

DOG M
MEETING
8/26/03
COMPANY

8/21/05
SALT LAKE
PHONE / e-MAIL

NAME	COMPANY	PHONE / e-MAIL
John Gefferth	CONSOL	618-625-6850 JohnGefferth@CONSOLENERGY.COM
Tim Kirschbaum	Consol	618-625-6847 TimKirschbaum@Consolenergy.com 435-286-3509
JAMES BYARS	CONSOL	JAMES BYARS @ CONSOL ENERGY.COM 801-539-0044
John Trygstad	Norwest	jtrygstad@norwestcorp.com
John Richardson	Norwest	801-539-0044, jr Richardson@norwestcorp.com
Priscilla Burton	DOG M	801-538-5288 priscillaburton@utah.gov
Daron Haddock	DOG M	(801) 538-5325 Daronhaddock@utah.gov
Stephen Demczak	DOG M	435-613-5242 sdemczak@hotmail.com
Wayne W. Lewis	DOG M	801-538-5267 wlewis@utah.gov
Don Baker	CEP Coal	435-421-9646 donbaker@msn.com
Pamela Grubaugh-Littig	DOG M	801-538-5268 pamgrubaugh.littig@utah.gov
Susan White	OGM	801-538-5258 susanwhite@utah.gov
Mary Ann Wright	OG M	801-538-5306 margannwright@utah.gov
Jerriann Ernstson	OGM	801-538-5214 jerriagnernstsen@utah.gov
Dave Danby	OGM	801-538-5341 davedanby@utah.gov

**Emery Mine 4th East Portal
CONSOL's Phase I Control Package –
Justification for Control Selection**

The following discussion provides the rationale for CONSOL's selection of controls for their Phase I package. CONSOL believes that the package, taken as a whole, will successfully control fugitive dust emissions at the Emery Mine 4th East Portal area.

Dust Treatment Program (Coal Yard and Truck Re-route Areas)

- The use of dust suppressants to control fugitive emissions in both paved and unpaved areas is widespread in general industry; dust suppressants have been used effectively in applications similar to Emery Mine for years.
- EPA's AP-42 document recognizes the value of dust suppressants for application on haul roads and unstabilized (unpaved, disturbed) areas, such as the coal yard at the Emery Mine.
- One formulation of MgCl₂, for example, has adhesive properties to bind fine particles; MgCl₂ is also hygroscopic (absorbs water) to help retain fine materials for months between applications, even in hot and dry climates. In windy areas, the application rate can be increased for even better control
- The use of dust suppressants in this application is considered Good Engineering Practice (GEP) and Best Management Practice (BMP) because they are effective at controlling dust for months at a time
- Dust suppressants like MgCl₂ are relevant to the situation at Emery, because they have a proven track record in similar applications with arid climates
- Contacts are shown on the attached table

Use of Water Sprays to Suppress Dust (Water Truck, Spray Bars at Transfer Points and Water Cannons)

- The use of water sprays to control fugitive emissions in both paved and unpaved areas is widespread in general industry; water has been used effectively in applications similar to Emery Mine for years.
- EPA's AP-42 document recognizes the value of water for application on haul roads and unstabilized (unpaved, disturbed) areas, such as the coal yard at the Emery Mine.
- Although a high evaporation rate as found at Emery may shorten the effective longevity of the control, this is offset by serial applications as needed
- The use of water sprays in this application is considered Good Engineering Practice (GEP) and Best Management Practice (BMP) because water is effective at controlling dust if serially applied, based on evaporation rate.
- Water sprays are relevant to the situation at Emery, because they have a proven track record in similar applications in arid climates
- Water cannons activated by high winds are very effective at controlling blowing dust from (coal) stockpiles by saturating the material
- A contact for water cannons is shown on the attached table

Concrete (Jersey) Barriers

- Widely used in industry for stockpile segregation and also for containment
- May also double as stockpile erosion control in general industry – more durable than the typical silt fence, i.e., an improvement over the typical control
- Confining the base of the stockpile with barriers will reduce encroachment of product into other areas of the plant, e.g., the load out and scale areas, where the material may otherwise become pulverized under tire pressure and dispersed by wind
- The concrete structure also doubles as a safety barrier for the front end loader operator; it defines the perimeter of the raised stockpile berm, and it segregates the loader from oncoming haul trucks
- ASARCO in East Helena, MT successfully used concrete barriers to contain open stockpiles as part of their lead State Implementation Plan (SIP), a plan ultimately approved by EPA
- The barriers are considered GEP and BMP in this application, because of their durability

Wind Fences

- Not widely used in industry; main application is as passive control device for outdoor stockpiles to reduce wind velocity upstream of the pile and/or divert air flow away from the pile
- EPA's AP-42 document mentions wind fences as a stockpile control, usually in tandem with one or more additional controls, such as pile wetting with water, e.g.
- The use of wind fences in this application is considered Good Engineering Practice (GEP) and Best Management Practice (BMP), because wind velocity impacting the pile is reduced 60-80%, depending on alignment of the fence and mesh material. Wind that contacts the surface tangentially is either dampened or deflected
- Contacts for wind fences are found on the attached table

