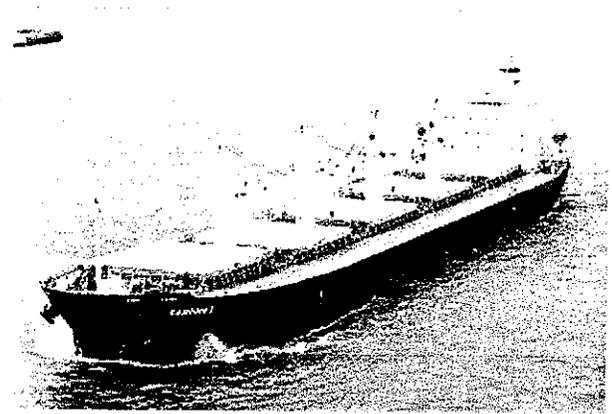
From Wikipedia, the free encyclopedia

A **bulk carrier**, **bulk freighter**, or **bulker** is a merchant ship specially designed to transport unpackaged bulk cargo, such as grains, coal, ore, and cement in its cargo holds. Since the first specialized bulk carrier was built in 1852, economic forces have fueled the development of these ships, causing them to grow in size and sophistication. Today's bulkers are specially designed to maximize capacity, safety, efficiency, and to be able to withstand the rigors of their work.

Today, bulkers make up 40% of the world's merchant fleets and range in size from single-hold mini-bulkers to mammoth ore ships able to carry 400,000 metric tons of deadweight (DWT). A number of specialized designs exist: some can unload their own cargo, some depend on port facilities for unloading, and some even package the cargo as it is loaded. Over half of all bulkers have Greek, Japanese, or Chinese owners and more than a quarter are registered in Panama. Korea is the largest single builder of bulkers, and 82% of these ships were built in Asia.

A bulk carrier's crew participates in the loading and unloading of cargo, navigating the ship, and keeping its machinery and equipment properly maintained. Loading and unloading the cargo is difficult, dangerous, and can take up to 120 hours on larger ships. Crews can range in size from three people on the smallest ships to over 30 on the largest.

Bulk cargo can be very dense, corrosive, or abrasive. This can present safety problems: cargo shifting, spontaneous combustion, and cargo saturation can threaten a ship. The use



The *Sabrina I* is a modern Handymax bulk carrier.

## Class overview

Name:	Freighter
Subclasses:	Handymax, Handysize, Panamax, Capesize
Built:	c. 1850–present
Active:	6,225 vessels over 10,000 long tons deadweight (DWT) <sup>[1]</sup>

## General characteristics

Type:	Cargo ship
Propulsion:	2-stroke diesel engine and 1 propeller
Capacity:	up to 364,000 DWT
Notes:	Rear house, full hull, series of large hatches

Generally, ships are removed from the fleet go through a process known as ship breaking or scrapping.<sup>[48]</sup> Ship-owners and buyers negotiate scrap prices based on factors such as the ship's empty weight (called light ton displacement or LDT) and prices in the scrap metal market.<sup>[49]</sup> In 1998, almost 700 ships were scrapped in places like Alang, India and Chittagong, Bangladesh.<sup>[48]</sup> This is often done by 'beaching' the ship on open sand, then cutting it apart by hand with gas torches, a dangerous operation that results in injuries and fatalities, as well as exposure to toxic materials such as asbestos, lead, and various chemicals.<sup>[50][51][52]</sup> Half a million deadweight tons of worth of bulk carriers were scrapped in 2004, accounting for 4.7% of the year's scrapping.<sup>[47]</sup> That year, bulkers fetched particularly high scrap prices, between \$340 and \$350 per LDT.<sup>[47]</sup>

## Operation

### Crew

The crew on a bulker typically consists of 20 to 30 people, though smaller ships can be handled by 8. The crew includes the captain or master, the deck department, the engineering department, and the steward's department. The practice of taking passengers aboard cargo ships, once almost universal, is very rare today and almost non-existent on bulkers.<sup>[53]</sup>

Deck department	Captain/Master Engine department	Steward's department
1 -Chief Officer	1 -Chief Engineer	1-Chief Steward
1 -2nd Officer	1 -1st Asst. Engr.	1-Chief Cook
1 -3rd Officer	1 -2nd Asst. Engr	1-Stwd's Asst
1 -Boatswain	1 - 2-3rd Asst. Engr.	
2 - 6-Able Seamen	0 - 2-QMED/Jr. Engr.	
0 - 2-Ord. Seamen	1 - 3- Oiler	
	0 - 3-Greaser/s	
	1 - 3-Entry-level	

During the 1990s, bulkers were involved in an alarming number of shipwrecks. This led ship-owners to commission a study seeking to explain the effect of various factors on the crew's effectiveness and competence.<sup>[54]</sup> The study showed that crew performance aboard bulk carriers was the lowest of all groups studied.<sup>[54]</sup> Among bulker crews, the best performance was found aboard younger and larger ships.<sup>[54]</sup> Crews on better-maintained ships performed better, as did crews on ships where fewer languages were spoken.<sup>[54]</sup>

Fewer deck officers are employed on bulkers than on similarly sized ships of other types.<sup>[54]</sup> A mini-bulker carries two to three deck officers, while larger Handysize and Capesize bulkers carry four.<sup>[54]</sup> Liquid natural gas tankers of the same size have an additional deck officer and unlicensed mariner.<sup>[54]</sup>

## Peabody CEO on coal demand:

By Milan on June 23, 2010

In Climate change, Climate Science, Coal mining, Economics, Power plants

Gregory Boyce-chairman and CEO of Peabody Energy, the world's largest coal company-has been saying some disturbing things to his investors. A recent Manhattan meeting was described in a press release:

Boyce observed that coal has been the world's fastest growing fuel this past decade, with demand growing at nearly twice the rate of natural gas and hydro power and four times faster than global oil consumption. "It's stunning that any mature commodity could expand nearly 50 percent in a decade and speaks to the strong appetite for the products we fuel, as well as coal's abundance and stable cost, he said. Coal demand is also expected to grow faster than other fuels in coming decades."

"Asia-Pacific nations are leading a historic global build-out in coal-fueled electricity generation. More than 94 gigawatt's of new generation are expected to come on line in 2010, representing 375 million tons of coal consumption per year. If growth continues at the current pace, generators would add another 1 billion tons of new coal demand every three years.

For the sake of the natural world and future generations of humans, it is imperative that those projections be badly off, and quickly. The world contains a very dangerous amount of coal, burning it all is not compatible with maintaining a habitable planet for those who will come after."

## Coal Train Facts

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## OVERVIEW

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There are currently plans to develop the largest coal export facility in North America at Cherry Point, in northwest Washington state. The Gateway Pacific Terminal, a project of Pacific International Terminals, would be owned by SSA Marine, which is owned by Carrix, partnered with Goldman Sachs. Coal mined from the Powder River Basin by Peabody Energy would be hauled by trains along BNSF rail lines. The coal train corridor extends from mines in Montana and Wyoming through Sandpoint, Idaho to Spokane, down through the Columbia River Gorge, then up along the Puget Sound coast, passing through Longview, Tacoma, Seattle, Edmonds, Everett, Mt. Vernon, Bellingham, Ferndale and all points in between.

Costs to local economies, public health, and rail corridor communities are concerning to many. There is evidence to support that local jobs and businesses, property values, human health and quality of life would be adversely impacted by the coal trains. Increased marine traffic and the coal terminal would affect fisheries, marine ecosystems, and air quality. Further, substantial taxpayer investment may be required to support infrastructure required by the project and to mitigate some of the potential negative effects. There are questions as to whether damages to local businesses, regional identity, communities and fisheries could ever be adequately mitigated. The global impacts of coal export and coal combustion are significant, particularly when the future is considered.

## WEST COAST COAL EXPORT

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Photo courtesy Paul K. Anderson

China is building at least one new coal-fired power plant every week and has a seemingly limitless appetite for coal. The Powder River Basin in southeast Montana and northeast Wyoming has a seemingly limitless supply. There is increasing interest linking this supply with Asian demand through west coast coal terminals. Two potential sites in Washington state—Gateway Pacific Terminal at Cherry Point (Carrix/SSA Marine, Peabody Energy) and Millenium Bulk Terminal at Longview (Ambre Energy, Arch Coal)—are currently the most active projects, although other sites both in the States and in Canada are under consideration.

Coal mining and coal transport (by both rail and sea) are problematic when conducted at such scale. Local economies, communities, and human health are foremost amongst concerns. The coal industry itself acknowledges that coal markets are traditionally volatile and that coal terminals are financially risky ventures. Strategic questions regarding the wisdom of selling energy resources cheaply to economic rival have been raised. Additional concerns include those about the coal combustion that occurs once the PRB coal reaches its market.

[↑ READ MORE about West Coast Coal Export](#)

China consumes coal at an ever-increasing rate due to its burgeoning industrial economy. Though China has vast coal supplies of its own, dangerous mines combined with overrun rail infrastructure make it easier for China to import coal from other countries rather than mine its own. China has committed \$80 billion over the next decade to build up its passenger rail in an effort to open up its main rail line capacity to move more coal. Washington State has put policies in place to phase out coal burning facilities because of coal's negative environmental impact, yet we are exporting it to China. Its unique economic position makes China especially powerful in negotiations of prices of coal worldwide.

The Powder River Basin (PRB) is an area in southeast Montana and northeast Wyoming known for its natural coal deposits. It is the largest source of coal in the United States. The Wyodak coalbed covers 10,000 square miles in the PRB and has seams of coal averaging 70 feet thick. Total production from the PRB was over 455 million short tons of coal in 2009. Powder River Basin coal is low-sulfur, subbituminous coal. While it contains 15 times less sulfur than Eastern (Appalachian) coal, it also has fewer Btu's of energy or a lower "heat rate," which means that coal-fired power plants need to burn nearly 50 percent more of it to match the power output from Eastern coal.

Coal is mined by a process called strip mining, a type of surface mining where overlying soil and rock are removed to reach the coal underneath. The mining process damages aquifers in the region, affecting human health and local economies, particularly ranching. Transporting tremendous amounts of coal from Powder River Basin mines requires an unprecedented intensity of railway usage.

