STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Petition of BNE Energy Inc. for a Declaratory Ruling for the Location, Construction and Operation of a 3.2 MW Wind Renewable Generating Project on New Haven Road in Prospect, Connecticut	Docket/Petition No. 980 March 8, 2011

Pre-filed Testimony of Kurt Tramposch, MPH

1. Please state your name and address for the record.

My name is Kurt Tramposch. I live at 2 Weir Meadow Path, Wayland, MA.

2. How long have you lived at your current residence?

I have lived there for 36 years.

3. What is your educational background?

Cornell University (AB, Philosophy/Environmental Studies), 1972; Harvard Graduate School of Design (graduate program - landscape architecture/planning) 1972-74; Boston University (MPH, Environmental Health) 1987; and recent graduate studies (2002-2009) in water policy and watershed management; environmental assessment techniques; and smart growth, land-use planning, and community sustainability at Tufts University, Boston University, and Harvard.

4. What is your occupation?

I have worked as a public health consultant for more than 30 years on issues affecting local, regional, and state environmental health, source water protection, community wellhead protection, private well policy and regulation, and engaged in outreach, education, and research on community environmental health impacts of

numerous siting projects. Additionally, since 1974 I have owned and operated an organic wholesale nursery in Wayland, MA.

5. In your professional career, have you researched the community health impacts from wind turbines?

Yes.

6. What have you researched?

At the request of the New England Water Works Association's *Groundwater Committee* on which I serve, I have examined the interactions of local wind turbine siting at or near water and wastewater utilities for three years. I made site-based assessments of many aspects of community wind turbine health concern and have had two years involvement with hearings and ongoing neighborhood discussions regarding wind turbine siting in the Massachusetts communities of Newburyport, Falmouth, Brimfield, Dartmouth, Douglas, Webster, Harwich, Brewster, Dennis, Plymouth, Wareham Hingham, Cohasset and Bourne.

7. What other qualifications do you have to opine about BNE Energy Inc.'s petition in this proceeding?

I have investigated since 2002 many aspects of private well use including history, contamination, policy and regulation and presented on private well public-health issues at regional and national water conferences - including those hosted by the University of Massachusetts *Water Resources Center*; the *National Groundwater Association*; the *New England Water Works Association*; the *Northeast Private Well Water Symposium*; and the *Nashua River Watershed Association*.

I have served for the past two years as an appointed member of the Wayland Water Department's *Wellhead Protection Committee* focused on source water protection and for the past three years I have been a member of the *New England Water Works Association* Groundwater Committee addressing water utility public health and water protection. I have also served for four years on the *Sudbury-Concord-Assabet Watershed Council* Steering Committee guiding watershed protection methods for a 36-community watershed west of Boston. I had also served as vice-chairman of the Massachusetts Water Resources Authority's *Citizen Advisory Committee* to assess the potential watershed impacts of a proposed Sudbury Reservoir (Southborough MA) reactivation.

Because of my practical and academic knowledge and experience, I have made presentations before the Board of Selectmen of Webster, MA (Sept. 13, 2010) regarding environmental health concerns of Douglas Woods wind farm; to a Brimfield, MA wind forum concerning potential impacts of a proposed wind farm in their community (Nov. 12, 2010); to the Bourne, MA Board of Health (Feb 2, 2011) regarding overall wind facility siting health concerns; and a subsequent presentation to the Bourne Board of Health (March 9, 2011) on wind turbine siting and community noise issues.

Since 2007 I have participated in numerous organized wind turbine tours, lectures, workshops, and hearings as well as dozens of events of the Connecticut and Massachusetts Wind Working Groups and the MIT Wind Energy Club.

I participated in the international Ontario symposium *The Global Wind Industry and Adverse Health Impacts* (Oct. 29-31, 2010); in the Consensus Building Institute's *Managing Renewable Energy Conflicts* symposium (Oct. 6, 2009); the National Wind Coordinating Collaborative's seminar *State of the Art in Wind Siting* (Oct 20-12, 2009);

the Manomet Center's *Social Challenge of Wind Energy* conference (Nov. 9, 2010); and the EBC *Land-Based Wind Energy* conference (Nov. 22, 2010). To further inform myself in assessing wind turbine concerns, I have independently toured wind facilities in NY, NH, CT, MA, RI, CA, HI, New Zealand and Canada.

Other relevant community environmental health work has included appointment to a Massachusetts DEP *Local Hazardous Waste Coordinator Program* steering committee for three years, founding and directing the *Center for Residential Health*, co-founding the *Massachusetts Association of Health Boards*, and appointment for three years as an environmental health agent for the Wayland Board of Health. My professional association membership has included the *American Planning Association*, the *American Public Health Association*, the *National Environmental Health Association*, the *U.S. Green Building Council*, and the *National Ground Water Association*.

8. Did you review BNE's petition in this proceeding?

Yes.

9. In your professional judgment, does BNE's proposal have the potential to harm the public health of Connecticut residents?

Yes, BNE's proposal has the potential to harm the stream and wetland tributaries to the Long Hill Reservoir, a significant surface source water supply for thousands of Connecticut residents.

10. Please explain how BNE's proposal may harm the health of Connecticut residents.

The basis for my opinion includes, but is not limited to, the following:

- Project will result in major alterations to site stormwater flows and infiltration and should require a comprehensive groundwater hydrogeologic assessment prior

to construction - including identification and characterization of all private residential and business groundwater wells within at least 3,000' of proposed turbine sites – and comprehensive site monitoring after construction;

• Potential construction impacts from onsite concrete truck rinsing during foundation construction for wind turbines or storage buildings: (See brochure prepared by Concrete Washout Systems titled "World's Premier Concrete Washout Services Provider," attached to my testimony as Exhibit A);

• Based on recent research, there is a potential for groundwater, wetland and reservoir contamination from concrete chemical admixtures leaching into groundwater over long term (can be up to 5% of ingredients). There are also trace amounts of hexavalent water-soluble chromium salts (Chromium VI) in Portland Cement (0-20 ppm). (See "Environmental effects of concrete," State-of-art report prepared by Task Group 3.4, March 2003, available at http://books.google.com/books?id=JlRJiZxFZroC&printsec=frontcover#v=onepage&q&f=false)

• Potential for other associated stored toxic materials to escape into the nearby groundwater – including resident transformer oils and other hazardous materials (Exs. C);

• Potential neighbor private well impacts from turbine construction, operation, and maintenance;

• Potential impacts to health of bordering wetlands and Long Hill water supplies from possible negative effects of wind turbine construction, operation, and maintenance (See "Lubricants, coolants, transformer oil and measures against accident-related leakage" by Nordex, attached to my testimony as Exhibit B);

• Spill hazard from replacement of operational petrochemicals, use of paints, periodic blade cleaning use of detergents and/or solvents; use of herbicides to control invasive species of plants in cleared areas near turbines;

• Potential for release of petrochemicals and polymers during storm event, lightning strikes or nacelle fire; Potential for groundwater and reservoir contamination from application PFC-containing Class B fire-fighting foams used on petrochemical fires and known to pollute sourcewaters;

• Need for drafting and filing a blasting environmental impact plan for turbine construction, site review to 2,500' prior to and after construction for impacts on private well water supplies in the area.

• Need for creation of a full spill prevention plan to protect source waters since wind turbines store and use petroleum products in the form of diesel fuel, hydraulic fluids, transformer oils, greases and lubricants, and used oils, including

storage of these in the Storage Building or aboveground storage tanks (AST's). (See Exhibit D: "Conceptual Spill, Prevention, Control and Countermeasures Plan", Hounsfield Wind Farm, NY 85p)
http://www.dec.ny.gov/docs/permits_ej_operations_pdf/appendixb1.pdf

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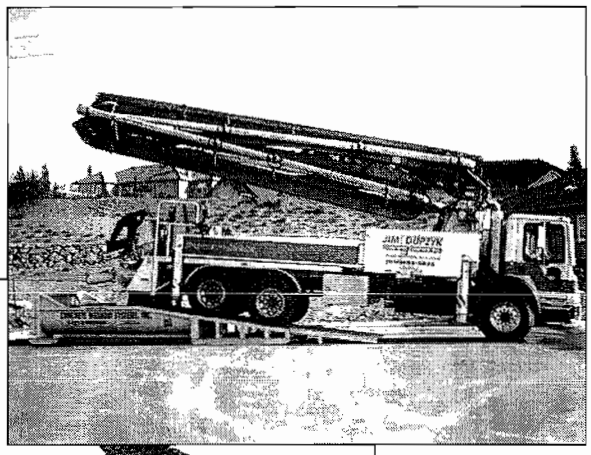
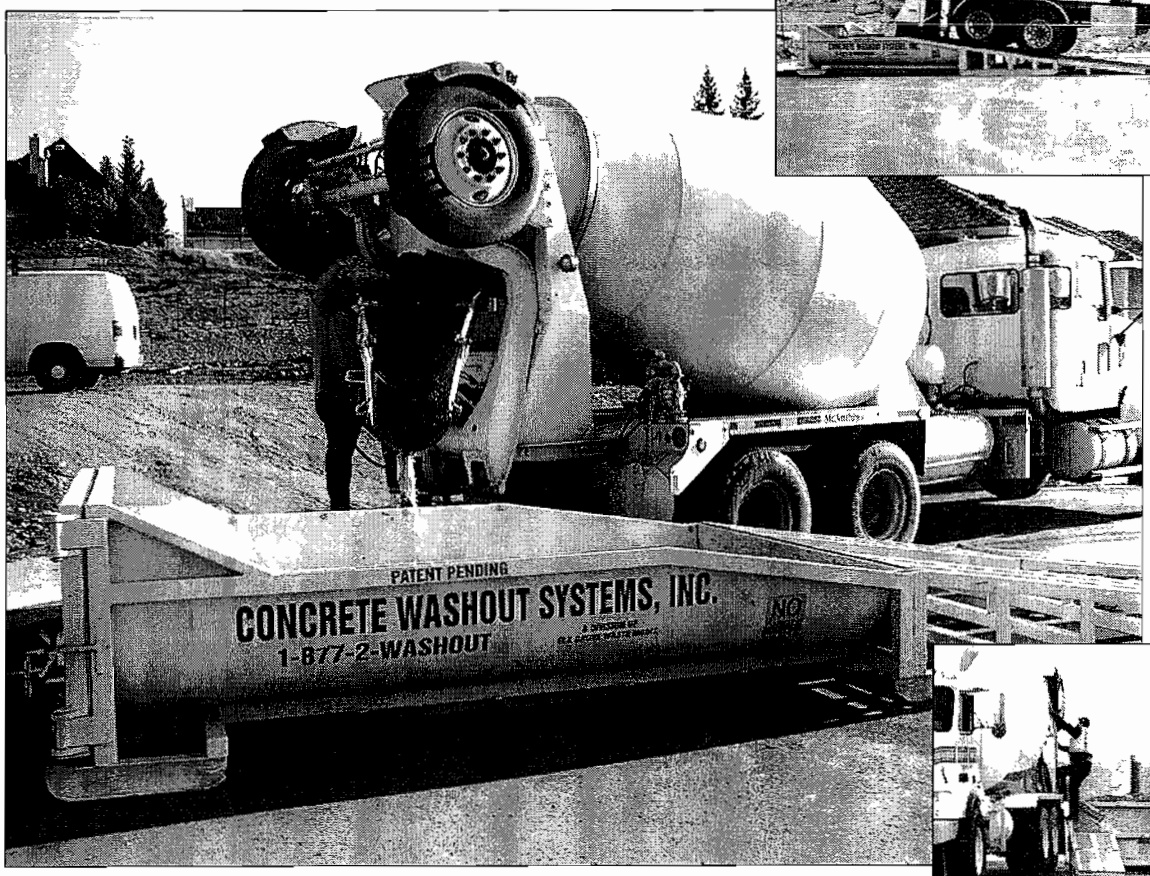
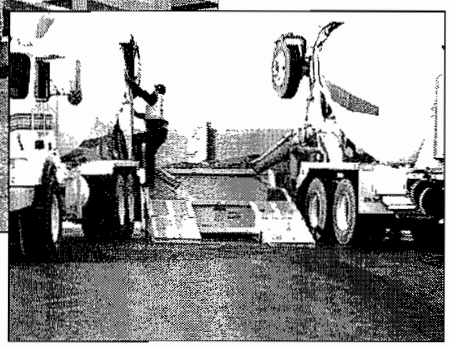
EXHIBIT A

World's Premier
Concrete Washout Services Provider ™







Your Solution To Washout Pollution ™

CONCRETE WASHOUT SYSTEMS, INC.
P.O. Box 2604 Carmichael, CA. 95609 • TEL: 1.877.2.WASHOUT (292-7468) • FAX: 1.916.244.0403
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CWS INTRODUCTION

OVERVIEW

Construction sites have long been identified as a large contributor to urban runoff pollution if the proper pollution prevention practices are not regularly performed. Materials washed into the storm drain have a direct impact on local waterways and habitat living in that environment.

An inadequately maintained and constructed concrete washout pit. Hazardous wash water is allowed to overflow the curb and eventually discharge into the storm drain.

The most common discharge into our storm drains from concrete construction is the residue and contaminants from washing down equipment such as concrete trucks, pumps, mixers, chutes, hand tools and wheelbarrows. It also comes from other cementitious type products such as grout, mortar and stucco. Concrete or cementitious washout wastewater is caustic and considered to be corrosive with a pH near 12, essentially the same as Liquid Drano®, Ammonia or other household cleaning detergents. The primary ingredient in ready mixed concrete is Portland Cement, which consists of Portland Cement Clinker, Calcium Sulfate, Calcium and Magnesium Oxide, metals and trace elements of potassium and sodium sulfate compounds, chromium compounds and nickel compounds.

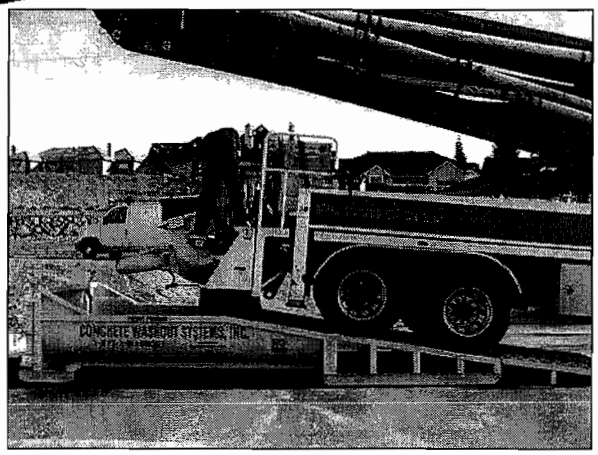
Due to this high potential for urban runoff pollution, the United States Environmental Protection Agency (US EPA) has stepped up their efforts to keep Storm Water Pollution Prevention Plans (SWPPP's) compliant to the National Pollution Discharge Elimination Systems (NPDES). All of these mandated criteria are part of the US Clean Water Act and mandates the utilization of Best Management Practices (BMP's) on construction sites. Potential discharges into the storm drain systems from concrete work has become a priority of the federal and state EPA, water quality control officials, regional and local inspectors as well as a strategic target of the advocacy and environmental groups.

A concrete truck washing down his chute in a Concrete Washout Systems bin, which provides proper containment and method for capturing the wastewater and material.

Concrete Washout Systems, Inc. (CWS) has addressed this serious challenge in keeping regulatory agencies and advocacy groups satisfied while protecting and balancing the interests of the concrete and construction industry. CWS has developed a BMP that not only meets SWPPP guidelines, but also exceeds them. In doing this, CWS is making every effort to protect the concrete and building industries and minimize regulatory fines and civil liabilities.

This Best Available Technology (BAT), patent-pending concrete washout system is a portable, self-contained and watertight roll-off bin that controls, captures and contains concrete washout material and runoff. This state-of-the-art, concrete washout system includes several unique design features including, steel folding ramps to accommodate almost all concrete pump hoppers, a high-grade plastic interior lining to assist in extracting the washout material and a watertight bin and seal to eliminate any wastewater discharge.

This system and method allows trade personnel to easily washout concrete trucks, pumps and equipment on site and facilitates easy off site recycling of the same concrete materials and wastewater, while protecting the storm drain system from potential illegal discharges. The off site recycling component of both the concrete material and washwater decreases waste generation, increases concrete waste diversion from our shrinking landfills, ultimately creating an even more environmentally sound recycling application. This system replaces other outdated washout BMP's, which are costly, unsightly and damaging to the environment since their containment value diminishes, do to inherently faulty material, over use and lack of maintenance.



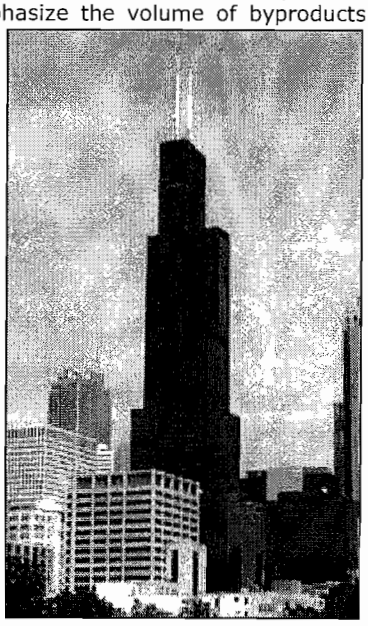
A concrete pump truck washing out after backing up onto a Concrete Washout Systems (CWS) bin. The ramps, unique to the CWS, keeps pump companies compliant with regulations.

CWS is currently being used by some of the largest residential and commercial builders in the country with tremendous success. CWS has assisted these builders in lowering their operational costs relating to concrete washout containment, overall cleanliness of jobsites, maximizing operational efficiency and keeping them in compliance, while balancing the needs of the building industry. In many state and regional SWPPP seminars and training classes, good housekeeping is listed as a key BMP. The CWS offers more than good, but outstanding housekeeping.

FACTS AND FIGURES

Concrete's versatility, durability, and economy have made it the world's most used construction material. The U.S. uses about **340 million cubic yards** (260 million cubic meters) of ready-mixed concrete each year. It is used in highways, streets, parking lots, parking garages, bridges, high-rise buildings, dams, homes, floors, decks, sidewalks, driveways, and numerous other applications. (http://www.cement.org/tech/)

There are two byproducts generated by the concrete and construction industry as a result of all the ready-mixed concrete used; concrete washout or waste and washwater. In order to emphasize the volume of byproducts generated every year by the construction industry, we have compiled the estimated figures below which put into perspective the magnitude of this problem and the impact of improper containment measures and lack of recycling efforts on jobsites nationwide.



Sears Tower in Chicago, Illinois.

Ready Mix Trucks

- 34 Million Truck Loads per year (~10 cubic yards per truck)
- 2.16 Million Cubic Yards of concrete material left on chutes (~1/16 yard left on chutes)
- 4.32 Million Tons of concrete material left on chutes (1 yard weighs ~2 Tons)
- 240 Million Gallons of concrete washwater generated (~7 gallons of water per truck chute)

Concrete Pumps

- 1.36 million Pumps per year (based on avg. 250 yard pour)
- 68 million Gallons of concrete washwater generated (~50 gallons of water per pump)
- 340,000 Cubic Yards of concrete material left in pump hoppers (~ 1/4 yard per pump)
- 680,000 Tons of concrete material left in pump hoppers (~ 1/4 yard per pump)

Totals

- 308 million gallons of washwater generated from truck and pump washout
- 2.5 million cubic yards of concrete washout material
- 5 million tons of concrete washout material

TRIVIA

The amount of concrete washout material and washwater generated each year accumulates to:

- ~34 times more concrete than was used to build the Sears Tower in Chicago (2 million cubic feet/72,000 cubic yards), the worlds tallest building until 1996 or,
- enough concrete to build an 8-lane freeway system 175 miles long or,
- nearly ¾ the amount of concrete used to construct the entire Hoover Dam
- Enough water to provide a city of 50,000 for nearly three months

EXISTING CONTAINMENT MEASURES

MEASURES THAT DON'T ADD UP

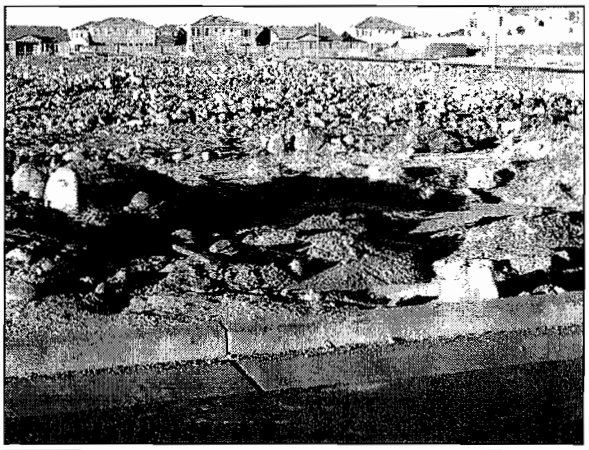
Although CWS stands alone as the leader and pioneer in the concrete washout containment and recycling market, there are other companies who offer what we believe are inferior services to dispose of concrete washout material.

A washout pit that does not comply with local BMP's as the plastic is torn and not covering the hay bales to prevent leakage.

WASHOUT PITS

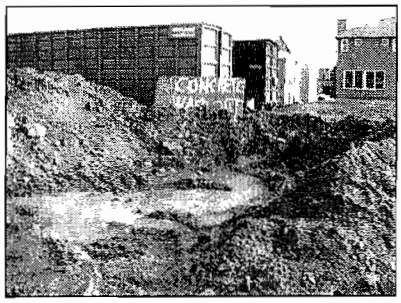
The washout pit has been around for quite some time and allow for onsite washouts. They are generally constructed with hay bales and plastic in a 12' X 12' X 2' area. Even though current BMP's suggest making this type of washout containment area, these pits are inherently flawed as the plastic and hay bales break down and allow the hazardous wash water to escape, creating the potential for illegal discharges into waterways.

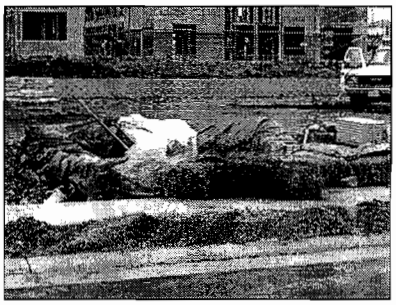
Almost all jobsites require the use of concrete pump trucks when working with concrete. These pumps have a larger discharge than concrete trucks and are also required to washout in a contained area. They generally have to washout next to a pit, since they cannot get into the washout pit without breaking the integrity. Again, this allows the hazardous wash water to escape, leach into the soil and possibly flow into a storm drain. The contractor then has to have the washout material broken up, excavated and removed from the jobsite. Once the material is removed, the hazardous wash water is left behind in the soil, potentially resulting in illegal discharges and/or contaminated soil that will inhibit vegetative growth.

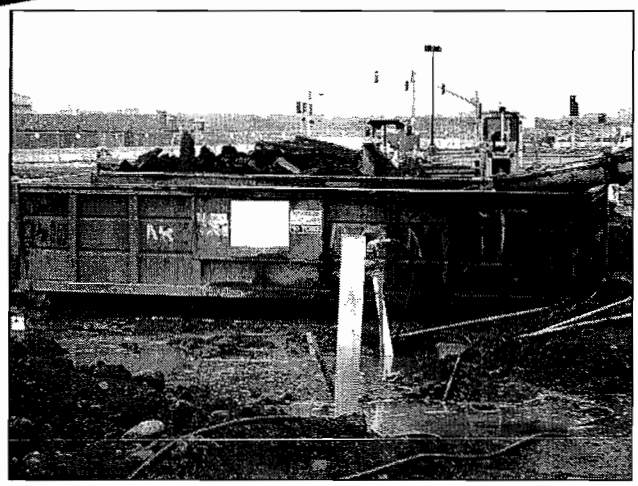


Blobs of concrete washout material next to a washout pit. Most likely a result of washing out pump trucks.

We have scoured construction sites all across the Greater Sacramento area and have yet to find a washout pit that contains all the caustic waste water and material like the CWS does. In addition, the cost for construction, excavation and re-construction of the washout pits is cost prohibitive when compared to the CWS. (See Below)





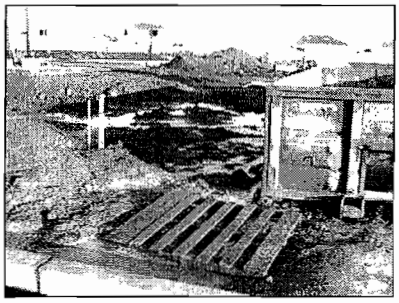


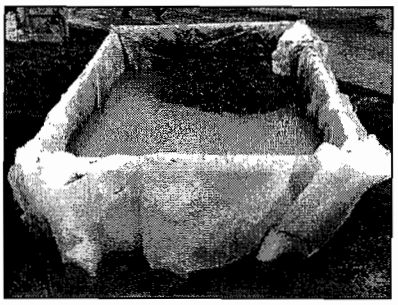
A concrete washout dumpster being used by a homebuilder that fails to contain the hazardous washout water. Notice the hazardous concrete wastewater all around the box.

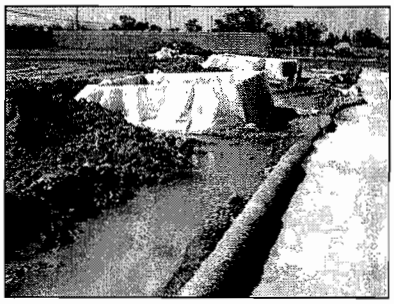
SLUDGE BOXES OR LOWBOYS

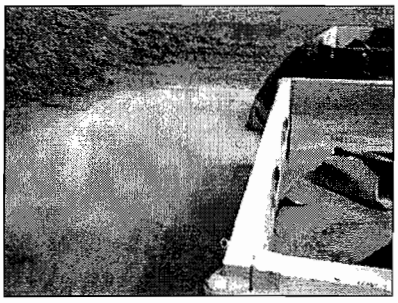
Sludge boxes or small waste boxes, generally around 5 yards, have also been used in an attempt to contain washout material on construction sites. Again, as with the hay bale washout pits, this system is inherently flawed, as it is not watertight and leaks caustic wash water onto the ground and into the storm drains as well as not having the ability to washout the hopper of a concrete pump truck.

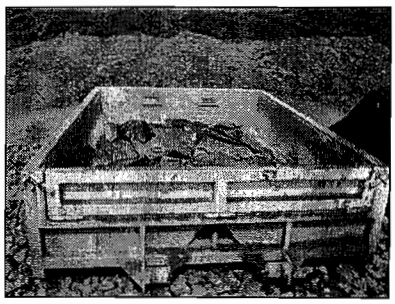
It is generally lined with plastic in an attempt to prevent it from leaking. However, in the pictures below, you can see that it does not work. Even if water remains in the box, which is unlikely, the usual practice is to still allow the hazardous wash water to escape from the box and leach into the ground or storm drain. Again, we have to be concerned not only about the known discharges but also what is left behind for the homeowner when he/she begins working with the soil in preparation for landscaping.

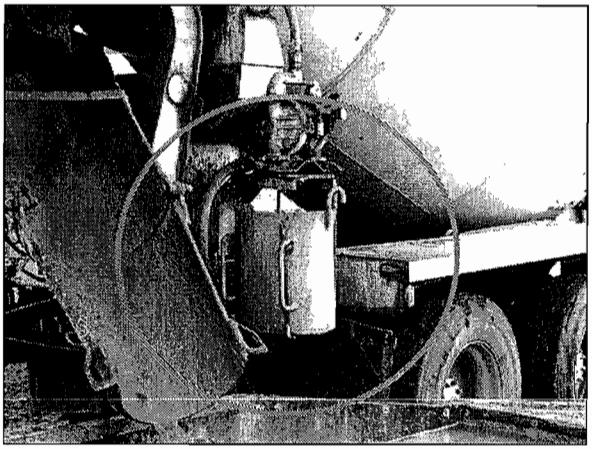












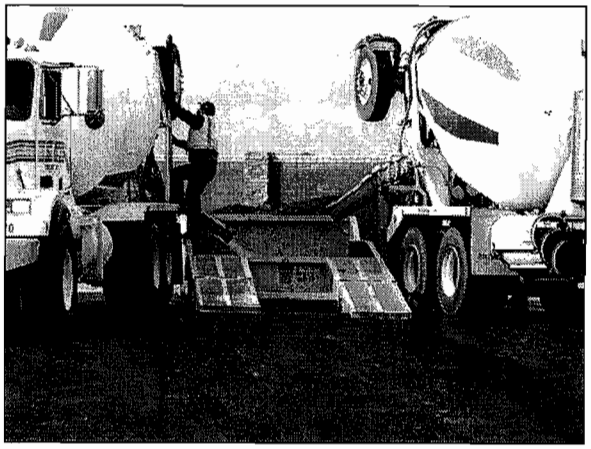
A concrete truck which has a reclaimer affixed to it, uses a CWS bin instead of its own reclaimer to speed the washout process up

Concrete Reclaimers

Concrete reclaimers have their place in the concrete washout market. These reclaimers are affixed to the truck and allow the driver to washout into a bucket that is attached to the end of their chute. The wastewater generated is then stored on the truck and the remaining material is dumped back into the drum for recycling at the batch plant.

This particular system is good for smaller or rural jobs but does not address high production jobs such as residential home building, large-scale commercial projects or washout of concrete pump trucks that require a designated concrete washout. Also, concrete suppliers generally charge an additional fee for the reclaimers above what they are charging for the ready mix itself. In addition, the reclaimers are expensive to install and require on going maintenance to keep them operational.

It takes approximately 2-3 times longer per load to washout a chute into a reclaimer than it does using the CWS bin. The resulting delay at the jobsite increases the turn around time thereby reducing productivity and revenue and tying up precious space on the site. We estimate that the average loss per truck is near ½ load per day. Multiply that by the amount trucks in a concrete suppliers fleet and you get a staggering loss of revenue.



Two concrete trucks, which both have reclaimers, are washing out simultaneously in the CWS bin to speed the washout process up

Washout Sacs or Bags

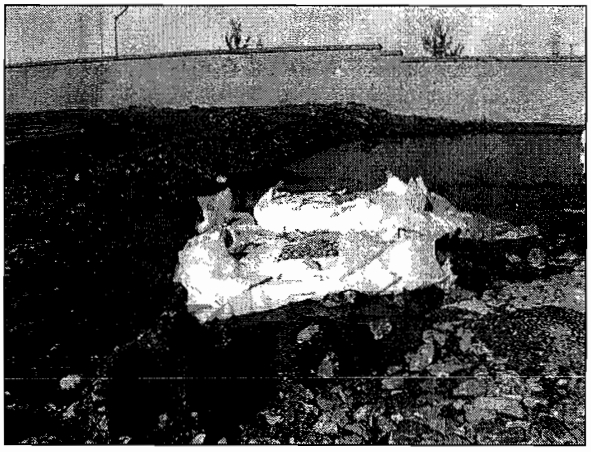
Washout sacs or bags are either made from ~6 Mil plastic or polypropylene material and hold anywhere from ~5 to ~400 gallons of material. The process is less than desirable and for the smaller bags requires two people, one to wash down the chute and the other to hold the bag. The bag is then either tied or taped shut. After washing out, the bag(s) are left on the ground for the builder/contractor to dispose of.