Conveyor and Transfer Enclosures

- Enclosing material handling devices (conveyors and transfer points) is general industry practice to reduce fugitive dust emissions
- EPA's AP-42 document frequently refers to enclosure as one of the preferred control options
- At Emery, enclosing the radial stacker on the windward side and the conveyor system transfer points will reduce dusting from these sources
- The material handling system at Emery is already partially enclosed; enclosing conveyors and transfer points is considered GEP and BMP

Vacuum Truck

- Vacuum trucks are widely used in general industry for cleanup of spills of solid and slurry materials, especially from inaccessible areas
- A contract vacuum truck well suited to cleanup coal yard spills at Emery, e.g., from conveyors, and to remove solids from beneath the cattle guard once installed
- Regulatory agencies (EPA, OSHA, MSHA) concerned with in-plant and ambient air quality champion the use of vacuum methods in general industry to control materials that may otherwise cause dusting.
- Vacuuming is considered GEP and BMP, because this control method removes the source of potential dusting

Cattle Guard

- Cattle guards aren't usually thought of as a dust control; however, this application is well suited for the conditions at Emery, where solids may adhere to truck tires under both overly wet and dry conditions
- Cattle guards in tandem with the collection sump are considered GEP and BMP, because solids are dislodged from tires and collected in a containment structure where they are less likely to be re-entrained

Modify or Replace Crusher

- Regulatory agencies (EPA, OSHA, MSHA) consider substitution or modification of process equipment known to generate less air emissions a valid engineering control (GEP and BMP). Replacing the crusher at Emery, e.g., is an ideal application of this engineering principle, where a double-roll crusher would produce a larger size product, on average, than the present hammer mill crusher
- Substitution of equipment for the purpose of emissions reduction is widely observed in general industry

Install Bypass Screen

- It is general industry practice to use size classification devices to bypass crushers in order to prevent over-crushing and excess fines
- Installing and operating a bypass screen at Emery would be GEP and BMP, because coal fines would be reduced and larger size product, on average, would be processed

Truck Re-routing

- Traffic (truck) re-routing is observed in general industry to shorten the travel path, to avoid areas where dusting may occur, and thereby better control air emissions. This aptly describes the haul truck traffic situation at Emery, where travel path and duration in dusty areas can be reduced by re-routing truck traffic
- EPA's AP-42 mentions traffic re-routing as a means of reducing dust levels
- Truck re-routing is considered GEP and BMP, because the design of a shorter travel path results in fewer air emissions

CONSOL's Proposed Phase I Dust Controls for the Emery Mine 4th East Portal Area

Control	Control Application	Industry Reference	EPA's AP-42¹	GEP/BMP²	Comments
Dust Treatment Program	Control dust in coal yard and truck re-route areas using dust suppressant	General industry practice Millard County Road Dept. W. Thayne Henrie P.O. Box 187, Delta, UT PacifiCorp/Scottish Power Dave Johnston Station Glenrock, WY James Ritter, Sr Staff Engineer (307)436-2045 Xcel Energy Arapahoe Station Denver, CO Richard Roe, Sr Staff Engineer (303)937-5403	Yes	Yes	
Water Cannon	Suppress dusting from stockpile during high winds	General industry practice (wet suppression) Sandusky Docks Corp., Sandusky Bay, OH	Yes	Yes	
Jersey Barriers	Contain base of stockpile and serve as safety barrier	General industry use as retaining wall and safety barrier	No	Yes	ASARCO incorporated concrete barriers into their Lead SIP control program to limit track out and blowing dust from outdoor stockpiles
Wind Fences	Reduce wind speed and divert wind direction at stockpile	Not widely used in industry Tri-Gen Bio Power, Louden, TN Cape Breton Development Corp., Sydney, Nova Scotia Graymont Western, Calgary, Alberta (403)250-9100	Yes	Yes	EPA documents like AP-42 mention wind fences in conjunction with other controls
Conveyor & Transfer Enclosures	Control dusting from material handling including transfer	General industry practice	Yes	Yes	

Control	Control Application	Industry Reference	EPA's AP-42 ¹	GEP/BMP ²	Comments
Water Sprays	Control dust at transfer points	General industry practice	Yes	Yes	
Water Truck	Supplement to dust treatment program in coal yard area	General industry practice	Yes	Yes	
Vacuum Truck	Supplement to dust treatment program in coal yard area. May also be used for grating sump cleanout.	General industry practice	--	Yes	Vacuum truck removes the source of potential dust re-entrainment.
Cattle Guard	Control dust emissions by dislodging and collecting coal fines adhering to truck tires	Not found in the literature	--	--	Judged by Norwest to be more effective at removing solids from truck tires than a tire wash station
Modify or Replace Crusher	Decrease dust levels by increasing average size of product	General industry practice	--	Yes	Regulatory agencies favor substituting equipment that results in reduced air emissions.
Install Bypass Screen	Decrease dusting by bypassing coal fines around crusher	General industry practice	--	Yes	
Truck Re-routing	Reduce dust levels from haul truck traffic in the coal yard	General industry practice	Yes	Yes	Size classification equipment is commonplace in general industry.