This dedication of rail lines to coal transport is associated with a number of concerns, including, but not limited to, interference with passenger rail and other freight rail uses; impacts on other ground traffic, as railroad crossing delays escalate to hours per day; damages to local economies as businesses are isolated on the "wrong side of the tracks;" loss of tax revenues; effects of noise, vibration, coal dust and diesel emissions on human health, property values and quality of life. The coal train corridor extends through several states and communities that differ in size, demographics, and economic base; however, all communities would be subject to impacts from the proposed scale of coal export activities.

Although the Gateway Pacific Terminal and Longview, both in Washington State, are the two terminal sites with current proposals, other ports, including the Port of Grays Harbor in Hoquiam, Oregon International Port of Coos Bay, and Port of St. Helens are also under consideration. British Columbia ships coal from the facility at Westshore, at Roberts Bank; there is talk of expanding Prince Rupert's Ridley Island terminal; other locations in BC may be developed towards similar ends.

Sightline Institute has done research into the unreliable economics of West Coast coal export. An example of the false economic promise of coal export is the coal terminal in Los Angeles which was closed in 2006 due to market failure.

## “Clean Coal” and the Powder River Basin

There is a compelling argument made by James Fallows in The Atlantic Magazine for making clean coal a priority, alongside “all-out effort on all other fronts, from conservation and efficiency to improved battery technology to wind- and solar-power systems to improved nuclear facilities.” Clean coal refers to coal being used in more sustainable ways by sequestering the carbon dioxide emissions of coal. Fallows reports that China is a leader in developing clean coal technologies; these technologies, however, are still theoretical. A fundamental question remains: Is selling coal cheaply to China the best way to provide incentive to further develop “clean coal?” Selling an inexpensive energy resource that can be utilized with existing technologies may simply perpetuate the consumption of coal as we know it.

## THE PROPOSED GATEWAY PACIFIC TERMINAL FACILITY

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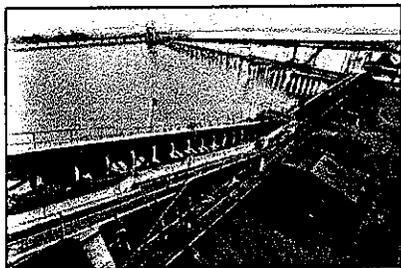


Photo courtesy Paul K. Anderson

The proposed Gateway Pacific Terminal (GPT) at Cherry Point would have a capacity of approximately 54 million metric tons of goods, of which 48 million tons would be coal, annually. By comparison, Westshore Terminals at Robert’s Bank in the lower mainland of British Columbia, currently the largest coal port in North America, ships around 21 million metric tons of coal per year. The 2,980 foot long wharf would berth 3 ships; cargo would be conveyed along a 1,250 foot trestle linking the ships to shore. There would be an 80 to 105-acre stockyard at Cherry Point for storage of coal and associated machinery. Coal dust is generated from uncovered piles that need to be rotated regularly. The dust is notoriously difficult to control. The coal would be loaded from the storage areas into Panamax and cape-size (too large to fit through the Panama Canal and must sail around a cape) ships for transport to destinations in Asia. As both supply and demand for Powder River Basin coal are vast, and as the current application is to develop only 350 acres of a 1,092 acre site, there is no way to accurately predict how large the Gateway Pacific Terminal might eventually become, and how many coal trains and vessels would then be required.

## TRAINS

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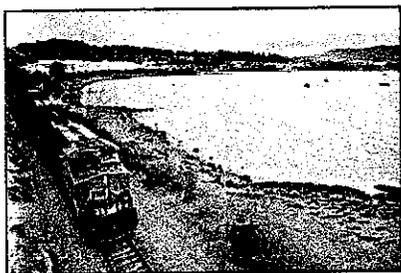


Photo courtesy Paul K. Anderson

Transporting coal from the Powder River Basin to proposed west coast terminal sites would require unprecedented levels of regional rail usage. There are concerns not only about dramatically increased rail traffic, but also about negative impacts associated with coal trains specifically, due to train length, weight, content, and polluting capacity. The terminal at Cherry Point would see the addition of approximately 30 miles of coal trains daily to the BNSF rail line that runs along the Puget Sound coast. This would likely constrain passenger rail and adversely affect the transport of freight other than coal. The Washington state rail system is already nearing practical capacity; infrastructure would need to be upgraded to accommodate proposed usage. BNSF has been largely silent on the issue of rail improvements; it remains unclear who would pay, and what kind of physical and economic disruption such upgrades would cause.

[↑ READ MORE about Trains](#)

### **Train number, size, weight and type:**

There are various numbers given for the number of trains per day required to transport 48 million tons of coal per year from the Powder River Basin to the proposed coal terminal at Cherry Point. According to Carrix/SSA, the total number of coal train trips per day (arriving full, leaving empty) would be in the range of 16 to 18 (9 loaded and 9 returning). Each of the coal trains would be approximately a mile and a half in length, made up of 125-150 cars, depending on car size and type. There is no cap on the number of trains possible, should the proposed terminal expand capacity in the future.

According to the Whatcom Transportation Plan of 2007, there are currently about 35 trains that run each day between Seattle and Everett, and 14 trains each day between Everett and Brownsville, BC. This means that between Everett and the Cherry Point coal port, there would be upwards of 30 trains total a day. Each loaded coal car (an open-top gondola or bottom dump hopper or bottom dump rapid discharge railcar) weighs an average of 143 tons. Due to this extreme weight, each 125-150 car train requires four to five locomotives, and therefore has at least four times the impacts due to diesel emissions of a single-locomotive train. The heaviness of the trains also produces more noise. There are lingering questions about the impact of the trains' weight, including their long-term impact on the rail system and potential damage to nearby structural foundations due to the trains' vibrations.

### **Coal dust:**

Coal cars are typically uncovered; each car loses between 500 pounds and one ton of coal dust en route. Coal dust is a proven nuisance for rail lines; fugitive dusts degrades the ballast of the rail lines, and can be a cause of derailments. While adverse effects of coal dust from mining and combustion on

human health are well-documented, the effects of coal dust blowing and/or leaching from coal cars on human health and on local water safety are as yet unknown.

### **Passenger Rail:**

Rail lines like BNSF's Burlington–Ferndale route are projected to exceed practical capacity by 2015, causing delays and interruption in the service quality to passenger rail. There is also evidence to suggest that the increased number of freight trains along the corridor would preclude the development of high-speed passenger rail in the area.

### **Bottlenecks and infrastructure problems:**

In some places along the rail corridor, the trains are on single tracks. These areas, along with other tunnels and bottlenecks along the corridor, could be severely impacted by an increase in the number and size of trains. Other trains, most notably passenger rail, could be forced off the tracks for extended periods of time. In addition, idling rail engines produce a significant amount of diesel emissions, resulting in environmental damage and raising health concerns.

### **Agricultural and other freight:**

Because freight railroads who own the track (i.e. BNSF) are focused on obtaining maximum benefit and revenue from each available train slot, Washington State's manufacturers and agricultural shippers who need low-cost, shorter haul carload service are being outbid and priced out of the rail market by high-volume shippers. Specifically, BNSF is giving preference to intermodal (double stack container trains that move as a unit from origin to destination with no or few stops) and coal (longer trains carrying more cars) contracts. This is squeezing out Washington's industrial (lumber, wood product producers, manufacturers, waste management, and mining) and low-density agricultural product (apples, wheat, other fruit, potatoes) shippers—making it more expensive for them to use rail and forcing them to consider other options of delivery like trucking, which could negatively impact the consumer, increase air pollution, and even force businesses out of state.

### **Rail system capacity issues:**

A number of factors determine capacity including the number of tracks and sidings, topography, mix of train types, the efficiency of terminals and rail yards receiving traffic, track speed, and power of locomotives. Generally, for a single rail system, capacity is in the range of 16 to 30 trains a day.

Already nearing capacity, the Washington State rail system is being further strained by the increased demand of longer (8,000-foot) trains carrying higher-volume freight (coal). Because rail traffic is a system, capacity issues caused by infrastructure shortage somewhere along the route or other constraints can cause delays throughout the system. In its most recent Freight Rail Plan, WSDOT's projections for coal freight (estimated at 19.9 million tons in 2030) were based in part on BNSF's statement that it had "no public plans to increase capacity... for the foreseeable future" along the I-5 corridor. Yet, in February 2011, Peabody Energy and SSA Marine entered into contract to export (with BNSF agreeing to haul) 24-48 million metric tons of coal per year along the I-5 corridor to Cherry Point—effectively doubling even the highest projected level of coal freight related to managing capacity issues.

### **BNSF basics:**

BNSF, owned by Berkshire Hathaway (Warren Buffett), operates in both the United States and in Canada, and transports coal across the border at Blaine, in Washington, and also in the Midwest. The railway privately owns and operates the tracks in Wyoming, Montana, Idaho and Washington. Historically, railroads have been accorded extraordinary rights (i.e. eminent domain) and protections (i.e. exempt from paying more than 10% of costs related to safety and the mitigation of adverse affects due to rail usage). BNSF has announced its plans to haul the coal (24-54 million mtpa) from Peabody Energy's PRB operations to the proposed SSA International Gateway Pacific Terminal at Cherry Point, where it will be shipped to Asia. Additionally, BNSF along with the Union Pacific railroad would service the proposed Millenium Bulk Terminal (MBT) at Longview, WA.

## TRAFFIC



Photo courtesy Paul K. Anderson

“Findings have shown that increases in rail traffic have the potential to result in diseconomies as a result of traffic delays,” according to a paper taken from a University of Texas Transportation Center study. Recent studies conducted by Gibson Traffic Consultants in the western Washington cities of Seattle, Edmonds, Burlington, Marysville, Mt Vernon, and Stanwood (a study in Bellingham is currently underway) suggest potentially severe consequences due to the proposed increase in rail traffic intensity associated with GPT. Adverse effects include increased risk of accidents, impacts to the city's level of service, decreased ability to provide effective emergency response times, and possible interference with the local freight delivery systems affecting the local economy.