A pile of plastic washout bags on a jobsite. Each bag was broke, which allowed caustic washwater to escape

As with hay bale washout pits and sludge boxes, this system is inherently flawed as well do to the use of plastic. The bags can be left on the jobsite up to several weeks, exposing them to the rough ground and elements. When the construction site gets around to disposing the washout bags, generally the bags have been torn open, releasing the caustic and hazardous wash water onto the ground and potentially resulting in an illegal discharge. The contractor now has to dispose of the waste and has difficulty recycling the concrete material do to the plastic.

The larger poly sacs are manufactured for concrete pump and concrete truck washout containment. The sacs are designed to allow caustic washwater to leak out and not contain it, resulting in an illegal discharge. When full, the sacs have the capacity to hold nearly 1 ton of concrete, which may pose additional problems.

Once the sac is full of material the contractor is required to find a way to dispose of it, ultimately increasing the amount of time and resources they must spend on this. This requires them to use a crane or forklift to move the sac around on the jobsite. The waste will most likely have to be sent to a landfill instead of being diverted and recycled, which increases time, money and resources.



Two poly sacs that were used for washout. The sac did not contain any of the caustic washwater which leaked onto the jobsite.

COMMONALITIES AMONGST EXISTING MEASURES

As you can see the most common feature amongst the existing measures mentioned is the lack of regulatory compliance and overall risk management. Also, there will most likely be an increase in waste generation instead of reducing it by diversion and recycling. Using these systems may in fact increase your company's risk relating to concrete washout containment.

FEATURE COMPARISON

Feature	Concrete Washout System	Washout Pit	Sludge Box	Reclaimer	Sac/Bag
Cost	**UP TO 50% LESS**	$1,250	$1,200	$1 / yard	Unk.
Regulatory Compliant	√			√	
Waste Diversion/Recycle	√			√	
Meets/Exceeds BMP's	√			√	
Ramps	√				
Watertight	√				
Portable	√		√		√
Maintenance Free	√				
Vacuum Service	√				
Recycle Concrete Waste	√		√	√	
Recycle Wastewater	√			√	
Clean Washout Area	√			√	
Multi-use Washout	√	√	√		
Simultaneous Washout-3	√				
Large Holding Capacity	√	√	√		√
Allows Pump Washout	√				√
Reduces Costly Fines	√			√	

WHAT EXACTLY IS CEMENTITIOUS WASHWATER?

Concrete or cementitious (mortar, grout, plaster, stucco, cement, slurry) washout wastewater is caustic and considered to be corrosive with a pH near 12, essentially the same as Liquid Drano®, Ammonia or other household cleaning detergents. The primary ingredient in ready mixed concrete is Portland Cement, which consists of Portland Cement Clinker, Calcium Sulfate, Calcium and Magnesium Oxide, heavy metals and potassium and sodium sulfate compounds, chromium compounds and nickel compounds. Some of the contaminants contained within concrete washwater include; Aluminum, Barium, Chromium, Hexavalent Chromium (Chromium 6), Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Selenium, Sodium, Vanadium, and Zinc. The washwater may also contain trace elements of petroleum products, admixtures and other materials from processing or treating the material. The graph to the left outlines the contaminants and their respective levels.

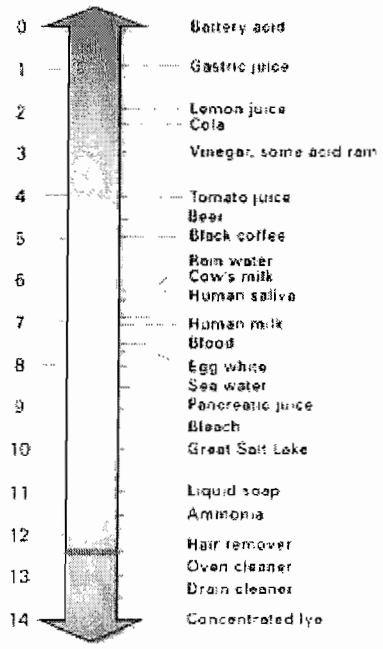
Contact with wet (unhardened) concrete, mortar, cement or other cementitious materials can cause skin irritation and severe chemical burns or serious eye damage.

Metal / Test	Dirty (S1) mg/l
Aluminum	50.0
Antimony	ND
Arsenic	ND
Barium	1.0
Beryllium	ND
Cadmium	ND
Calcium	1900.0
Chromium VI	0.73
Chromium	0.99
Cobalt	ND
Copper	0.24
Iron	66.0
Lead	ND
Magnesium	28.0
Manganese	1.60
Mercury	ND
Nickel	0.10
Potassium	110.0
Selenium	0.24
Silver	ND
Thallium	ND
Sodium	87.0
Vanadium	0.27
Zinc	0.51
Total Dissolved Solids	2700
Total Suspended Solids	5900
Turbidity	15
pH	12.3
Corrosivity	Corrosive

WHAT IS PH?

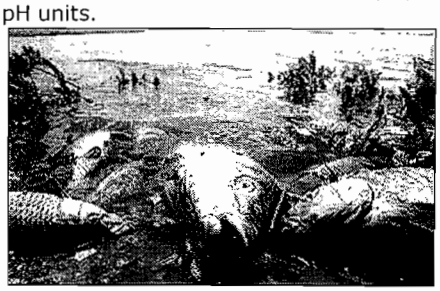
pH is a measure of how acidic or alkaline a substance is. The pH scale goes from 0 to 14, where 7 is neutral. A low pH value means the sample is acidic, while a high pH value means that the sample is basic or alkaline. A change in one pH unit means a tenfold change in concentration, similar to the Richter scale and measuring earthquakes.

EFFECTS OF HIGH PH ON AQUATIC LIFE



The effects of high pH on fish may include: DEATH; damage to outer surfaces like gills, eyes, and skin; and an inability to dispose of metabolic wastes. High pH may also increase the toxicity of other substances. For example, the toxicity of ammonia is ten times more severe at a pH of 8 than it is at pH 7. The safe range for aquatic life is between 6.5 – 9.0 pH units. The average pH of concrete washout water is near 12 pH units.

EFFECTS OF HIGH PH ON VEGETATION AND SOIL



Dead fish washed ashore on a riverbank as a result of illegally discharged pollutants.

The effects of high pH on vegetation may include: inhibited growth, damage to soil and plants and substantial alteration of the soil and plant chemical composition even after the pollution source is gone. High pH may also increase the toxicity of other substances causing further problems. The safe range for plant life is between 6.5 – 7.0 pH units. The average pH of concrete washout water is near 12 pH units.

HIGH SUSPENDED AND DISSOLVED SOLIDS COUNT

Concrete wash water is basically slurry of fine Portland Cement particles in water, also called suspended solids when in water. When illegally discharged into a fish-bearing waterway, it will clog fish gills; reducing the amount of oxygen they receive which can ultimately lead to death. It can also smother aquatic habitat, impair their feeding ability and permanently damage the fragile ecosystem we enjoy. Turbidity, which refers to water clarity, is related to suspended solids. In clear water, the turbidity is 0 NTU and fish are able to capture their prey, however as the turbidity increases to 60 NTU, certain fish are only able to capture 5% of their prey. The average turbidity of concrete washout water coming directly from the source is 27,000 NTU. The

average stream or river in the United States has a total suspended solid count of no more than 75 ppm. The average total of suspended solids in concrete washout water coming directly from the source is 79,000 ppm.

Potential Health Effects

Metal	Effect
Chromium	A known carcinogen when inhaled and possibly when ingested. Contact Dermatitis
Iron	Gastrointestinal distress, liver and kidney damage.
Copper	Elevated levels can cause heart disease, cancer and diabetes.
Selenium	Rashes, swelling of skin and pain, deformed nails and brittle hair.
Vanadium	Irritation of lungs, throat, nasal cavities and eyes.
Zinc	Skin irritation, nausea, stomach cramps.

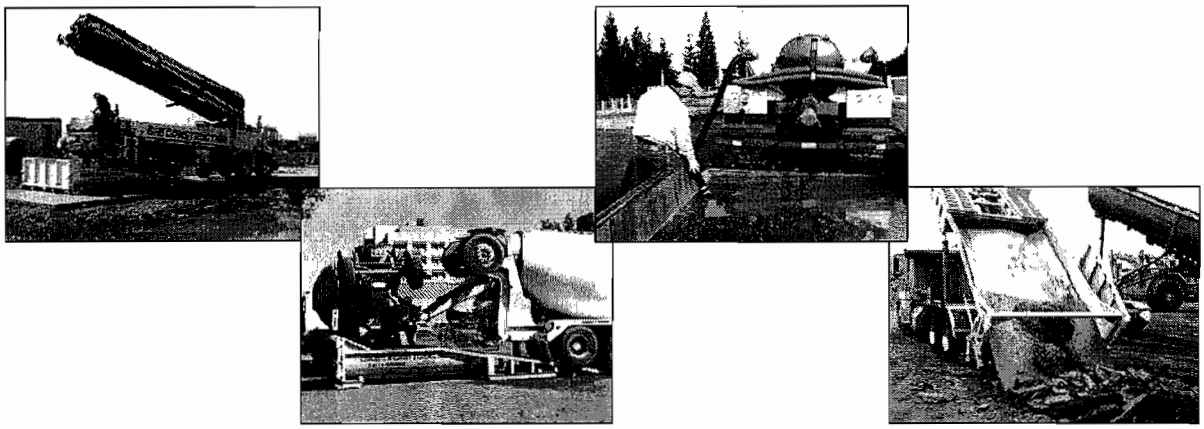
Impaired Waterways Impact Us All

40% of the waterways in the United States are still impared; unable to swim, fish, play or otherwise use the waterway and 70% of those because of non-point source pollution (ie., concrete washout water). As construction in the United States and worldwide continues to boom, we are faced with a pollution problem of epedemic proportions. The building and concrete industries need to continue to combat this problem quickly, effectively and need to be armed with the most innovative and state of the art equipment and procedures available; Concrete Washout Systems portable and patent pending roll-off bin.

The "White" warning sign with "yellow and black" stripes is used at or near storm drains to warn people of elevated bacteria levels at or adjacent to the storm drain. Contact with ocean water in these areas may cause individuals to become ill. Avoid water contact where signs are posted and areas between posted signs. Signs are normally posted every 50 yards.

What Is CWS Doing About It?

CWS is the ultimate risk management and compliance system for concrete washout containment. Not only do we have a product that controls, captures and contains all of the concrete and washwater material, we employ a system and method in which we divert and recycle the concrete material and recycle all of the caustic concrete washwater that was generated on a jobsite. CWS has also developed a patent pending treatment and recycling system that reduces the contaminant levels in concrete washwater so it may be used for other applications and/or recycled.



US CLEAN WATER ACT

The 1972 amendments to the Clean Water Act (CWA), prohibit the discharge of any pollutant into navigable waters of the United States from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination Systems (NPDES) permit. It was first thought that pollution primarily came from industrial activities but over time it became evident that storm water runoff from construction sites was also a significant contributor to water quality problems. Construction sites generally can contribute 10 to 20 times more sediment than agricultural lands and 1,000 to 2,000 more times than forestlands. During a short period of time, construction sites can contribute more sediment than can be deposited over several decades, causing physical and biological harm to our Nation's waters.

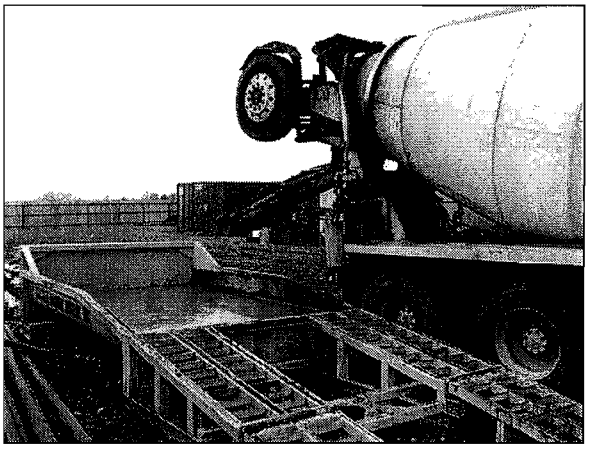
Phase I of the NPDES storm water program addresses runoff from construction sites disturbing 5 acres or more of land. On March 10, 2003, Phase II went into effect, requiring construction sites disturbing 1 or more acres of land to now adhere to the NPDES permit.

Both Phase I and II or the NPDES storm water program require that construction sites implement Storm Water Pollution Prevention Plans (SWPPP) addressing appropriate Best Management Practices (BMP's) to minimize discharge of pollutants from the site. One such BMP is the utilization of a concrete washout containment area to control all concrete waste materials generated, including the washwater,

BEST MANAGEMENT PRACTICES (BMP'S)

California has emerged as a leader in being proactive in its education and enforcement of BMP's and two authorities have emerged within for the implementation of various BMP's related to construction; Caltrans and the California Stormwater Quality Association (CASQA). Both entities have similar BMP guidelines relating to concrete washout containment and specifically address Concrete Waste Management (WM-8) and Liquid Waste Management (WM-10).

These BMP's shall include; not washing trucks into storm drains, open ditches, streets or streams, slurry should be vacuumed and disposed of, concrete washout to be discharged into designated washout area, washout facilities shall be constructed with sufficient quantity and volume to contain all liquid and concrete waste and any plastic used shall be free of holes, tears or other defect that compromise the impermeability of the material.



Concrete Washout Systems is the Best Management Practice for containing concrete washout material and wash water on jobsites.

Caltrans has begun and other entities have followed, adopting a stricter guideline of using portable and watertight vessels to fully contain all the concrete washout material.

IT'S THE LAW

The United States Environmental Protection Agency (US EPA) and numerous other states including California Environmental Protection Agency (CalEPA) have stepped up their efforts to keep SWPPP's compliant to the NPDES. All of these criteria mandate the utilization of Best Management Practices (BMP's) on construction sites. Potential discharges into the storm drain systems from concrete work has become a priority of the federal and state EPA, water quality control officials, regional and local inspectors as well as a strategic target of the advocacy and environmental groups. Illegal discharges into our waterways can bring fines of $32,500 per day if the US EPA becomes involved.

In 2004, the US EPA conducted approximately 21,000 inspections, 425 criminal investigations and 455 civil investigations relating to pollution activities. The investigatory activities, both civil and criminal, help ensure a level playing field, removing any economic or competitive advantage which may be gained through noncompliance. The EPA identifies, apprehends, and assists prosecutors in successfully convicting those responsible for the most significant and egregious criminal violations of environmental law.

The most publicized of these investigations was Walmart's $3.1 Million settlement in May 2004 for their failure to adequately implement BMP's and control runoff. "....no designated concrete wash area, concrete piles were scattered about the site, inadequate concrete wash water controls that allow drainage into the storm drain inlet and failure to install proper concrete washout area..."

During the course of 2004, the EPA's efforts helped reduce, properly treat or eliminate an estimated 1 billion pounds of pollutants from civil enforcement in addition 25.3 million pounds of pollutants will be reduced due to criminal enforcement. These enforcement actions will also require companies to invest $4.8 billion in pollution control measures. Please review the US EPA's 2004 report; **EPA's 2004 Annual Report** (http://www.epa.gov/ocfo/finstatement/2004ar/2004ar.htm)

Homebuilder in Santa Ana Region
Complaint No. R8-2003-0100 for Administrative Civil Liability

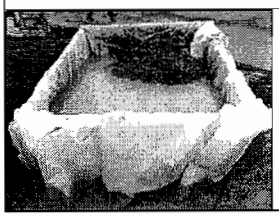
Imposed Fine - $50,000

"...the concrete washout pit was not maintained and did not effectively contain concrete slurry...the concrete washout pit was full of solid waste and surrounded by concrete slurry"

"...slurry from the concrete washout pit flowed into the street...stucco washout flowed into the street and into the storm drain inlet."

Homebuilder in Santa Ana Region
Complaint No. R8-2003-0024 for Administrative Civil Liability

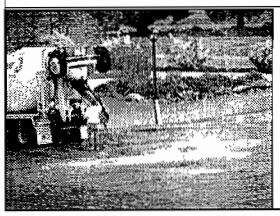
Imposed Fine - $55,000



"A milky white liquid was discharging from uncovered on site roll-off bin. The pollutants discharging from the bin had commingled with storm water runoff and migrated to an area near a protected wetland..."

Homebuilder in Los Angeles Region
Complaint No. R4-2003-0012 for Administrative Civil Liability

Imposed Fine - $17,400



"The discharge of construction pollutants (i.e. cement and sediment) is not easily cleaned up once it is released into the storm drain. Therefore, a reduction from the maximum civil liability is not warranted... waste from concrete and related construction were dumped on the ground without containment BMP's ...one of these locations was adjacent to the Hasley Creek."

Homebuilder in Central Coast Region
Complaint No. R3-2003-0103 for Administrative Civil Liability

Imposed Fine - $58,500

"Residual concrete from a washout area had apparently overflowed and left the site...Inadequate BMP's for the control of erosion and sediment."

Construction in Santa Ana Region
Complaint No. R8-2003-0031 for Administrative Civil Liability

Imposed Fine - $30,000

"BMP's implemented at the site were not adequate to control the discharge of pollutants from the site...inadequately protected for cementitious (plaster waste) materials. There were no noticeable BMP's implemented for control of plaster or stucco materials."

Although the previous examples originate from within California, most states are adopting and enforcing more stringent standards of their water pollution control regulations. In fact, many states have chosen to include discharges into groundwater and not just surface waters, as covered under the Clean Water Act, as additional types of regulated discharges. An example of this could be ready mixed concrete facilities or other yards that wash out into unlined settling ponds.

In these types of practices or on construction jobsites where improper containment measures are employed, there is the distinct possibility and likelihood of creating an illegal discharge. Rainwater or water from another source will attach to these pollutants and carry them off as stormwater, infiltrate the groundwater or both.

DIVERSION AND RECYCLING THE CONCRETE MATERIAL

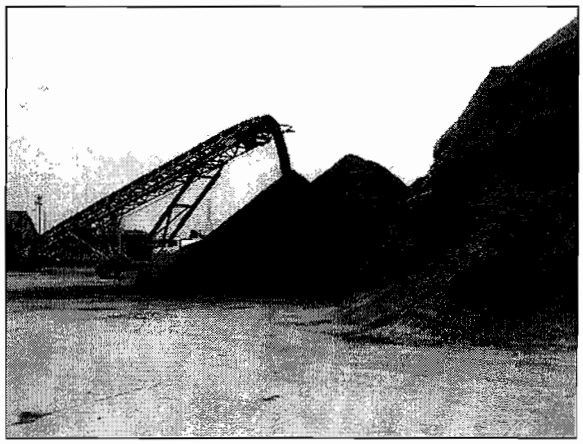
Another critical component of CWS's system and method is our recycling efforts. CWS recycles all of the concrete washout material from jobsites where it can be used for secondary applications. Many states and other jurisdictions are requiring the construction industry to not only divert and recycle materials from the landfill but also are beginning to require the usage of recycled material on new jobs.

For example, in 1989 California enacted AB 939 in an effort to begin diverting recyclable waste materials from the ever growing landfills, which was fast becoming a national crisis. AB 939 required cities and counties and other municipalities to divert 50% of their waste from landfills by the year 2000. It is estimated that as much as 30% of the tonnage of waste stream is generated from construction and demolition. In 2002 SB 1734 was adopted in California which mandated the California Integrated Waste Management Board propose a model ordinance for municipalities to enact within their own jurisdictions to satisfy the 50% diversion requirements imposed by AB 939.

El Dorado County, California along with numerous others municipalities across the nation have enacted or will be enacting Construction and Demolition Debris Recycling Ordinances that require all construction jobsites to recycle 50% of the C&D debris generated and to document it.

CWS offers a clear and distinct advantage when compared to some existing methods of containment. For example a typical washout pit using haybales and plastic will actually create more waste materials. We consider this a contaminated load since it will contain haybales, plastic, concrete and dirt and cannot be recycled, instead will have to be directed to a landfill.

A sludge box or similar system using a plastic lining material or where there is some other contaminate in the concrete load will most likely not be diverted from a landfill.



PART OF THE SOLUTION

We at CWS are committed to ensuring our product and services are the solution to the problems associated with concrete washout containment on jobsites. The terms below epitomize our products, know-how and systems and are why we are the solution to a problem that has been plaguing the industry for decades.

risk | man·age·ment
Risk management is the process of analyzing exposure to risk and determining how to best handle such exposure.

com·pli·ant
Being compliant is acting according to certain accepted standards; observance of official requirements.

en·viron·mental·ly | friend·ly
Being environmentally friendly is having minimal impact on the natural environment; using as well as maintaining natural materials.

in·no·va·tive
Being innovative is being or producing something like nothing done or experienced or created before.

best | man·age·ment | prac·tice
A best management practice is a technique or methodology that, through experience and research, has proven to reliably lead to a desired result. A commitment to using the best management practices in any field is a commitment to using all the knowledge and technology at one's disposal to ensure success.

best | a·vail·a·ble | tech·nol·o·gy
Best available technology is the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges.

WASHING THE WOES AWAY

Over the last 2 years, we've grown into largest concrete washout services provider in the world and in doing so have set the bar to a higher standard. For us and our partners, it is much more than providing washout services; it is developing lasting relationships with our clients that are built on quality of service and product, trust that we will provide services when requested and the assurance that we will provide essential and critical risk management services.

Exceeding Expectations

We take pride in our services and will strive to exceed the expectations and specific needs of each customer. We encourage feedback from our customers and are motivated to ensure satisfaction.

Risk Management

Using our services will ensure that your jobsite is compliant with current regulations and you are doing all you can to manage jobsite risk and promoting best management practices relating to concrete washout. We are ever mindful of P2 and green practices so our services include vacuuming out the caustic concrete washwater and recycling it and diverting the concrete waste material from the landfill and recycling it. You can be assured that our services are environmentally friendly and exceed even the most stringent local, state and federal standards.

The Right Equipment

Contrary to what some believe, not all washout service providers and their products are the same and offer the same end result. We have several patent pending innovations that set us aside from the other service providers. Our patent pending Concrete Washout Systems containers are specially designed to control, capture and contain all concrete washout material. They are watertight boxes with ramps affixed to them to accommodate concrete pump trucks and ready mix trucks. Trucks and pumps can washout simultaneously, which increases turnaround time for them and ultimately you and decreases congestion on your jobsite. No other washout box on the market today can accommodate pump washout as ours can. It is a distinct advantage we have over our competition and a much needed service for our clients.

Most of our roll-off trucks come equipped with a patent-pending CWS Enviro-Vac System that enables our drivers to vacuum the concrete washwater and remove and replace the box if needed. This creates a much more efficient

operation for both us and you. You will also see vacuum trucks or trailers on your jobsite from time to time to handle other jobs.

The Right People

From our maintenance workers to our executive management, our people are motivated and driven to fulfill your needs and protecting the environment. Empowering our employees creates workers that are more knowledgeable, confident and mindful of their professional and environmental obligations.

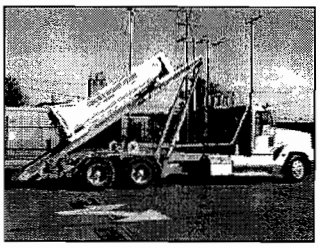
SERVICE WITH CONCERN

Our partner's number one priority is providing their customers an affordable risk management tool, unparalleled in service, quality and efficiency.

Placing an Order

Everything starts by you picking up the phone and requesting prices and service. Keep in mind that each area will have different operating structure as their respective markets drive and dictate how a box is priced out or what the actual price is for service. Your information is then inputted into a customer database, saved and a drop ticket is created for the driver.

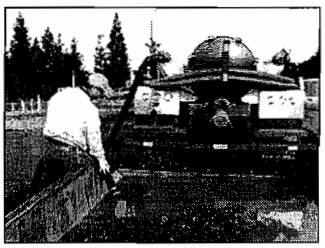
Delivery of the Concrete Washout Systems™ Container



Once our drivers receive an order from their dispatch, they pick up a clean box from the yard and deliver it to your jobsite. The drivers are very diligent in their efforts to place the boxes in areas that the customer request. However, there are some regulatory restrictions in some areas that will prevent them from placing it near a drain inlet or near a waterway or other protected area.

Our boxes are designed with ramps to accommodate and enable concrete pump trucks to washout their hoppers on the jobsite. Keep in mind that there are numerous factors that may affect the ability of the pump to properly back up onto the ramps. The most critical factor is location and our drivers are trained to select the best location for placing the box; taking in the customers, environmental and topographical considerations.

Vacuum Service

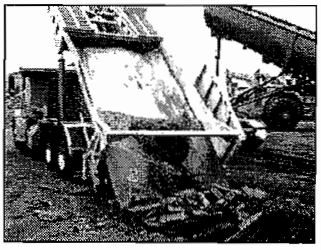


Once you begin pouring concrete you will find that the box will begin to fill up with both concrete material and concrete washwater. The washwater may not have been something you have dealt with in the past using other systems or services. Our partners are essentially dealing with two different source separated waste streams; concrete and washwater. A need may arise to have the washwater vacuumed from the box to increase holding capacity and to ensure compliance and eliminate any discharge of material. Our partners will dispatch personnel to your jobsite to vacuum the washwater from the box, providing you with more holding capacity. Once you reach a point where the material and washwater is near 3/4 full, it is now time to re-contact our partners to have the full box replaced with a new one.

Pick up of Concrete Washout Systems Box

Most of our roll-off trucks are equipped with a patent pending CWS EnviroVac System that enables us to dispatch only one truck to your jobsite for a removal and replace. They will drop the new box on your jobsite (if needed), vacuum out the remaining washwater from the full box and then haul it away. No matter if they drop a new box on your site or not, our drivers will leave your site clean with no impact on your operations whatsoever.

Finishing the Job Right



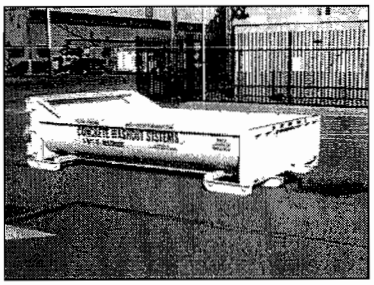
Once the box is taken from your jobsite, our job is not finished. Our drivers then transport the concrete material in the box to a concrete crushing and recycling yard (or equivalent). The recycling yard accepts this material without any hesitation or problems, since it is source separated and not contaminated with other materials such as hay, plastic or dirt. The concrete material is then crushed and used for various applications in the construction industry.

Our drivers then take the empty box to the yard where it is thoroughly cleaned and placed back into operation on another site. The concrete washwater they have is then recycled using our patent pending CWS Treatment & Recycling System or recycled in an environmentally friendly and regulatory acceptable manner.

INNOVATIVE AND RESPONSIVE

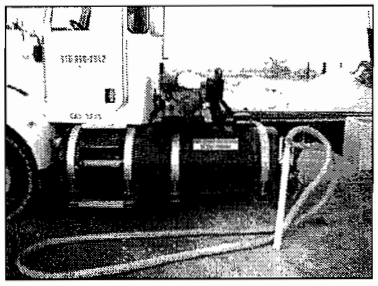
Our products signify innovation and entrepreneurialism at its best, with countless time, energy and money spent on R&D. Our finished products are also a result of our responsiveness to the building and construction industry, regulatory industry and listening to our clients needs.

CONCRETE WASHOUT SYSTEMS™ CONTAINER
PATENT PENDING



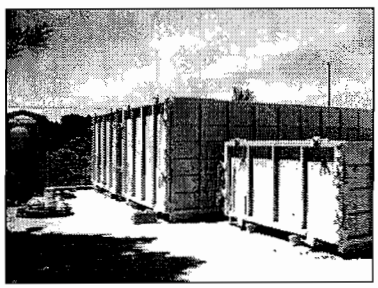
Our flagship product was developed to address the ever growing industry problems relating to effective containment measures for concrete washout. It has numerous unique features that set it aside from other run-of-the-mill containers including; ramps to accommodate almost all pumps, liner system to extract concrete material, watertight container to fully contain all materials, and a method and systems of recycling the materials that are exclusive to CWS. Our proprietary and patent pending system is the only one of its kind on the market and is licensed exclusively to Concrete Washout Systems partners.

CWS ENVIROVAC SYSTEM™
PATENT PENDING



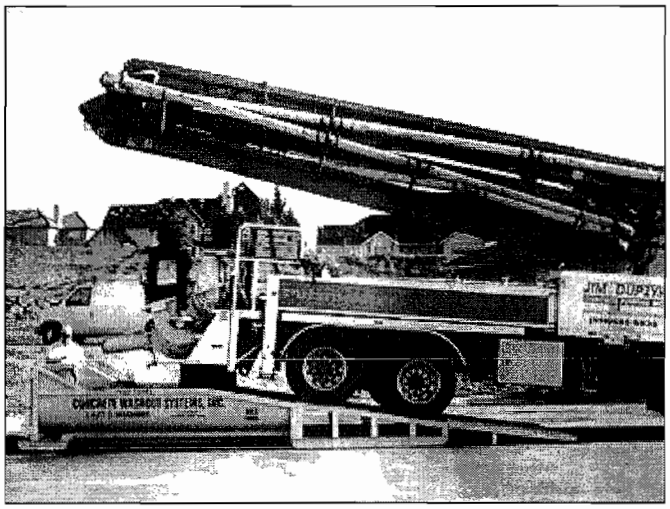
Developed to address the needs of our partners who needed an efficient method to vacuum the washwater from boxes without having to deploy additional equipment and resources. Our system reduces manpower usage, time, equipment deployment and increases overall efficiency both for our partners and their clients. This proprietary and patent pending system is affixed to the roll-off trucks, is the only one of its kind on the market and is exclusively licensed to Concrete Washout Systems partners.

CWS TREATMENT & RECYCLING SYSTEM™
PATENT PENDING



Developed to address the ongoing problems with disposing of the caustic and contaminant laden concrete washwater. Our system reduces the pH to an acceptable level, reduces Total Suspended and Dissolved Solids and reduces or eliminates harmful contaminants like Chromium VI. This proprietary and patent pending system is the only one of its kind on the market and is licensed exclusively to Concrete Washout Systems partners and ready mixed suppliers.