¹ AP-42 is EPA's compilation of air pollution emission factors arranged by industry category. This authoritative document is widely used to prepare emission inventories industry-wide.

² GEP/BMP – Good Engineering Practice/Best Management Practice.

CONSOL ENERGY
Fugitive Dust Control Plan
4th East Portal Area
Emery Mine

Presentation to
Utah Division of Oil, Gas & Mining

August 26, 2003

Background

- CONSOL opened 4th E Portal at Emery Mine
- DOGM inspected the site December 8, 2002
- DOGM mailed Notice of Violation #03-39-1-1 (coal fines) December 9, 2002

CONSOL ENERGY

NORWEST CORPORATION

Background Cont.

- The NOV contained the following items:
 - Violation of R645-300-141 (permit area)
 - Violation of R645-301-560 (performance standard, mining & reclamation)
 - Utah Code, Annotated, Title 40, Chapter 10, Section 17(2)(u) (permit area):
- Extensions granted beyond the original abatement date of March 10, 2003
- Most recent extension – from August 9 to August 26, 2003

CONSOL ENERGY

NORWEST CORPORATION

Introduction

- CONSOL retained Norwest to assist in abating coal fines NOV
- Norwest conducted two site visits to Emery Mine 4th East Portal – August 1 and August 6
- Norwest recommended a two-tier control approach based on observations at the mine
- This presentation summarizes Norwest's recommended control package to CONSOL

CONSOL ENERGY

NORWEST CORPORATION

Emery Mine – 4th East Portal, from County Road 915 - Looking NW



CONSOL ENERGY

NORWEST CORPORATION

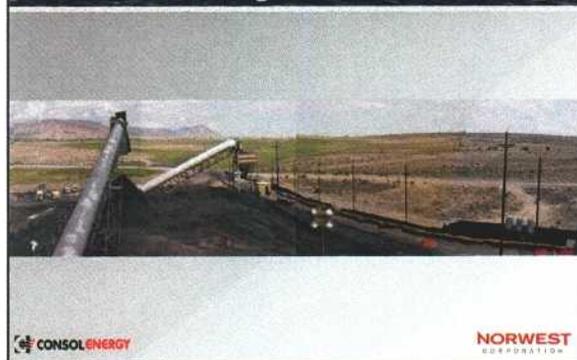
Emery Mine – 4th East Portal, from Paved Road - Looking SE



CONSOL ENERGY

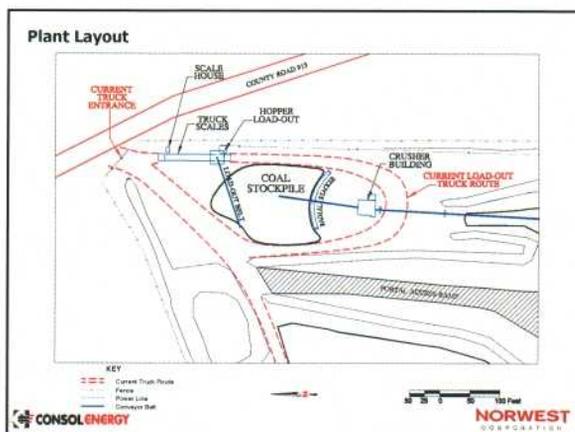
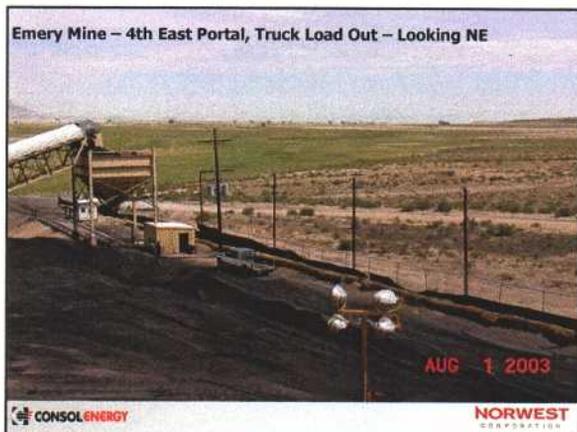
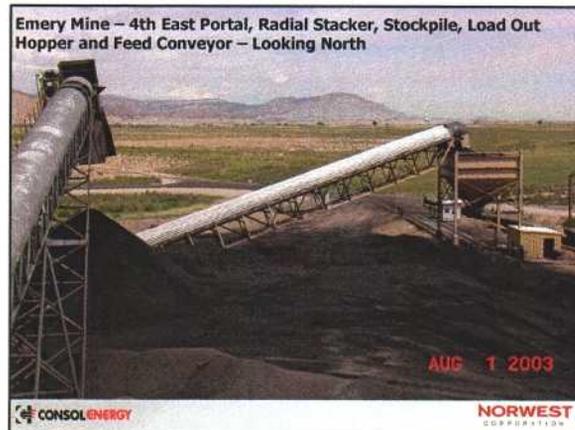
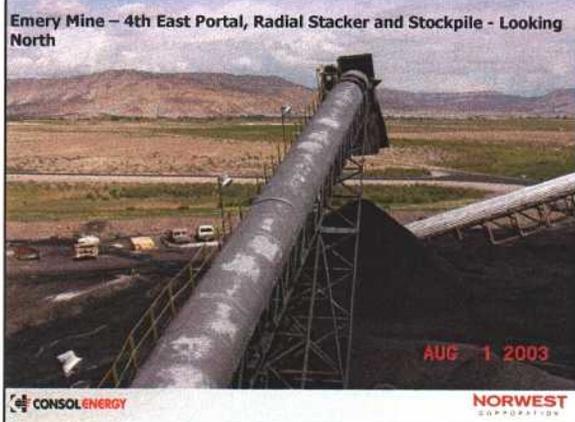
NORWEST CORPORATION