[↑ READ MORE about Traffic](#)

The cities studied by Gibson Traffic Consultants all have common concerns regarding waiting and traffic. An additional 16-18 trains are expected, and each train may be over 1.5 miles long. At a speed of 50-60 mph, that would be an approximate 3-4 minute wait time at crossings. At a speed of 35 mph, there would be an approximate 6-7 minute wait time at crossings. These wait times are in addition to existing train traffic, and do not take into consideration the compounded wait times that would occur with traffic backed up at stop lights, freeway exits and/or ferry lines (as in Edmonds, WA). There is concern among the citizens of towns like Marysville—including the Mayor—that the additional train could cause over two additional hours of traffic delays per day. Whatcom County predicts an average of 2-3 hours of additional county-wide delays per day, should the proposal go through.

## JOBS and LOCAL BUSINESS



Photo courtesy Paul K. Anderson

There are concerns that diverse existing businesses would be compromised and/or lost in order to accommodate coal traffic. Increased traffic delays at city rail crossings and on I-5, waterfront accessibility issues, and increased noise and pollution would likely all impact local jobs and businesses. Mitigating the disruption to the flow of traffic would require the building of over- and underpasses, which would, themselves, cause disruption to local commerce. It is unclear who would pay for mitigation; these costs are typically borne, in large part, by taxpayers. Rail corridor communities outside of Whatcom County will experience potential negative economic impacts without guarantee of any of potential economic benefits (i.e. tax revenue from the terminal, the permanent employment of 44 terminal operators). Ranching and agricultural enterprises can be particularly hard hit by increased rail traffic through their properties and by damages to local water supplies caused by mining. A thorough economic analysis can be conducted as part of the environmental review process.

[↑ READ MORE about Jobs & Local Business](#)

### Mitigation of Traffic Gridlock:

Attempts to repair the interrupted flow of commerce would likely include the building of over- and underpasses. These mitigation efforts, themselves, would entail physical disruption to and displacement of the surrounding businesses. Projects such as these often take years to complete, and cost many millions of dollars at each site. There are concerns that damages to local business would already be done by the time that such mitigation measures would be completed. As the railroad line is prevented from paying more than a small fraction of total mitigation costs, it seems likely that local residents and businesses would pay, in some part.

### Economic Analysis:

There has yet to be a thorough analysis of the economic impacts of the proposed GPT coal terminal, though one could be called for as part of the environmental impact statement. Such an analysis could approximate a net gain or loss of jobs, and a net gain or loss to the economy. It could take into account not only the number of permanent number of jobs created at the terminal site and the tax revenue associated with the terminal, but also job losses, damages to small businesses and fisheries,

opportunity costs (such as loss of tourism revenue), and taxpayer expenses for upgraded safety and infrastructure along the rail corridor. It is more difficult to quantify losses to quality of life and regional identity.

### **Opportunity Costs:**

One possible consequence of the project may be to discourage new businesses from locating to the area because of traffic gridlock, loss of quality of life, or diminished attractiveness of waterfront redevelopment projects cut off from the rest of the city due to rail line delays. In Bellingham, for instance, there have been considerable previous investments made in a large waterfront redevelopment project, the impacts of the coal train on the continued development of this project are unknown.

### **Actual Job Numbers:**

There is a great deal of rhetorical confusion about precisely how many jobs will be created and sustained by the Gateway Terminal Project. Peabody and SSA have offered divergent claims about job numbers, ranging from less than a hundred to upward of 4,000, but analysis of the Project Information Document by the Bellingham Herald on May 21, 2011 shows that 89 full-time jobs will be created by the end of the first phase of construction. Then, depending on demand, the number could grow to 160 jobs by 2017 and 213 jobs by 2026. The applicant's traffic impact summary in their land use application to Whatcom County states a maximum of 213 jobs at build-out. Pacific International Terminals/Gateway Pacific Terminal commissioned a study by Martin Associates, and then a review by three local economists. The jobs study and the review were fairly consistent in their findings, projecting the employment of 44 terminal operators at the Cherry Point site. Tug operators, railroad workers, ILWU workers, tug and ship pilots, and maritime services also factored into their 430 "direct jobs" figure.

## **TAXPAYER INVESTMENT**

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Mitigation refers to the measures taken to diminish the adverse effects of a project. For instance, traffic gridlock at a grade railway crossing can be mitigated by building an overpass or an underpass so that the cars don't have to wait for the train to pass. The adverse effects of coal blowing from train cars may be mitigated by the use of covered cars or by spraying the coal with a chemical agent, known as a surfactant, which diminishes the amount of coal that escapes. Mitigation costs, by law and by precedent, are normally borne by the shipper (in this case, Peabody Coal and SSA Marine) for coal dust, and by taxpayers, for the building of infrastructure to support additional rail traffic. It is unclear who might pay for any safety measures that might help protect communities from the significantly increased rail traffic. Nothing in SSA's proposal or anything submitted by BNSF suggests a willingness to provide grade separation at all crossings or make other mitigation expenditures necessary to reduce impacts all along the Puget Sound line or along the rest of the rail corridor.

[? READ MORE about Taxpayer Investment](#)

The building of overpasses at affected railway crossings in Washington State could cost many millions, if not billions, of dollars. Research is currently being done to assess how many critical crossings would require grade separation, and how much this might cost. Building a single grade separation can easily cost 20 million dollars, can cause disruption to neighborhoods if businesses and/or residences need to be condemned or relocated, and can create access problems. There are 24 grade crossings in Whatcom County alone. Additionally, bridges, sidings, and tunnels would need to be built, improved, and/or expanded. Technically, this could be considered a public subsidy of a private industry, as the railroads would continue to privately own and control the railways. The profits to be made from transporting and exporting coal would go to the interested parties: SSA Marine, Peabody Energy, BNSF railroad.

## PROPERTY VALUES

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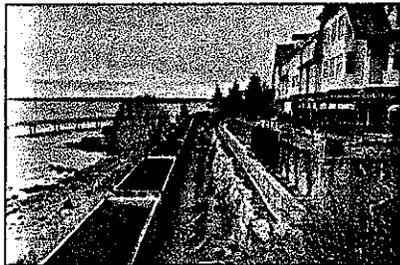


Photo courtesy Paul K. Anderson

Property values could suffer near the coal train corridor. Entrepreneur Magazine found that the worth of small homes near freight rail lines decrease 5-7%. Ranching and agricultural properties are often bisected by rail lines and therefore are particularly affected by increased coal train traffic. The productive value of these properties is further diminished by damages to water supply caused by strip mining in the Powder River Basin. A new study examining Los Angeles neighborhoods supports the notion that home values decrease as nearby rail traffic increases.

## MARINE VESSEL TRAFFIC

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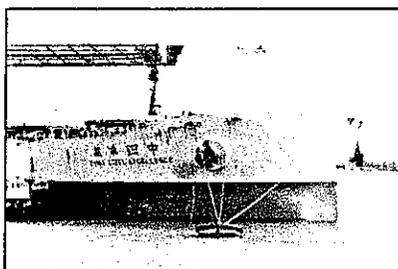


Photo courtesy Paul K.  
Anderson

Tens of thousands of marine vessels transit the Strait of Georgia every year, including those destined for the piers of the Alcoa Aluminum smelter, BP and Conoco-Phillips refineries at Cherry Point. Vessel traffic is growing due to a rise in exports and plans for an additional oil pipeline from Canada. The transport of 54 million metric tons per annum (Mtpa) of cargo, 48 Mtpa of which would be coal, from the proposed terminal at Cherry Point, would require the addition of over 900 annual transits (over 450 ships, coming and going) by some of the largest oceangoing vessels. Despite the increase in vessel traffic, Washington's oil response spill program is facing budget cuts. Given the size of vessel involved, a spill of coal and/or oil would be devastating to marine life, shorelines, and Washington's economy.

[↑ READ MORE about Marine Vessel Traffic](#)

### **The Passage:**

Marine vessels in transit to and from the proposed terminal at Cherry Point travel through the Strait of Georgia. The Discovery Islands at the north and San Juan Islands at the south, along with narrow channels, mark each end of the Strait. It adjoins Puget Sound to the south (through Rosario Strait) and the Strait of Juan de Fuca to the west (through Haro Strait).

Cherry Point's deep water trench (about 80 feet) makes it a much sought-after deep water industrial port, as it easily can accommodate Panamax and capesize vessels. This same bathymetrical feature also makes it a vital environmental zone, as the phyto- and zooplankton that form the bottom of the food chain thrive in such a place.

### **Vessel Size/Type, Projected Number of Transits:**

The Strait of Georgia is one of the busiest shipping lanes in the world and is getting busier with recent increases in the region's marine exports. In addition, the number of oil tankers traveling from Canada through the Strait of Georgia has increased dramatically due to an increased volume of oil exports. Moreover, the number of oil tankers and the volume of oil exports in the Strait are expected to grow unprecedentedly high with North America's Kinder Morgan energy company's plans to proceed with a major oil pipeline expansion linking Alberta tar sands oil to Vancouver's Westridge terminal.

Cherry Point's eight mile shoreline currently receives 850 annual transits from its three existing marine piers. The proposed terminal would add approximately 221-487 (by 2026) vessels for a total of 442-947 transits per year. Vessels will be either Panamax or Capesize. Panamax class are the largest vessels that can cargo through the Panama Canal, they are up to 950 feet long by 106 feet wide, with a deadweight of 50,000 – 80,000 tonnes. Capesize vessels are too wide to fit through the Panama or Suez Canal and therefore must travel around the Cape of Good Hope or Cape Horn. These vessels require deep-water ports and can carry a deadweight of 80,001 to 199,000 tonnes (which would include both bulk commodity i.e. coal and ballast water for stability).

### **Vessel Collision, Groundings and Delays:**

A 2008 BP Refinery Vessel Traffic Risk Assessment study projected dramatic increases for both the risk of marine vessel accidents and oil spills or outflows resulting from collisions between two

vessels, groundings (both powered and drift), and collisions (collisions with the dock or other fixed objects) if crude vessel traffic levels increased by 17% at the BP Cherry Point Refinery.