CONCRETE WASHOUT SYSTEMS™ RAMPED CONTAINER
PATENT PENDING



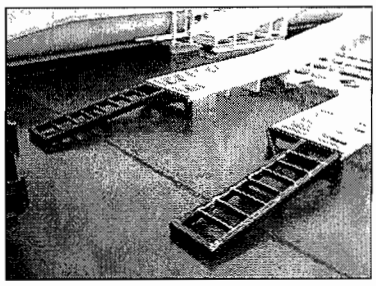
FEATURES
Our unique and proprietary system includes ramps to allow the concrete pumps a mechanism in which they can washout their hoppers. We have incorporated several new design features that create an even easier washout experience which include; ramp extensions for the original and new boxes, reduced ramp angle which created some extra space between hoppers and the ramps creating a wheel stop and introduction of catwalks for pump operators.

Availability
Available from all distributors.
Note: Wheel stops are standard with new boxes only and may not be available in every market. Catwalk and ramp extensions must be requested if needed or desired.

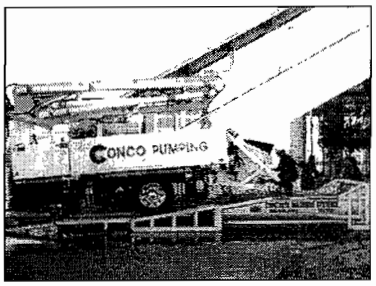
SPECIFICATIONS

Holding Capacity
5.5 cubic yards or nearly 900 gallons; capacity for washout from approximately 350 yards of poured material or containment for approximately 35 trucks and 2 pumps

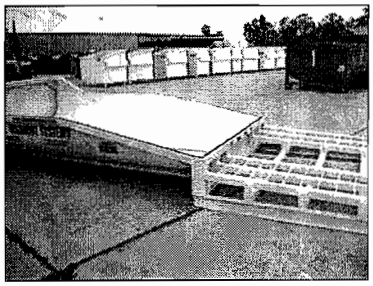
Dimensions
20'L X 8'W with ramps folded onto box (transport position)
26'L X 8'W with ramps extended and folded out (site position)



Ramp Extensions
4'L extensions that affix to end of operable ramp



Catwalk
8'L X 12"W catwalk (wood or metal) that affixes across width of box to allow easier washout



Wheel Stop
Lowered ramps against bulkhead creating wheel stop for trucks using ramps

CONCRETE WASHOUT SYSTEMS™ RAMPLESS CONTAINER
PATENT PENDING

FEATURES
A hybrid of our flagship ramped box, the rampless has more holding capacity for jobsites that are not pumping or that have a need for more than one box on the jobsite. The box can be ordered with hook points for use with a crane on commercial jobsites. The added versatility compliments the ramped box.

AVAILABILITY
Available in most markets. Ask our distributor in your area for availability.

SPECIFICATIONS

Holding Capacity
6 cubic yards and nearly 400 additional gallons of jobsite capacity; capacity for washout from approximately 450 yards of poured material or containment for approximately 45 trucks

Dimensions
12'L X 8'W X 2'H

Hook Points
The box can be configured with hook points for commercial applications

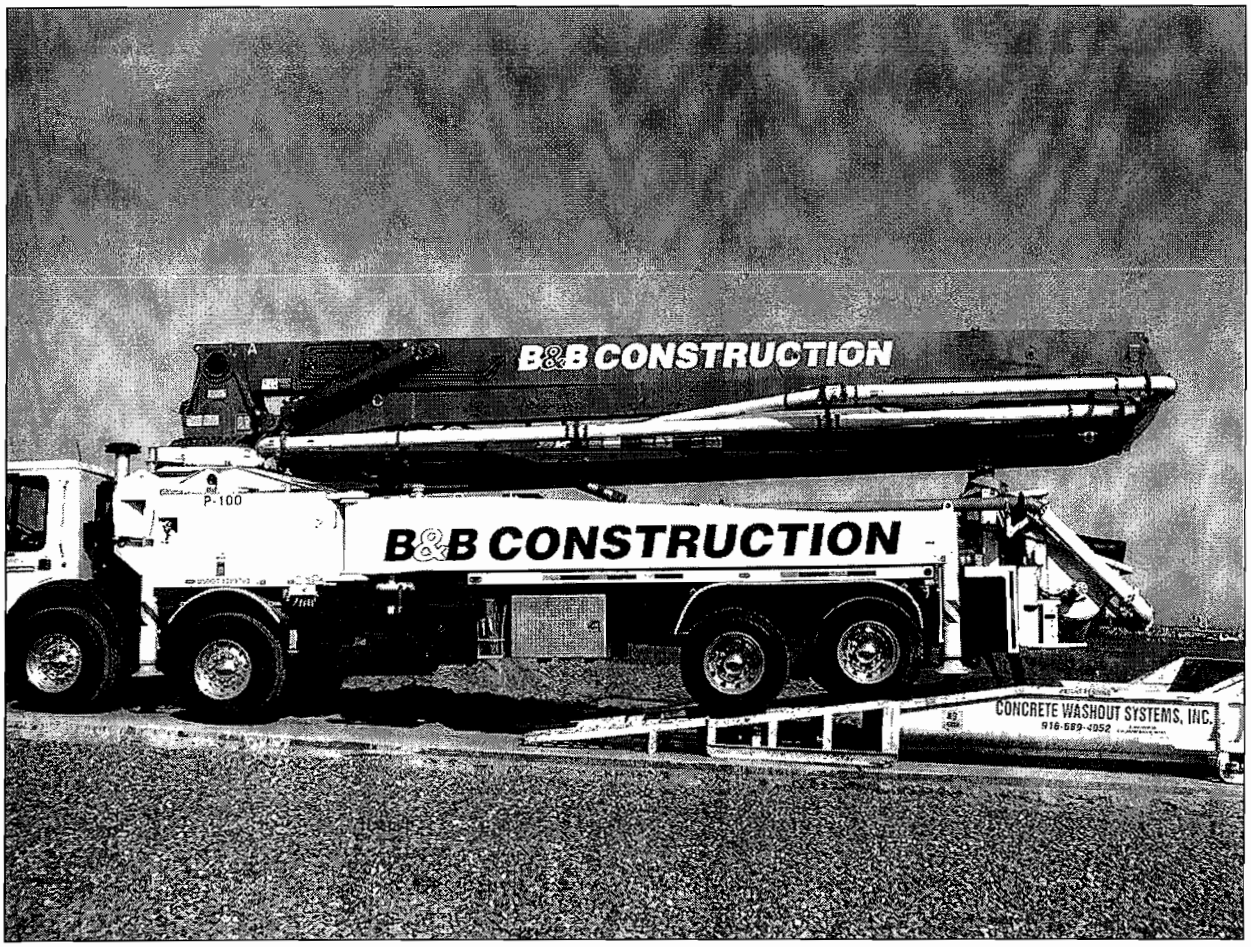
A rampless concrete washout systems container with hook points being craned.

GOOD HOUSEKEEPING

There are several factors that can and will have an affect on the performance of our box and proper placement on the jobsite and maintaining the approach to the box are the most critical. The ground must be level or if a sloped placement is necessary, the ramps must be pointing down the slope, not up. We have found this to be the most critical issue. The jobsite superintendent must monitor and maintain the area surrounding the box, especially the approach. The box and approach to the box should be checked towards the end of every pour to make sure the approach has not been compromised to the point where the concrete pump will have difficulty backing up or onto the box. If the ramps are dug into the ground some pumps will have difficulty backing up on the box. Usually, with little effort, the approach can be re-graded thereby allowing the pump to access the box.

We have addressed the problem of some pumps not being able to back up onto the box by providing ramp extensions, re-designing the box by reducing the ramp angle which created some extra space between hoppers and the ramps and created a wheel stop.

If your pumps are having difficulty backing on to the box, please inform our distributor or the jobsite superintendent of the need for ramp extensions. If you don't ask, they won't know you are having problems.
If proper housekeeping measures aren't employed on jobsites it may have a direct impact on the effectiveness of any BMP no matter what system or method is used to control concrete washout material and washwater. While it may be the responsibility of the jobsite to provide washout areas, ultimately it is everyone's responsibility to ensure they are properly washing out in an area or system that eliminates the possibility of any illegal discharge the jobsites.



A residential construction site built a concrete driveway in order to maintain the area approaching and surrounding the concrete washout systems container.

CWS AWARDS

A GREENER FUTURE

World of Concrete 2005
2005 Most Innovative Product

CWS was awarded the 2005 Most Innovative Product, Attendees and Experts Choice, in the production category at the 2005 World of Concrete for having the greatest impact on the concrete and masonry industries.

National Ready Mixed Concrete Association (NRMCA)
2004 Environmental Innovation Award

CWS was awarded the 2004 Environmental Innovation Award by the National Ready Mixed Concrete Association for implementing a system that resulted in a measurable improvement in environmental protection.

Sacramento Business Environmental Resource Center (BERC)
2004 Pollution Prevention Award

CWS was awarded the 2004 Pollution Prevention Award by the Sacramento County Business Environmental Resource Center for its efforts in pollution prevention practices.

Sacramento Environmental Commission
5th Annual Environmental Recognition Award

CWS was recognized by the SEC for Voluntarily Exceeding Environmental Regulatory Requirements in the 5th Annual Environmental Recognition Awards.

If the definition of Best Management Practices truly means *BEST* in an effort to protect the environment, comply with regulatory guidelines and enable the concrete and building industries to minimize liabilities affordably... Concrete Washout Systems is *THE BMP* and the ultimate Risk Management tool for concrete washout containment!

PARTNERS & ASSOCIATIONS

BUILDING LASTING RELATIONSHIPS

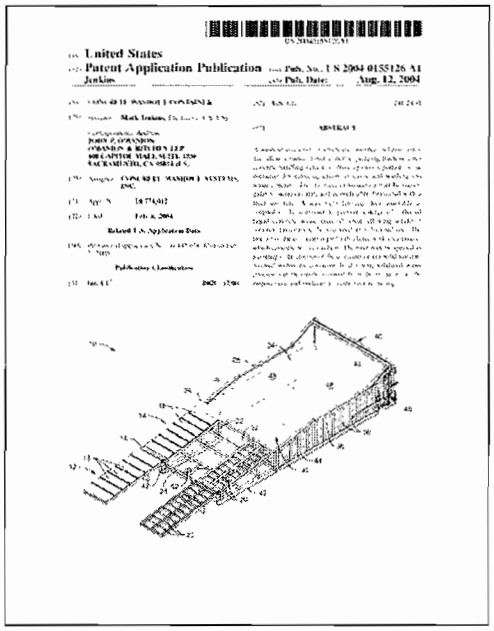
Concrete Washout Systems holds a strong commitment towards forming strategic partnerships and alliances and places a high value on mutually beneficial relationships. Concrete Washout Systems values its partners and is committed to customer satisfaction and developing our partnerships into long-term relationships.

A SHARED COMMITMENT

Concrete Washout Systems is committed to aligning ourselves with associations that foster an environment surrounded by education, awareness and communication within their respective industries. Concrete Washout Systems values its relationships and the relationships built from our association with various industry leaders.

INTELLECTUAL PROPERTY

INTELLECTUAL PROPERTY AND PATENT PROTECTION RIGHTS



United States
Patent Application Publication
Jenkins
Pub. No.: US 2004/0155126 A1
Pub. Date: Aug. 12, 2004

The Concrete Washout Systems™ and our proprietary "know-how" information is patent pending under the **United States Patent number 2004/0155126-A1**. Concrete Washout Systems™ owns this patent application.

Although we do not yet have a patent, federal statute, 35 U.S.C. Section 154, provides us with certain rights now, including issuing cease and desist letters. If the issued patent is substantially identical to our patent application, we will have the right to obtain a reasonable royalty from anyone who makes, uses, offers for sale or sells an invention as claimed in our application, with actual knowledge of our published patent application.

We are very serious about protecting our intellectual property rights and will aggressively pursue any person or company whom we believe is violating our intellectual property rights.

WORKING WITH LOOK-a-LIKE or COPYCATs

If there are no Concrete Washout Systems licensed partners in an area where the look-a-like or copycat party is operating, we will entertain bringing the party aboard as a licensee. We understand that even the look-a-like or copycat party may have a substantial investment into their own operations and are willing to discuss and explore a business relationship.

If however there is a current licensee in the area the look-a-like or copycat party is operating in, we strongly recommend they immediately cease operations and will not be allowed to operate in the same area as a licensed partner. We may however, offer them a different area if available. If a look-a-like or copycat party chooses not to cease operations, we will aggressively pursue any and all legal avenues in order to protect our intellectual property rights.

Prior to being a licensed partner, look-a-like or copycat parties must still meet all the requirements of a licensee.

To more fully understand what is covered in our patent application and what constitutes a look-a-like or copycat product, please download and view our patent application.

WHAT PEOPLE ARE SAYING

HOMEBUILDERS

"SWPPP (Storm Water Pollution Prevention Plans) problems are gone and our streets are clean. We are extremely happy with the Concrete Washout Bin."
Tom King, Northern California Superintendent - Sundt Corporation

"The Concrete Washout Bin virtually eliminated our concerns over SWPPP (Storm Water Pollution Prevention Plans) violations relating to concrete washout."
Mike Shultz, Superintendent - Beazer Homes

"The service has been great!"
Craig Garrison, Project Superintendent - JR Roberts Corp.

"Concrete Washout Systems approach is a great idea!"
Roger Stanton, VP Purchasing - Beazer Homes

"The Concrete Washout Bin is great! It's a one-call service. The old hay bale washout pits that we had were a big hassle to deal with. Now I don't have to worry. No more headaches over clean up and no more SWPPP concerns. Your service is great and makes my life much easier."
George Cosgrove, Superintendent - Frontier Homes

CONTRACTORS

"Your service is fantastic! The bins reduce SWPPP concerns and are a very good BMP measure to employ. We don't have any more headaches because of clean up and it has reduced our costs as well."
Pawell Salamonik, Superintendent - AG Spanos

"Your Concrete Washout System is excellent! I don't have anymore SWPPP concerns thanks to your company. It not only keeps my jobsite cleaner, but has reduced costs associated with clean up as well. I will definitely use Concrete Washout Systems on all of my jobsites."
Laverne Brant, Superintendent - LS Construction (Les Schwab)

"Working with Concrete Washout Systems allows us to be more environmentally conscious, provides better containment of our washout material and keeps our jobsites free of the mess generated by washing down cementitious equipment. They were able to drop a concrete washout box on site, which allowed not only our ready mix concrete trucks to washout, but allowed our concrete and stucco workers to wash down all their tools. We have limited room to work with on all our jobsites so space is a precious commodity that we can't afford to give up. Concrete Washout Systems provided a service that not only helped us manage workspace better but also assisted us in doing our part in protecting the environment from illegal discharges from construction sites. We will certainly be calling on them to assist us on future projects."
Alan Luxmore, On-site Project Manager for ABC Extreme Makeover: Home Edition

CONCRETE COMPANIES

"From a suppliers standpoint, the Concrete Washout Bin is the answer to a terrible problem that has plagued this industry for a long time. When we send our trucks out to a high volume jobsite, we don't worry. They are fantastic and can handle three trucks washing out simultaneously. We currently have a washout system on board our trucks but we prefer to use the bins as they are much quicker, easier and contain more of the washout. Your system is great and we love it!"
Mike Regan, Sales Representative - Concrete Inc.

"We had a huge problem in the past. Most jobsites that we went on didn't have any place for our pump trucks to washout, so we had to send them out of town to designated washout areas. This caused a lot of problems because of the time, wear and tear on the trucks and not to mention our drivers who would have to chip out their hoppers. This amounted to a lot of lost money. Now that we have two Concrete Washout Bins in our yard, we don't have to worry about trying to find places to washout. The ramps that the bins have give us enough room so our pump trucks can washout out their hoppers. The bins and service are fantastic. We only wish they were on all the jobsites."
Anna Brocchini - Dupzyk Pumping

GOVERNMENT AND ENGINEERING OFFICIALS

"Concrete Washout Bins work and follow the SWPPP guidelines."
Richard Hodnett, SWPPP Field Inspector - Sacramento County

"The Concrete Washout Bin provides builders, developers and contractors a better alternative to hay bales and plastic. One of our concerns is to make sure construction sites and companies follow BMPs (Best Management Practices) and adhere to SWPPP (Storm Water Pollution Prevention Plans). Your service and product are great BMP measures for companies to use and I like the system you have in place."
David Kreisher, SWPPP Field Inspector - City of Elk Grove

"The CWS system solves one of the construction industries greatest compliance problems of concrete washout entering streets and storm drains. Not only does it solve a major compliance issue, but it also creates a much needed recycled product for the construction industry. As a consultant, we look for practices that are good for business and good for the environment. The CWS system meets both criteria."
Johnny Combs. P.E. R.E.M. CPSWQ, Founder and CEO of Paradigm Engineering

Concrete Washout Systems has attracted the attention of national and local homebuilders as well as residential, commercial and concrete contractors. Concrete Washout Systems client list continues to grow daily as more companies become aware of our valuable services.

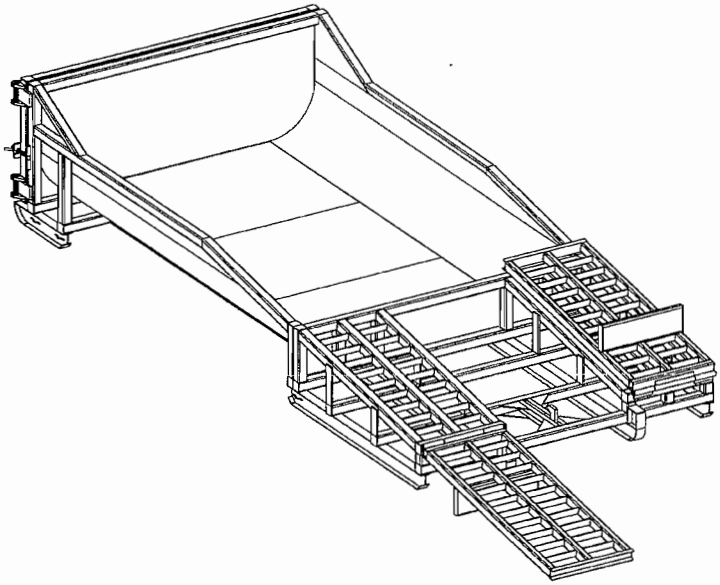
Beazer Homes
DR Horton
Centex
KB Homes
Pulte Homes
Granite Construction
Teichert Construction
Richmond American
Lennar Homes
Shea Homes
Elliot Homes
Brookfield Homes
MBK Homes
William Lyons Homes
Granite Homes
Van Dale Homes
FCI Constructors
Swinerton
Largo Concrete
John Laing Homes

K.Hovanian
ABC Extreme Makeover: Home Edition
World of Concrete
Urata & Sons
Rudolph Sletten
Overaa Construction
Sundt Corporation
Panattoni
Riverdale Homes
Ascent Builders
Tutor Saliba
Bloom Construction
Woodside Homes
Pacific Concrete
San Jose Const.
Jaeger Construction
Thunder Mountain
Tilton Pacific

Total Site Maint.
Morrison Homes
Tim Lewis Communities
JTS Homes
Forecast Homes
Sinclair Concrete
AG Spanos
Frontiers Homes
LS Construction
Dupzyk Pumping
JR Roberts
USA Properties
Bredian Homes
Cemo Construction
Picerne Construction
Whiting Turner
Clark & Sullivan
Forum Consultants
Goodwin Const.

Hurley Construction
SD Deacon
Sierra View Co.
Benco Contracting
CC Meyers
American River Con.
Cimorelli Const.
Moorefield Const.
Pacific Concrete
Valley Commercial
Griffin Industries
Blazona Construction
Martin Brothers Con.
Sisler & Sisler
Treasure Homes
Buzz Oats
DSS Engineering

PORTABLE CONCRETE WASHOUT CONTAINER



CONCRETE WASHOUT SYSTEMS

PO Box 2604
Carmichael, CA. 95609
Phone: 1.877.292.7468
Fax: 1.916.244.0403
info@concretewashout.com
www.concretewashout.com
Patent Pending

DESCRIPTION
A portable, self-contained and watertight container affixed with ramps that controls, captures and contains caustic concrete wastewater and washout material.

PURPOSE & OBJECTIVE
Allows trade personnel to easily washout concrete trucks, pumps and other equipment associated with cement on site and allows easy off site recycling of the same concrete materials and wastewater.

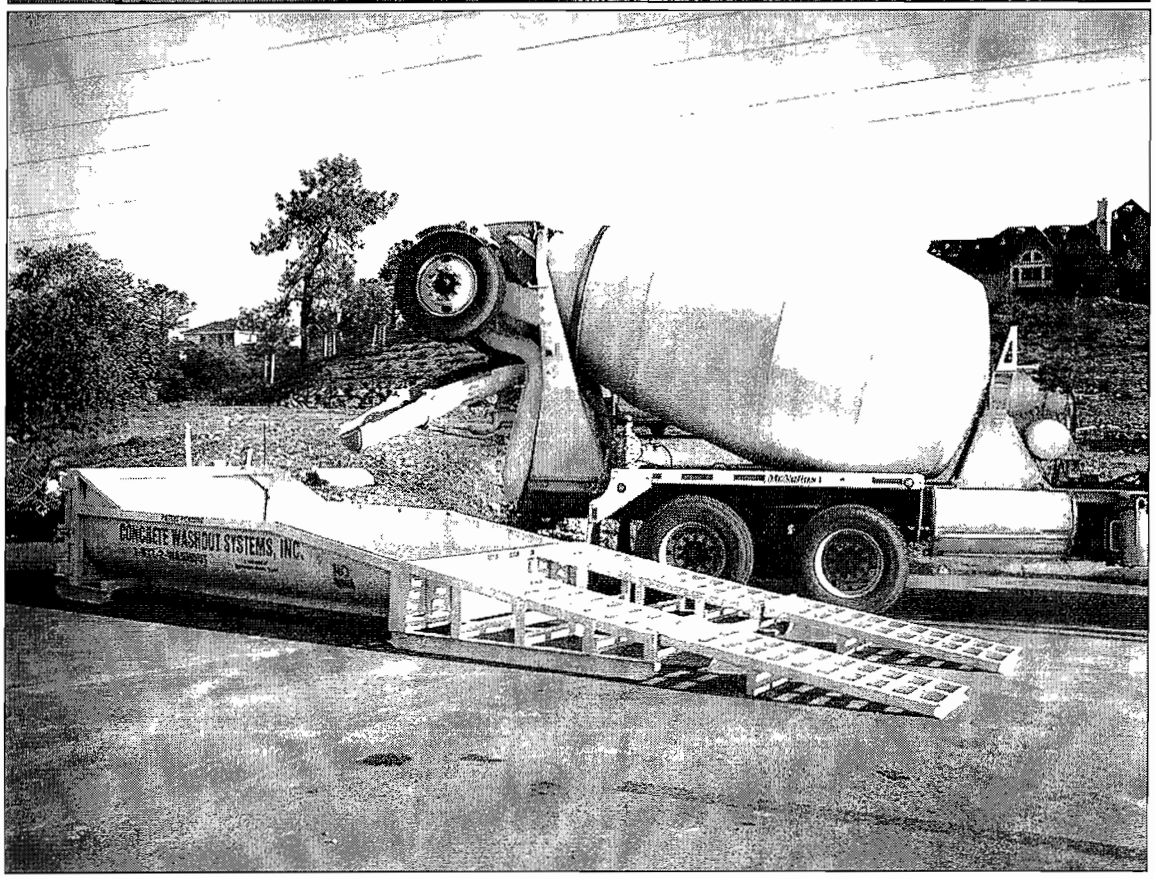
APPLICATION
Construction projects where concrete, stucco, mortar, grout and cement are used as a construction material or where cementitious wastewater is created.

MAINTENANCE
Inspect and clean out when ¾ full, not allowing the container to overflow.
Inspect wastewater level and request a vacuum if needed.
Inspect subcontractors to ensure that proper housekeeping measures are employed when washing out equipment.

SPECIFICATIONS
The container must be portable and temporary, watertight, equipped with ramps and have a holding capacity to accept washout from approximately 350 yards of poured concrete. A vacuum service must accompany washout container and be used by site superintendent as needed. A rampless container may be used in conjunction with a ramped container or by itself if a concrete pump is not needed. The washwater must be disposed of or treated and recycled in an evironmentally safe maanner and in accordance with federal, state or local regulatory guidelines.

TARGETED POLLUTANTS
Caustic wastewater (high pH level near 12 units)
Suspended solids
Assorted Metals; Chromium VI, Nickel, Sulfate, Potassium, Magnesium and Calcium Compounds