Emery Mine – 4th East Portal Panorama - Looking North



CONSOL ENERGY

NORWEST CORPORATION



Guiding Assumptions (Norwest)

Phase I of Fugitive Emission Control Study

- Assumption #1 – There may be more than one source of fugitive dust emissions contributing to offsite deposition of coal fines, i.e., look at other potential sources in addition to the stockpile.
- Assumption #2 – If more than one source of dusting is identified, these sources may contribute either individually or in combinations depending on conditions related to the process or meteorology, e.g., wind direction, wind speed, temperature, humidity.

CONSOL ENERGY NORWEST CORPORATION

Guiding Assumptions (Norwest)

Phase I of Fugitive Emission Control Study

- Assumption #3 – If more than one source of dusting is identified, different controls may apply
- Assumption #4 - The application of controls may likely be an iterative process

CONSOL ENERGY NORWEST CORPORATION

Facility Areas and Equipment Evaluated (Norwest Plant Visits)

- Plant entrance
- Crusher
- Stockpile
- Haul trucks – routing, loading and plant egress
- Water truck
- Vacuum truck
- Conveyor belt system
- Water sprays

CONSOL ENERGY

NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Plant Entrance - Fugitive Dust Sources:

- Haul trucks
- Over-watering plant roadways
- Coal fines in load-out/scale area

CONSOL ENERGY

NORWEST CORPORATION

Emery Mine – 4th East Portal, Truck Load Out – Looking NE



CONSOL ENERGY

NORWEST CORPORATION

Plant Entrance – Showing Load Out Hopper



CONSOL ENERGY

NORWEST CORPORATION

Plant Entrance – Loaded Truck Leaving Facility



CONSOL ENERGY

NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Plant Entrance - Recommended Controls:

- Supplement water truck as dust control method with chemical dust suppressants (e.g., magnesium chloride)

CONSOL ENERGY

NORWEST CORPORATION

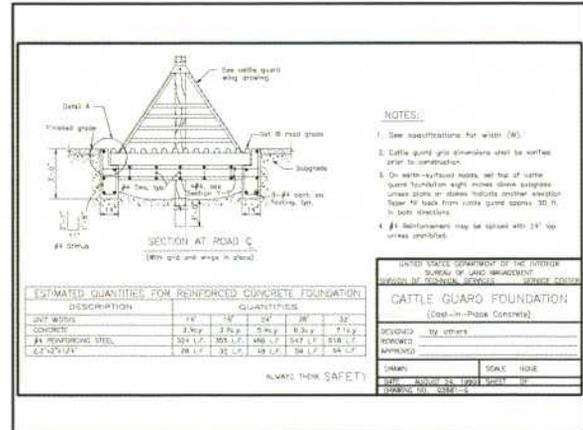
Observations and Recommended Controls by Facility Area

Plant Entrance - Recommended Controls:

- Grating (cattle guard) and sump at plant entrance

CONSOL ENERGY

NORWEST CORPORATION



Observations and Recommended Controls by Facility Area

Crusher - Fugitive Dust Sources:

- Crusher (hammer mill)
- Material handling (fines routing)

CONSOL ENERGY

NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Crusher Fugitive Dust Sources:

- Over-crushing (hammer mill on ROM coal)
- Incomplete screening of fines ahead of crusher

CONSOL ENERGY

NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Crusher - Recommended Controls:

- Replace or modify crusher (hammer mill) to increase particle size of product resulting in less likelihood of windblown dust
- Re-route fines presently reporting to crusher (add screen so fines bypass crusher)

CONSOL ENERGY

NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Stockpile - Fugitive Dust Sources:

- Windblown dust from drop height, stacker to pile
- Windblown dust from the pile
- Windblown dust from coal fines on ground adjacent to pile area
- Fugitive emissions from front end loader activity at the pile (loading, dumping, traversing area)