A review of the environmental and safety documents for the initial (1997) proposed Gateway Pacific Terminal, shows that the proposed increase in vessels would result in an increase of approximately 60% in the deep draft ship traffic in the upper Rosario Strait, the route most vessels from the terminal would likely take. The review also found that the increase in proposed deep draft traffic on the risk of collisions and powered vessel groundings in Rosario Strait was not adequately addressed by the 1997 Vessel Traffic Study. Collision frequency is highly dependent upon traffic density and environmental conditions. Vessels most likely to be involved in a collision with a large bulk cargo vessel are: passenger ferries, tank barges, and tank vessels—the impact of which any one would be catastrophic. Powered or drift groundings of large bulk carriers are also a serious risk given that they carry thousands of tons of bunkers in single bottom tanks and they are not escorted by tugs. Marine traffic delays and backups in the Rosario Strait will also likely occur given that it is a one-way zone for deep draft vessels.

#### **Air Pollution from Marine Vessels:**

Marine vessels represent one of the most difficult to regulate sources of air pollution in the world. Sometimes called “floating power plants,” marine vessels emit sufficient pollutants to negatively impact the air quality and health of people near ports and inland waterways. Marine vessels used in international shipping are typically powered by diesel engines fueled by either diesel (distillate) or residual fuel. Diesel engines generate significant amounts of fine particle and toxic emissions, which are linked to cancer, cardiovascular problems, aggravated asthma, chronic bronchitis and premature death. Additionally, in response to increasing oil prices and the large quantities of fuel needed to operate vessels, lower quality residual fuel called bunker fuel is commonly used. Bunker fuel has a very high sulfur content which, when burned, emits harmful levels of particulate matter and nitrogen oxide that can travel inland, causing severe respiratory illnesses. Airborne pollution at Cherry Point is primarily from marine vessel traffic and stationary sources. Marine vessels account for the largest single source of sulfur dioxide in the airshed in the larger Georgia Basin (where the Cherry Point Aquatic Reserve is located).

## **MARINE IMPACTS**

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Cartographer: Stefan  
Freelan

Sharply increased marine traffic, physical disruption of ecologically sensitive areas, and open coal storage in proximity to the Cherry Point Aquatic Reserve give rise to concerns about the proposed coal export facility. The risk of collisions and oil spills rises as coal ships are added to waters already crowded with oil tankers. 80-100 acres of open coal heaps will be in proximity to the aquatic reserve, in an area sometimes subjected to high winds; it is unknown to what extent coal dust in the water might affect the marine plants and animals. The construction of the facility and rail loops on wetlands and uplands, and of the wharf and trestle area over the water, have the potential to disrupt fragile ecosystems. Cherry Point herring are a keystone species, providing food for a number of other species; their status is currently fragile, and would likely be further stressed by activities associated with the coal port. Increased noise pollution, increased risk of collision with marine vessels, threatened food sources (i.e. herring), and a degraded marine environment would pose challenges to killer whales, salmon and a myriad of shore and migratory bird populations. Ballast water carried from Asian ports and released into local waters could introduce invasive species, to possibly devastating consequence.

[↑ READ MORE about Marine Impacts](#)

### Oil Spill Risks:

Tens of thousands of marine vessels transit the Strait of Georgia every year, including those destined for Cherry Point. The Strait of Georgia has been designated by Parks Canada as Canada's "most-at-risk natural environment." Vessel traffic is growing due to a rise in exports and plans for a major oil pipeline expansion in Canada. Coal transport from the proposed terminal at Cherry Point would require, at build-out, an additional 974 annual transits by some of the largest oceangoing vessels. Despite the increase in vessel traffic and a Vessel Traffic Risk Assessment correlating higher vessel traffic levels with a higher risk of accidents and oil spills, Washington's oil spill response program is facing budget cuts. Effects from collision or grounding are amplified by the type of vessel and cargo; oil and/or coal would be devastating to marine life, shorelines, and Washington's economy in the event of a spill.

Of recent concern is how to prepare for and respond to an oil spill from bitumen—the type of oil moving through B.C. Canada's pipeline. Originating from the Alberta Oil Sands, bitumen is thicker and heavier than crude oil and may sink rather than float on the surface making traditional oil spill response and clean-up methods likely ineffective. Not knowing how much bitumen is currently exported through our region's waters

or how a spill would affect the environment, the Washington Department of Ecology acknowledges its concern, especially in light of the planned pipeline expansion.

### **The Risks to Cherry Point Herring:**

Washington herring are a keystone species, as they provide food for a number of other species. Cherry Point herring, unlike other regional herring populations that spawn at sea in the winter, migrate toward fresh water and estuaries to spawn in the spring. This unique spawning schedule and location makes the Cherry Point herring a vital source of food for endangered Chinook salmon. The Chinook salmon, in turn, provide sustenance for orca/killer whales, porpoises and other marine mammals. Cherry Point herring was once the most abundant herring species in Washington state waters; their population has declined by over 90%. Efforts to have this critical and fragile species declared "endangered" have so far been unsuccessful.

Noise and vessel movement are stressors to Pacific herring. The waters at Cherry Point serve as a "core" region for Pacific herring spawn deposition. Because Cherry Point herring spawn in open, high energy shoreline areas, vessels in transit to and from the proposed Terminal could cross through their prespawning holding areas and disrupt their spawning habits. According to Washington Fish and Wildlife, conservation of herring spawning habitat and minimizing disturbance in the prespawning holding areas are key to preservation of herring stock inside Puget Sound. Additionally, shading from the proposed Terminal's wharf and trestle could further decrease the herring population by causing a decline in herring spawning habitat and primary productivity due to reduction of macroalgae. Coal dust, which is notoriously difficult to control, blowing or running into the water from the proposed Terminal's uncovered 80-acre coal storage area could further shade critical macroalgae or seagrass species and deplete critical oxygen in nearshore habitats. Noting the regional importance of the Cherry Point herring stock, the WDNR, in a 1998 letter to Pacific International Terminals, stated that further herring studies and a regional risk analysis were necessary and that it would "allow the construction of the Terminal only if the completed regional ecological risk analysis shows that construction and operation activities will not pose an unacceptable risk to the Cherry Point herring stock."

### **Killer Whales (Orca) and other Marine Mammals:**

Marine mammals in and around the waters at the proposed Terminal may be injured or killed by collision with vessels. Disturbance by marine traffic from noise and vessel movement, reduction of food (Chinook salmon, herring, cod), and high levels of environmental contaminants are the three main factors causing the decline of threatened Northern Resident and endangered Southern Resident Killer Whales.

### **Cherry Point Habitats:**

The Cherry Point Aquatic Reserve encompasses important habitats, including those of mixed microalgae (critical for salmon and herring), kelp, eelgrass beds, a salt marsh, and two small freshwater streams, which provide lower salinity in the nearshore, which in turn provides habitat for many fish species, including Pacific herring, salmon, surf smelt, and groundfish. Surf smelt spawning very high up in the tideland area rely on the beach's mix of sand and fine gravel. The Reserve is listed as a significant bird habitat, and its wetland supports many species of marine and migratory birds. Marine mammals that may use the Reserve's waters include: Dall's porpoise, Stellar and California sea lions, gray whales, harbor seals, Southern Resident Killer Whales, humpback whales, seals, and Pacific harbor porpoise.

### **The Importance of Wetlands at Cherry Point:**

A wetland impact assessment of the proposed project at Cherry Point has determined direct permanent wetland impacts to approximately 140.6 acres of wetlands, including filling and grading or cutting to raise areas for rail embankments. The project will be located within two coastal watersheds—the Gateway Pacific Terminal Watershed and the Birch Bay Watershed, which contains extensive wetlands associated with Terrell Creek and Lake Terrell, including a 1,500-acre wildlife area managed by the Washington Department of Fish and Wildlife (WDFW) for wintering waterfowl (Canada geese, duck, trumpeter and tundra swans, pheasants). In addition, Lake Terrell wetlands support the second largest heron rookery in Washington. Indirect effects to aquatic systems downstream are expected as well. Potential negative changes to stormwater; soil erosion and sedimentation; and spills and fugitive coal dust all would degrade water quality.

### **Ballast Water and the Risk of Invasive Species:**

In order to maintain stability and structural strength during transit, cargo vessels fill their ballast tanks with water at one port and then discharge it at another when receiving cargo. A single modern cargo vessel can carry anywhere from 100,000 to 10 million gallons or more of ballast water (6 million gallons is approximately 10 Olympic-size swimming pools) — all potentially containing several hundred different invasive aquatic species (plants, insects, animals, microbes). Once established, the invasive species can become a significant threat to biodiversity because there are often no natural predators to control them. The introduction of invasive marine species into new environments by ships' ballast water has been identified by the United Nations as one of the four greatest threats to the world's oceans. The International Maritime Organization (IMO) recommends guidelines to minimize the risk of spreading aquatic nuisance species such as mid-ocean water exchange of ballast water. Several countries have adopted the IMO standards. However, in the United States, the US Coast Guard (USCG) has yet to mandate a ballast water discharge standard to help vessel operators comply with its ballast water management practices.

### **The Cherry Point Aquatic Reserve & Required Environmental Protection:**

Because part of the proposed terminal (the wharf and nearly all the trestle) will need to be built on state-owned tidelands, a lease from the Washington Department of Natural Resources (WDNR) is required. These tidelands have been recognized by the State of Washington as part of the Cherry Point Aquatic Reserve. In 2010, the WDNR adopted a Management Plan to assist in its management and protection of the Reserve. The Management Plan identifies environmental protection of the Reserve over and above all other management actions. In addition to following the Management Plan, it is also the responsibility of the WDNR, under state law, to withhold from leasing lands which it finds to have significant natural values.

### **GPT and the Aquatic Reserve: concerns and incomplete studies:**

While there are many effects to consider regarding the proposed terminal and increase in marine traffic, several key areas of concern were identified by environmental groups and state agencies during negotiations to a 1999 Settlement Agreement between Pacific International Terminals, Inc. and five citizen groups, including: “impacts to habitat in the footprint of the pier from shading and ship operations; impacts to herring, particularly during spawning season; ballast water exchange; water quality deterioration from construction and operation of the facility; vessel traffic impacts; public access issues, and questions surrounding how many additional piers will be allowed....” As key

conditions of the settlement, Pacific International Terminals, Inc. agreed to conduct and fund mitigation and monitoring programs for macroalgae, herring, ballast water, sediment, as well as a vessel traffic analysis, which will evaluate impacts of increased vessel traffic, oil spill risk, hazards at the facility, and bunkering (fueling) operations. Many of these studies have yet to be completed. Additionally, a Biological Assessment (in preparation) will evaluate impacts on marine habitat, threatened, endangered, and priority species, including salmon and herring.