PATENT PENDING
CONCRETE WASHOUT SYSTEMS, INC.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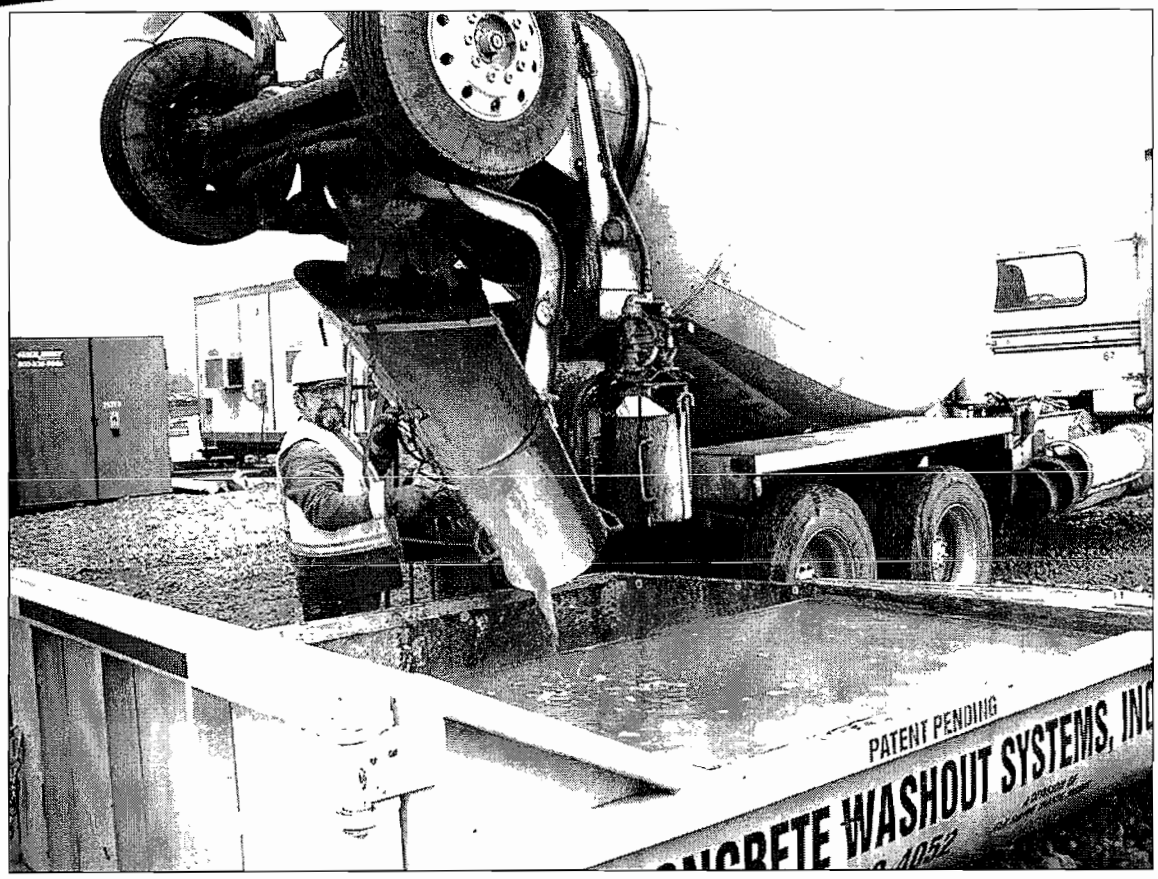
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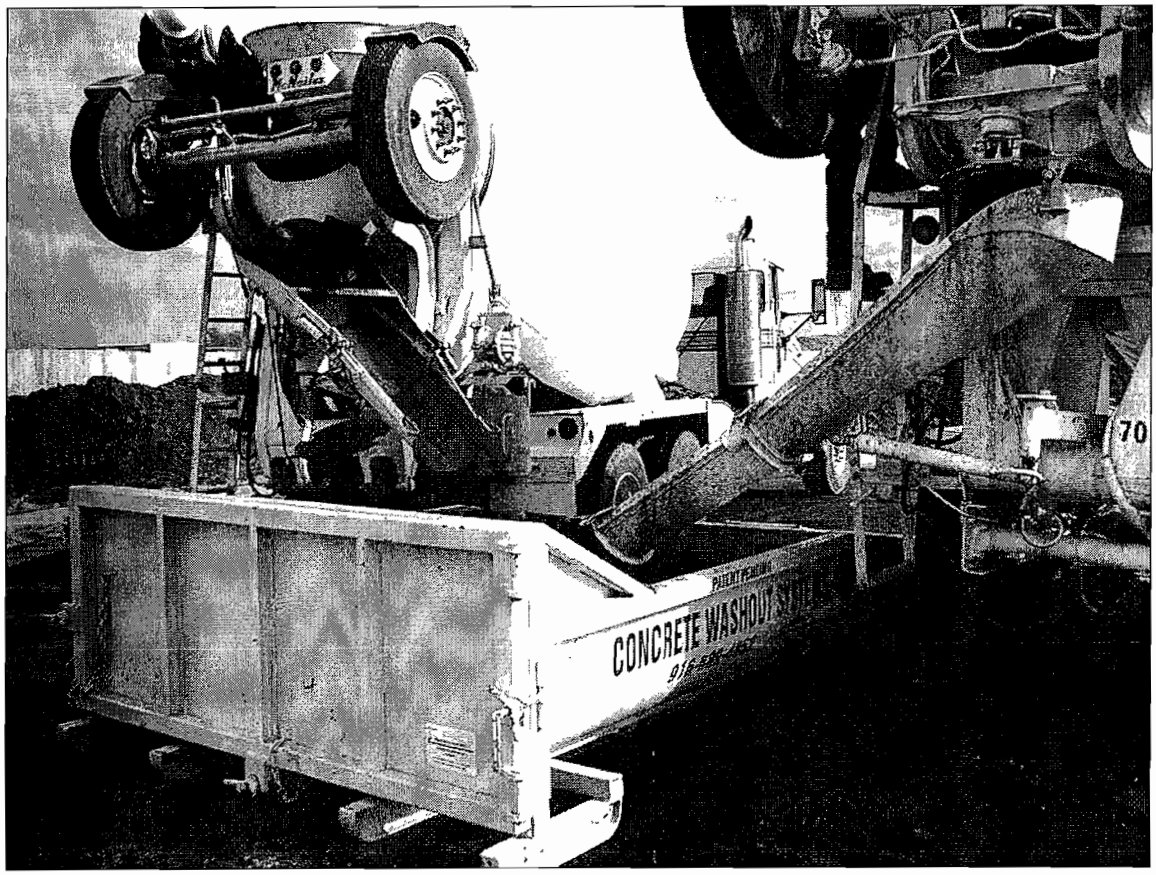
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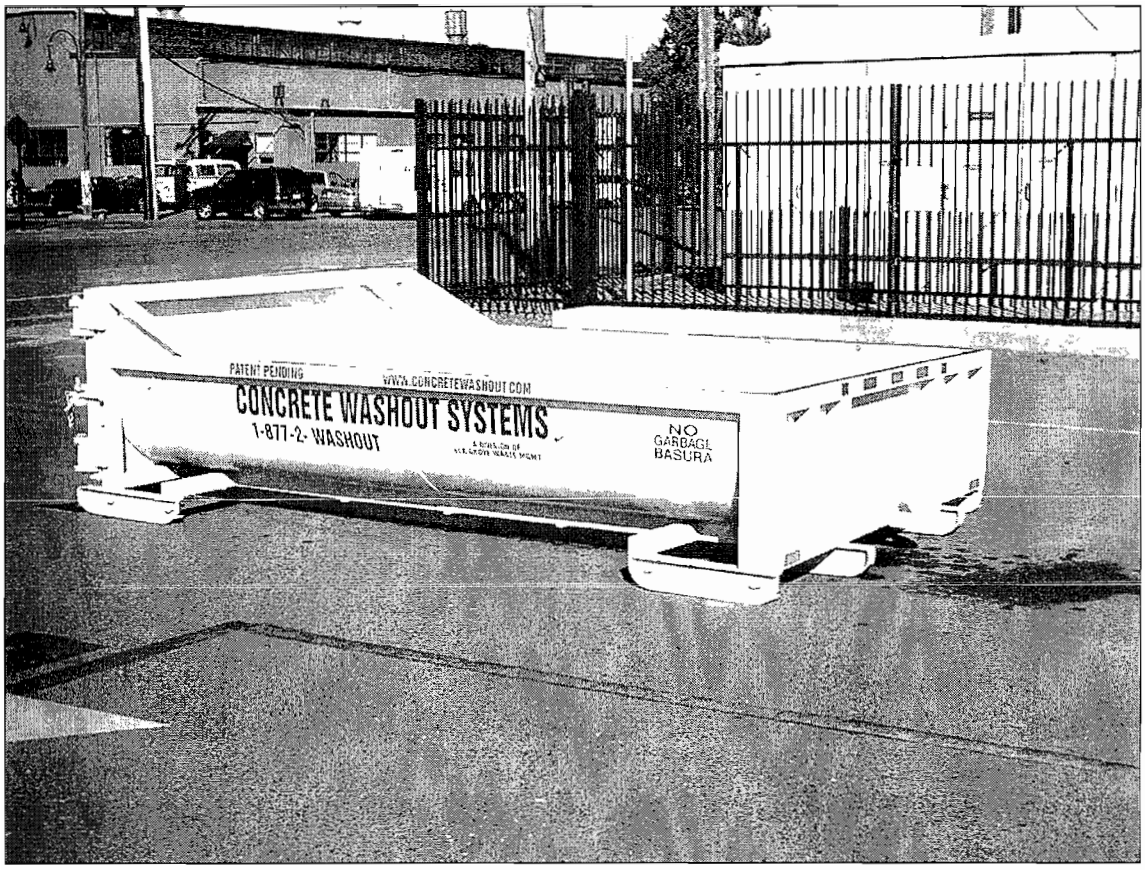
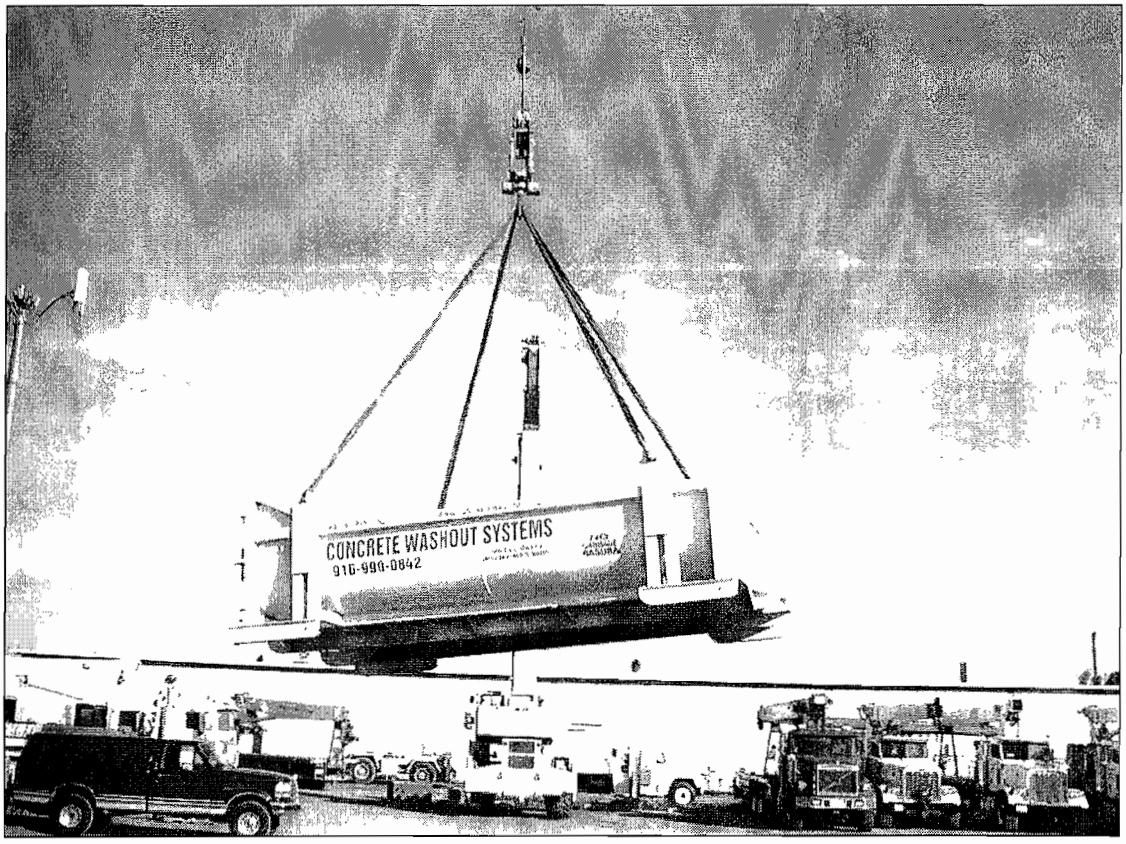
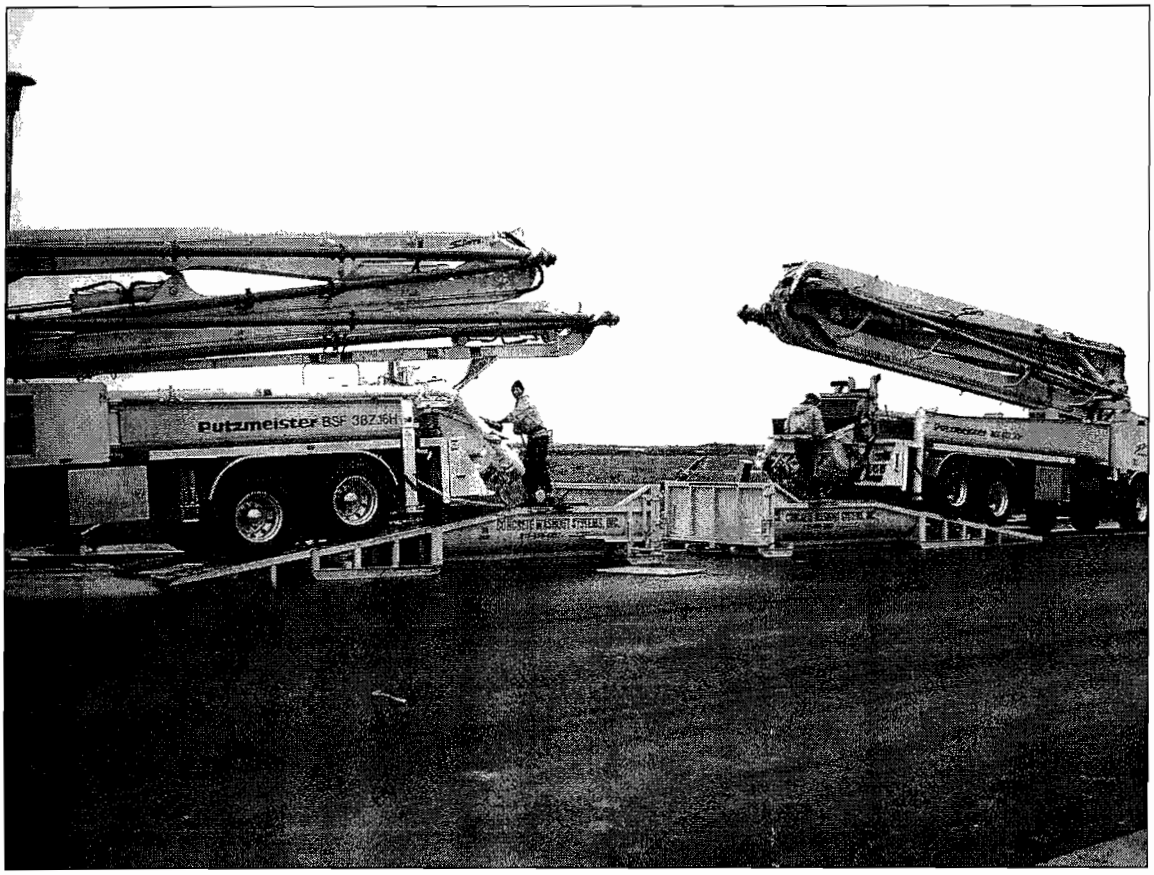
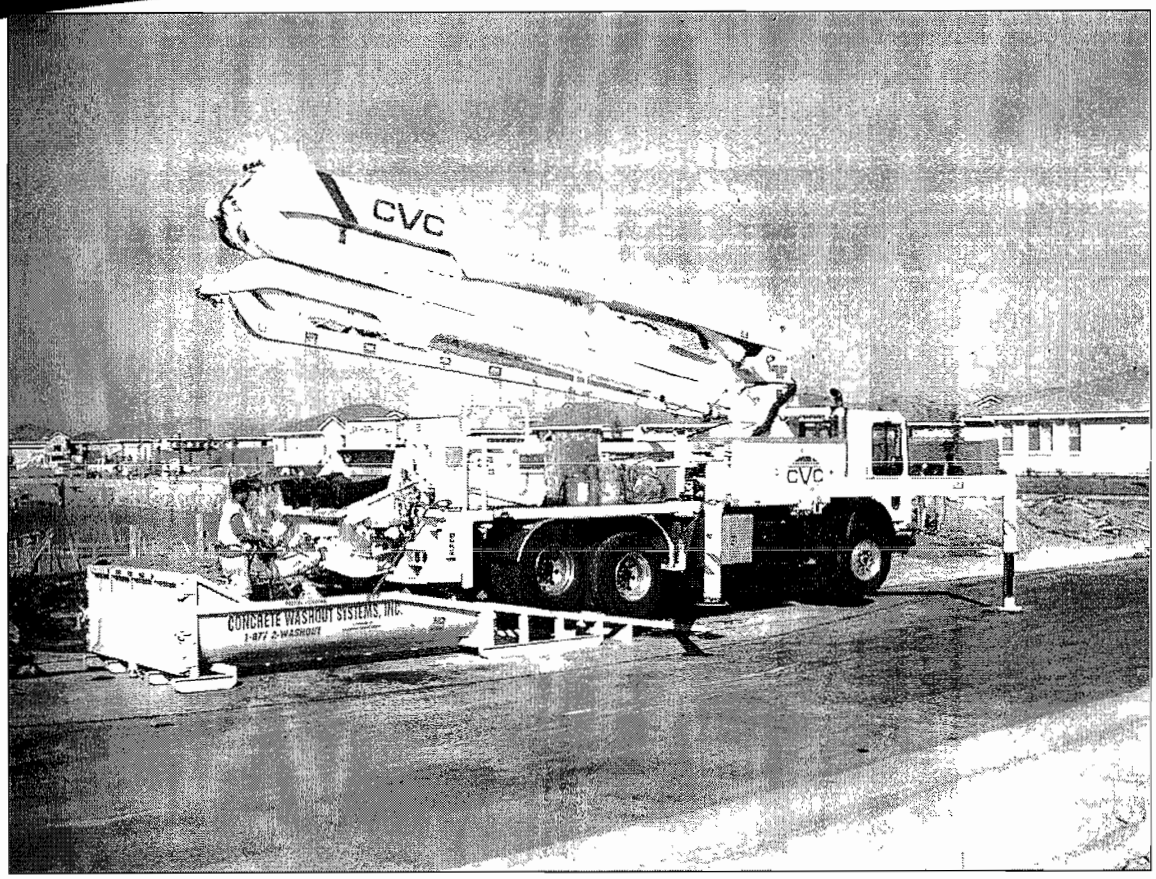

PATENT PENDING
WWW.CONCRETEWASHOUT.COM
CONCRETE WASHOUT SYSTEMS
1-877-2-WASHOUT
NO GARBAGE BASURA

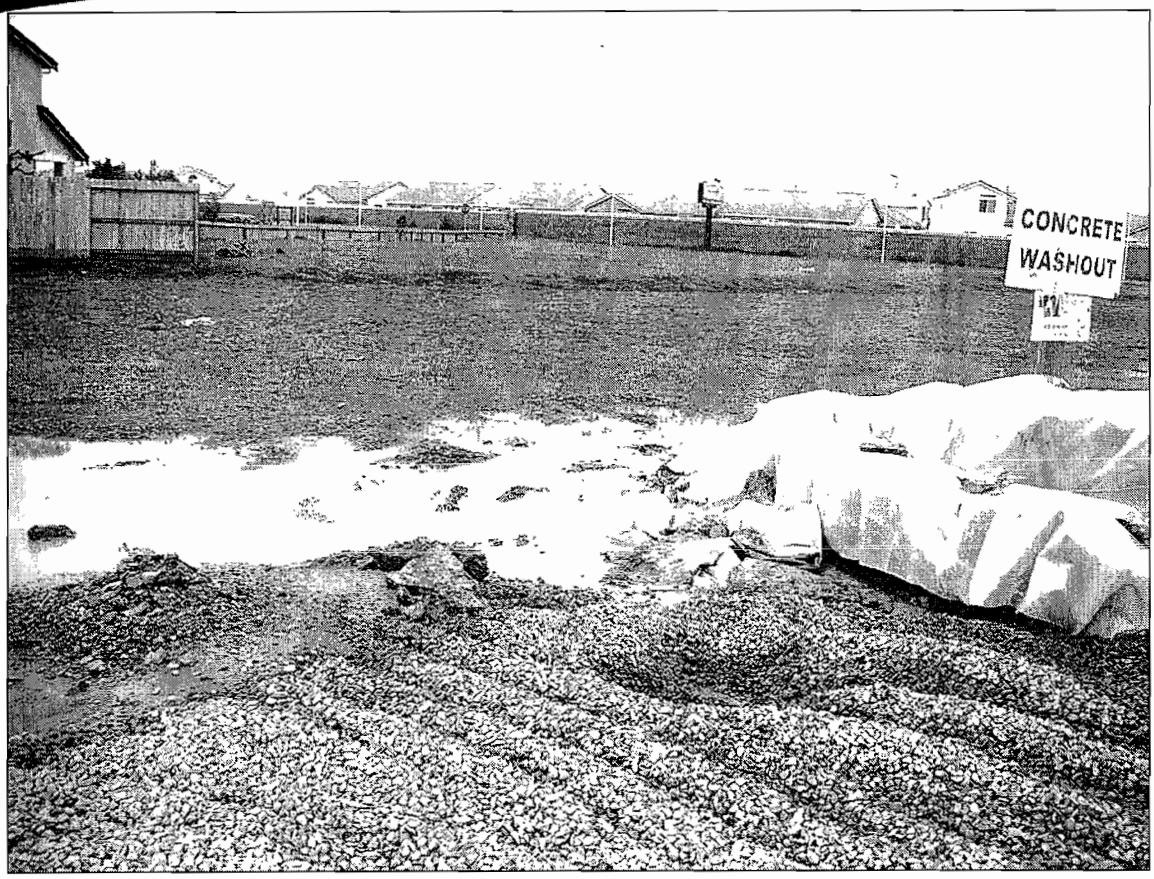

CONCRETE WASHOUT SYSTEMS
916-999-0842

PHOTOS: Concrete Pumps

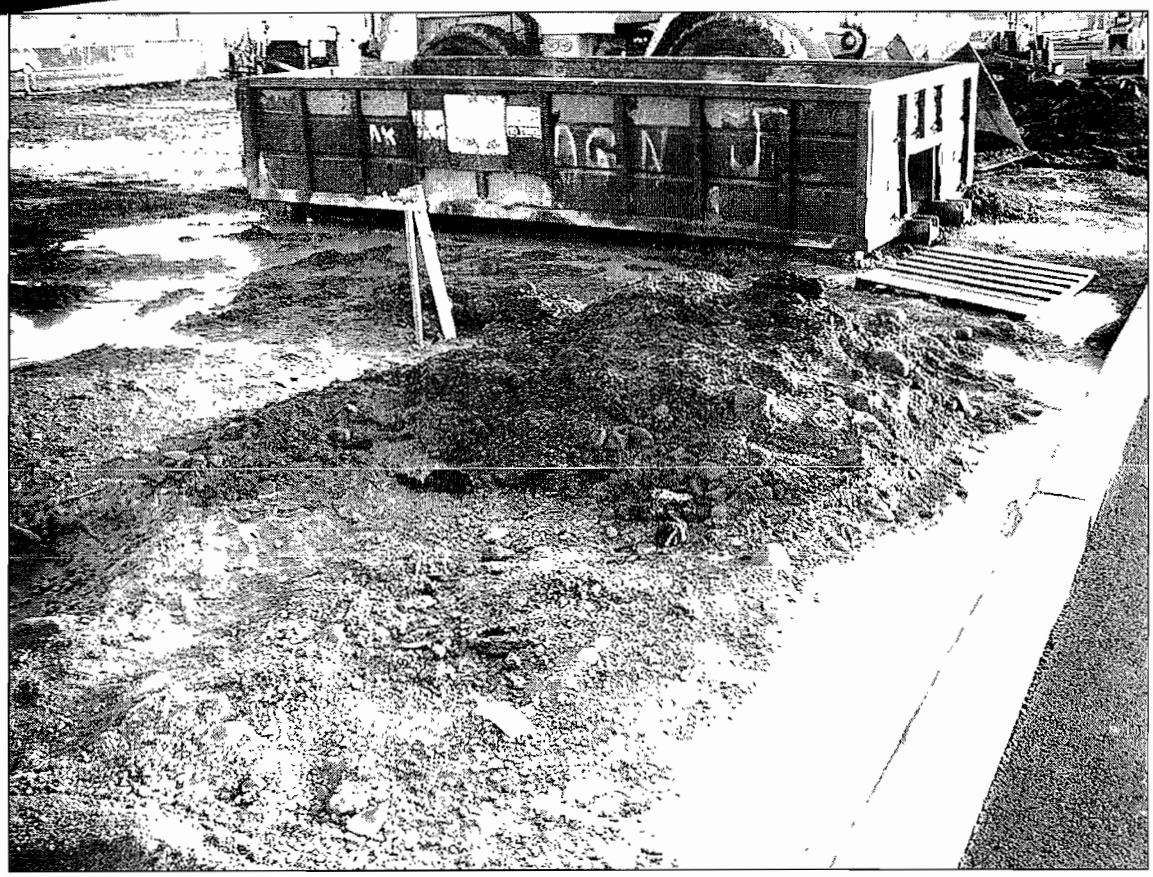


PHOTOS: Concrete Pumps




CONCRETE
WASHOUT


CONCRETE
WASHOUT
AREA



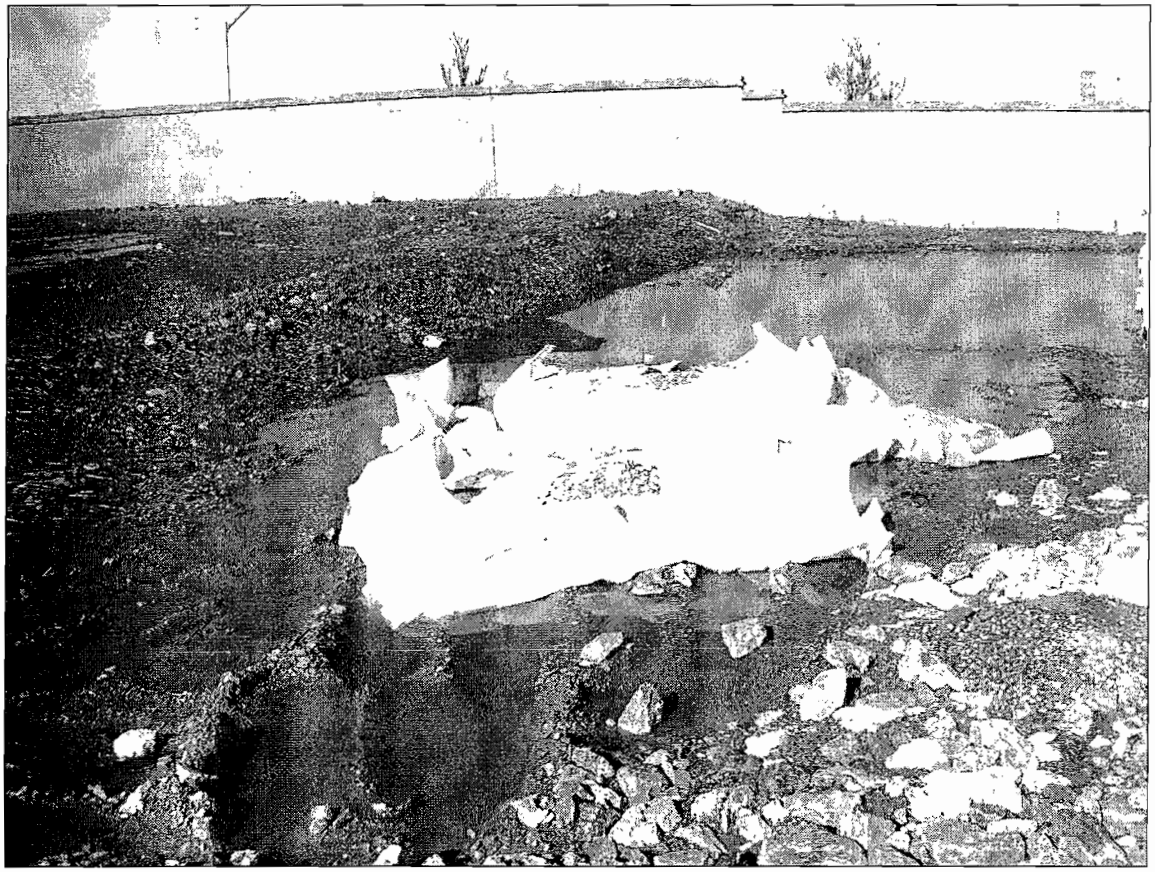


EXHIBIT B

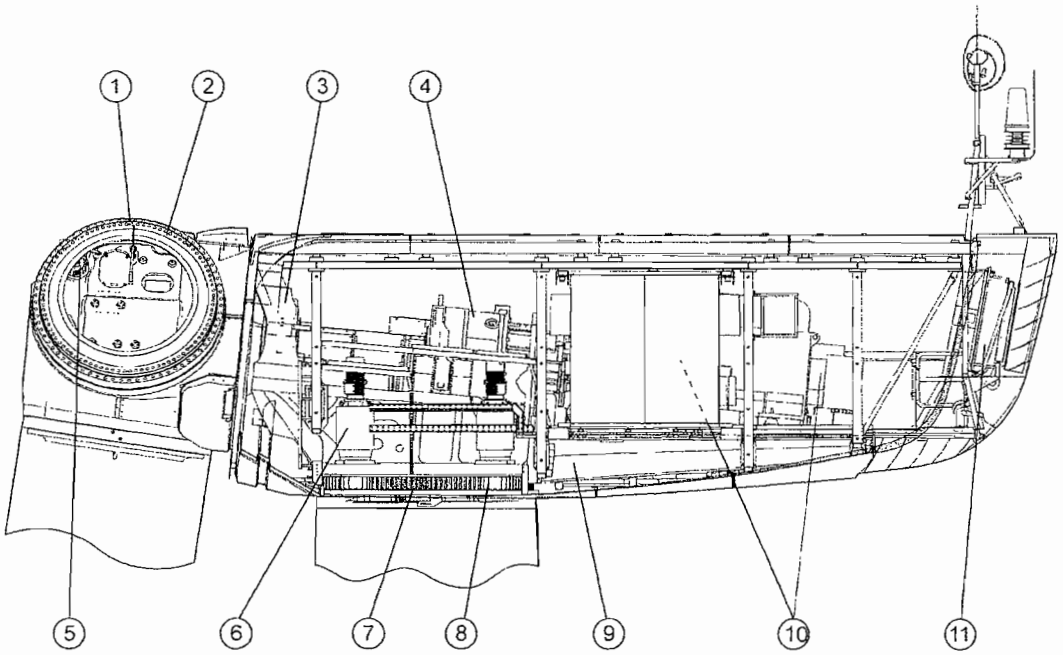
Lubricants, coolants, transformer oil and measures against accident-related leakage

Nordex N80/2500, N90/2500, N100/2500
Version gamma

This document is a translation from German. In case of doubt, the German text shall prevail.
Document published in electronic form. Signed original at Central Engineering/ENS.

Locations where lubricants are applied

Lubricants are used in the following assemblies in the wind turbine:



	Component	Description	Oil/grease type	Volume	WDC	HSC
	Pitch bearings					
1	- raceway	Mobil SHC Grease 460WT	Grease	3 x 4.9 kg	2	-*
2	- tooth system	Ceplattyn BL	Grease	approx. 0.5 kg	1	-
3	Rotor bearing	Mobil SHC Grease 460WT	Grease	approx. 30 kg	2	-
	Gearbox incl. cooling circuit	Mobilgear XMP 320	Mineral oil		1	
4	- Eickhoff	For CCV		455 l		-
	- Winergy	Optigear Synthetic A320	Mineral oil	475 l	2	
	- Bosch-Rexroth	Mobilgear SHC XMP 320	Synthetic oil	550 l	1	
5	Pitch gearboxes	Mobil SHC 629	Synthetic oil	3 x 11 l	1	-
6	Yaw gearbox	Mobil SHC 629	Synthetic oil	4 x 18 l	1	-
	Yaw bearing					-
7	- Bearing	Mobil SHC Grease 460WT	Grease	3.8 kg	2	
8	- Tooth system	Ceplattyn BL	Grease	approx. 0.5 kg	1	-
9	Hydraulic system	Shell Tellus Artic 32	Mineral oil	approx. 25 l	1	-
10	Generator bearing	Klueberplex BEM 41-132	Grease	approx. 9.4 kg	1	-
11	Cooling systems	Varidos FSK 45 Varidos FSK 50 for CCV	Cooling liquid**	approx. 170 l	1	Xn
12	Transformer	Nytro 10 GBN	Transformer oil	1035 kg	1	-

WDC: water danger classification

HSC: hazardous substance classification

Xn: harmful to health

* EU-marking not necessary

** see below

*** only applicable to oil transformers; if provided by Nordex

For all lubricants safety data sheets are available according to guidline 91/155/EWG.

Design measures against oil and grease leakage

1. Pitch gearboxes
   The pitch gearboxes are placed within the hub and rotate at rotor speed. A double sealing system prevents the oil from emerging. In case of an accident the oil remains within the hub and will not emerge from the hub opening because of the shape and inclination of the hub.

2. Pitch bearings
   The raceways of the pitch bearings are lubricated with grease. The sealing system prevents the grease from emerging. If there is too much grease in the bearings it emerges inside the hub and remain there.
   The tooth system is lubricated with non-drip adhesive lubricant.
   In case of an accident the grease remains within the hub and will not emerge from the ub opening because of the shape and inclination of the hub.

3. Rotor bearing
   From the labyrinth seals of the rotor bearing grease regularly emerges during operation. The grease runs directly into two grease pans (approx. 10 or 25 l) where it is removed during maintenance.

4. Gearbox
   The gearbox has non-abrasive, non-wearing sealing systems at its input and output shaft. In case of an accident the oil is collected in an oil pan underneath the gearbox. Oil which might emerge from the cooling system is collected in the oil pan of the main frame.

5. Generator bearings
   The generator bearings are lubricated with grease and have a highly effective sealing system. If the sealing system fails the grease remains within the nacelle and is removed during maintenance in a professional manner.

6. Hydraulic unit
   An oil pan is located underneath the hydraulic unit to collect the oil emerging in case of an accident.

7. Yaw gearboxes (yaw motors)
   The yaw gearboxes have a highly effective sealing system which prevents oil from emerging. In case of damage to the sealing system, the oil remains within the nacelle.

8. Yaw bearing
   The raceways of the bearing are lubricated with grease. The sealing system prevents the oil from emerging. If there is too much grease in the bearings the grease emerges to the outside tooth system.
   The tooth system is lubricated with non-drip adhesive grease.
   Underneath the outside toothing any emerging grease is diverted into the nacelle housing where it can then be removed.

9. Tower
   The top tower platform is designed like an oil pan. The capacity of this platform is at least 630 litres.

10. Transformer (if delivered by Nordex)
    External transformer: The transformer is located outside of the turbine in a separate transformer substation. The transformer oil is normally not changed during its entire lifetime. In case of an accident the oil remains in an oil pan made of oil-impervious concrete under the transformer. A certificate of oil-impervious concrete can be ordered from Nordex.
    Transformer in the tower: The transformer is located on the tower foundation inside the turbine. It is placed in a defined area separated by a steel mesh. An air-cooled transformer is used which operates without oil.