CONSOL ENERGY

NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Stockpile – Recommended Controls:

- Dust suppression in stockpile area
- Transfer point water sprays
- Water cannon automatically activated in high winds
- Concrete barriers
- Wind fences

CONSOL ENERGY

NORWEST CORPORATION

Fugitive Emission Source: Windblown Dust from Stacker Discharge



CONSOL ENERGY

NORWEST CORPORATION

Fugitive Emission Source: Windblown Dust from Stockpile



CONSOL ENERGY

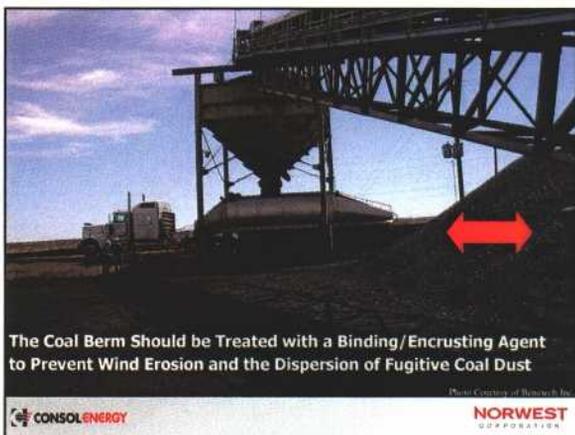
NORWEST CORPORATION

Fugitive Emission Source: Windblown Dust in Stockpile Area



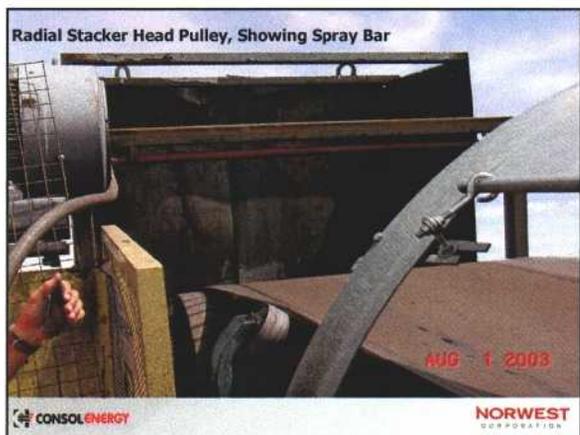
CONSOL ENERGY

NORWEST CORPORATION



CONSOL ENERGY

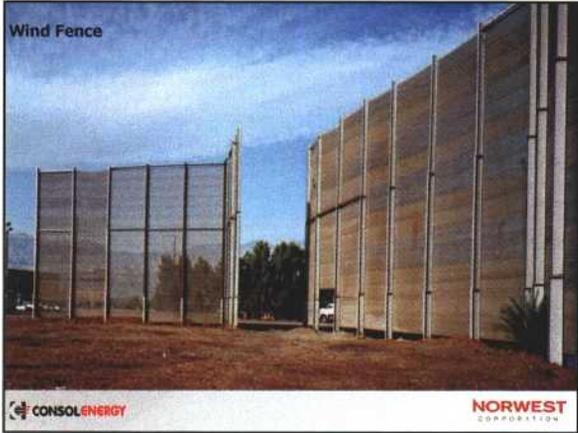
NORWEST CORPORATION



Radial Stacker Head Pulley, Showing Spray Bar

CONSOL ENERGY

NORWEST CORPORATION

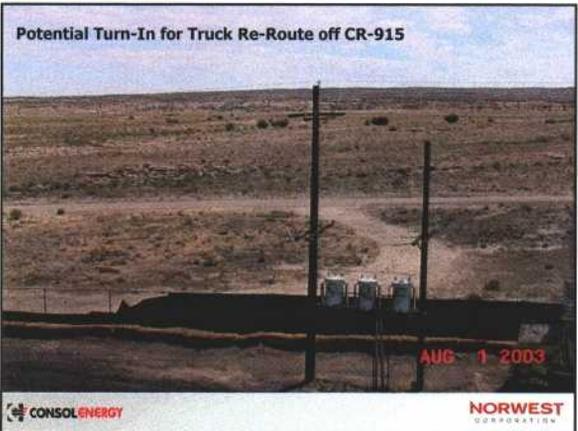
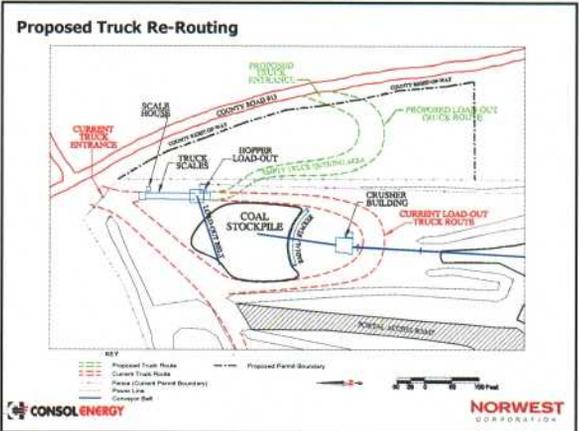
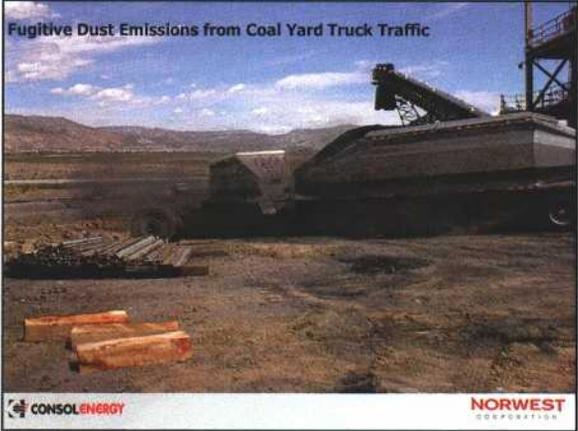