## FISHERIES

Partly due to its deep water feature, Cherry Point has been an especially rich and fertile marine area. The waters around Cherry Point have traditionally been part of abundant salmon and lingcod fisheries. There has also been a vigorous recreational, commercial, and tribal Dungeness crab fishery. Damages to the local herring population would result in damages to the salmon and lingcod fisheries, as herring are a primary source of nutrition for these fish. Heavily increased marine traffic could result in losses both the the fisheries and the fisherman, as crabbing gear can be destroyed or carried away by large marine vessels.

[↑ READ MORE about Fisheries](#)

### Herring Populations, Eelgrass Beds and Fisheries:

According to the Cherry Point Aquatic Reserve Management Plan, there are several factors that could disturb the already fragile herring population. Light, noise, shading, and movement from the terminal and/or from marine vessels could disrupt herring spawning. Many fish, mammals, and aquatic birds are dependent upon herring, including: Pacific Cod, Lingcod, halibut, Chinook salmon, harbor seals, herons, western grebes, common murre, rhinoceros auklets, tufted puffins, orcas, seals, sea lions, Dall's porpoises and surf scoters.

The Department of Natural Resources (DNR) has extensively studied the Cherry Point herring population and its decline. Their website contains a study called "Covered Species Paper" that documents the health of the Cherry Point Pacific herring population (see pps. 3-80 through 3-87). Two state agencies, Puget Sound Partnership (PSP) and DNR, have been studying eelgrass in the Puget Sound because it is a preferred habitat for herring spawn deposition. PSP has just adopted "Recovery Targets" for Puget Sound eelgrass. DNR's Nearshore Habitat Program webpage includes scientific studies on eelgrass, including a paper entitled "Developing Indicators and Targets for Eelgrass in Puget Sound." PSP has generated numerous scientific documents relating to the health of the Puget Sound generally, including the 2009 State of the Sound Report. It has also published specific recovery targets for protecting and restoring eelgrass habitat: "Eelgrass extent in 2020 is 120 percent of area measured in the 2000-2008 baseline period."

Much has been written about the decline of anadromous fisheries in the Puget Sound. Anadromous fish are those that are born in fresh water, live their lives in salt water, then return to fresh water to spawn. Salmon and smelt are examples. The importance of estuaries in marine life can not be overstated; a healthy estuarial system is critical to the survival of certain species. DNR has done a study on threatened and covered species listed under the Endangered Species Act (ESA) as a part of its "Aquatic Lands Habitat Conservation Plan." You can also see the National Marine Fisheries Service website, which administers the ESA and recovery planning for listed species.

The federal government, the Puget Sound Partnership, and the state DNR have invested millions of dollars in working to restore marine ecologies that now may be jeopardized by the substantial increase in ship traffic, pollution and wetland disturbance associated with the proposed coal port site.

## **QUALITY OF LIFE and REGIONAL IDENTITY**

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The Northwest is a region noted for spectacular physical beauty, an emphasis on “quality of life,” and a dedication to clean, healthy living and environmental stewardship. It is considered a prime tourist destination spot and a highly desirable place to live; it is both agriculturally rich and a haven for innovative business. The pollution, traffic, noise, and degradation of our waters and fisheries that would come with significant coal train and ship traffic is at odds with our enjoyment and stewardship of this region. Choosing to become an economy in which coal transport is an emphasis seemingly undermines aspirations to build on the Northwest economies of tourism, healthy agriculture, innovative businesses, clean energy and the manufacture of local goods. Even our icons – the salmon and the orca– would be imperiled by the proposed project. The Northwest’s most valuable asset is our quality of life –witness the profusion of Northwest communities on “best places” lists– and this quality is what hangs in the balance.

[↑ READ MORE about Quality of Life and Regional Identity](#)

Along the Puget Sound rail corridor, many communities have invested in the transformation of waterfront from industrial to commercial use as an essential part of a plan for sustainable economic viability. A continuously in-use train track effectively shears such a town off from its waterfront, and jeopardizes such long-term planning.

The transport of another region’s goods to another country brings limited benefit to our region, at significant cost to our region. In particular, many feel that the export of a highly polluting form of fossil fuel is contradictory to this region’s values and dedication to phase out domestic coal-burning power plants. The Puget Sound Partnership compiled an action agenda which addresses many of these quality of life concerns.

## **COAL DUST**

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Photo courtesy Paul  
K. Anderson

Coal dust is notoriously difficult to control. BNSF estimates that each uncovered car loses between 500 pounds and a ton of coal dust en route. It is unknown how much coal dust will be released into the air, onto the land, and into the water from the from the 80-100+ acres of open, continuously turned-over, coal heaps in storage at the terminal site. There are concerns about train derailments, the effects of dust on human health, local clean water supplies, and on the marine environment. The methods of containing coal dust, especially in adverse weather conditions (wind, rain) are unproven, and it is uncertain which party would pay for dust mitigation measures.

[↑ READ MORE about Coal Dust](#)

Because most coal trains are uncovered, they produce significant amounts of coal dust in the course of transporting the coal from one place to another. According to BNSF research, 500 pounds to a ton of coal can escape a single loaded car. Coal dust is regarded as a nuisance, as the dust can damage the ballast and, the railway claims, cause derailments. BNSF asks that shippers pay for dust mitigation; shippers typically balk at paying. The Puget Sound coast line is notoriously rainy and windy; it is unclear as to how effective surfactants might be at containing the pulverized coal in adverse weather. There seem to be no guarantees that dust would successfully be controlled en route from the mines to the port.

Dust is also generated at the terminal site, as bulldozers continually shift and rotate the ground-up coal. Constant turnover is required to both keep the coal in one area, and also to prevent spontaneous combustion. Wind and moisture can agitate the combustive properties of coal. The potential adverse effects of coal dust on adjacent sites was a factor in the Port of Vancouver rejecting a proposal to export coal from a new export site there. The dust is notoriously difficult to control, and has proven to be a concern for residents close to Westshore, the coal port in BC. The coal at the proposed GPT terminal will be stored in open heaps on 80-105 acres located in proximity to the Cherry Point Aquatic Reserve. Cherry Point can be buffeted by high winds, winter conditions often see wind gusts in the 60-70 knot range. It seems likely that the wind will agitate the heaped, pulverized coal.

The leaching of toxic heavy metals from coal ash into water supplies is a proven problem. Exposure to arsenic, cadmium, barium, chromium, selenium, lead and mercury can cause any number of health problems, including cancers and neurological diseases. It is unknown if and to what extent these heavy metals might leach out from the coal and/or fugitive coal dust, from the train cars and at the terminal storage site, into local water supplies and into the marine environment. There are potential implications for the safety of the water we drink and the seafood we eat.

## COAL TRAIN DERAILMENTS

- Havelock, NC – July 2012
- Jefferson County, KS – July 2012
- Princeton, IN – July 2012
- Pendleton, TX – July 2012
- Northbrook/Glenview, IL – July 2012
- Mesa, WA – July 2012
- Portageville, MO – June 2012
- Junction City, KS – June 2012
- Collins, MS – May 2012
- Salmon Arm, BC – April 2012
- Houston, BC – February 2012
- Hinton, Alberta – January 2012
- Vanderhoof, BC – January 2012
- Montrose, IA – December 2011
- Vanderhoof, BC – December 2011
- Galland, BC – December 2011
- Topeka, KS – November 2011
- Peetz, NE – October 2011
- Charleston, WV – October 2011
- Emmett, KS – September 2011
- Denison, IA – July 2011
- Omaha, NE – July 2011
- Bloomington, IN – July 2011
- Ashdown, AK – July 2011
- Pueblo, CO – Nov 2010
- Survivor, WV – Apr 2011
- Kearney, NE – September 2010
- Quantico, VA – August 2010
- Drummond, MT – August 2010
- Ferry Farm, VA – July 2010

And, a 2006 spill that resulted in 2 loaded cars being submerged in the Clark Ford River:

- Trout Creek, MT – November 2006, 2-4 cars spilled and submerged into Clark Fork River – resulting in EPA Superfund action.

## AIR QUALITY

Coming soon.

## NOISE

While there are many sources of noise from trains (high-pitch screeching, idling engines; moving cars, etc.), horn sounding is the most significant. Federal rules governing the blowing of locomotive engine horns require that engineers of all trains sound horns for at least 15-20 seconds at 96-110 decibels (dB) at all public crossings. Decibels in the range of 80-105 are labeled extremely loud, whereas those above 105 are dangerous. Decibels are logarithmic, meaning that 100 decibels is twice as loud as 90, 110 decibels is twice as loud as 100, and so on. While impacts to quality of life from repeated loud noise are self-evident, chronic noise exposure has proven adverse health effects, including impaired sleep and cognitive function, and cardiovascular effects.

[↑ READ MORE about Noise](#)

### Noise Level and Frequency:

The Federal Railroad Administration (FRA), regulates the sounding of train horns at public highway railroad at-grade crossings i.e. where a public roadway crosses the railroad tracks at the same level. Under the train horn rule, the FRA requires train horns to be at least 96 dB and no louder than 110 dB. Since sound propagates depending on conditions like weather, openness of land, etc., only someone standing right next to the train hears the horns at 96-110 dB levels. Using the inverse square law, an estimate of someone living within 300 feet of the rail can be predicted to hear a train horn of 110 dB at 70.77 dB, which is categorized as very loud.

With few exceptions, before reaching an at-grade crossing, the FRA requires a locomotive engineer to sound the horn in a pattern: 2 long: 1 short: 1 long for a minimum of 15 second and a maximum of 20 seconds.