Coolants

The cooling system of the turbine requires approx. 120 l of liquid coolant. The converter cooling needs additionally approx. 50 l. It is a mixture of 45 parts Varidos and 55 parts water. In the case of the CCV version, Varidos FSK 50 is used.

Maintenance

All drip trays are inspected in regular intervals during maintenance and emptied if necessary.

Gearbox oil change

In the turbine there is no storage of lubricants. Oil is not refilled. During scheduled maintenance an oil sample is taken and analysed in a laboratory. Depending on the result of the analysis, an oil change is only made, if required. How long before an oil change is required depends on the gearbox vendor.

Disposal

The proper disposal of all used oils and greases is according to country's laws and regulations.

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBIL SHC GREASE 460 WT**
Product Description: Synthetic Base Stocks and Additives
Product Code: 2015A0209710, 643932-00, 97AS52
Intended Use: Grease

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Under normal conditions of intended use, this material is not expected to be an inhalation hazard.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Sulfur oxides, Aldehydes, Oxides of carbon, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >204C (400F) [EST. FOR OIL, ASTM D-92 (COC)]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Scrape up spilled material with shovels into a suitable container for recycle or disposal.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other

shipping. Skim from surface.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is not a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly affect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS
See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION
Physical State: Solid
Form: Semi-fluid
Color: Red
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION
Relative Density (at 15 C): 0.9
Flash Point [Method]: >204C (400F) [EST. FOR OIL, ASTM D-92 (COC)]
Flammable Limits (Approximate volume % in air): LEL: N/D UEL: N/D
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): N/D
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): N/A
Solubility in Water: Negligible
Viscosity: 460 cSt (460 mm2/sec) at 40 C | >16 cSt (16 mm2/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION
Freezing Point: N/D
Melting Point: N/D

NOTE: Most physical properties above are for the oil component in the material.

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity: No end point data.	Not determined.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Not determined.
Ingestion	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

CHRONIC/OTHER EFFECTS

Contains:

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC 3 = IARC 1 5 = IARC 2B

2 = NTP SUS 4 = IARC 2A 6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) · Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: EINECS, TSCA
Special Cases:

Inventory	Status
IECSC	Restrictions Apply

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Revision Changes:
Section 01: Product Code was modified.
Section 13: Empty Container Warning was modified.
Section 08: Hand Protection was modified.
Section 15: List Citation Table - Header was modified.
Section 06: Notification Procedures was modified.
Section 15: Special Cases - Header was added.
Section 15: Special Cases Table was added.
Section 15: Inventory - Header was added.
Section 15: Status - Header was added.
Section 15: TSCA Class 2 Statement was deleted.

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Internal Use Only
MHC: 0, 0, 0, 0, 0, 0 PPEC: A

DGN: 7079855XUS (1012605)

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Name of product

CEPLATTYN BL

Manufacturer/distributor

Fuchs Lubritech GmbH
Hans-Reiner-Straße 7-13, D-67685 Weilerbach/ Germany
Postbox POBox 51, D-67683 Weilerbach/ Germany
Phone +49 (0) 6374 / 924-5, Fax + 49 (0) 6374 / 924-940

E-Mail info@fuchs-lubritech.de
Internet www.fuchs-lubritech.com

Advice

Product Safety Management
Phone +49 (0) 6374 / 924-608
Fax +49 (0) 6374 / 924-939

Emergency advice

EMERGENCY TELEPHONE NO.

Recommended intended purpose(s)
see Product information

800-255-3924

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization
aluminium complex grease with solid lubricants

Additional advice
No hazardous material resp. below level of consideration according to RL 67/548 EWG

3. HAZARDS IDENTIFICATION

Special hazards information for humans and environment
none at appropriate handling and storage

4. FIRST AID MEASURES

General information
Remove contaminated soaked clothing immediately, do not leave to dry

In case of inhalation
Ensure of fresh air.
Remove from danger zone
In the event of symptoms refer for medical treatment.
(may be relevant for vapours of superheated product)

In case of skin contact
In case of contact with skin wash off with soap and water.
Don't use organic solvents
Consult a doctor if skin irritation persists.

In case of eye contact
In case of contact with eyes rinse with plenty of water carefully. In the event of persisten: symptoms seek medical treatment.

In case of ingestion
Do not induce vomitting.
Call for a doctor immediately.

Physician's information / possible symptoms
No symptoms known so far.

Physician's information / possible dangers
Aspiration hazard when vomiting after swallow up

Treatment (Advice to doctor)
Treat symptoms.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Foam
Dry fire-extinguishing substance
Carbon dioxide
sand

Extinguishing media which must not be used for safety reasons
water

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases
Fire gas of organic material has to be classed invariably as harmful when being inhaled.

Special protective equipment for fire-fighters
In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation by edging out of air oxygen
Wear suitable personal protective equipment for fire extinguishing measures.

Additional information
Apply foam in large quantities because some of it is destroyed by the product.
Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective clothing.
Avoid contact with skin and eyes
High risk of slipping due to leakage/spillage of product.

Environmental precautions
Collect contaminated water / firefighting water separately.
Do not discharge into the drains/surface waters/groundwater.
Do not discharge into the subsoil/soil.

Methods for cleaning up
Take up residues with absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).
After taking up the material dispose according to regulation.
Take up mechanically and send for disposal.

Additional information
Informations for disposal see chapter 13.

7. HANDLING AND STORAGE

Advice on safe handling
Avoid formation of oil dust.
Take the usual precautions when handling with chemicals.

Advice on protection against fire and explosion
The product is combustible.
Pay attention to general rules of internal fire prevention.

Requirements for storage rooms and vessels
Prevent penetration into the ground.

Advice on storage compatibility
Do not store together with oxidising and self-inflammable materials.

Further information on storage conditions
Keep container tightly closed, store at cool and aired place, open and handle carefully
Protect from heat and direct solar radiation.
Store in a dry place.

Storage group 10/11

Fire class B

Information on storage stability
Refer to product information paper.

Recommendation(s) for intended use
see Product information

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional advice on system design
Care for good room ventilation, exhaust system at workshop place if necessary

Additional advice
This product as such does not contain any relevant ingredients with to be observed limited values
As basis for this information served the valid references.

Respiratory protection
not necessary in general

Hand protection
Wear gloves of PVC at prolonged or intensive skin contact

Eye protection
safety goggles

Skin protection
Usual working clothes for chemical industries

General protective measures
Avoid contact with eyes and skin
Do not inhale gases/vapours/aerosols.

Hygiene measures
Cloths contaminated with product should not be kept in trouser pockets.
Follow general rules of industrial hygiene for safe handling of chemical products
At work do not eat, drink and smoke.
Remove soaked clothing immediately.
Wash hands before breaks and after work.
Use barrier skin cream.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Colour	Odour
pasty	black	like mineral oil

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
pH value in delivery state					not applicable
drop point	260 °C			DIN/ISO 2176	
Flash point					not applicable
Combustion temperature	> 300 °C				
Autoignition					unknown
Density	0,9 - 0,95 g/cm3	20 °C			
Solubility in water					more or less insoluble
Partition coefficient (log pOW)					not determined
Viscosity 1 consistency					NLGI 2

Oxidizing properties
no

Explosive properties
no

10. STABILITY AND REACTIVITY

Conditions to avoid
Heating, unshielded flame, ignition source, electrostatic charge

Materials to avoid
Reactions with oxidising agents

Hazardous decomposition products
thermal decomposition:
Nitrous oxides (NOx)
Sulphurous oxides (SOx)

Thermal decomposition

Remark No decomposition if suitable use.

Additional information
All grease components show a very low level of reactivity at room temperature

11. TOXICOLOGICAL INFORMATION

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LD 50 acute oral				not determined
Irritability skin				frequent and/or persistent contact may cause skin irritation
Irritability eye	no irritating effects known			
Sensitization skin	No sensitizing effect known			

Experiences made from practice
Frequent persistent contact with the skin may cause skin irritation.
no harmful effects at appropriate handling and determined usage

Additional information
No toxical dates available.
The product was classified on the basis of the calculation procedure of the preparation directive (88/379/EEC).

12. ECOLOGICAL INFORMATION

Data on elimination (persistence and degradability)

	Elimination rate	Method of analysis	Method	Validation
Biological degradability				not determined

Mobility and bioaccumulative potential
The product has not been tested. Because of the product's consistency and low solubility in water bioavailability is not likely.
preparation is water insoluble and does not formate emulsion

Ecotoxicological effects

	Value	Species	Method	Validation
Fish				not determined

Behaviour in sewage plant
Product gets duly not into waste water before it is not treated according to the local regulations.
The viscous consistency of the product can cause trouble in transport lines and purification plants.

General regulation
Ecological dates are not available.
Do not discharge product unmonitored into the environment.
Product is not allowed to discharge into aquatic environment, drains or sewage treatment plants.

13. DISPOSAL CONSIDERATIONS

Waste code No.	Name of waste
12 01 12*	spent waxes and fats

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste

Recommendations for the product
Standardized regulations for residual waste disposal within the EG member states do not exist.
German statutes are prescribed in the law of "recycling and waste" (KrW/AbfG)
In accordance with regulations for special waste, must be taken to a special waste disposal
The waste disposal has to be proved.
used absorbents of chapter 6: EAK 07 06 10

Recommendations for packaging
Totally emptied packaging may be taken for recycling.
Dispose one-trip container according to local authority prescriptions
EAK 15 01 99 D1: packing material with harmful contamination

Recommended cleansing agent
white spirit

General information
Ultimately responsible for correct classification is the waste producer, as the EWC names different codes for different origins of same waste
Therefore the a.m. recommendation has to be checked in case of need.

14. TRANSPORT INFORMATION

Land and inland navigation transport ADR/RID

Remarks

No hazardous material as defined by the prescriptions.

Marine transport IMDG

Remarks

No hazardous goods as defined by prescriptions

Air transport ICAO/IATA-DGR

Remarks

No hazardous goods as defined by prescriptions

15. REGULATORY INFORMATION

Remarks for classification

The product does not require a hazard warning label in accordance with EC directives/German regulations on dangerous substances.
Although this product does not require a hazard warning label, we recommend that the safety advice should be observed.
Classification happened on the basis of calculation methods of preparation directive (88 / 379 / EEC).

National regulations

Water hazard class	1	Mixture-WGK according to VwVwS (GER) preliminary

VOC standard

VOC content	0 %

16. OTHER INFORMATION

Training advice

Use information in this MSDS

Recommendend uses and restrictions

usage only according to instructions for use and observance of warning notes
National and local regulations concerning chemicals shall be observed.

Further information

The information given in this MSDS is based on the present state of knowledge and is intended to describe our products from the point of view of safety requirements only.
Substantal changes to the former version are marked by "!" on the left margin of the paper
Refer to product information paper.
All the raw materials in this product are listed in TSCA

Sources of key data used

Material Safety Data Sheets of raw materials

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **MOBILGEAR SHC XMP 320**
Product Description: Synthetic Base Stocks and Additives
Product Code: 610535-00, 97F364
Intended Use: Gear oil

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
MSDS Requests	713-613-3661
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
DITRIDECYL ADIPATE	16958-92-2	10 - 20%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity:	0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Oxides of carbon, Incomplete combustion products, Aldehydes

FLAMMABILITY PROPERTIES

Flash Point [Method]: 205C (401F) [ASTM D-93]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify relevant authorities in accordance with all

applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Source	Form	Limit / Standard			Note	Source
DITRIDECYL ADIPATE		TWA	5 mg/m3		N/A	ExxonMobil

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ - ACGIH TLV, 10 mg/m³ - ACGIH STEL, 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions.

Control measures to consider:
No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:
No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:
No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15.6 C): 0.86
Flash Point [Method]: 205C (401F) [ASTM D-93]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): N/D
Solubility in Water: Negligible
Viscosity: 335 cSt (335 mm2/sec) at 40 C | 38.3 cSt (38.3 mm2/sec) at 100C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -32°C (-26°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.

Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS

For the product itself:

Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable

laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrositivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: ENCS, AICS, KECI, TSCA, EINECS, IECSC

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below: None.

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

No revision information is available.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0 PPEC: A

DGN: 2008997XUS (548975)

Material Safety Data Sheet

1. Chemical product and company identification

Product name	OPTIGEAR SYNTHETIC A 320
MSDS#	61832-AE, -AH
Code	61832-AE, -AH
Product use	Lubricant
Manufacturer	Castrol Industrial North America, Inc.
Supplier	Castrol Industrial North America, Inc.
EMERGENCY SPILL INFORMATION:	1 (800) 424-9300 CHEMTREC (USA)

2. Composition/information on ingredients

Ingredient name	CAS #	% by weight	Exposure limits
Residual oils (petroleum), solvent-dewaxed (Highly refined mineral oil)	64742-62-7	1 - 5	**ACGIH (United States).** STEL: 10 mg/m³ 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral **OSHA (United States).** TWA: 5 mg/m³ 8 hour(s) Form: Oil mist, mineral
Phosphorodithioic Acid, O,O-Di-C1-14-Alkyl Esters, Zinc Salts	68649-42-3	1 - 5	None assigned.
Reaction product of ethoxylated Fatty amine and Ammonium compound	Proprietary	1 - 5	None assigned.

3. Hazards identification

Physical state	Liquid.
Color	Clear. Brown. (Dark.)
Emergency overview	WARNING! MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wash thoroughly a handling. Keep container closed. Use with adequate ventilation. In accordance with g industrial hygiene and safety work practices, airborne exposures should be controlled to lowest extent practicable.

Routes of entry	Dermal contact. Eye contact. Inhalation. Ingestion.
Potential Health Effects	
Eyes	May cause eye irritation.
Skin	May cause skin irritation. May cause allergic skin reaction.
Inhalation	May cause respiratory tract irritation.
Ingestion	Ingestion may cause gastrointestinal irritation and diarrhea.
Medical conditions aggravated by overexposure	None identified.

See toxicological Information (section 11)

4. First aid measures

Eye Contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. medical attention if irritation develops.
Skin Contact	Immediately wash exposed skin with soap and water Remove contaminated clothing and sh Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attentic irritation develops.
Inhalation	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is diffi give oxygen. Get medical attention.
Ingestion	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anythin mouth to an unconscious person. Get medical attention if symptoms appear.

5. Fire-fighting measures

Flammability of the product	May be combustible at high temperature.
Flash point	205 °C (Open cup) Cleveland.
Products of combustion	These products are carbon oxides (CO, CO_2), sulfur oxides (SO_2, SO_3...). Some metallic oxide
Unusual fire/explosion hazards	This material is not explosive as defined by established regulatory criteria.
	Non-explosive in presence of open flames, sparks and static discharge, of shocks, of hea oxidizing materials.
Fire fighting media and instructions	In case of fire, use water fog, foam, dry chemicals, or carbon dioxide.
Protective clothing (fire)	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and turnout gear.

6. Accidental release measures

Personal Precautions	Immediately contact emergency personnel. Keep unnecessary personnel away. Use suit protective equipment (See Section: "Exposure controls/personal protection"). Follow all fighting procedures (See Section: "Fire-fighting measures").
Environmental precautions and clean-up methods	If emergency personnel are unavailable, contain spilled material. For small spills absorbent (soil may be used in the absence of other suitable materials) scoop up material place in a sealed, liquid-proof container for disposal. For large spills dike spilled materi otherwise contain material to ensure runoff does not reach a waterway. Place spilled mat in an appropriate container for disposal. Minimize contact of spilled material with soil prevent runoff to surface waterways. See Section 13 for Waste Disposal Information.

Personal protection in case of a large spill	Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not sufficient; consult a specialist BEFORE handling this product.

7. Handling and storage

Handling	Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wash thoroughly a handling. Use only with adequate ventilation. Do not ingest.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area. Empty contair may contain harmful, flammable/combustible or explosive residue or vapors. Do not cut, gr drill, weld, reuse or dispose of containers unless adequate precautions are taken against th hazards.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Residual oils (petroleum), solvent-dewaxed (Highly refined mineral oil)	**ACGIH (United States).** STEL: 10 mg/m³ 15 minute(s). Form: Oil mist, mineral TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral **OSHA (United States).** TWA: 5 mg/m³ 8 hour(s). Form: Oil mist, mineral
Phosphorodithioic Acid, O,O-Di-C1-14-Alkyl Esters, Zinc Salts	None assigned.
Reaction product of ethoxylated Fatty amine and Ammonium compound	None assigned.

Control Measures	Provide exhaust ventilation or other engineering controls to keep the airborne concentration vapors below their respective occupational exposure limits.
Hygiene measures	Wash hands after handling compounds and before eating, smoking, using lavatory, and at end of day

Personal protection

Eyes	Avoid contact with eyes. Safety glasses with side shields.
Skin and Body	Avoid prolonged or repeated contact with skin. Wear suitable protective clothing.
Respiratory	Use only with adequate ventilation.
Hands	Wear suitable gloves.
	Not available.

Consult local authorities for acceptable exposure limits.

9. Physical and chemical properties

Physical state	Liquid.
pH	Not Applicable
Odor	Characteristic.
Color	Clear Brown. (Dark.)
Density	870 kg/m³ (0.87 g/cm³) at 15.6°C
Solubility	insoluble in water.
Viscosity	Kinematic: 320 mm²/s (320 cSt) at 40°C

10. Stability and reactivity

Stability and Reactivity	The product is stable.
Conditions to avoid	None known.
Incompatibility with various substances	Reactive with oxidizing agents, acids, alkalis.
Hazardous Decomposition Products	carbon oxides (CO, CO_2)
Hazardous polymerization	Will not occur

11. Toxicological information

Chronic toxicity

Carcinogenic effects	No component of this product at levels greater than 0.1% is identified as a carcinogen by ACGIH or the International Agency for Research on Cancer (IARC). No component of this product present at levels greater than 0.1% is identified as a carcinogen by the U.S. Nationa Toxicology Program (NTP) or the U.S. Occupational Safety and Health Act (OSHA).
Mutagenic effects	No component of this product at levels greater than 0.1% is classified by established regulat criteria as a mutagen.
Reproductive effects	No component of this product at levels greater than 0.1% is classified by established regulat criteria as a reproductive toxin.
Teratogenic effects	No component of this product at levels greater than 0.1% is classified by established regulat criteria as teratogenic or embryotoxic.

12. Ecological information

Ecotoxicity	No testing has been performed by the manufacturer

13. Disposal considerations

Waste information	Waste must be disposed of in accordance with federal, state and local environmental control regulations.
RCRA Waste Code(s)	USED OIL.

Consult your local or regional authorities.

14. Transport information

Not classified as hazardous for transport (DOT, TDG, IMO/IMDG, IATA/ICAO)

15. Regulatory information

U.S. Federal regulations

US INVENTORY (TSCA): In compliance.

This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: OPTIGEAR SYNTHETIC A 320: Immediate (Acute) Health Hazard

SARA 313

	Product name	CAS number	Concentratio
Form R - Reporting requirements	Phosphorodithioic Acid, O,O-Di-C1-14-Alkyl Esters, Zinc Salts	68649-42-3	1.3598
Supplier notification	Phosphorodithioic Acid, O,O-Di-C1-14-Alkyl Esters, Zinc Salts	68649-42-3	1.3598

CERCLA Sections 102a/103 Hazardous Substances (40 CFR Part 302.4):: This material is not regulated under CERCLA Sections 103 and 107

State regulations

Massachusetts RTK:Highly refined mineral oil (proprietary)
:Phosphorodithioic Acid, O,O-Di-C1-14-Alkyl Esters, Zinc Salts

WARNING: This product contains a chemical known to the State of California to cause cancer
Ethyl acrylate; Arsenic

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.
Lead; Cadmium

Inventories

AUSTRALIAN INVENTORY (AICS): Not listed.

CANADA INVENTORY (DSL): Not listed.

CHINA INVENTORY (IECS): Not determined.

EC INVENTORY (EINECS/ELINCS): In compliance.

JAPAN INVENTORY (ENCS): Not listed.

KOREA INVENTORY (ECL): Not listed

PHILIPPINE INVENTORY (PICCS): Not listed.

16. Other information

Label Requirements

WARNING!

MAY CAUSE EYE IRRITATION.
MAY CAUSE SKIN IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
MAY CAUSE ALLERGIC SKIN REACTION.

HMIS® Rating :

Health	2
Flammability	1
Physical Hazard	0
Personal protection	B

National Fire Protection Association (U.S.A.)

Other special considerations	PETROLEUM OIL: STEL = 10 mg/M3. Using terminology of the International Agency for Research on Cancer (IARC), the petroleum distillates listed in Section II are classified by the supplier as severely processed. Not all those listed in Section II may be present. The supplier stated that these distillates do not require a carcinogen label as defined by OSHA 29CFR 1910.1200. No component known to be present in this product at >0.1% is presently listed as carcinogen by IARC, NTP or OSHA.
History	
Date of issue	12/16/2004.
Date of previous issue	No Previous Validation.
Prepared by	Product Stewardship

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environme information contained in it is accurate as of the date specified below. No warranty or representation, express or implie made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use product other than for the stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the mate from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handlin using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken.

MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL SHC 629
Product Description: Synthetic Base Stocks and Additives
Product Code: 201560500540, 602946-00, 970114
Intended Use: Lubricant

COMPANY IDENTIFICATION

Supplier: **EXXON MOBIL CORPORATION**
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency	609-737-4411
Transportation Emergency Phone	800-424-9300
ExxonMobil Transportation No.	281-834-3296
Product Technical Information	800-662-4525, 800-947-9147
MSDS Internet Address	http://www.exxon.com, http://www.mobil.com

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

No Reportable Hazardous Substance(s) or Complex Substance(s).

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID:	Health:	0	Flammability:	1	Reactivity: 0
HMIS Hazard ID:	Health:	0	Flammability:	1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: >210C (410F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists / aerosols can occur, the following are recommended: 5 mg/m³ – ACGIH TLV, 10 mg/m³ – ACGIH STEL, 5 mg/m³ – OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator

selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State: Liquid
Color: Orange
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 C): 0.864
Flash Point [Method]: >210C (410F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316C (600F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 150 cSt (150 mm2/sec) at 40 C
Oxidizing Properties: See Sections 3, 15, 16.

OTHER INFORMATION
Freezing Point: N/D
Melting Point: N/A
Pour Point: -39°C (-38°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Route of Exposure	Conclusion / Remarks
Inhalation	
Toxicity (Rat): LC50 > 5000 mg/m3	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on test data for structurally similar materials.
Eye	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

CHRONIC/OTHER EFFECTS
Contains:
Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.
Material -- Not expected to demonstrate chronic toxicity to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

SECTION 13 DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14 TRANSPORT INFORMATION

LAND (DOT) : Not Regulated for Land Transport

LAND (TDG) : Not Regulated for Land Transport

SEA (IMDG) : Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA) : Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

NATIONAL CHEMICAL INVENTORY LISTING: IECSC, DSL, EINECS, KECI, TSCA
Special Cases:

Inventory	Status
AICS	Restrictions Apply
PICCS	Restrictions Apply

EPCRA: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The Following Ingredients are Cited on the Lists Below:

Chemical Name	CAS Number	List Citations
PHENOL, 4,4-METHYLENEBIS(2,6-BIS(1,1-DIMETHYLETHYL)-	118-82-1	5

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16 OTHER INFORMATION

N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:
Section 06: Notification Procedures - Header was modified.
Section 08: Hand Protection was modified.
Section 11: Dermal Lethality Test Data was modified.
Section 11: Oral Lethality Test Data was modified.
Section 05: Hazardous Combustion Products was modified.
Section 15: List Citation Table - Header was modified.
Section 16: Code to MHCs was modified.
Section 15: Special Cases Table was modified.
Section 06: Notification Procedures was modified.
Section 01: Company Contact Methods Sorted by Priority was modified.
Section 15: Chemical Name - Header was added.
Section 15: CAS Number - Header was added.
Section 15: List Citations - Header was added.
Section 15: List Citations Table was added.
Section 16: Standard phrases for California Proposition 65 was deleted.

Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0 PPEC: A

DGN: 2007961XUS (1013314)

Shell Canada Limited
Material Safety Data Sheet

Effective Date: 2009-04-22
Supersedes: 2008-05-28

Class D2A Reproductive Toxicity

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: **TELLUS* ARCTIC 32**
SYNONYMS: HYDRAULIC OIL
PRODUCT USE: Hydraulic Fluid
PRODUCT CODE: **407-170**

SUPPLIER
Shell Canada Limited (SCL)
P.O. Box 100, Station M
400-4th Ave. S.W.
Calgary, AB Canada
T2P 2H5

TELEPHONE NUMBERS

Shell Emergency Number	1-800-661-7378
CANUTEC 24 HOUR EMERGENCY NUMBER	1-613-996-6666
For general information:	1-800-661-1600
	www.shell.ca

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.
*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled
Isopropylated Phenol Phosphate		0.1 - 1.0	Yes

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Liquid Amber colour Hydrocarbon Odour

Routes of Exposure: Exposure will most likely occur through skin contact or from inhalation of mechanically or thermally generated oil mists.

Hazards:

This product is not expected to be irritating and has a low level of toxicity under normal use.
May be a reproductive hazard.
Inhalation of oil mist or vapours from hot oil may cause irritation of the upper respiratory tract.

Handling: Minimize skin contact.

Wash thoroughly after handling.

For further information on health effects, see Section 11.

4. FIRST AID MEASURES

Eyes: Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

Skin: Wipe excess from skin. Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention. If material is injected under the skin, get medical attention promptly to prevent serious damage; do not wait for symptoms to develop.

Ingestion: Not normally required; obtain medical attention if large amounts have been ingested. Do not induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

Inhalation: Remove victim from further exposure. Additional first aid treatment is not ordinarily required.

Notes to Physician: In general, lubricating oils have low oral toxicity. High pressure injection under the skin may have serious consequences and may require urgent treatment.

5. FIRE FIGHTING MEASURES

Extinguishing Media: Dry Chemical
Carbon Dioxide
Foam
Water Fog

Firefighting Instructions: Material will not burn unless preheated. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Use water to cool fire exposed containers. Water may be used to flush spills away from exposure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

Hazardous Combustion Products: Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

6. ACCIDENTAL RELEASE MEASURES

Eliminate all ignition sources. Isolate hazard area and restrict access. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Spilled material is slippery. Dike and contain land spills; contain spills to water by booming. For large spills remove by mechanical means and place in containers. Adsorb residue or small spills with adsorbent material and remove to non-leaking containers for disposal. Notify appropriate environmental agency(ies). After area has been cleaned up to the satisfaction of regulatory authorities, flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations.

7. HANDLING AND STORAGE

Handling: Avoid excessive heat, formation of oil mist, breathing of vapours and mist of hot oil and

prolonged or repeated contact with skin. Launder contaminated clothing prior to reuse. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities.

Storage: Store in a cool, dry, well ventilated area, away from heat and ignition sources.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

The following, while appropriate for this product, is general in nature. The selection of personal protective equipment will vary depending on the conditions of use.

OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):
Oil mist (mineral): 5 mg/m3 (STEL: 10 mg/m3)

Mechanical Ventilation: Not normally required. Local ventilation is recommended if oil mist is present or if exposure limit is exceeded. Make up air should always be supplied to balance air exhausted (either generally or locally).

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: No special eye protection is routinely necessary. Wear safety glasses as appropriate.

Skin Protection: Impervious gloves (viton, nitrile, PVC, neoprene) should be worn at all times when handling this product.

Respiratory Protection: Not normally required under intended conditions of use. If airborne concentration is high (e.g. when product is heated), use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges in combination with a P95 particulate filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Amber colour
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	-60 °C
Boiling Point:	> 280 °C
Density:	886 kg/m3 @ 15 °C
pH:	Not applicable
Flash Point:	COC > 100 °C
Lower Flammable Limit:	Not available
Upper Flammable Limit:	Not available
Auto-ignition Temperature:	> 320 °C
Viscosity:	33.6 cSt @ 40 °C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{OW}):	Not available
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No

Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	No
Incompatible Materials:	Avoid strong oxidizing agents.
Conditions of Reactivity:	Avoid excessive heat, formation of vapours or mists.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
Isopropylated Phenol Phosphate	

Routes of Exposure:	Exposure will most likely occur through skin contact or from inhalation of mechanically or thermally generated oil mists.
Formulation:	No data is specifically available for this product and therefore this toxicological information is based on data available for the ingredients.
Irritancy:	This product is not a primary skin irritant after exposure of short duration, is not a skin sensitizer and is not irritating to the eyes.
Acute Toxicity:	This product is not expected to be irritating and has a low level of toxicity under normal use.
Chronic Effects:	Prolonged or repeated contact may cause various forms of dermatitis including folliculitis and oil acne. Long term intensive exposure to oil mist may cause benign lung fibrosis.
Reproductive Toxicity:	Animal studies indicate that ingestion of a component of this product may have adverse effects on reproduction.

12. ECOLOGICAL INFORMATION

Environmental Effects:	The immediate effect of a release is the physical impairment of the environment from the coating of surfaces, resulting in the disruption of oxygen, water and light to flora and fauna. Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. Product is expected to be slightly toxic to aquatic organisms (LL/EL50 in the range of 10 to 100 mg/L)
Biodegradability:	Not readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site.

14. TRANSPORT INFORMATION

Canadian Road and Rail Shipping Classification:
This product is not regulated under the Canadian Transportation of Dangerous Goods Regulations for transport by road and rail.

15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Class:	Class D2A Reproductive Toxicity
DSL/NDSL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.
Other Regulatory Status:	The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

16. OTHER INFORMATION

LABEL STATEMENTS

Hazard Statement :	May be a reproductive hazard.
Handling Statement:	Minimize skin contact. Wash thoroughly after handling.
First Aid Statement :	Wash contaminated skin with soap and water.
Revisions:	This MSDS has been reviewed and updated. Changes have been made to: Section 1 Section 2 Section 3 Section 8 Section 9 Section 11 Section 15

Safety Data Sheet
according to 1907/2006/EC, Article 31

Printing date 21.01.2008 Revision: 21.01.2008

* 1 Identification of the substance/preparation and of the company/undertaking

· **Product details**

· **Trade name: Klüberplex BEM 41-132**

· **Article number:** 020256
· **Application of the substance / the preparation** Grease

· **Manufacturer/Supplier:**
KLÜBER LUBRICATION MÜNCHEN KG
Geisenhausenerstrasse 7
D-81379 München
Tel.: 0049 (0) 897876-0
Fax: 0049 (0) 897876-333

· **Further information obtainable from:**
Material Compliance Management
E-Mail: mcm@klueber.com

· **Information in case of emergency:** 0049 (0) 89 7876 700 (24 hrs)

2 Hazards identification

· **Hazard description:** Not applicable.
· **Information concerning particular hazards for human and environment:**
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
· **Classification system:**
The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

* 3 Composition/information on ingredients

· **Chemical characterization**
· **Description:**
mineral oil
Synthetic hydrocarbon oil
special lithium soap

· **Dangerous components:**

CAS: 597-82-0 EINECS: 209-909-9	O,O,O-Triphenylthiophosphate	R 53	≤ 2.5%
CAS: 68411-46-1 EINECS: 270-128-1	Dioctyldiphenylamine	R 52/53	≤ 2.5%

· **Additional information:** For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
After skin contact:
Wash off with soap and plenty of water.
If skin irritation continues, consult a doctor
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

(Contd. on page 2)

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Trade name: Klüberplex BEM 41-132

(Contd. of page 1)

· **After swallowing:** If symptoms persist consult doctor.