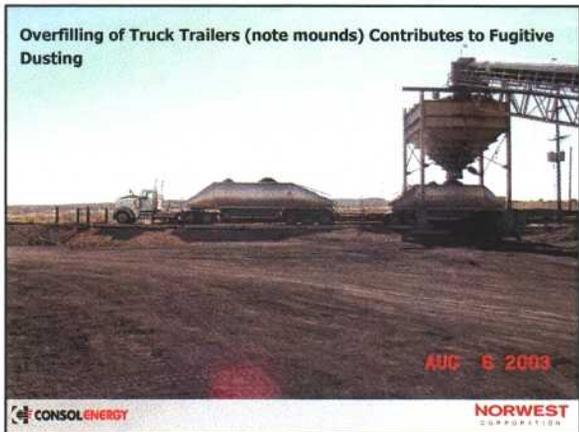
Observations and Recommended Controls by Facility Area

Haul Trucks – Routing, Loading and Plant Egress:

- Sources:
 - Truck route through coal yard (path length & yard speed)
 - Dry or overly wet roadway (extremes) – entrainment or track out
 - Overfilling trailers
- Controls:
 - Re-route trucks
 - Supplement water truck with chemical dust suppression program
 - Training and education to minimize trailer overfilling

CONSOL ENERGY NORWEST CORPORATION





Observations and Recommended Controls by Facility Area

Water Truck:

- Sources:
 - Overwatering roadways (trackout)
 - Entrainment-movement on dry roadways
- Controls:
 - Supplement water truck with chemical dust suppression programs

CONSOL ENERGY NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Vacuum Truck (not observed):

- Sources:
 - Entrainment-movement on dry roadways
- Controls:
 - General plant cleanup as needed, including cattle guard sump

CONSOL ENERGY NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Conveyors and Transfer Points

- Sources:
 - Stacker partially enclosed
 - Transfer points not enclosed
- Controls:
 - Enclose stacker
 - Enclose transfer points

CONSOL ENERGY NORWEST CORPORATION

Observations and Recommended Controls by Facility Area

Water Sprays:

- Sources:
 - Currently one spray bar (discharge of radial stacker)
 - Spray operates intermittently (booster pump)
- Controls:
 - Add spray bars to transfer points

CONSOL ENERGY NORWEST CORPORATION

Summary of CONSOL's Selected Phase I Controls

- Ongoing Dust Treatment Program (Coal Yard and Truck Re-route)
- Water Cannon
- Concrete Road Dividers (Jersey Barriers)
- Wind Fences
- Conveyor & Transfer Point Enclosures
- Water Sprays
- Water Truck
- Vacuum Truck
- Cattle Guard

CONSOL ENERGY NORWEST CORPORATION

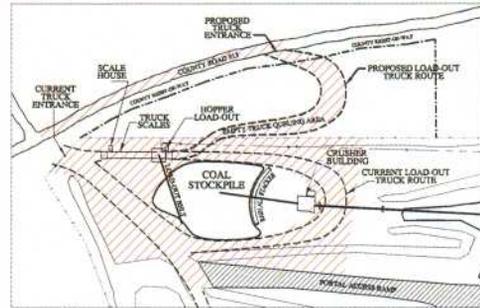
Summary of CONSOL's Selected Phase I Controls

- Equipment Substitution/Modification
- Bypass Screen Installation
- Truck Re-Routing:
 - Decrease path length traveled inside facility
 - Previous heavy traffic areas now amenable for stabilization
 - Previous heavy traffic areas now easier to maintain

CONSOL ENERGY

NORWEST CORPORATION

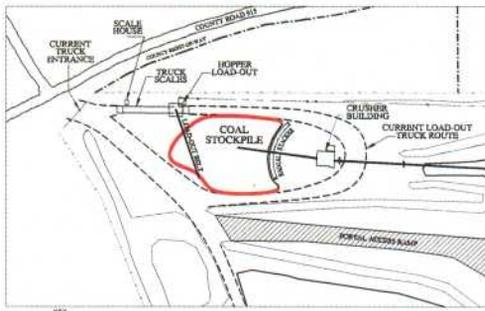
Treatment of Yard Area and Proposed Truck Route with Dust Suppressant