### An Example of Potential Noise Increases:

There are 12 at-grade public crossings within the City of Bellingham. Current train traffic through Bellingham is estimated at 12-15 trains per day, accounting for at least 36 minutes of horn noise (15-second soundings x 12 at-grade crossings x 12 existing trains = 2,160 seconds). An additional 18 trains per day will add 54 minutes of horn soundings: (15-second soundings x 12 at-grade crossings x 18 trains = 3,240 seconds) for a total of 90 minutes. Each day, this 90 minutes will be comprised of at least 1440 horn blows (4 x 12 at-grade crossings x 30 trains).

### Adverse Health Impacts from Noise:

Studies on noise from aircraft, roadways, and trains show that continuous noise above 30 dB or frequent intermittent noise disturbs sleep. In addition to sleep disturbance, noise during sleep causes

increased blood pressure, increased heart rate, increased pulse amplitude, vasoconstriction, changes in respiration, cardiac arrhythmias, and increased body movement.

Secondary effects from sleep disturbance can also occur including fatigue, depressed mood and well-being, and decreased performance and alertness. Cardiovascular effects, independent of sleep disturbance, can also occur with acute exposure to noise mostly due to elevated blood pressures and levels of stress-induced hormones. In addition, noise can exacerbate stress and anxiety and impair task performance.

### **Noise Mitigation:**

To mitigate train noise, some cities have established quiet zones, in which safety modifications are made to public crossings; exempting trains from their horn soundings at the modified crossing. However, the high cost of significant improvements at public crossings borne by cities and taxpayers has been a deterrent. Moreover, once a crossing is converted into a quiet zone, liability shifts from the railroad to the city for any traffic or personal injury incurred within the quiet zone.

## **PUBLIC HEALTH**

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Frequent long trains at rail crossings will mean delayed emergency medical service response times, as well as increased risk of accidents, traumatic injury and death.

The scale of the proposed terminal would require a dramatic increase in the number of diesel-burning locomotives and marine vessels affecting Puget Sound airsheds. Diesel particulate matter is a particularly noxious form of air pollution, as it is of sufficiently small size (PM 2.5) to embed in the lung tissue. Diesel particulate matter is associated with both pulmonary and cardiovascular issues, including cancers, heart disease, and asthma. Children, teens and the elderly are especially vulnerable. Noise exposure can cause cardiovascular disease; cognitive impairment in children; sleep disturbance and resultant fatigue; hypertension; arrhythmia; and increased rate of accidents and injuries; and exacerbation of mental health disorders such as depression, stress and anxiety, and psychosis. Transporting coal to China in particular has the potential to raise levels of mercury in our waters. Mercury is associated with neurological dysfunction, as in ALS, Parkinson's, and Alzheimer's.

[↑ READ MORE about Health Concerns](#)

For further explanation of public health concerns, please see the Physicians' Position Statement calling for a Health Impact Assessment. The attached appendices go into further detail about: pulmonary, cardiovascular, coal dust, noise exposure, and delayed emergency vehicle response time concerns.

Whatcom Docs, a group representing over 180 local physicians, and an increasing number of health care providers from the Pacific Northwest (Skagit, King and Thurston counties; Oregon) are calling for a Health Impact Assessment (HIA). While few specific mandates or resources exist for conducting HIA, its use is increasing and recently has been included in state legislation to fulfill regulatory

requirements. For example, Washington state required an HIA be performed to inform mitigation planning for the State Route 520 Bridge in Seattle to analyze effects on air pollution exposure. Realizing the benefits of HIA, many are advocating its analysis be integrated with or part of the Environmental Impact Assessment process.

For more information on HIAs:

- [Center for Disease Control Fact Sheet on Health Impact Assessments](#)
- [A Guide for Health Impact Assessment](#)
- [Health Impact Project: About the HIA](#)
- [Health Impact Project: The HIA Process](#)
- [Public Health – Seattle and King County Health Impact Assessment](#)

Many people have expressed anxiety about coal dust. Although coal dust contains toxic heavy metals and has been associated with emphysema, chronic bronchitis, and malignancy in people who work closely with coal in mining, processing and/or transport, it is not yet known what, if any, health effects fugitive coal dust from coal trains or from the uncovered coal heaps in storage, might have on the general population. A more pressing question might involve the effects of coal dust from the trains and/or storage site leaching into local water supplies, about which little is known.

## GLOBAL IMPACTS

While the Gateway Pacific Terminal and the associated coal trains would be active in only the transport and export of coal, it is important to recognize that the *only* function of coal transport is to link coal mining to coal combustion: GPT and related enterprises need to be considered as part of this larger system. Each of the various processes associated with coal have negative effects on local economies, public health, communities and the environment. The coal mines in the Powder River Basin (Montana and Wyoming) continue to degrade local aquifers and water supplies. Coal combustion in China presents a serious health risk to the hundreds of millions of people, especially children, who live in affected airsheds. Coal combustion is also associated with negative impacts that transcend geographic borders. Ocean acidification, acid rain, mercury emissions, and climate change affect global populations, regardless of where the coal is burned. The financial cost accrued from health and environmental damages from coal mining, processing, transport and combustion are currently estimated at a third to over half a trillion dollars annually in the U.S. alone.

[↑ READ MORE about Global Impacts](#)

### China, PRB Coal, and the Global Energy Market:

We are at a critical time and a critical place: a West Coast coal export industry of the scale currently under discussion could influence Chinese energy policy for the next half-century: increasing the supply of cheap coal could reduce the incentive to pursue clean energy. While regulations such as The Clean Air Act have limited the profitability of coal in the U.S. and provided a degree of environmental and health protection, China has no such regulations.

From 2005 to 2030 the global demand for electricity is expected to double, bringing with it an increase in coal consumption. Although the U.S. Energy Information Administration predicts that by

2030 nearly 90% of increased coal consumption will be attributed to China, this prediction is not inevitable. Economic analysis shows that Chinese demand is sensitive to the value of coal in the market place. Recently an empirical study performed in China found that a 10 percent decrease in the cost of coal resulted in a 12 percent increase in Chinese coal consumption.

The proposed Gateway Pacific Terminal is part of a larger trend to create a coal export industry in the United States. SSA Marine at Cherry Point and Millenium Bulk Terminals at Longview are currently seeking permits that would allow them to export close to 110 million tons of coal annually. In addition, Port of Morrow in eastern Oregon has signed a one-year lease to transfer coal, while other ports, including Port of St. Helens, Coos Bay, and Grays Harbor, are also being considered.

In order to profit, Washington ports will have to undercut the prices of Australian and Asian competitors as well as other North American sources. Increased competition results in reduced price. Inserting Powder River Basin (PRB) coal into the global market each year could influence China towards a future of coal and away from exploring renewables.

### **Quantifying the Effects of Coal Mining, Transport, Processing and Combustion:**

While certain parties stand to profit considerably from coal, the general population will suffer economic loss due to its health and environmental impacts. Studies quantifying such comprehensive costs include that of Dr. Paul Epstein of the Harvard Medical School Center for Health and the Global Environment. A 2011 study co-authored with 11 peers traces each stage in the life cycle of coal. As the report states, "Each stage—extraction, transport, processing, and combustion—generates a waste stream and carries multiple hazards for health and the environment." These effects are defined as "externalities." Coal companies are not responsible for these costs. Rather, they fall to the public. The Epstein study estimates that each year externalities cost the U.S. public a third to over \$500 billion or half a trillion dollars.

Externalities transcend borders. The effects of air pollution, mercury emissions, acid precipitation, ocean acidification and climate change are felt globally regardless of where the coal is burned.

### **Public Health: At home and in China:**

Coal combustion produces sulfur dioxide, which causes the premature deaths of about 400,000 people in China each year. Pollution from coal combustion makes some cities so dark that people drive with their lights on during the day. Some of that sulfur dioxide pollution crosses the Pacific Ocean, and has been detected in California, Oregon and Washington State. India, whose population is expected to exceed China's by 2030, is accelerating construction of coal-burning plants.

### **Acid Rain:**

Another externality of coal combustion is acid precipitation or acid rain. The primary man-made cause of acid rain is sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>), released from burning fossil fuels like coal. Approximately 2/3 of all SO<sub>2</sub> and ¼ of all NO<sub>x</sub> in the U.S. comes from burning fossil fuels for power. Acid rain is not limited to national borders and can travel hundreds of miles before precipitation occurs. Although the U.S. has taken action to regulate coal power plants domestically and thus reduce acid rain, these efforts would be undermined from a global perspective if U.S. coal contributes to Chinese acidification—a form of pollution that already effects not only China, but threatens quality of life across the Pacific Rim, resulting in increased illness and premature death from heart and lung disorders, such as asthma and bronchitis.

### Mercury:

While acid rain can travel hundreds of miles, mercury emissions can travel thousands of miles. The EPA estimates that 34% of mercury emissions in the U.S. come from non-U.S. sources. In Oregon, a researcher estimated that 18% of mercury in the Willamete River came from overseas. Increasingly the source of mercury is Asia. From 1990 to 1995, Asia's contribution to the global inventory rose from 30 to 56%. Like acid rain, coal burning power plants are the primary cause of mercury. After mercury from coal combustion is emitted into the atmosphere, it settles in water, where microorganisms change it to methylmercury, a high toxic chemical that builds up in shellfish and fish. Human consumption of methylmercury infected seafood can harm the brain, heart, kidneys, lungs and immune system. For pregnant woman, methylmercury exposure can damage the nervous system of unborn children resulting in mental retardation. A 2003 study conducted by the Centers for Disease Control and Prevention found that one in twelve women (8%) of childbearing age had mercury in their blood above levels deemed safe by the EPA.

### Ocean Acidification:

The burning of fossil fuels, including coal, release carbon dioxide into the atmosphere. About a quarter of all carbon dioxide emissions are absorbed into the world's oceans. This carbon dioxide changes the chemistry of the ocean water, making it more acidic. Marine life has been and is being harmed by this rather sudden and dramatic change; the ocean's pH had remained fairly stable for about 20 million years prior to humans burning coal and oil. At current rates, the waters around Antarctica will become corrosive by 2050. High acidity will fundamentally alter the nature of the oceans and any human connection (fishing, tourism, recreation) with them.