5 Fire-fighting measures

· **Suitable extinguishing agents:**
Water haze
Foam
Fire-extinguishing powder
Carbon dioxide
For safety reasons unsuitable extinguishing agents: Water with full jet
· **Special hazards caused by the substance, its products of combustion or resulting gases:**
In case of fire, the following can be released:
Carbon monoxide (CO)
Hydrocarbons
· **Protective equipment:**
Do not inhale explosion gases or combustion gases.
Standard procedure for chemical fires.
· **Additional information**
Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

6 Accidental release measures

· **Person-related safety precautions:** Not required.
· **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
· **Measures for cleaning/collecting:**
Pick up mechanically.
Dispose of the material collected according to regulations.

7 Handling and storage

· **Handling:**
Information for safe handling: No special measures required.
Information about fire - and explosion protection: No special measures required.

· **Storage:**
Requirements to be met by storerooms and receptacles:
Store in cool, dry conditions in well sealed receptacles.
· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizing agents.
· **Further information about storage conditions:** None.

8 Exposure controls/personal protection

· **Additional information about design of technical facilities:** No further data; see item 7

Ingredients with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
Additional information: The lists valid during the making were used as basis.

· **Personal protective equipment:**
General protective and hygienic measures:
Immediately remove all soiled and contaminated clothing
Avoid close or long term contact with the skin.
Be sure to clean skin thoroughly after work and before breaks.

(Contd. on page 3)

Safety Data Sheet
according to 1907/2006/EC, Article 31

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Trade name: Klüberplex BEM 41-132

(Contd. of page 2)

· **Respiratory protection:** Not required.
· **Protection of hands:** Preventive skin protection by use of skin-protecting agents is recommended.
· **Eye protection:** Not required.

9 Physical and chemical properties

· **General Information**

Form:	Pasty
Colour:	Yellow
Odour:	Product specific
· **Change in condition**	
Drip point:	> 240°C (DIN ISO 2176)
Flash point:	not applicable
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Density at 20°C:**	~ 0.9 g/cm³
· **Solubility in / Miscibility with water:**	Insoluble.
· **Organic solvents:**	0.5 %

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **Materials to be avoided:** oxidizing agents
· **Dangerous reactions** No dangerous reactions known.
· **Dangerous decomposition products:** none under normal use

11 Toxicological information

· **Additional toxicological information:**
Prolonged skin contact may cause skin irritation and/or dermatitis.

12 Ecological information

· **Ecotoxical effects:**
· **Behaviour in sewage processing plants:** The product can be mechanically separated.
General notes: Do not allow product to reach ground water, water course or sewage system.

13 Disposal considerations

Product:
· **Recommendation** Can be incinerated in accordance with local and national regulations.
Waste disposal key:
For this product no waste disposal key according the European Waste Catalogue (EWC) can be determined, as only the purpose of application defined by the user enables an allocation. The waste code number has to be determined in accordance with the local waste disposer.

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Trade name: Klüberplex BEM 41-132

(Contd. of page 3)

· **Uncleaned packaging:**
· **Recommendation:**
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.

14 Transport information

· **Land transport ADR/RID (cross-border)**
· **ADR/RID class:** -

· **Maritime transport IMDG:**
· **IMDG Class:** -

· **Air transport ICAO-TI and IATA-DGR:**
· **ICAO/IATA Class:** -

· **Transport/Additional information:**
Not classified as dangerous according to the above specifications.

15 Regulatory information

· **Labelling according to EU guidelines:**
The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EU" as issued in the latest valid version.

· **Special labelling of certain preparations:**
Safety data sheet available for professional user on request.

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant R-phrases
52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
53 May cause long-term adverse effects in the aquatic environment.

· **Department issuing MSDS:** Material Compliance Management
· **Contact:** +49(0)897876-1564
*** Data compared to the previous version altered.**

NALCO

MATERIAL SAFETY DATA SHEET

PRODUCT

VARIDOS FSK45

EMERGENCY TELEPHONE NUMBER(S)

See section 16, for Emergency Telephone Numbers.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : **VARIDOS FSK45**

APPLICATION : ANTIFREEZE

COMPANY IDENTIFICATION : NALCO EUROPE B.V.
Postbus 627
2300 AP Leiden, The Netherlands

EMERGENCY TELEPHONE NUMBER(S) : See section 16, for Emergency Telephone Numbers.

Date issued : 30.06.2005
Version Number : 1.2

COMPANY CONTACT TELEPHONE NUMBERS.

NALCO EUROPE B.V.	+31 71 5241 100		
NALCO AB (SE)	+46 (0)8-50074000	NALCO ITALIANA S.R.L.(I)	+39 06-542971
NALCO ANADOLU KIMYA (TR)	+90 216 5743464	NALCO Kft. (HU)	+36 (0)1 471 91 81
NALCO APPLIED SERVICES OF EUROPE BV	+31 (0)73 6456980	NALCO LIMITED	+44 (0)1606 74488
NALCO BELGIUM N.V./S.A. (B)	+32 (0)3-450 69 10	NALCO NETHERLANDS B V.	+31 (0)13-5952200
NALCO DANMARK A/S	+45-48195800	NALCO NORGE AS (NO)	+47 51 96 36 00
NALCO DEUTSCHLAND GmbH (D)	+49 (0)69-79340	NALCO ÖSTERREICH Ges.m.b.H. (A)	+ 43(0)1 27026350
NALCO ESPAÑOLA S.A. (E)	+34 93-4095555	NALCO POLSKA Sp.z.o.o. (PL)	+48 (0)32-3262750
NALCO FINLAND OY (FI)	+358 (0)9 2517 4700	NALCO PORTUGUESA LDA. (P)	+351 214130996
NALCO FRANCE SAS	+33 (0)3 20 11 70 00	WYSS WASSERTECHNIK AG (CH)	+41 (0)52 235 38 38

2. COMPOSITION/INFORMATION ON INGREDIENTS

This product is classified as dangerous in accordance with the Preparations Directive 1999/45/EC.

Hazardous Substance(s)	EINECS / ELINCS NO	SYMBOL	R-PHRASES / NOTAS	% (w/w)
Ethylene Glycol	203-473-3	Xn	R22	30 - 60

Refer to Section 16 for descriptions of relevant risk phrases and Notas.

3. HAZARDS IDENTIFICATION

HAZARD CLASSIFICATION :

This product is classified as dangerous in accordance with the Preparations Directive 1999/45/EC.

Harmful if swallowed.

HUMAN HEALTH HAZARDS - ACUTE :

INHALATION :
Not a likely route of exposure. No adverse effects expected.

SKIN CONTACT :
May cause irritation with prolonged contact.

EYE CONTACT :
May cause irritation with prolonged contact.

INGESTION
Not a likely route of exposure. Harmful if swallowed. Large quantities may cause kidney damage.

HUMAN HEALTH HAZARDS - CHRONIC :
Contains ethylene glycol (EG). Repeated high dose exposure to EG by ingestion (animal studies) has caused kidney damage, brain damage, degeneration of the liver, changes in blood chemistry and circulating blood cells. Prolonged and/or repeated exposures may cause similar effects in humans. Ethylene glycol has been shown to cause developmental and reproductive effects at high dose levels in laboratory animals. The relationship of these results to humans has not been fully established. Prolonged exposure to ethylene glycol may cause central nervous system, kidney and liver effects.

4. FIRST AID MEASURES

INHALATION :
Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

SKIN CONTACT :
Flush affected area with water. If symptoms develop, seek medical advice.

EYE CONTACT :
Flush affected area with water. If symptoms develop, seek medical advice.

INGESTION :
Get medical attention. Do not induce vomiting without medical advice. If conscious, washout mouth and give water to drink.

NOTE TO PHYSICIAN :
Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

5. FIRE FIGHTING MEASURES

FLASH POINT : Not applicable

EXTINGUISHING MEDIA :
This product would not be expected to burn unless all the water is boiled away. The remaining organics may be ignitable. Use extinguishing media appropriate for surrounding fire.

FIRE AND EXPLOSION HAZARD
May evolve oxides of carbon (COx) under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :
In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :
Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Ensure clean-up is conducted by trained personnel only. Do not touch spilled material. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Notify appropriate government, occupational health and safety and environmental authorities.

METHODS FOR CLEANING UP :
SMALL SPILLS: Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. LARGE SPILLS: Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS :
Do not contaminate surface water. Prevent material from entering sewers or waterways. If drains, streams, soil or sewers become contaminated, notify local authority.

7. HANDLING AND STORAGE

HANDLING :
Do not get in eyes, on skin, on clothing. Do not take internally. Use with adequate ventilation. Do not breathe vapors/gases/dust. Keep the containers closed when not in use. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labelled. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection).

STORAGE CONDITIONS :
Store in suitable labelled containers. Store the containers tightly closed.

SUITABLE CONSTRUCTION MATERIAL :
Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

SPECIFIC USE(S) :
ANTIFREEZE

For specific dosages and customized applications please contact your representative.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

Country/Source	Substance(s)	Category.	ppm	mg/m3
AUSTRIA	Ethylene Glycol	MAK	10	26
		Skin*		
		MAK CEIL	20	52
		TWA	20	52
		STEL	40	104

		Skin*		
BELGIUM	Ethylene Glycol (Aerosol.)	Ceiling		101
		STEL		101
DENMARK	Ethylene Glycol	GV	10	26
	Ethylene Glycol (Aerosol.)	GV		10
	Ethylene Glycol	Skin*		
FINLAND	Ethylene Glycol	HTP 8H	20	50
		HTP 15MIN	40	100
		Skin*		
FRANCE	Ethylene Glycol	TWA	20	52
		STEL	40	104
		Skin*		
		VME	20	52
GERMANY	Ethylene Glycol	Skin*		
		MAK	10	26
IRELAND	Ethylene Glycol (Vapour.)	TWA	20	52
	Ethylene Glycol (Particulate.)	TWA		10
	Ethylene Glycol (Vapour)	STEL	40	104
		Skin*		
ITALY	Ethylene Glycol	TWA	20	52
		STEL	40	104
		Skin*		
NETHERLANDS	Ethylene Glycol (Mist.)	MAC TGG		10
	Ethylene Glycol (Vapour.)	MAC TGG	20	52
		MAC-TGG	40	104
		15		
		Skin*		
NORWAY	Ethylene Glycol (Dust)	ADM. NORM		10
	Ethylene Glycol (Vapour.)	Skin*		
	Ethylene Glycol (Dust)	Skin*		
	Ethylene Glycol (Vapour.)	CEIL	25	
SPAIN	Ethylene Glycol	VLA-ED	20	52
		VLA-EC	40	104
		Skin*		
SWEDEN	Ethylene Glycol	NGV	10	25
		KTV	20	50
		Skin*		
SWITZERLAND	Ethylene Glycol	TWA	10	26
		STEL	20	52
		Skin*		
UNITED KINGDOM	Ethylene Glycol (Particulate.)	TWA		10
	Ethylene Glycol (Vapour.)	TWA		52
		STEL		104
	Ethylene Glycol (Particulate)	Skin*		
	Ethylene Glycol (Vapour.)	Skin*		

* A skin notation refers to the potential significant contribution to overall exposure by the cutaneous route, including mucous membranes and the eyes.

MONITORING MEASURES :

A small volume of air is drawn through an absorbant or barrier to trap the substance(s) which can then be desorbed or removed and analyzed as referenced below:

Substance(s)	Method	Analysis	Absorbant

Ethylene Glycol	US NIOSH: 5523	Gas chromatography	XAD-7 / Glass fibre filter OVS tube

ENGINEERING MEASURES :
The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

PERSONAL PROTECTION

GENERAL ADVICE :
The use and choice of personal protection equipment is related to the hazard of the product, the workplace and the way the product is handled. In general, we recommend as a minimum precaution that safety glasses with side-shields and workclothes protecting arms, legs and body be used. In addition any person visiting an area where this product is handled should at least wear safety glasses with side-shields. The applicable European standard can be found in EN 166.

RESPIRATORY PROTECTION :
Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. A suitable filter material depends on the amount and type of chemicals being handled. Consider the use of filter type: P The applicable European standard can be found in EN 141, EN 143 and EN 371. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

HAND PROTECTION :
When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from PVC Gloves should be replaced immediately if signs of degradation are observed. Breakthrough time not determined as preparation, consult PPE manufacturers. The applicable European standard can be found in EN 374.

SKIN PROTECTION :
When handling this product, the use of overalls, a chemical resistant apron and rubber boots is recommended. A full slicker suit is recommended if gross exposure is possible. The applicable European standard can be found in EN 345.

EYE PROTECTION :
When handling this product, the use of splash chemical goggles is recommended. The applicable European standard can be found in EN 166.

HYGIENE RECOMMENDATIONS .
Use good work and personal hygiene practices to avoid exposure. Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Liquid
APPEARANCE	Clear

ODOR	Somewhat sweet
FLASH POINT :	Not applicable
SPECIFIC GRAVITY	1.06 (20.0 °C)
SOLUBILITY IN WATER	Complete
pH (100.0 %)	8.5
POUR POINT	-33.0 °C
BOILING POINT	197.0 °C
VAPOR PRESSURE	0.0 kPa

Note: These physical properties are typical values for this product and are subject to change.

10. STABILITY AND REACTIVITY

STABILITY :
Stable under normal conditions.

HAZARDOUS POLYMERIZATION :
Hazardous polymerization will not occur.

CONDITIONS TO AVOID :
Avoid extremes of temperature.

MATERIALS TO AVOID :
None known

HAZARDOUS DECOMPOSITION PRODUCTS :
Under fire conditions: Oxides of carbon

11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :
This product is not expected to be a sensitizer.

CARCINOGENICITY :
None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

For additional information on the hazard of the preparation, please consult section 3 and 12.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

No toxicity studies have been conducted on this product.

MOBILITY :
The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM , provided by the US EPA. The model assumes a steady state condition between the total

input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
<5%	30 - 50%	50 - 70%

The portion in water is expected to be soluble or dispersible.

PERSISTENCY AND DEGRADATION :

The organic portion of this preparation is expected to be readily biodegradable.

BIOACCUMULATION POTENTIAL
This preparation or material is not expected to bioaccumulate.

13. DISPOSAL CONSIDERATIONS

If this preparation becomes a waste, the final user must define and assign the appropriate European Waste Catalogue code. Use only authorized contractors. Ensure compliance with EC, national and local regulations.

Dispose of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all applicable regulations. Do not dispose of wastes in local sewer or with normal garbage. This product is ashless and can be burned directly in appropriate equipment. This product is NOT suitable for disposal via municipal sewers, drains, natural streams or rivers.

Empty drums should be taken for recycling, recovery, or disposal through a suitably qualified or licensed contractor.

EUROPE WASTE CODE :
16 03 03* - OFF SPECIFICATION BATCHES AND UNUSED PRODUCTS - Inorganic wastes containing dangerous substances. If this product is used in any further processes, the final user must redefine and assign the most appropriate European Waste Catalogue Code.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

LAND TRANSPORT
Proper Shipping Name . PRODUCT IS NOT REGULATED DURING TRANSPORTATION

AIR TRANSPORT (ICAO/IATA)
Proper Shipping Name · PRODUCT IS NOT REGULATED DURING TRANSPORTATION

MARINE TRANSPORT (IMDG/IMO)
Proper Shipping Name : PRODUCT IS NOT REGULATED DURING TRANSPORTATION

15. REGULATORY INFORMATION

CLASSIFICATION AND LABELLING :

GOVERNING DIRECTIVE(S): Dangerous Substances Directive 67/548/EEC and Dangerous Preparations Directive 1999/45/EC.

HAZARD SYMBOLS

HARMFUL

Contains:..Ethylene Glycol

RISK PHRASES
R22 - Harmful if swallowed.

SAFETY PHRASES
S24/25 - Avoid contact with skin and eyes.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28 - After contact with skin, wash immediately with plenty of water
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

INTERNATIONAL CHEMICAL CONTROL LAWS

UNITED STATES
For Export Only - one or more of the components of this product are not on the TSCA 8(b) inventory.

CANADA .
This product contains substance(s) which are not listed on the Domestic Substances List (DSL) or the Non-Domestic Substances List (NDSL).

EUROPE
The substance(s) in this preparation are included in or exempted from the EINECS or ELINCS inventories

16. OTHER INFORMATION

RELEVANT RISK PHRASES AND NOTAS
R22 - Harmful if swallowed.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

EMERGENCY TELEPHONE NUMBER(S)

Trans-European	**+32-(0)3-575-5555**
Belgium / Luxembourg	+32-(0)3-575-0330
Czech Republic	+420-602-669421
Denmark	+47-22-33-69-99
Finland	+358-(0)9-4711
France / French Switzerland	+33-(0)6-11-07-32-81
Germany / Austria / German Switzerland	+49-(0)6232-130128
Hungary	+36-30-9-506-447
Italy / Italian Switzerland	+39-333-210-7947
The Netherlands	+32-(0)3-575-0330
Norway	+47-22-33-69-99
Poland	+48-(0)601-66-2626
Portugal	+351-91-911-1399
Russia / Belarus	+7-812-449-0474
Slovak Republic	+421-(0)905-585-938
Spain	+34-977-551577
Sweden	+47-22-33-69-99
UAE	+44-(0)7071-223-738
UK and Republic of Ireland	+44-(0)7071-223-738
Nalfleet International	+32-(0)3-575-5555

POISON CONTROL CENTER TELEPHONE NUMBERS

Belgium	+32-70-245245
Czech Republic	+420 224 91 92 93
France	+33-(0)145-42-59-59 ORFILA
Slovak Republic	+421 (0)2 5477 4166

Prepared By : SHE Department
Date issued : 30.06.2005
Version Number : 1.2

Numbers quoted in the MSDS are given in the format: 1,000,000 = 1 million and 1,000 = 1 thousand

Naphthenics Safety Data Sheet 2004-07-06

SAFETY DATA SHEET

1. Identification of the Substance/Preparation and the Company/Undertaking

Product Name:	Nytro 10GBN
Product Type:	Insulating Oil
Supplier:	Nynas Naphthenics AB P. O. Box 10701 S-121 29 STOCKHOLM Sweden
Telephone No:	+46-8-602 1200 Fax: +46-8-81 62 02
Emergency Phone No:	Please contact your local Nynas sales office for specific information regarding your country.

2. Composition/Information of Ingredients

Chemical Name:	CAS-No.:	EC-No.:	Weight-%	Symbols/Phrases
Hydrotreated Light Naphthenic Distillate	64742-53-6	265-156-6	100	

3. Hazards identification

Classification:	No classification needed according to 67/548/EC and 1999/45/EC.
Human Health:	Inhalation of vapours and/or mists might irritate respiratory tract.
	Prolonged skin contact will cause defatting and possible irritation. Eye contact might cause irritation.
Environment:	Slow biodegradation, the product will remain for long time in the environment. Risk for contamination of earth, soil and water.
Physical and chemical hazard:	At elevated temperatures flammable vapours and decomposition products will be released. Risk for slippery floors if spilled out.

4. First Aid Measures

General advice:	
Inhalation:	If inhalation of mists, fumes or vapours occur causing irritation, move to fresh air. If the symptoms persist, obtain medical advice.
Skin contact:	Remove immediately adhering matter and wash off with soap and plenty of water.
Eye contact:	Rinse with plenty of water.
Ingestion:	Clean mouth with water. Obtain medical advice if a large amount has been swallowed. Do not induce vomiting.

5. Fire-fighting Measures

Suitable extinguishing media:	Extinguish preferably with dry chemical, carbon dioxide (CO_2), or foam. Waterspray / mist may be used.
Extinguishing media which must not be used for safety reasons:	Water jet, unless used by authorised people.(Stain risk caused by combustion).

6. Accidental Release Measures

Personal precautions:	Suitable protection equipment should be used. In case of large spillage, the cleaning procedure should be carried out using suitable protective clothing such as overall, gloves and boots. Remove contaminated clothes as soon as possible. Smaller spillage can be wiped up with paper cloths, using protective gloves.
Environmental precautions:	Prevent spills to enter and spread to drains, sewers, water courses, and soil. Contact local safety authorities.
Methods for cleaning up:	Absorb leaking product with sand, earth or other suitable inert material and collect. Disposal according to section 13.

7. Handling and Storage

Handling:	Handle in accordance with good industrial hygiene and safety practices. If handled at elevated temperatures or with high speed mechanical equipment, vapours or mists might be released and require a well ventilated workplace.
Storage:	Store at ambient temperature or with lowest necessary heating as handling requires.

8. Exposure Controls/Personal Protection

Control parameters:	Exposure via the air and normal handling.
Chemical name:	Mineral oil.
Short term value:	5 mg/m^3. TLV-TWA 8 hours ACGIH (1998).
Engineering measures to reduce exposure:	Mechanical ventilation and local exhaust will reduce exposure via the air. Use oil resistant material in construction of handling equipment. Store under recommended conditions and if heated, temperature control equipment should be used to avoid overheating.

Personal protection equipment:

- Respiratory protection:	If the product is heated under manual handling, use suitable mask with filter A1P2 or A2P2. Handling in automatic production lines, with exhaust or ventilation, will not require mask.
- Hand protection:	Wear oil-resistant protective gloves if there is a risk of repeated skin contact. Suitable gloves are neoprene, nitrile- or acrylnitrilebutadiene rubber, or PVC. Take notice of CEN 420:94, CEN 374:1-3:94 and CEN 388:94.
- Eye protection:	Wear safety goggles / safe shield if splashes may occur.
- Skin and body protection:	Wear protective clothing if there is a risk of skin contact and change them frequently, or when contaminated.
Hygienic measures:	Act in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Form:	Viscous liquid
Colour:	<0.5 , pale light yellow
Odour:	Odourless / light petroleum
Melting point/pour point:	-57°C
Initial boiling point:	>250°C
Density 15°C:	888 kg/m3
Flash point, PM:	146°C
Auto ignition temp.:	>270°C
Solubility in water:	Non soluble
Solubility in organic solvents:	Soluble
Decomposition temp.:	>280°C
Vapour pressure at 100°C:	160 Pascal
DMSO extractible compounds according to IP346:	< 3%
Calculated partition coefficient n-octanol/water, log P_{ow}:	>6
Viscosity at 40°C:	9,0 cSt
pH:	non relevant

10. Stability and Reactivity

Stability:	Stable at normal conditions. Start to decompose at 280°C or higher.
Avoid:	Excessive heating and highly oxidizing agents.
Hazardous decomposition products:	Flammable gases which might also be noxious. With air present, there is a risk for auto ignition at temperatures >270°C.

11. Toxicological Information

Acute toxicity:	Studies available indicate oral and dermal LD_{50} s of >5 000 mg/kg which is considered as low acute toxicity.
Local effects:	
- Inhalation:	Prolonged and repeated inhalation of mist or vapour generated at elevated temperatures may irritate respiratory tract.
- Oral:	May cause nausea and eventually vomiting and diarrhoea.
- Skin contact:	Prolonged or repeated exposure may lead to defatting of the skin and subsequent irritation.
- Eye contact:	May cause redness and transient pain.
- Sensitisation:	Studies indicate no evidence of sensitisation.

12. Ecological Information

Mobility:	Low, due to low water solubility.
Persistence/degradability:	The baseoil is not readily biodegradable. Substances may not meet criteria for ready biodegradability. Studies indicate inherent, primary biodegradation in the range of 20-60 % based on carbondioxide evolution.
Bio-accumulation:	Base oil has Log P_{ow} in the range >3,9->6,0. Log P_{ow} is used for estimating the bioacccumulation in fish. A value >3,0 indicates possible bioaccumulation. The size of the hydrocarbon molecules reduces the risk for bioaccumulation.
Ecotoxicity:	Aquatic toxicity data on base oils indicate LC_{50} values of >1 000 mg/l, which is considered as low toxicity. Chronic toxicity studies shows no long-term hazard to the aquatic environment.

13. Disposal Considerations

Residues of unused product is not regarded as hazardous waste. Residues of products/packageing must not be disposed of in the environment, but taken care of in accordance with local regulations.

Emptying instructions:

Barrels and equals: Turn the barrel upside down and tilt it approximately 10° until nondripping.
Nondripping is less than one drop / minute at 15 °C. The product viscosity depends on temperature, and it is important that the emptying not is done at to low temperature. It can be necessary to scrape out highviscous products.
When the barrel is nondripping send it for recycling. If the residue volume is more than 1% send it for destruction of barrels. Empty barrels with < 1 % residue is not dangerous goods. Notify local regulations.

Bags for one way use/multiple use: Follow instructions given by the bag manufacturer.
The last residues in the bag can be removed by placing the hose over the remaining residues or by lifting the bag so the product can run towards the hose.
Bottom residues; roll up the bag towards the hose to press out the oil
One way bags of polyethylene can be recycled or disposed of by incineration. Notify local regulations.

14. Transport Information

The product is not classified as hazardous goods for land, sea and air transport according to the respective regulations (ADR, IMDG, IATA-DGR).

15. Regulatory Information

Classified according to European directives on classification of hazardous substances and preparations. Not classified as hazardous. No statutory label required.

Listed in TSCA (Toxic Substances Control Act) and EINECS.

16. Other Information

The information for labelling and ecotoxicity is according to Concawe Report No. 95/59, 98/54, 01/53 and 01/54.

Classified according to the Dangerous Substance Directive, 67/548/EC up to the 28th ATP, the Dangerous Preparation Directive 1999/45/EC, and the Safety Data Sheet Directive 2001/58/EC.

Product have DMSO extractible compounds according to IP 346 <3%.

Updated according to DSD, DPD and SDSD as above. Latest update: 2004-07-06

Replacing revision date: 2002-06-30

Changes to previous version:

Other Information

Nota L
The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3 w%w
DMSO extract as measured by IP 346. This Nota applies only to certain complex oil-derived substances in Annex 1.

Nota N
The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it was produced is not a carcinogen. This Nota applies only to certain complex oil-derived substances in Annex 1.

Safety at Work

Valid for all Nordex wind turbines

This document is a translation from German. In case of doubt, the German text shall prevail.
Document published in electronic form. Signed original at Central Engineering/ENS.

Contents

1 Basic principles

Access to the wind turbine is forbidden to unauthorised persons. The tubular tower is locked by a steel door

All work on wind turbines (WT) of Nordex is to be performed exclusively by personnel whose health and physical fitness has been confirmed by the examination of a company physician. Work on the WT must always be performed by at least two employees working together. Before starting work, the WT is to be taken out of operation and secured against restarting by remote access. The start and end of work, encountered problems, accidents, etc. must always be communicated to the central remote monitoring office at the company by telephone.

The general principles of occupational safety (e.g. safety shoes, suitable clothing, use of protective equipment provided by the company, prohibition of smoking and alcohol) are to be observed.

AkSiWe

Since 2001 the Arbeitskreis für Sicherheit in der Windenergie "AkSiWe" (a cross-manufacturer working group) has been offering safety solutions especially for wind turbines. It consists of safety experts of various turbine manufacturers and service providers of this industry. Nordex is a part of this working group.
Further information can be found at www.aksiwe.de.

2 Personal rescue

2.1 Emergency calls

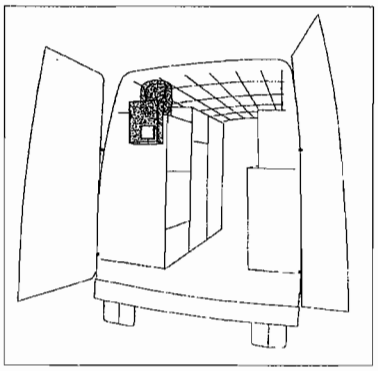
During maintenance work on the wind turbines radio communication is used. Employees carry walkie-talkies and mobile telephones.

In cooperation with other enterprises of the wind energy branch, for Germany a register is compiled (WEA-NIS) with details of the locations, access routes and special features of each individual WT. The WEA-NIS (**W**indenergieanlagen-**N**otfall**i**nformations**s**ystem) is available at www.wea-nis.de. This will represent a reliable source of information for the local fire and rescue services. Additionally, it is recommended to communicate the necessary information to the local fire service (or climbing rescue group) directly before the WT is taken into service.

For this register each turbine is marked unambiguously. With letters 20 cm high on the tower the turbine number of the manufacturer is well visible in direction of the access road, e.g. 'N8137' This number can be looked up at www.wea-nis.de.

2.2 First aid

First aid kits and rescue and abseiling equipment are to be deposited in all service vehicles at a defined location (see figure). The employees of the company are trained to provide first aid and attend regular follow-up courses. Additionally in all nacelles of the S70, S77 first aid kits are located.



Annual training courses on rescue from heights instruct the employees in the handling of the safety harness and lanyards and of the rescue and abseiling equipment, as well as in the special aspects of accidents occurring in a WT (e.g. falls into the safety harness, rescue from the ladder).

2.3 Rescue and escape routes

To ensure a safe footing, all treads are to be provided with non-slipping surfaces.

The first available escape route is the vertical ladder or the ladder well. The door at the tower base is fitted with a lock which can always be opened from the inside without a key.

The second escape option is to descend from the WT by rope. Abseiling equipment is to be found in all service vehicles and in all nacelles. If other equipment is used, then it is guaranteed that the different types are handled and function in the same way. The equipment is also suitable to be able to lift and rescue a person hanging in the safety harness, and subsequently to lower them safely. The equipment is inspected annually.

The employees receive annual theoretical and practical instruction in the use of the abseiling equipment, in rescue from the ladder and in descending from the WT.

For all nacelles without floor hatch: The abseiling equipment may be secured in the nacelle using the transport lugs of the generator, gearbox or rotor bearing. The attachment points are marked in a distinct colour. Persons are to be lowered via the side wall of the nacelle. To this end, there is a rope slide in the nacelle to prevent friction and damage to the rope or side wall.