CONSOL ENERGY

NORWEST CORPORATION

Localized Application of Dust Suppressant



CONSOL ENERGY

NORWEST CORPORATION

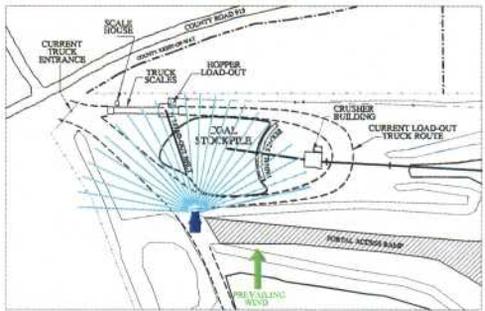
Utah Climate CENTER



CONSOL ENERGY

NORWEST CORPORATION

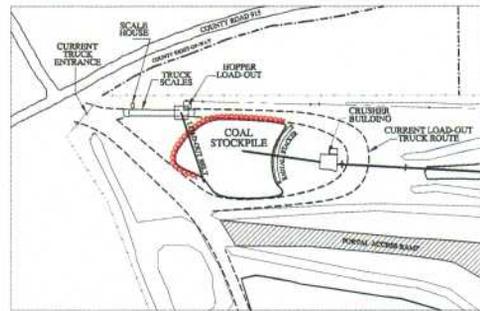
Locations of Water Cannon and Coverage Area



CONSOL ENERGY

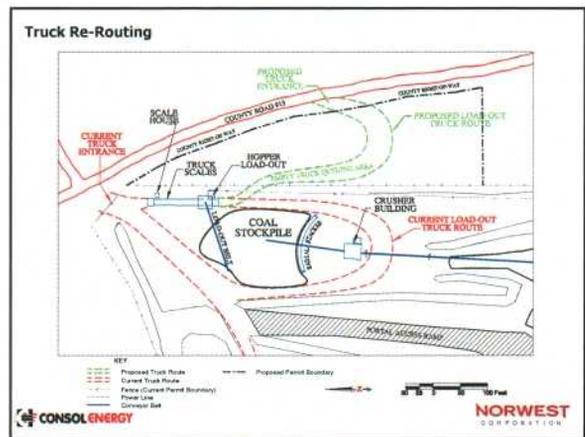
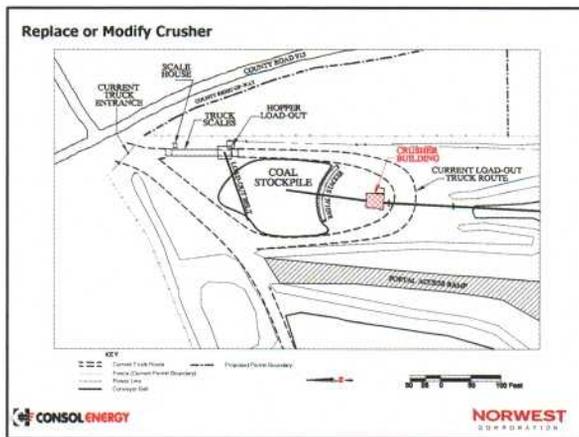
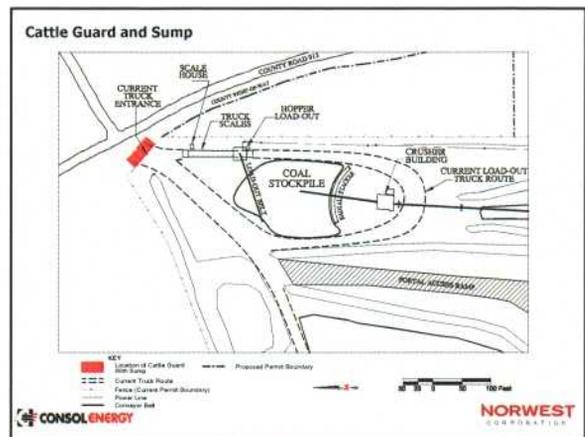
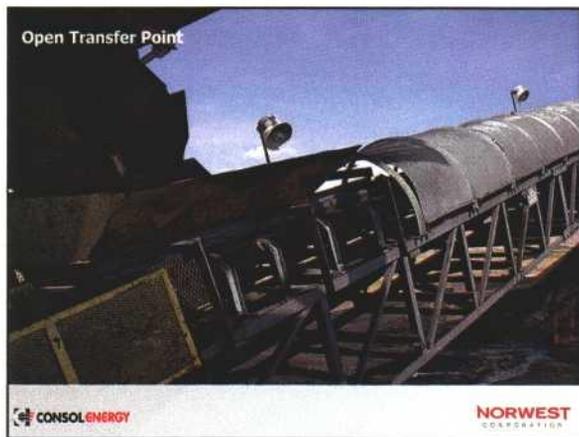
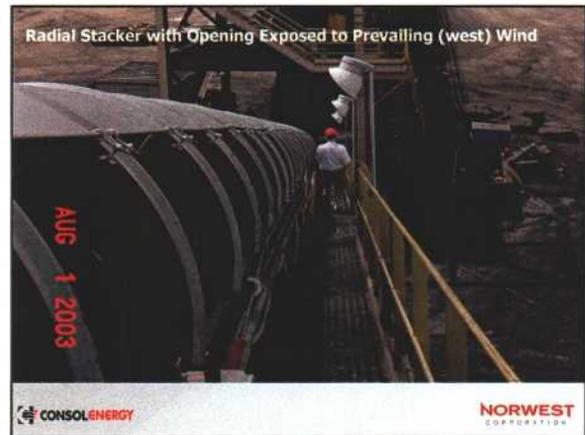
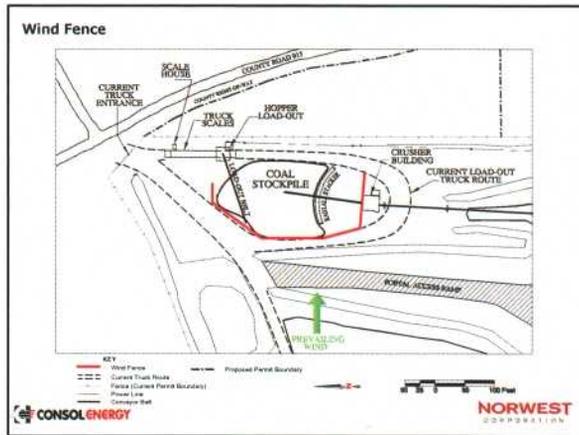
NORWEST CORPORATION