A recent study published in the journal Limnology and Oceanography shows that ocean acidification is occurring much sooner than predicted. Since 2005, oyster farms and hatcheries in the Pacific Northwest have been experiencing massive oyster larvae die-offs during periods of ocean upwelling. During these periods, scientists have determined that the level of acidity from the combination of more acidic deep ocean water from the upwell and the rising carbon dioxide levels in surface water from increased CO2 emissions is too high for the oyster larvae to survive.

### Climate Change:

Of the greenhouse gases linked to global warming, the UN's Intergovernmental Panel on Climate Change (IPCC) cites carbon dioxide as being the single most important. Coal burning is the primary contributor of CO2 emissions, accounting for 81% of emissions in the U.S. Overall coal combustion contributes at least one-third of heat trapping chemicals. Carbon emissions have already shown an alarming increase, rising 80% from 1970 to 2004.

West coal export would contribute to this trend, allowing for close to 110 million tons of Powder River Basin coal to leave Washington annually. For context, burning this amount of PRB coal is roughly equivalent to the annual carbon emissions of 40 million cars. For every 100 million tons of PRB coal burned, 180 million tons of heat trapping carbon-dioxide are released into the atmosphere. That constitutes twice the greenhouse gas emissions of the entire state of Washington, including every power plant, car, truck factory, and farm combined.

The IPCC report states that in order for the global temperature to stabilize between 2 and 2.4 degrees above the pre-industrial average, emissions would need to peak before 2015. Rather than peaking,

coal exporters hope to hit their stride in 2015, abandoning the IPCC warnings in order to take advantage of a market that Peabody Energy estimates will have grown to 220-260 million metric tons a year by that time.

### **Economics of Climate Change:**

To date, the most comprehensive study done to measure the full economic effect of climate change is the Stern Review, a 700 page independent report released for the British government led by Sir Nicholas Stern of The Grantham Research Institute on Climate Change and the Environment.

At current rates, the stock of greenhouse gases in the atmosphere would reach 550ppm CO<sub>2</sub>e by 2050, doubling pre-industrial averages. However increasing transportation and energy demand has resulted in an acceleration of emissions. The level of 550ppm CO<sub>2</sub>e could be reached as early as 2035. Depending on the climate model used, there is a 77% to 99% chance that at this level global warming will rise 2 degrees Celsius. If emissions go uncurbed, the study estimates a 50% risk of exceeding 5° C global temperature rise in the decades following the turn of the century.

The economic effect of climate change is proportional to the rise in temperature. Today the world has warmed half a degree Celsius, and already seen a measured increase in asthma, heat waves, clusters of illnesses after heavy rain events and intense storms, and the distribution of infectious disease. The costs of weather-related disasters rose 10-fold from the 1980s to the 1990s (from an average of \$4 billion/year to \$40 billion/year) and jumped again in the past decade, reaching \$225 billion in 2005.

### **Effect of Uncurbed Emissions:**

Given that current trends anticipate a 2-3° C warming over the next fifty years or so—a number that will rise several more degrees if emissions continue to grow—the Stern Review reveals the following severe impacts:

- “Melting glaciers will initially increase flood risk and then strongly reduce water supplies, eventually threatening one-sixth of the world’s population, predominantly in the Indian sub-continent, parts of China, and the Andes in South America.”
- “Declining crop yields, especially in Africa, could leave hundreds of millions without the ability to produce or purchase sufficient food. At mid to high latitudes, crop yields may increase for moderate temperature rises (2 – 3°C), but then decline with greater amounts of warming. At 4°C and above, global food production is likely to be seriously affected.”
- “In higher latitudes, cold-related deaths will decrease. But climate change will increase worldwide deaths from malnutrition and heat stress. Vector-borne diseases such as malaria and dengue fever could become more widespread if effective control measures are not in place.”
- “Rising sea levels will result in tens to hundreds of millions more people flooded each year with warming of 3 or 4°C. There will be serious risks and increasing pressures for coastal protection in South East Asia (Bangladesh and Vietnam), small islands in the Caribbean and the Pacific, and large coastal cities, such as Tokyo, New York, Cairo and London. According to one estimate, by the middle of the century, 200 million people may become permanently displaced due to rising sea levels, heavier floods, and more intense droughts.”

- “Ecosystems will be particularly vulnerable to climate change, with around 15 – 40% of species potentially facing extinction after only 2°C of warming. And ocean acidification, a direct result of rising carbon dioxide levels, will have major effects on marine ecosystems, with possible adverse consequences on fish stocks.”
- “Warming may induce sudden shifts in regional weather patterns such as the monsoon rains in South Asia or the El Niño phenomenon – changes that would have severe consequences for water availability and flooding in tropical regions and threaten the livelihoods of millions of people.”
- “A number of studies suggest that the Amazon rainforest could be vulnerable to climate change, with models projecting significant drying in this region. One model, for example, finds that the Amazon rainforest could be significantly, and possibly irrevocably, damaged by a warming of 2 – 3°C.”
- “The melting or collapse of ice sheets would eventually threaten land which today is home to 1 in every 20 people.”

### **Cost of Mitigation:**

In addition to the immeasurable human cost, by the end of the century a very real temperature rise of 5-6 C would result in an estimated 5-10% loss of global GDP, with poor countries suffering costs in excess of 10% GDP. In contrast, the review estimates the annual cost of stabilization at 500-550ppm CO<sub>2</sub> e to be around 1% of GDP by 2050, with a range of -2% to +5% GDP. If mitigation to reduce emissions fails in the next 10 to 20 years, the costs of deceleration will increase and stabilization even at 550 ppm CO<sub>2</sub>e will be beyond reach. As the Stern Review states, “Mitigation—taking strong action to reduce emissions—must be viewed as an investment, a cost incurred now...to avoid the risks of very severe consequences in the future.”

### **SCOPING: THE PUBLIC’S OPPORTUNITY TO BE INVOLVED**

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The public will never vote on the GPT project, however, it will have an opportunity to officially express concerns about the proposal during a period called scoping. Public comments made at hearings or submitted in writing (a “scoping letter”) to the appropriate agencies during the scoping process will help inform the type and the geographic scope of impacts to be included in the Environmental Impact Statement (EIS). The EIS is the key document for the various agencies involved with approving or denying permits, permissions and/or leases for the project.

Scoping is triggered by a complete application for GPT being submitted. An application was submitted on March 19, 2012, and a Determination of Completeness was issued by Whatom County on April 2, 2012. Although the start date for the scoping period has yet to be declared, it seems likely, according to a [Department of Ecology timeline](#), to occur in the summer of 2012. The period for public comment will be brief, in the range of 30 to 90 days. This website will soon have a template scoping letter on the main menu, and will post updates about scoping particulars as information becomes available.

[↪ READ MORE about Scoping](#)

## PERMITTING: WHO DECIDES AND HOW

The permitting process for GPT will be complex and will involve multiple levels of federal, state and local review. Decision-makers include the Whatcom County Council for shoreline and development permits and the Public Lands Commissioner at the Department of Natural Resources for an aquatic lease (state-owned tide lands). The Department of Ecology, the Department of Fish and Wildlife and the U.S. Army Corps of Engineers must also grant approvals in order for the project to go through. These governmental bodies will consider the Environmental Impact Statement when making their decisions. The Lummi and Nooksack Nations, following their own processes, will render pivotal decisions regarding usual and accustomed fishing grounds.

[↓ READ MORE about Permitting](#)

## ENVIRONMENTAL REVIEW

All major development projects are reviewed under both the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA). Two major purposes of the environmental review process are better informed decisions and citizen involvement. If a proposal is likely to have significant environmental impact, as in the case of the proposed Gateway Pacific Terminal, an Environmental Impact Statement (EIS) must be prepared. The various agencies involved in approving or denying permits, leases and other permissions refer to the environmental impact statements when making their decisions. For the Gateway Pacific Terminal project, NEPA will be led by the Army Corps of Engineers. Whatcom County and the Washington State Department of Ecology will act as co-leads for SEPA.

[↑ READ MORE about Environmental Review](#)

The U.S. Army Corps of Engineers has informed SSA Marine and BNSF that their projects (the Gateway Pacific Terminal and the Custer railroad spur) will require preparation of an EIS. It is likely that there will be only one, joint state/federal scoping process and EIS for this particular project.

An EIS is conducted by a third party; the contract for an EIS is put out for bid after the application is submitted but before scoping begins. A contractor selected and managed by the U.S. Army Corps of Engineers and Whatcom County "Tentative Project Schedule," Gateway Pacific Terminal, Multi-Agency Permit (MAP) Team, April 22, 2011 will oversee a number of studies that will constitute the EIS. The subject and breadth of those studies is determined during the scoping process.

### **Timeline for Environmental Impact Statements:**

The environmental review process is triggered by the submission of a complete application. An application was submitted on March 19, 2012, and a Determination of Completeness was issued on April 2, 2012. It is estimated that the environmental studies will take a minimum of two years to complete.

**The National Environmental Policy Act (NEPA)** requires federal agencies in the executive branch of the government to undertake an assessment of the environmental effects of proposed actions before making decisions. Two major purposes of the environmental review process are better informed decisions and citizen involvement, both of which should lead to implementation of NEPA's policies.

**The State Environmental Policy Act (SEPA)** has a mission similar to NEPA's but allows Whatcom County and state agencies to deny or condition the project based on their adopted SEPA policies and regulations, which include the County's Shoreline Management Master Program and in particular its policies and regulations for development of the Cherry Point area. (See § 23.100.170 of the Whatcom County Code). A good starting point for helpful explanations of the SEPA process is the SEPA handbook. The handbook includes step-by-step guidance and a digest of current case law. The Department of Ecology website contains a wealth of information on SEPA, including some useful explanations of the SEPA process and a focus sheet. On July 15, 2011, the State Department of Ecology agreed that state agencies will participate with Whatcom County as co-leads in preparing a state EIS.

## COMMON QUESTIONS & MISPERCEPTIONS

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### Would rail usage really increase, or will the coal trains come through anyway?

[↑ READ CLARIFICATION - Trains Coming Anyway?](#)

Fact Check: Will the Trains Come Anyway, Without the proposed Gateway Pacific Terminal?