For all nacelles with floor hatch: The abseiling equipment may be secured in the nacelle using the on-board crane or the transport lug of the generator. Persons are to be lowered via the floor hatch in the stern of the nacelle.

3 Ascent and fall protection

3.1 Ladders and protection against falls

The ladders and the protection against falls are designed in compliance with the following standards:

- BGV D36 BG safety regulations on ladders and treads
- DIN 18799-1 Ladders for construction works - Ladders with two uprights
- DIN 18799-2 Ladders for construction works - Ladders with one upright
- DIN EN 12437-4 Fixed ladders (prEN 12437-4)
- DIN EN 131 Ladders
- DIN EN 1808 Ladder-guided service lift

Personal protective equipment against falls:

- DIN EN 353-1 Guided-type fall arresters including a rigid anchor line
- DIN EN 354 Lanyards
- DIN EN 355 Energy absorbers
- DIN EN 361 Full body harnesses
- DIN EN 362 Connectors
- Workplace safety guidelines ASR

Inside of a tower there is a continuous ladder made of aluminium reaching from the tower base to the platform below the nacelle. A service lift is guided on this ladder. For ascending, usually this service lift is used. In case the service lift is not ready for operation, climb the ladder with your back facing towards the tower centre. A platform is provided beneath each tower section joint. There are furthermore resting platforms every 10 metres.

Bei Türmen mit Außenverschraubungen befindet sich zusätzlich eine Steigleiter an der Außenwand des Turmes. Es wird das gleiche Leiter- und Fallschutzsystem verwendet wie im Inneren des Turmes. Unterhalb der Turmverschraubung befindet sich eine Außenplattform mit Geländer und direkt an der Turmwand ein Sicherungshandlauf. Der Handlauf p zur Sicherung mit dem Y-Seil. Die Außenleiter wird mit einer Leitersperre gegen unbefugten Zutritt gesichert.

Towers with external screw conections are additionally equipped with an external ladder attached to the outside of the tower wall. The same ladder and fall protection system is used as inside the tower. An external platform with a raillling is installed below the tower screw connections. A safety handrail is installed directly on the face of the tower. The handrail is used for attaching the twin-leg lanyard. The external ladder has a ladder guard to secure against unauthorized access.

The following fall protection system is used:

- - Fall arrest rail DIN EN 353-1
  e.g. HACA No. 0529.66, steel, hot-galvanised
- - Safety rope DIN EN 353-1;
  e.g. Latchways No. 00900-15, steel, hot-galvanised
- - 2 fall arrest sliders DIN EN 353-1, detachable
  e.g. Latchways No. 31021-00, high-grade steel
- - 2 fall arresters to DIN EN 353-1, detachable
  e.g. HACA No. 0529.71.02, aluminium/high-grade steel
- - 2 full-body harnesses to EN 361 with abdominal lug (climbing protection), lateral lugs (retainer) and dorsal lug (fall protection)
  e.g. Mittelmann MKA 20 UNI-LM
  e.g. HACA No. 0529.37

- - Friction energy absorber DIN EN 355
  e.g. Latchways No. 85535-00, high-grade steel
- - 2 end stops to DIN EN 353-1 (top and bottom)
  e.g. HACA No. 0529.40.02, bottom, high-grade steel
  e.g. HACA No. 0529.40.03, top, high-grade steel

The manufacturers and type designations of the fall protection system components may differ from the above in individual cases, depending on the supplier of the tower or on national legal provisions.

Certificate from HACA: see document "NALL17_014719_DE"

Certificate from Latchways: see document "NALL01_012561_EN"

3.2 Personal protective equipment

Every employee who carries out work on the WT possesses personal protective equipment provided by the company, comprising:

- Full-body safety harness with abdominal lug on the abdominal belt
- Fall arrester (or slider) with snap hook (for steel rope or rail)
- Lanyard 1.5 m (Y-rope) with energy absorber (strap-type or friction energy absorber)
- Safety helmet with chin strap
- Safety shoes with steel toe protection/cap
- Work clothing
- Protective gloves
- Ear protection (if required)
- Safety glasses (if required)

Employees are obliged to use the personal protective equipment at all times.

The scope of delivery of the WT includes as an option two sets of safety equipment (safety harness, fall arrester, lanyard), which are to be kept in the vicinity of the tower base for use by the operator or rescue teams.

Rules for the use of the fall protection system

The safety equipment consists of the following parts:

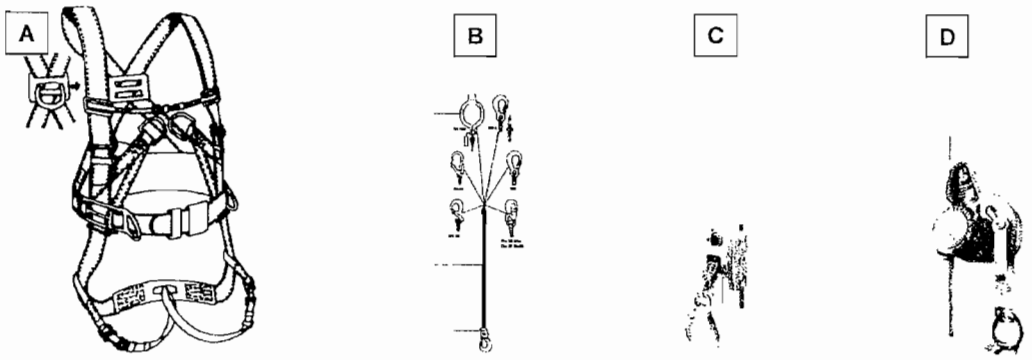


Fig. 1 Safety equipment

A Safety harness
B Lanyard with energy absorber
C Fall arrest slider with rigid guide (HACA) or
D Fall arrester with steel rope (Latchways)

Before maintenance the following must be observed:

1. Use approved PPE only.
2. Before using the equipment, check the material for possible damage.
   Do not use damaged safety equipment!
3. Adjust the safety harness properly and tight around your body.
4. Adjust the safety rope in length to limit the falling height to less than 0.4 m.
5. Assemble and attach the fall arrest slider to the fall arrest rail or the fall arrester to the steel rope and check its proper functioning.

All safety equipment must be kept hanging in a dry and cool storage room.

Make sure that no aggressive chemical substances or sharp objects can harm any of the safety gear

Possible damages must immediately be reported to the person responsible for safety.

Never ever use any damaged, worn out or uncertified safety gear!

3.3 Service lift

All WT come with a service lift. The service lift is designed for use in the WT only. The maximum load bearing capacity is 240 kg or this corresponds to 2 persons. The service lift is guided on the ladder and runs up and down a steel rope powered by a continuous winch. An arrester device secures the service lift on a second steel rope.

Assembly, maintenance and operation of the service lift must only be entrusted to appropriately instructed persons. All employees remain obliged to use their personal protective equipment, even when ascending the tower by service lift. A walkie-talkie or mobile telephone is to be carried at all times.

The service lift is equipped with the following safety equipment:

- Emergency-stop button
- Phase sequence relay, which prevents operation in case of incorrect phase sequence (danger of false assignment of running directions, danger of malfunction/failure of limit switches and hoisting power limiter)

- Mechanical hoisting power limiter, integrated into the rope drive, to disconnect the drive in case of overload (excess loading, jamming during ascent)
- Emergency lowering and hand wheel for manual operation in case of a power failure
- Arrester device on the steel rope, with emergency-stop button, triggers in case of sudden excessive acceleration and thus protects the lift cage in case of carrying cable rupture or winch failure
- Limit switches for ascent (operating limit switch, emergency limit switch), descent (cage base), and door limit switch
- The guiding on the ladder prevents rotary and reciprocating motion.

To ensure functioning of the arrester device, the steel rope must be tensioned. A tensioning weight is provided for this purpose.

The following checks of the service lift are prescribed:

- Routine checks before each use and monitoring during operation
- Regular inspections by an expert at least once each year or after 250 operating hours of the continuous winch, whichever is earlier
- Special inspection by an authorised expert before commissioning, after every 48 months and after any incident leading to activation of the arrester device

The personal protective equipment must also be worn when using the service lift. Furthermore a walkie-talkie or a mobile phone must be carried along.

3.4 Entering the nacelle

The passage from the top platform up into the nacelle is via a lattice on the platform. Grips and treads, or else a short ladder segment, are mounted on the nacelle floor and turn together with the nacelle. Access hatch to the nacelle is closed by a cover. On the Nxx machines, the cover possesses a switch to signal opening of the cover to the control system. If not already the case, the WT is then automatically switched off.

4 Protection against falling objects

A platform is provided below the upper flange of each tower segment. Gaps in the platforms, insofar as required by the design, are approx. 20 mm wide. The openings for lead-throughs, etc. are provided with a coaming to prevent objects from being able to roll over the edge. Access openings, furthermore, are closed with covers.

No loose tools or other objects are to be carried in clothing, pockets, etc. Employees are obliged to use suitable tool bags. Safety helmets must be worn at all times.

5 Material transport using the on-board crane

The WT is equipped with an on-board crane, which can be used to transport spare parts, etc. Loose parts must only be transported in the special containers provided for this purpose.

The preferred method for communication between the slinger/banksman and crane operator is to use a walkie-talkie, whereby unambiguous hand signals should be agreed before starting work in case the radio communication fails.

6 Lighting

The electrical installations and lighting are designed in accordance with the following standards:

- Workplace safety guidelines with ASR 7/3: Artificial lighting and ASR 7/4: Safety lighting
- DIN 5035-2: Artificial lighting: Recommended values for indoor and outdoor workspaces

- EN 50308: Wind turbines – Occupational safety

For the WT, the following minimum requirements apply for the provision of lighting:

- Nacelle: 50 lx (maintenance, inspection in WT), possibly to be achieved with additional lamps, for which power sockets are provided.
- Platforms: 50 lx (working lighting), one lamp installed on each platform, additional lamps can be connected for maintenance work.
- Ladder: 10 lx (guide lighting, general lighting), lamps are installed at the ladder ends and in the vicinity of the access openings.
- Entrance space at the tower base: 50lx (working lighting)
- Switch cabinets: 100 lx (switchgear in buildings), additional lamps are installed; further additional lamps can be connected for maintenance work.
- Service lift: one lamp (with battery) inside the lift and one additional lamp on the exit platform.
- Emergency lighting: Battery-powered lamps with a capacity of at least 60 minutes are integrated into the existing lamps, with an ON delay of max. 15 seconds.

The lamp types and the precise locations of the individual lamps may vary slightly between different towers and manufacturers.

The lighting guarantees adequate illumination throughout the whole WT. A safe descent is also possible in the case of a power failure.

During erection and during any other work with the crane, floodlights are used for additional illumination in case of darkness.

7 Protection against noise

Employees are required to wear ear protection when carrying out noise-intensive work, e.g. use of an impact screwdriver

8 Handling of hazardous substances

Special work instructions exist regarding the handling of hazardous substances, e.g. oils, greases, paints, sprays, etc., copies of which are carried in all service vehicles. Furthermore, additional personal protective equipment, e.g. gloves, eye protection and respirator, are provided by the company.

The employees are obliged to inform themselves regarding proper handling before starting work, to observe the relevant work instructions and to use the additional safety equipment provided.

9 Electrical equipment

The electrical equipment of the WT complies with VDE 0100: *Electrical work*.

The following shock-hazard protection measures are implemented:

- Switches, sockets, lamps: Protection to IP54
- Converters, generators: Protection to IP54
- Cables: Sheathing, terminal covers in the switch cabinets

Work on the electrical equipment is to be performed exclusively by correspondingly trained and authorised persons. Employees without a corresponding order or without the necessary qualification are not permitted to perform switching, repairs or maintenance work.

The wind turbine is considered an enclosed electrical operating site. Hence the applicable guidelines are the respectively valid editions of VDE 0101 and 0105:

- Enclosed electrical installations (DIN VDE 0101 January 2000/HD 637 S1)
  Space or location for the operation of electrical plants and operating equipment which is clearly designated by the appropriate warning signs. Access is available to electrical professionals and those familiar with electrical engineering as well as non-professionals, but the latter must be accompanied by an electrical professional or someone familiar with electrical engineering. Access can be provided by, for example, opening a door or removing a cover with the help of a key or tool.
  This can involve, for example, enclosed switching and distribution systems, transformer cubicles, switch bays, distribution systems in sheet-metal housings or other enclosed systems.
- Electrical professional (DIN VDE 0105-100 October 1997)
  An electrical professional is someone who, based on his specialised education, knowledge and experience, as well as the relevant standards, can assess the work assigned to him and recognise potential dangers.
- Person familiar with electrical engineering (DIN VDE 0105-100 October 1997)
  A person familiar with electrical engineering is someone who has been instructed by an electrical professional about his assigned tasks and the possible dangers of inappropriate activities and trained, if necessary, and was taught about the necessary protective equipment and protective measures.

The operator is instructed correspondingly before taking over the turbine.

LBNL-2829E

ERNEST ORLANDO LAWRENCE
BERKELEY NATIONAL LABORATORY

The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis

Ben Hoen, Ryan Wiser, Peter Cappers, Mark Thayer, and Gautam Sethi

Environmental Energy Technologies Division

December 2009

Download from http://eetd.lbl.gov/EA/EMP

The work described in this report was funded by the Office of Energy Efficiency and Renewable Energy (Wind & Hydropower Technologies Program) of the U.S. Department of Energy under Contract No. DE-AC02-05CH1123.

EXHIBIT C

Wind farm substation is damaged by blaze

By STEVE VIRKLER
TIMES STAFF WRITER
WEDNESDAY, OCTOBER 14, 2009

ARTICLE OPTIONS
A A A
SHARE

WEST MARTINSBURG — A transformer at the Maple Ridge Wind Farm's substation off Rector Road was destroyed by fire late Monday afternoon.

Martinsburg firefighters were dispatched to the substation about 5 p.m. but had to wait until the facility was shut down before extinguishing the blaze, said Lewis County Fire Coordinator James M. Martin.

The fire was contained to the damaged part, located outside the control building, Mr. Martin said.

"It didn't get inside, and it didn't get into the other transformers," he said.

The Columbus Day fire was the second transformer fire at the site, with a similar incident occurring July 4, 2007. In that case, 491 gallons of mineral oil leaked from the damaged transformer and temporarily contaminated a nearby residential well. About 15 other wells also were tested, but none was affected.

Some oil also leaked into the soil Monday, although the amount hasn't been determined yet, said state Department of Environmental Conservation Region 6 spokesman Stephen W. Litwhiler. The transformer had a capacity of 550 gallons, but some of the oil burned, remained inside the unit or was recovered before it seeped into the soil.

The wind farm retained a firm Monday night to immediately begin excavation of contaminated soil,

and DEC will continue to investigate and monitor the situation, Mr. Litwhiler said.

DEC officials on Tuesday were attempting to contact the homeowner whose well had been contaminated in 2007 to notify him of the incident, he said.

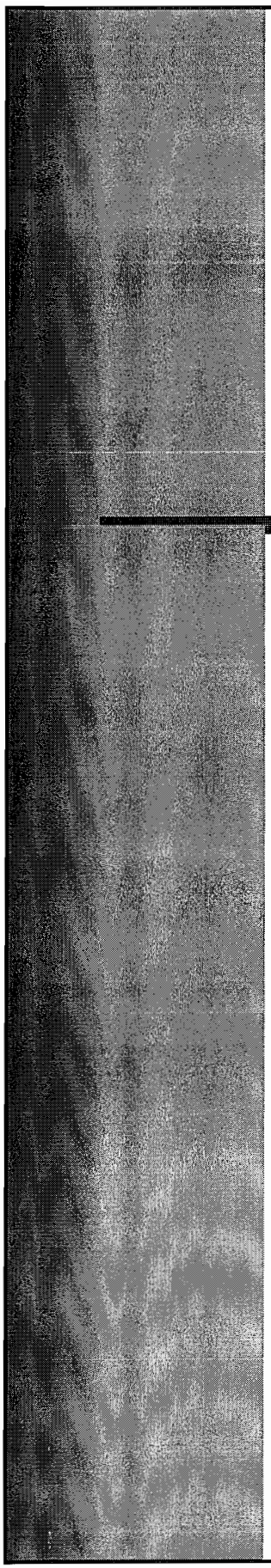
Attempts to reach wind farm officials for comment Tuesday afternoon were unsuccessful.

SHOW COMMENTS (1)

EXHIBIT D

Appendix B

Spill Prevention Control and Countermeasures Plan



Spill Prevention, Control and Countermeasures Plan

Hounsfield Wind Farm Project
Jefferson County, New York

Prepared for:

Upstate New York Power Corporation

950-A Union Road, Suite 20
West Seneca, New York 14224

Prepared by:

URS Corporation - New York

77 Goodell Street
Buffalo, New York 14203-1243

October 2009

G41445

PROPOSED HOUNSFIELD WIND FARM PROJECT
JEFFERSON COUNTY, NEW YORK

SPILL PREVENTION, CONTROL, AND COUNTERMEASURES (SPCC) PLAN

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40 CFR Parts 110 and 112

October 2009

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FIGURES

APPENDICES

1.0 GENERAL APPLICABILITY, PURPOSE AND SCOPE OF PLAN

40 CFR 112.1

This Spill Prevention, Control and Countermeasures (SPCC) Plan has been prepared for the proposed Hounsfield Wind Farm project located on Galloo Island in the Town of Hounsfield, Jefferson County, New York (Figure 1). The project is currently being developed by Upstate New York Power Corporation. The Plan was prepared in accordance with requirements specified by the United States Environmental Protection Agency (USEPA) under Title 40 Code of Federal Regulations (*CFR*) *Parts 110* and *112*. This Plan includes the changes to the SPCC regulations, which were promulgated on July 17, 2002. In addition, requirements of the New York State navigation Law (Article 12) and appropriate New York State Department of Environmental Conservation (NYSDEC) regulations are incorporated/cited throughout this plan.

The proposed Hounsfield Wind Farm project or "facility" is scheduled to be constructed between 2010 and 2012, and will consist of 84 wind turbines, an electrical substation, temporary/permanent housing, helipad, slip, concrete batch plant and support buildings. This SPCC Plan addresses both the construction phase and long-term operation and maintenance (O&M) phase of the project.

Each wind turbine will have an electrical generating capacity of 3.0 megawatts providing a total electrical output of 252 megawatts. The wind turbines will be connected together through an electrical interconnection line that is both aboveground as well as subsurface, which transmits the generated power to the electrical substation. At the substation, the electricity will be transformed and sold as a commodity to the power company through an electric transmission line located on the New York State mainland. Figures 2 and 3 illustrate the facility layout, with the location of the turbines, the electrical substation, adjacent transmission lines, and elevation contours. Figures 2, 3, 5, and 6 illustrate the site features adjacent to typical wind farm components, topographic features, and the direction of flow in the event of an oil spill.

The proposed facility will have multiple areas of oil storage and use, including electrical transformer oil, yaw oil, hydraulic oil, gear oil, diesel fuel and drummed or containerized oil. The majority of oil stored at the wind farm will be stored in the diesel fuel aboveground storages tanks (ASTs), the primary pad-mounted power transformers in the electrical substation and within each of the 84 wind turbine nacelles. Requirements of *40 CFR Parts 110* and *112* specify that an SPCC Plan be developed and implemented for facilities with more than 1,320 gallons of oil stored on site in containers 55-gallons in size or larger. Based on this requirement, and the quantities of oil stored/used on-site, the proposed facility requires an SPCC Plan.

This SPCC Plan describes the equipment, structures, and procedures designed to prevent the discharge of oil from the proposed facility into or upon the navigable waters of the United States. This SPCC Plan complies with the provisions of *40 CFR Parts 110* and *112* and has been reviewed and certified by a Registered Professional Engineer familiar with the site and the SPCC Plan regulatory requirements. Certification for Applicability of the Substantial Harm Criteria is contained in Appendix A.

Even though the facility's total oil capacity will be greater than 42,000 gallons and it will receive oil over water, the checklist in Appendix A determined that the facility will not require a Facility Specific Response Plan (*40 CFR 112 Appendix F*) because of the following:

- All but two (2) ASTs are located at least 1.8 miles inland from the slip;
- The two (2) ASTs at the slip have an aggregate capacity of 10,000 gallons; and,
- The amount of oil transferred over water is less than 5,000 gallons per week.

As required by *40 CFR 112.3(e)*, this SPCC Plan will be kept on file at the proposed facility's O&M building (Figure 3) and will be available for regulatory agency review upon request during normal working hours. Upon completion of the proposed facility, this Plan will be modified to reflect any changes between the proposed and actual construction. As required by *40 CFR 112.5*, this Plan will also be reviewed once every five years, and amended within six months of the review, if required. In addition, this Plan will be amended within six months of any modification of operations conducted at the proposed facility, if the modification could result in the discharge of oil into or upon the navigable

waters of the United States. All amendments to this SPCC Plan will be certified by a qualified, registered, professional engineer.

During construction of this facility, spill prevention/containment measures will be implemented in accordance with applicable regulations (i.e. New York State Department of Transportation). Spill response and reporting during construction will be in accordance with Section 4.0 of this Plan.

This is the initial SPCC Plan, so reviews of this plan per *40 CFR Part 112.5* have yet to be conducted.

This SPCC Plan does not follow the exact order presented in *40 CFR Part 112*. Section headings identify, where appropriate, the relevant section(s) of the SPCC rule. The following table presents a cross-reference of SPCC Plan sections relative to applicable parts of *40 CFR Part 112*.

SPCC Cross-Reference Table

Provision of 40 CFR Part 112	Plan Section	Page
112.3(d)	3.2 Professional Engineer Certification	3-2
112.3(e)	1.0 Location of SPCC Plan	1-2
112.5	1.0 Plan Review	1-2
112.7	3.1 Management Approval	3-1
112.7	1.0 Cross-Reference with SPCC Rule	1-3
112.7(a)(3)	1.0, 2.2 through 2-7 General Facility Information Figures 1-9: Site Plan and Facility Diagrams	1-1, 2-2, 2-3 & 2-4 Figures 1-9
112.7(a)(4)	4.12.4 Discharge Notification	4-21 Appendix C
112.7(a)(5)	4.12 Discharge Response	4-17
112.7(b)	4.2 Potential Discharge Volumes and Direction of Flow Figures 2, 3, 5 & 6	4-1 Figures 2, 3, 5 & 6
112.7(c)	4.3 through 4.8 & 4.10 Containment and Diversionary Structures	4-5 to 4-12 & 4-14
112.7(d)	4.13 Practicability of Secondary Containment	4-22
112.7(e)	5.0 Inspections, Tests, and Records	5-1 Appendix C
112.7(f)	6.0 Personnel, Training and Discharge Prevention Procedures	6-1 Appendix C
112.7(g)	7.0 Security	7-1
112.7(h)	4.5 Tank Truck Loading/Unloading	4-7 Appendix C
112.7(i)	4.7 Brittle Fracture Evaluation	4-10
112.7(j)	4.6 Conformance with Applicable State and Local Requirements	4-10
112.8(b)	4.4 Facility Drainage	4-7
112.8(c)(1)	4.3 & 4.7 Construction	4-5 & 4-10
112.8(c)(2)	4.3, 4.7, 4.9 & 4.10 Secondary Containment	4-5, 4-10, 4-12 & 4-14
112.8(c)(3)	4.9 Drainage of Diked Areas	4-12
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112.8(c)(5)	4.7.2 Partially Buried and Bunkered Storage Tanks	4-12
112.8(c)(6)	4.7, 4.8, 4.9 & 4.11 Inspection Appendix C - Facility Inspection Checklists	4-10, 4-12, 4-12 & 4-15 Appendix C
112.8(c)(7)	4.7 Heating Coils	4-10
112.8(c)(8)	4.7 & 4.10 Overfill Prevention System	4-10 & 4-14
112.8(c)(9)	4.7 Effluent Treatment Facilities	4-10
112.8(c)(10)	4.8 Visible Discharges	4-12
112.8(c)(11)	4.10 Mobile and Portable Containers	4-14
112.8(d)	4.5 Transfer Operations, Pumping and In-Plant Processes	4-7
112.20(e)	Certification of Substantial Harm Determination	Appendix A

Note: Only selected excerpts of relevant rule text are provided. For a complete list of SPCC requirements, refer to the full text of 40 CFR Part 112.

2.0 DEFINITIONS, FACILITY INFORMATION AND PERSONNEL

2.1 Definitions

40 CFR 110, 112.2; 6 NYCRR Part 612.1(c) and New York State Navigation Law, Article 12, Part 1, §172

Discharge - The spilling, leaking, pumping, pouring, emitting, emptying, dumping, etc., of oil (except as allowed under a discharge permit); and/or any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of petroleum into the waters of the state or onto lands from which it might flow or drain into said waters, or into waters outside the jurisdiction of the state when damage may result to the lands, waters or natural resources within the jurisdiction of the state.

Facility – For the purpose of this SPCC Plan, facility means all of Galloo Island, including its buildings, structures and any ancillary features (i.e., wind turbines, boat slip, etc.).

Harmful Quantities - Discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in such quantities that it has been determined may be harmful to public health, welfare, or the environment of the United States. This would include, but not be limited to, spills that violate applicable water quality standards or cause a film, sheen upon, or discoloration of the surface of the water, or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines. Also included are spills of polychlorinated biphenyls (PCBs) in any quantity to the water or discharge of 10 pounds or more to the land.

Navigable Waters - For the purpose of this SPCC Plan, navigable waters include any waters of the United States as defined in Section 502(7) of the Federal Water Pollution Control Act (i.e. Lake Ontario).

Oil - Oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, and oil mixed with wastes other than dredged spoil.

Petroleum - oil or petroleum of any kind and in any form including, but not limited to, oil, petroleum, fuel oil, oil sludge, oil refuse, oil mixed with other wastes and crude oils, gasoline and kerosene.

Spill Event - A discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities, as defined by *40 CFR 110*; and/or the discharge has impacted the land or waters of the State of New York, or is not cleaned up in two hours, or is not under the control of the facility, or involves more than 5 gallons of oil.

2.2 Facility Information

Name:	Hounsfield Wind Farm
Type:	Wind Farm Electric Power Generation
Location:	Galloo Island Town of Hounsfield Jefferson County, New York Latitude: 43°54'19.98" N Longitude: 76°24'52.65" W
Address:	Galloo Island, Hounsfield, New York 13685 (Location of Operations and Maintenance Building)
Phone:	(315) 221-0893

2.3 Owner/Operator Information

The proposed Hounsfield Wind Farm project is being developed and currently owned by Upstate New York Power Corporation, who has a long-term lease of the property for use as a wind farm. Upstate New York Power Corporation provides site operations management and O&M services for the wind farm.

2.4 Oil Stored

The following table summarizes the oil stored at the proposed facility in containers either with at least 55-gallon capacity or in equipment. Lubrication specifications for the Vestas wind turbines planned for use at the site (Model V90-3.0 MW) are presented in Appendix B, including the quantity and types of oils contained within the turbine equipment.

Summary of Oil Stored On-Site or in Equipment Subject to SPCC Regulations

Container ID	Location	Typical Quantity Stored (gallons)	Container Description (Construction Standard)	Content	Discharge Prevention & Containment
Not Applicable	84 Turbine Nacelles	5,544 (total)	Nacelle Gearbox	Main Bearing Oil	Internal Collector System
		244 (total)	Brake System	Hydraulic Oil	
		222 (total)	Yaw Gear	Yaw Oil	
	Electrical Substation	Estimated to be 48,000 to 60,000	Substation Transformers	Transformer Oil	Secondary containment dike
	O&M Building	Estimated 30 55-gallon drums	Steel DOT-drums	Motor oil, lubricants, and used oil	Spill pallets with built-in containment capacity. Building also serves as containment since there will be no floor drains.
001	Generators at O&M Facility	10,000	Steel aboveground horizontal tank, dual wall, elevated on built-in saddles*.	Diesel Fuel	Double walled construction, liquid level gauge and interstitial monitoring**.
002		10,000			
003		10,000			
004	Generators for Concrete Batch Plant	550			
005	Fueling Island for Vehicles and Construction Equipment	6,000		Gasoline	
006		10,000		Diesel Fuel	
007	Fueling Island for Boat Slip	2,000		Gasoline	
008		8,000		Diesel Fuel	
009	O&M Facility	1,200		Waste Oil	

* - Complies with NYSDEC PBS regulation *6 NYCRR Part 614.9(a)*.
** - Complies with NYSDEC PBS regulation *6 NYCRR Part 613.3(c)*.

2.5 Notification of Personnel

40 CFR 112.7(a)(3)

Notification will be performed in accordance with Section 4.12 of this plan.

2.6 Designated Facility Personnel

40 CFR 112.7(f)(2)

EHS Coordinator and Spill Response Coordinator

Name:	Mr. Thomas L. Hagner	
Title:	Manager	
Phone:	Office:	(716) 675-0751
	Cell:	(716) 863-5331

Alternate Spill Response Coordinator

Name:	Mr. Kevin J. Shanahan	
Title:	Project Manager	
Phone:	Office:	(716) 923-1215
	Cell:	(716) 480-7352

2.7 List of Regulatory Personnel

40 CFR 112.7(a)(3)

National Response Center: 1-800-424-8802
New York State Department of Environmental Conservation
317 Washington Street
Watertown, New York 13601-3787
24-Hour Spill Hotline: 1-800-457-7362

2.8 Response Contractor

Op-Tech
1 Adler Drive
East Syracuse, New York 13057
Phone: (315) 437-2065

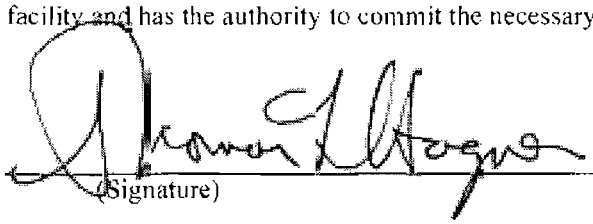
3.0 PLAN APPROVAL AND CERTIFICATION

3.1 Management Approval

40 CFR 112.7

Upstate New York Power Corporation are committed to preventing discharges of oil to navigable waters and the environment, and to maintaining the highest standards for spill prevention control and countermeasures through the implementation and regular review and amendment to the SPCC Plan. This SPCC Plan has the full approval of Upstate New York Power Corporation. Upstate New York Power Corporation has committed the necessary resources to implement the measures described in this SPCC Plan.

The Spill Response Coordinator is the Designated Person Accountable for Oil Spill Prevention at the facility and has the authority to commit the necessary resources to implement this SPCC Plan.