Concrete Barriers



CONSOL ENERGY

NORWEST CORPORATION



Examples of Selected Control Use in the U.S. Coal Industry

- **Dust Treatment Program for Coal Yard and Truck Re-route Area**
 - EPA's AP-42
 - Standard Industry Practice
 - Good Engineering Practice (GEP)
 - Best Management Practice (BMP)

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- **Water Sprays and Water Cannon**
 - EPA's AP-42
 - General Industry Practice to Use Water Sprays for Dust Control
 - Water Cannon as Specialized Water Spray (High Winds)

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- **Concrete Road Dividers (Jersey Barriers)**
- **Good Engineering Practice (GEP)**
- **Best Management Practice (BMP):**
 - Pile Containment
 - Safety Barrier for FE Loader

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- **Wind Fences**
 - Not Widely Used
 - EPA's AP-42 Recognizes Wind Fences as an Effective Control
 - Fences Can Reduce Wind Speed by 60-80%

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- **Conveyor and Transfer Enclosures**
 - EPA's AP-42
 - Good Engineering Practice (GEP)
 - Best Management Practice (BMP)

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- **Vacuum Truck**
 - EPA's AP-42
 - General Industry Practice – Removes Dust Source
 - Good Engineering Practice (GEP)
 - Best Management Practice (BMP)

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- Cattle Guard (Grating) with Solids Collection
 - Norwest Innovation
 - Good Engineering Practice (GEP)

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- Equipment Substitution or Modification (Crusher)
 - Good Engineering Practice (GEP)
 - Best Management Practice (BMP)

CONSOL ENERGY

NORWEST CORPORATION

Examples of Selected Control Use in the U.S. Coal Industry

- Size Classification Equipment (bypass screen)
 - Good Engineering Practice (GEP)
 - Best Management Practice (BMP)

CONSOL ENERGY

NORWEST CORPORATION

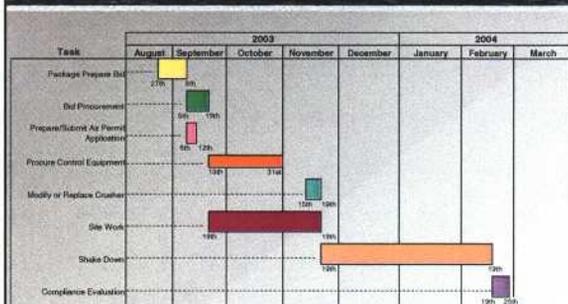
Examples of Selected Control Use in the U.S. Coal Industry

- Haul Truck Re-Routing
 - Good Engineering Practice (GEP)
 - Best Management Practice (BMP)

CONSOL ENERGY

NORWEST CORPORATION

Proposed Phase I Controls Implementation Schedule



CONSOL ENERGY

NORWEST CORPORATION

CONSOL's Selected Phase II Controls

- Permanent and integrated dust suppression program (stockpile)
 - Spray nozzles at transfer points
 - Dust suppressant applied
 - Control room and ancillaries
 - All-weather system

CONSOL ENERGY

NORWEST CORPORATION