The building of the Gateway Pacific Terminal would dramatically increase rail traffic along the Puget Sound BNSF rail corridor. Although there are currently a few (2-6 total) coal trains that travel along the Puget Sound rail corridor to Canadian ports, the building and use of the proposed coal port would, by the applicant's own conservative estimates, cause a dramatic increase in the number of coal trains, adding an additional 9 fully-loaded and 9 empty (18 total) trains each day.

A spokesperson for the applicant has asserted that this larger volume of coal trains will traverse the corridor anyway to Canadian ports, if a Cherry Point export facility is not approved. However, U.S. company Arch Coal has a contract to export 2.5 million tonnes of coal per year through Ridley, Canada, but the contract expires in 2015. Canadian coal companies are currently engaged aggressively to dedicate all future export capacity to Canadian firms.

A recent analysis prepared by Sightline concludes that, even if all the planned expansion in Canadian coal export facilities went to American companies – a highly unlikely scenario – the total additional capacity of 28 million metric tons would not be enough to satisfy the planned export of U.S. coal. Peabody Coal alone has contracted with SSA for Cherry Point exports of 24 million metric

tons. Canadian coal producers voiced their strong disagreement with a decision to award contracts to U.S. companies for shipment from Pt. Ridley, Canada. Thus, U.S. coal export facilities will drive increased rail traffic on western rail lines. Based on our review, it appears U.S. rail traffic is unlikely to increase based on current or future capacity at Canadian coal export facilities. We have seen no hard evidence to support the applicant's claim at the time of writing.

Carrix/SSA Marine has stated that the number of trains would not be much greater than before the shutdown of the Georgia Pacific paper mill several years ago. (See point #11 on their frequently asked questions page.) However, this statement is not verified, quantified or qualified. An estimate of 35-40 trains a day during a California home construction boom is mentioned, but neither duration nor train type is indicated. It should be noted that the trains referred to were likely not 150 cars long, were likely not as heavy as coal trains, and likely did not require four locomotives. It should be noted that even with economic recovery, the likelihood that Canadian lumber exports to the U.S. would achieve prior levels is remote, in light of governmental reductions in British Columbia timber harvesting since that time, and due to environmental regulations.

### **Are there any limits on coal export volumes or number of trains?**

↑ READ CLARIFICATION - Limits on Exports?

Peabody Energy has a contract with Carrix/SSA Marine to ship 24 million tons of coal annually. Sometimes people refer to tons, and sometimes to metric tons, or tonnes. In the United States and Canada, a "ton" is 2,000 lbs, whereas a "metric ton" (sometimes referred to as a "tonne") is 1,000 kg (approx 2,205 lbs). This has accounted for some variance in the capacity numbers, as has the fact that there is an initial contract with Peabody Coal for 24 million metric tons per year and a "build out" capacity of 48 million metric tons per year for the proposed coal port.

Beth Sutton, a representative of Peabody, recently commented on these numbers in the comments section of a Sightline blog entry. Ms. Sutton confirms Peabody Coal's estimate that the demand for Asian coal will increase by an additional 100 million metric tons within the next four years. This skyrocketing demand would logically put a lot of pressure on existing coal export facilities to expand. Thus, many are concerned that SSA's projected export volumes may be a dramatic underestimation for purposes of keeping the scope of permitting review as low as possible, with the opportunity to expand later.

Often, a port will be permitted for an initial capacity, but then the facility will be permitted for additional capacity. For example, in Longview, the applicant for the coal facility proposed an initial volume of 5 million tons per year, but actually intended to expand to a much larger facility (up to 80 million tons) in the future. There is a concern that the Gateway application is for a pier and upland facility on a much larger site that could accommodate future expansion of the export capacity, thus for planning purposes, it may be prudent to take the applicant's estimates of export volume and number of trains per day as minimum planning numbers. The applicant has not proposed any permit conditions that would place a cap on export volumes or number of trains per day.

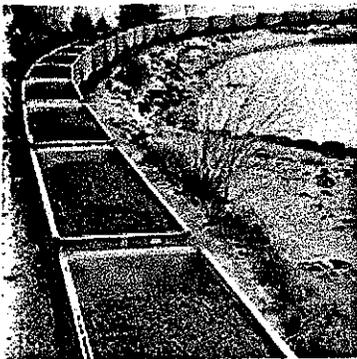
### **Would the port be used for grain?**

↑ READ CLARIFICATION - Port Used for Grain?

There is a large surplus of export capacity at existing ports on the Columbia River, closer to grain producers in Eastern Washington. Skagit and Whatcom County are not grain-export producing markets.

An exhaustive discussion of this issue in a recent article in Crosscut concluded that the Gateway Pacific terminal would not likely lead to increased agricultural exports. After interviewing industry analysts, Crosscut noted that SSA has not contracted for any grain export leases at Cherry Point: “Although the concept of using Gateway Pacific to export farm products would likely be more attractive to terminal critics than coal, as long as existing regional ports have adequate capacity, shipping agricultural products the extra miles to Cherry Point could prove to be a hard sell. “We are looking at 10 to 15 years out,” said Gaibler, in terms of additional shipping capacity for grain. “Shippers could gain some advantage in price competition if the region adds more capacity, but to be competitive, Gateway would need to negotiate a lease with a large grain exporter. Grain terminals in the Northwest are typically operated by joint ventures of large agri-business firms, such as Archer Daniels Midland, Cargill, Bunge North America, and United Grain. No such agreement appears imminent, Watters confirmed. SSA Marine wants to present its project as a multiple-commodity port, but at this time it is only coal that seems to be a certain customer.”

Comments are closed.



### Key Facts

Start with this summary of information about the Gateway Pacific Terminal Project.

### Library

Browse the library of documents for more information.

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<http://www.coaltrainfacts.org/key-facts>

8/1/2012

Get Google Maps on your phone  
Text the word "GNAPS" to 466453

Trains entering the Custer Spur must back into the siding from the North.  
Trains exiting the spur must also proceed North, then back up onto the mainline to the siding at Ferndale 5 miles South.  
Mile long coal trains will block the major routes to and from Birch Bay.

Maps

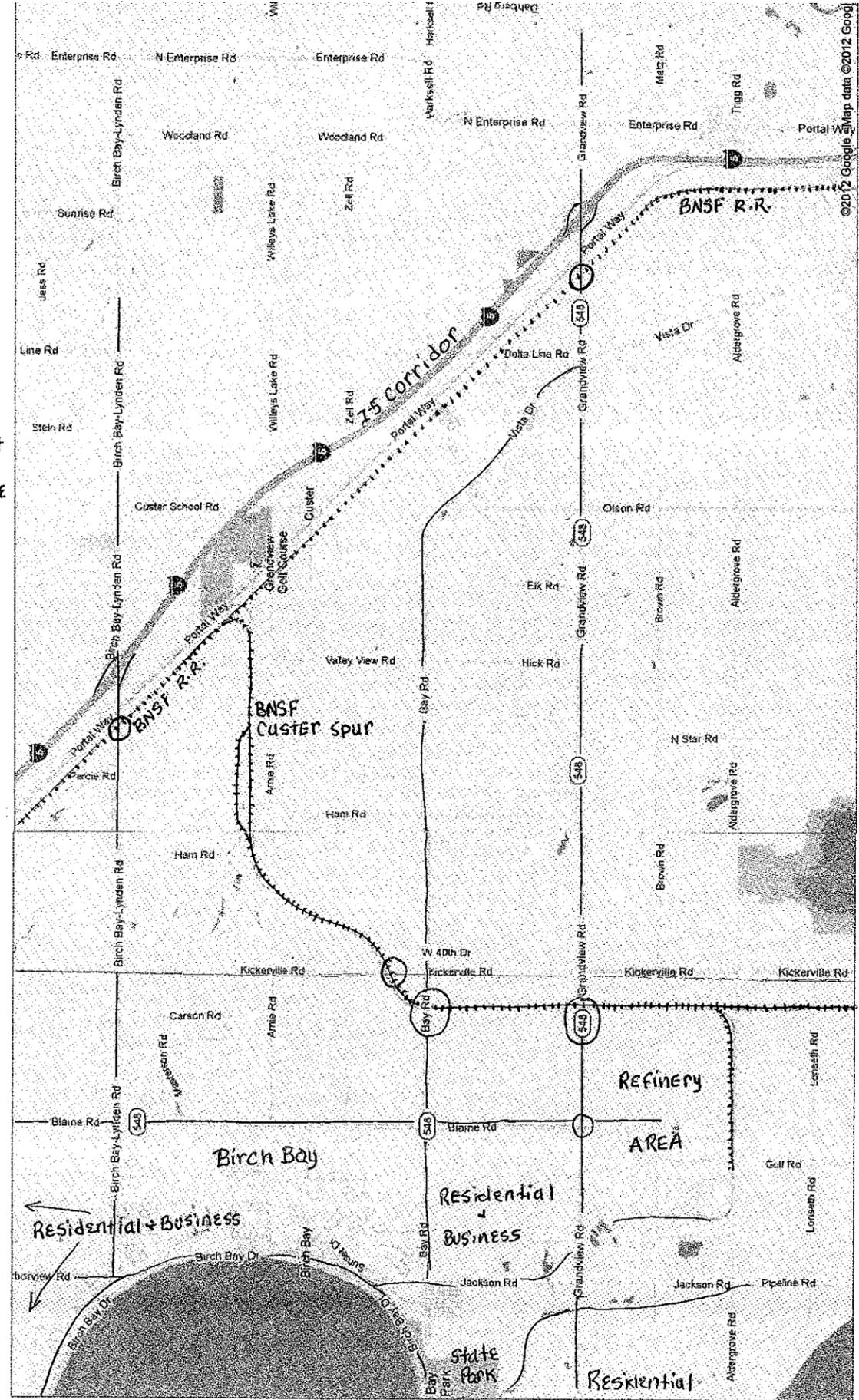
Google

The BNSF spur line is poorly designed for this type of system of high rail traffic.

LEGEND:  
 - - - - - BNSF R.R.  
 O - TRAIN DELAY CROSSINGS  
 |-----| 1 mile

Google Maps

Google



→ To proposed Westgate Site (3 km)