(Signature)

Thomas L. Hagner
(Name)

President
(Title)

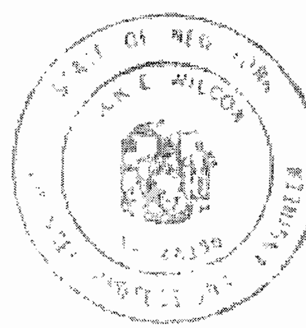
3.2 Certification

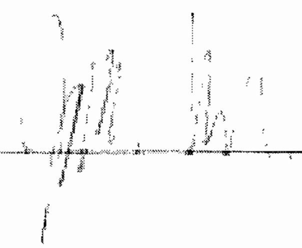
40 CFR 112.3(d)

The undersigned Registered Professional Engineer is familiar with the requirements of *40 CFR Part 112* and has reviewed the design of the proposed facility, or has supervised the design team of the proposed facility by appropriately qualified personnel. The undersigned Registered Professional Engineer attests that this Spill Prevention, Control, and Countermeasure Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of *40 CFR Part 112*, that procedures for required inspections and testing have been established; and that this SPCC Plan is adequate for the facility. [*40 CFR Part 112.3(d)*]

This certification in no way relieves the owner or operator of the facility of his/her duty to prepare and fully implement this SPCC Plan in accordance with the requirements of *40 CFR Part 112*. This SPCC Plan is valid only to the extent that the facility owner or operator maintains, tests, and inspects equipment, containment, and other devices as prescribed in this SPCC Plan.

Name	Jack Wilcox, P.E.
Registration Number	66336
State	New York
Company	URS Corporation
Phone No	(716) 856-5636



Signature  Date 10/9/11

4.0 SPILL PROTECTION PLAN

4.1 Prior Spills

40 CFR 112.4

At the time of the publication of this plan, the only actions that occurred with regards to the proposed Hounsfield Wind Farm site were surveying and design related activities. No spills of reportable quantities of oil, as outlined in the reporting requirements (*40 CFR 112.4 and 6 NYCRR Part 613.8*), have occurred at this site in the past three (3) years. The proposed Hounsfield Wind Farm will begin construction in 2010 and begin operation in 2012.

4.2 Potential Spills

40 CFR 112.7(b)

If an oil spill or release occurs at the site, product may reach Lake Ontario (which surrounds the facility) through the following potential mechanisms:

- direct release to surface water;
- flow over land;
- migration in groundwater;
- through the unsaturated subsurface soil or bedrock; or,
- through stormwater transport.

The storm water routes described in Section 4.4 of this plan, or groundwater (see Figures 2 and 3).

The table on page 4-3 presents expected volume, discharge rate and general direction of flow in the event of equipment failure, and means of secondary containment for different parts of the facility where oil is stored, used, or handled.

4.2.1 Construction Phase

Initial phase of construction will involve the installation and operation of ASTs #001 - #009 listed in the table shown in Section 2.4 of this plan. Oil spills or leaks at the site during construction of this facility would most likely occur as a result of four possible events:

1) Fuel tank failure – Ruptures in the fuel tanks of construction vehicles (i.e., dump trucks, front end loaders, cranes, etc.) or ASTs may be the result of defective materials, defective workmanship, damage from mobile equipment, corrosion, fire, or damage from storms, tornados, or high winds. The volume of spill at each tank is dependent on that tank (i.e., 50-10,000 gallons).

2) Overfill/spills during container loading/unloading operations – Oil may be spilled due to accidents involving containers or temporary fuel tanks (vehicles, generators, etc.). These accidents typically include overfilling or spills such as punctures, leaks, corrosion, improper storage, etc. Every effort will be taken during truck unloading activities to prevent damage to petroleum containers, etc. and thus the creation of spills. Temporary or permanent containment structures will be provided, as required. These types of spills are often due to operator error, but sometimes can be the result of defective equipment. These spills are the most common types of spills, and spill prevention should be emphasized during employee training.

Potential Discharge Volumes and Direction of Flow

Potential Event	Maximum volume released (gallons)	Maximum discharge rate	Direction of Flow	Secondary Containment
Aboveground Bulk Storage Tanks (Storage Tanks #001 - #009)				
Failure of aboveground tank (collapse or puncture below product level)	10,000	Gradual to instantaneous	Southeast to Lake Ontario	Double-walled AST
Tank overfill	1 to 120	60 gal/min		Spill bucket
Pipe failure	1 to 20	60 gal/min		Land-based spill response capability (spill kit)
Leaking pipe or valve packing	500	1 gal/min		
Wind Turbines (Wind Turbine Generators #01 through #84)				
Leak or failure of Oil Containment within Nacelle	66	Gradual to instantaneous	To Lake Ontario	Land-based spill response capability (spill kit)
Electrical Substation				
Leak or failure of Transformer Oil Containment from Substation Transformers	Estimated to be 12,000 to 15,000	Gradual to instantaneous	Southeast to Lake Ontario	Secondary containment dike
O&M Building				
Leak or failure of drum	1 to 55	Gradual to instantaneous	To Lake Ontario	Spill pallets, Secure Building, Mobile Box Structure

3) Hose failure - A break in piping or a hose will cause the contents to be pumped or drained onto the ground. This failure can occur as a result of damage to the pipe, hose, defective connections, or errors by facility personnel.

4) Oil drum/container rupture or puncture - A rupture caused by equipment puncture or corrosion could release oil to the ground. Leakage due to corrosion or loose fittings may also occur.

4.2.2 Operation and Maintenance Phase

Oil spills or leaks at the site would most likely occur as a result of four possible events:

1) Turbine failures - Ruptures in container walls, turbine bearing failures, turbine gear oil seal failure, oil pan housing failures, etc. may be the result of defective materials, defective

workmanship, damage from mobile equipment, corrosion, fire, or damage from storms, tornados, or high winds. The volume of spill at each turbine could be 66 gallons (from the equipment in the nacelle).

2) Fuel tank failure – Ruptures in the fuel tanks of service vehicles or ASTs may be the result of defective materials, defective workmanship, damage from mobile equipment, corrosion, fire, or damage from storms, tornados, or high winds. The volume of spill at each tank is dependent on the tank capacity (i.e., 50-10,000 gallons).

3) Overfill/spills during container loading/unloading operations – Oil may be spilled due to accidents involving containers or fuel tanks (i.e., vehicles, generator AST, etc.). These accidents typically include overfilling or spills such as punctures, leaks, corrosion, improper storage, etc. Every effort will be taken during truck unloading activities to prevent damage to petroleum containers, etc. and thus the creation of spills. Temporary or permanent containment structures will be provided, as required. These types of spills are often due to operator error, but sometimes can be the result of defective equipment. These spills are the most common types of spills, and spill prevention should be emphasized during employee training.

4) Hose failure - A break in piping or a hose will cause the contents to be pumped or drained into containment areas or onto the ground. This failure can occur as a result of damage to the pipe, hose, defective connections, or errors by facility personnel.

5) Oil drum/container rupture or puncture - A rupture caused by equipment puncture or corrosion could release oil to the ground. Leakage due to corrosion or loose fittings may also occur.

The turbine gearbox and hydraulic station located in the nacelle are not required to have secondary containment. Any potential releases would be detected visually and corrective action implemented. In the unlikely event that a turbine had a release of the entire 66 gallons of oil stored in the equipment, the oil would flow overland for a relatively short distance and would be absorbed into the soils on site or immediately down gradient of the site (see Spill Route Maps presented as Figures 3, 5, and 6).

4.3 Spill Containment/Control Equipment and Structures

40 CFR 112.7(c)

All ASTs to be used at this facility will be constructed of steel, in accordance with industry specifications as described in Section 2.4 of this plan and in accordance with NYSDEC regulation *6 NYCRR Part 614.9*. The design and construction of all bulk storage containers will be compatible with the characteristics of the oil product they contain, and with temperature and pressure conditions.

AST piping will be made of steel and placed aboveground on appropriate supports designed to minimize erosion and stress. Supply piping to equipment may be fiberglass or steel and designed in accordance with industry wide standards.

4.3.1 Construction Phase

If a release of diesel fuel would occur from any of the ASTs listed in Section 2.4 of this plan, the product would be retained within the annular space between the primary and secondary walls of that AST's double walled system.

Service vehicles equipped with spill kits will be present during construction. Additional spill kits will be positioned adjacent to the ASTs (see Figures 7-9). Each spill kit will be assembled with equipment that will address the type/quantity of spill that may occur at their location (i.e. Speedi Dry, booms, etc.). The typical contents of a spill kit adjacent to all ASTs include, but are not limited to the following:

- 90-gallon poly "over pack" drum;
- Absorbent booms, pillows and/or pads;
- Absorbent granular material (i.e., speedi dri); and,
- Safety glasses, gloves.

In addition, special provisions are proposed for addressing potential spills at the slip location. A CONEX box will be located approximately 30 feet from the shoreline directly northeast of the slip, and will contain the following spill response equipment:

- SPCC Plan.
- 500-Foot harbor boom.
- 100 Petroleum absorbent pads.
- 500 Foot Petroleum absorbent boom.
- 4 Mushroom anchors.
- 4 Boom buoys.
- 4 55-gallon 1A2 steel drums.
- 3 12-Foot duck boat with outboard motor and personal floatation devices.
- 4 Pitch forks.
- 100 Contractor trash bags.
- 100 Pair of disposable coveralls or Tyvek suits.
- 100 Pair of disposable gloves.

Approximately 10 additional spill kits will be stored in the O&M Building. All spill kits will be inventoried on a monthly basis.

4.3.2 Operation and Maintenance Phase

If a release of fuel would occur from any of the ASTs listed in Section 2.4 of this plan, the product would be retained within the annular space between the primary and secondary walls of that AST's double walled system.

If a release of transformer oil were to occur from the electrical substation transformer, the oil would be retained in the permanent concrete secondary containment dike designed to contain over 110 percent of the transformer oil.

Spill kits mentioned in Section 4.3.1 of this plan will be positioned adjacent to the ASTs and in the O&M Building (see Figures 7-9). Each spill kit will be assembled with equipment that will address the type/quantity of spill that may occur at their location (i.e. Speedi Dry, booms, etc.).

4.4 Facility Drainage

40 CFR 112.7(c) and 40 CFR 112.8(b)

Storm water flows overland at all locations throughout the wind farm area. The site has no designated storm water outfalls. Any storm water will travel down from the turbine locations and/or ASTs towards Lake Ontario or low-lying interior areas, via surficial topography (see Figures 2, 3, 5, and 6).

All proposed ASTs will be of double walled construction, which will protect them from storm water contact.

Additionally, oil storage at the wind farm includes oil-filled gearboxes and hydraulics located in the nacelle of each wind turbine. Oil stored within these units will be protected from storm water contact. However, should a release occur, a maximum of 66 gallons of oil could be carried by storm water down towards Lake Ontario or low lying interior areas (see Figures 2, 5 & 6).

Another discharge prevention measures will include the use of spill buckets surrounding the fill ports on the ASTs. The spill buckets will be routinely inspected for liquids and any accumulated water and oil pumped out.

4.5 Loading/Unloading Procedures

40 CFR 112.7(h) & 40 CFR 112.8(d)

Throughout every phase of this project, oil (i.e., diesel fuel, lube oil, etc.) will be delivered to the site via trucks (i.e., tanker trucks, box trucks with 55-gallon drums, etc.) on barges. These barges will be off-loaded at the temporary off-loading facility and/or proposed permanent slip located along the southeast coast of Galloo Island (see Figures 2 and 4). In addition, ASTs #007 and #008 located at the boat slip fueling island (see Figure 9) will be used to refuel the motorized watercraft servicing the facility. Such off-loading/refueling will also be conducted in accordance with U.S. Coast Guard Regulation *33 CFR 126* (Handling of Dangerous Cargo at Waterfront Facilities).

Even though oil transfer operations will be conducted between the boat slip fueling island and watercraft servicing the facility, a Response Plan for Oil Facilities (*33 CFR 154 Subpart F*) is not required because of the following:

- The amount of oil transferred over water is less than 5,000 gallons per week;
- The ASTs at the slip have an aggregate oil capacity of less than 39.75 m^3;
- Any vessel docking at the slip will have an aggregate oil capacity of less than 39.75 m^3; and,
- The ASTs at the slip will be resupplied on-shore, via tanker trucks.

All oil suppliers must meet the minimum requirements and regulations for tank truck loading/unloading established by the U.S. Department of Transportation. Upstate New York Power Corporation will ensure that oil delivery vendors understand the site layout, know the protocol for entering the facility and unloading product, and have the necessary equipment to respond to a discharge from the vehicle or fuel delivery hose. The EHS Coordinator or his/her designee supervises oil deliveries for all new suppliers, and periodically observes deliveries for existing, approved suppliers. All unloading of tank vehicles will take place only in the designated unloading areas.

The refueling of land-based mobile construction equipment will be accomplished using a dedicated fueling truck. Refueling of equipment will, whenever possible, be conducted away from the proposed in-water slip construction work area and care will be taken to minimize the potential for petroleum spills.

The refueling of construction equipment situated on barges will be accomplished by manual pumping product from a double walled petroleum storage tank stationed on the barge and equipped with secondary containment. It is anticipated that the petroleum storage tank will have a capacity of 1,000- to 2,000-gallons and will be periodically filled at a commercial fueling facility on the New York State mainland such as at the Port of Oswego.

There will be no refueling of ASTs over water. Product delivery trucks will drive to the AST location and refuel the AST from land. Secondary containment for the delivery trucks will consist of spill buckets placed beneath any connections/valves during product transfers. While transferring oil to and from the ASTs, the vehicle driver or facility personnel will remain with the vehicle at all times while

fuel is being transferred. Transfer operations will be performed according to the minimum procedures outlined in following table.

Fuel Transfer Procedures

Stage	Tasks
Prior to Unloading	• Visually check all hoses for leaks and wet spots. • Verify that sufficient volume (ullage) is available in the storage tank or truck. • Lock in the closed position all drainage valves of the secondary containment structure. • Secure the tank vehicle with wheel chocks and interlocks. • Ensure that the vehicle's parking brakes are set. • Verify proper alignment of valves and proper functioning of the pumping system. • If filling a tank truck, inspect the lowermost drain and all outlets. • Establish adequate bonding/grounding prior to connecting to the fuel transfer point. • Turn off cell phone.
During Unloading	• Driver must stay with the vehicle at all times during loading/unloading activities. • Periodically inspect all systems, hoses and connections. • When loading, keep internal and external valves on the receiving tank open along with the pressure relief valves. • When making a connection, shut off the vehicle engine. When transferring Class 3 materials, shut off the vehicle engine unless it is used to operate a pump. • Maintain communication with the pumping and receiving stations. • Monitor the liquid level in the receiving tank to prevent overflow. • Monitor flow meters to determine rate of flow. • When topping off the tank, reduce flow rate to prevent overflow.
After Unloading	• Make sure the transfer operation is completed. • Close all tank and loading valves before disconnecting. • Securely close all vehicle internal, external, and dome cover valves before disconnecting. • Secure all hatches. • Disconnect grounding/bonding wires. • Make sure the hoses are drained to remove the remaining oil before moving them away from the connection. Use a drip pan. • Cap the end of the hose and other connecting devices before moving them to prevent uncontrolled leakage. • Remove wheel chocks and interlocks. • Inspect the lowermost drain and all outlets on tank truck prior to departure. If necessary, tighten, adjust, or replace caps, valves, or other equipment to prevent oil leaking while in transit.

All oil transfer operations will be conducted in accordance with applicable local, state and federal regulations/guidelines,

4.6 Conformance with Applicable State and Local Requirements

40 CFR 112.7(j)

ASTs #001 through #009 (see Section 2.4) will be registered with the NYSDEC in accordance with their Petroleum Bulk Storage (PBS) regulations. These ASTs will meet the requirements of *6 NYCRR 614.9(a)* and will be inspected monthly, per *6 NYCRR 613.6(a)*.

4.7 Tank Containment and Spill Response

40 CFR 112.7(c) and 40 CFR 112.8(c)

To satisfy *40 CFR 112.8(c)(8)*, all ASTs will be equipped with a direct-reading level gauge, and facility personnel will be present throughout the filling operations to monitor the product level in the tanks.

4.7.1 Construction Phase

There are no field-constructed tanks at the facility; all tanks will be shop-built. The shell thickness of all of the steel ASTs will be less than one-half inch. As discussed in the American Petroleum Institute (API) Standard 653 *Tank Inspection, Repair, Alteration, and Reconstruction* (API-653), brittle fracture is not a concern for tanks that have a shell thickness of less than one-half inch. Therefore, brittle fracture evaluation per *40 CFR 112.7(i)* is not required.

The ASTs will be of double-walled steel construction and provide intrinsic secondary containment for 110 percent of the tank capacities. Since the secondary containment is not open to precipitation, the volumes are sufficient to fully contain the product in the event of a leak from the primary container. The interstitial space between the primary and secondary containers is inspected on a monthly basis to detect any leak of product from the primary container.

There will be no corrosion protection system, per *40 CFR 112.8(c)(4)*.

There will be no tank heating coils, per *40 CFR 112.8(c)(7)*.

No effluent treatment systems, per *40 CFR 112.8(c)(9)*, will be installed at the facility.

In addition, spill kits will be deployed on an as-needed basis.

4.7.2 Operation and Maintenance Phase

The quantity of diesel fuel required during the O&M phase of the project will be significantly reduced. The power generation system will only be required in the event of a power outage since electric power will likely be provided by the wind farm or directly from the tie-in to the grid. In addition, the requirement to heat the temporary housing will be greatly reduced or eliminated.

There are no field-constructed tanks at the facility; all tanks will be shop-built. The shell thickness of all of the steel ASTs will be less than one-half inch. As discussed in the American Petroleum Institute (API) Standard 653 *Tank Inspection, Repair, Alteration, and Reconstruction* (API-653), brittle fracture is not a concern for tanks that have a shell thickness of less than one-half inch. Therefore, brittle fracture evaluation per *40 CFR 112.7(i)* is not required.

The ASTs will be of double-walled steel construction and provide intrinsic secondary containment for 110 percent of the tank capacities. Since the secondary containment is not open to precipitation, the volumes are sufficient to fully contain the product in the event of a leak from the primary container. The interstitial space between the primary and secondary containers is inspected on a monthly basis to detect any leak of product from the primary container.

There will be no corrosion protection system, per *40 CFR 112.8(c)(4)*.

There will be no tank heating coils, per *40 CFR 112.8(c)(7)*.

No effluent treatment systems, per *40 CFR 112.8(c)(9)*, will be installed at the facility.

There will not be any partially buried or bunkered storage tanks, per *40 CFR 112.8(c)(5)*. In addition, spill kits will be deployed on an as-needed basis.

4.8 Turbine Oil Containment and Spill Response

40 CFR 112.7(c)

1) The proposed wind farm will have 84 wind turbines, each of which will contain approximately 66 gallons of gear oil, along with yaw and hydraulic oil. The turbines have internal collection systems that are designed to prevent leaks from spreading outside their nacelles. They are also located on concrete pads allowing visual inspection. Each turbine will be inspected from the ground on a weekly basis. In addition, routine O&M activities are conducted on turbine equipment every six months at which time gear oil, hydraulic oil and yaw oil are topped off or changed out. Additional O&M work completed at this time would include lubrication and filter change outs. The equipment will be inspected at that time and documented on inspection forms similar to those contained in Appendix C. A spill kit, stored at the O&M Building, will be used in the event of any leak or spill.

2) Personnel who observe visible oil leaks, which result in a loss of oil from the turbine gear box, hydraulic system, or leaking fittings large enough to cause an accumulation of oil on the concrete pad, surrounding soil, or on the turbine tower, shall notify the EHS Coordinator or designee. The EHS Coordinator or designee will ensure the turbine will be promptly repaired. If the leak is not repairable, the turbine will be removed from service until such time the oil leak can be repaired or the malfunctioning parts can be replaced.

3) Spill kits will be deployed on an as-needed basis.

4.9 Transformer Oil Containment and Spill Response

40 CFR 112.7(c)

1) The electrical substation facility will be equipped with four pad-mounted electrical transformers containing an estimated 12,000 to 15,000-gallons of transformer oil each (48,000 to 60,000-gallons total). These transformers will be equipped with a concrete

secondary containment structure designed to contain 110% of the entire contents of a single transformer in case of a failure. The transformers will be formally inspected monthly, and these inspections will be documented on the inspection forms contained in Appendix C. In addition to the formal monthly inspections, informal inspections are also performed during the course of each week as part of the routine operations of the site. Based on O&M employee schedules and routine maintenance, any leaks from the equipment should be observed within 48 hours (during the work week) to 72 hours (during the weekend) of occurrence.

2) Each wind turbine will have its own step up dry-type transformer located within the rear portion of the turbine nacelle. These transformers are not subject to *40 CFR 110* and *40 CFR 112* since they do not contain transformer oils.

3) Personnel who observe oil leaks, which result in a loss of oil from transformer puncture, leakage, electrical failure, leaking fittings, or acts of god, large enough to cause an accumulation of oil in the concrete secondary containment structure shall notify the EHS Coordinator or designee. The EHS Coordinator or designee will ensure the transformer is promptly repaired. If the leak is not repairable, the transformer contents will be transferred to a temporary storage tank and the transformer repaired or replaced.

4) Dikes surrounding the transformers will be drained monthly, or immediately after a significant rain event.

5) Each transformer will have a gauge indicating the level of dielectric fluid within it.

6) Spill kits will be deployed on an as-needed basis.

4.10 Drum Containment and Spill Response

40 CFR 112.7(c)

4.10.1 Construction and Start-Up Phase

1) If 55-gallon drums of oil are used during facility construction and start-up, they will be stored on-site, on secondary containment structures. Unused/used oil will be stored in 5-gallon plastic containers, which are exempt from SPCC regulations, or in 55-gallon drums stored on secondary containment structure. Such practices are also designed to prevent drum corrosion by limiting drum/container contact with the ground. Used oil may also be temporarily stored in 55-gallon drums during the construction and start-up phase, on secondary containment structures prior to proper disposal.

2) Personnel who observe oil leaks that result in a loss of oil from drum puncture, leakage, improper drum storage, or leaking fittings and large enough to cause an accumulation of oil on the floor or in the secondary containment structure shall notify the EHS Coordinator or designee. The EHS Coordinator or designee will ensure that the drum will be promptly repaired. If the leak is not repairable, the drum contents should be transferred to another drum or an over-pack drum may be used to contain the leaking drum. In addition, spill kits will be deployed on an as-needed basis.

4.10.2 Operation and Maintenance Phase

1) The proposed facility will store its 55-gallon oil drums on secondary containment structures within the facility's O&M Building. Containers of oil that are less than 55-gallons (i.e., 5-gallon plastic buckets) will also be stored within the O&M Building, on secondary containment structures adjacent to the aforementioned 55-gallon drums. Such practices are also designed to prevent drum corrosion by limiting drum/container contact with the ground.

2) Personnel who observe oil leaks that result in a loss of oil from drum puncture, leakage, improper drum storage, or leaking fittings and large enough to cause an accumulation of oil

on the floor or in the secondary containment structure shall notify the EHS Coordinator or designee. The EHS Coordinator or designee will ensure that the drum will be promptly repaired. If the leak is not repairable, the drum contents should be transferred to another drum or an over-pack drum may be used to contain the leaking drum. In addition, spill kits will be deployed on an as-needed basis.

4.11 Supplemental Spill Prevention Procedures

4.11.1 Construction Phase

Spill prevention procedures include routine maintenance of construction equipment and storage units and frequent inspections by construction personnel.

Construction personnel will inspect drum/container storage areas at least once a week, and construction vehicles daily, and record noticeable changes or conditions. Key personnel will be familiar with and instructed to follow this SPCC plan. The construction project will have a program in place to improve maintenance and/or operating procedures through employee suggestions and management advice.

Other discharge prevention measures at the Hounsfield Wind Farm are noted below.

- Spill buckets will surround the fill ports on the ASTs. The spill buckets will be routinely inspected for liquids and any accumulated water and oil pumped out.

- Construction vehicles and equipment will be inspected for evidence of oil leakage. Any vehicles or equipment that are leaking oil will be repaired and the impacted soils containerized and properly disposed of.

4.11.2 Operation and Maintenance Phase

Spill prevention procedures include routine maintenance of proposed facility equipment and storage units and frequent inspections by facility personnel. Facility personnel will inspect ASTs, containment areas, drum/container storage areas, transformers, and turbines at least once a week and record noticeable changes or conditions. Key personnel will be familiar with and instructed to follow this SPCC plan. The proposed facility has a program in place to improve maintenance and/or operating procedures through employee suggestions and management advice.

4.12 Supplemental Spill Response Procedures

40 CFR 112.7(a)(5)

This sub-section describes the response and clean-up procedures in the event of any oil discharge. The uncontrolled discharge of oil to groundwater, surface water, or soil is prohibited by New York State laws. Immediate action must be taken to control, contain, and recover discharged product.

In general, the following steps will be taken:

- Eliminate potential spark sources;
- If possible and safe to do so, identify and shut down the source of the discharge to stop the flow;
- Contain the discharge with absorbents, berms, fences, trenches, sandbags, or other material;
- Contact the Spill Response Coordinator or his/her alternate;
- Contact regulatory authorities and the response organization; and
- Collect and dispose of recovered products according to appropriate regulations.

For the purpose of establishing appropriate response procedures, this SPCC Plan classifies discharges as either "minor" or "major", depending on the volume and characteristics of the material released.

A list of Emergency Contacts is provided in Section 2.6 of this plan. The list is also posted at prominent locations throughout the facility. A list of discharge response materials that will be kept at the

facility is included in Appendix C.

During the construction phase, on-site equipment (i.e., excavators, backhoe/loaders, dump truck, etc.) will be utilized at spill sites on an "as-needed" basis.

During the operation phase, site specific backhoe/loaders and dump trucks will be utilized at spill sites on an "as-needed" basis.

4.12.1 Response to a Minor Discharge

A "minor" discharge is defined as one that poses no significant harm (or threat) to human health and safety or to the environment. Minor discharges are those where:

- The quantity of product discharged is less than 5 gallons;
- The product is contained under the control of the spiller;
- The product has not and will not reach the State's water or any land;
- Clean-up of the spilled product was completed within 2 hours of discovery;
- There is little risk to human health or safety; and
- There is little risk of fire or explosion.

Minor discharges can usually be cleaned up by O&M personnel. The following guidelines apply:

- Immediately notify the Spill Response Coordinator.
- Under the direction of the Spill Response Coordinator, contain the discharge with discharge response materials and equipment. Place discharge debris in properly labeled waste containers.
- The Spill Response Coordinator will complete the discharge notification form (Appendix C) and attach a copy to this SPCC Plan.

4.12.2 Response to a Major Discharge

- A "major" discharge is defined as any discharge other than "minor" (see Section 4.12.1 of this plan).

- In the event of a major discharge, the following guidelines apply:

- All workers must immediately evacuate the discharge site via the designated exit routes and move to the designated staging areas at a safe distance from the discharge. Exit routes are included on the facility diagram and posted in the O&M Building that contains the spill response equipment.

- If the Spill Response Coordinator is not present at the facility, the senior on-site person will notify the Spill Response Coordinator of the discharge and has authority to initiate notification and response. Certain notifications are dependent on the circumstances and type of discharge. For example, if oil reaches a sanitary sewer, the publicly owned treatment works (POTW) should be notified immediately. A discharge that threatens Lake Ontario may require immediate notification to the Coast Guard National Response Center (800-424-8802).

- The Spill Response Coordinator (or senior on-site person) must call for medical assistance if workers are injured.

- The Spill Response Coordinator (or senior on-site person) must notify the Fire Department or Police Department (911).

- The Spill Response Coordinator (or senior on-site person) must call the spill response and clean-up contractors listed in Section 2.8 of this plan.

- The Spill Response Coordinator (or senior on-site person) must immediately contact the NYSDEC (800-457-7362).

- The Spill Response Coordinator (or senior on-site person) must record the call on the Discharge Notification form in Appendix C and attach a copy to this SPCC Plan.

- The Spill Response Coordinator (or senior on-site person) coordinates clean-up and obtains assistance from a clean-up contractor or other response organization as necessary.

If the Spill Response Coordinator is not available at the time of the discharge, then the next highest person in seniority assumes responsibility for coordinating response activities.

Due to the remote nature of the facility, removal and segregation of the media impacted by a major discharge will commence immediately upon discovery by on-site personnel, using equipment cited in Section 4.12 of this plan. Once the impacted media is removed and isolated, confirmatory sampling of the adjacent in-situ media will be conducted to verify that no more media needs to be removed. These clean-up procedures will be conducted under the supervision of the Spill Response Coordinator (or senior on-site person), in accordance with NYSDEC Spill Technology and Remediation Series (STARS) Memo #1 (Petroleum-Contaminated Soil Guidance Policy). The spill response and clean-up contractors listed in Section 2.8 of this plan will take over the above-mentioned remedial operations upon arrival to the site.

Once these clean-up procedures have been completed to the satisfactory of the NYSDEC, a spill clean-up report will be issued to the NYSDEC detailing the events that occurred following the discovery of the major discharge. This report will include, but not be limited to the following:

- Notification information cited in Section 4.12.4 of this plan;
- Waste information (i.e., quantity, containerization type, disposal confirmation, etc.); and,
- Confirmatory sampling details/results.

In addition, data generated during these clean-up procedures (i.e., analytical data, GPS coordinates, etc.) will be made available to the NYSDEC in ESRI GIS format.

4.12.3 Waste Disposal

Wastes resulting from a minor discharge response will be containerized in impervious bags, drums, or buckets. The Spill Response Coordinator will characterize the waste for proper disposal and ensure that it is removed from the facility by a licensed waste hauler within two months. Wastes resulting from a major discharge response will be removed and disposed of by a clean-up contractor.

4.12.4 Discharge Notification

40 CFR 112(a)(4)

If petroleum impacts soil or water, or the spill is not cleaned up in two hours, or is not under the control of the facility, or involves more than 5 gallons of oil, the Spill Response Coordinator will call the NYSDEC (800-457-7362).

Any size discharge (i.e., one that creates a sheen, emulsion, or sludge) that affects or threatens to affect navigable waters or adjoining shorelines must be reported immediately to the National Response Center (1-800-424-8802). The Center is staffed 24 hours a day.

A summary sheet is incorporated into the "Discharge Notification Form" (Appendix C) to facilitate reporting. The person reporting the discharge must provide the following information:

- Name, location, organization, and telephone number;
- Name and address of the party responsible for the incident;
- Date and time of the incident;
- Location of the incident (GPS Coordinates);
- Source and cause of the release or discharge;
- Types of material(s) released or discharged;
- Quantity of materials released or discharged;
- Danger or threat posed by the release or discharge;
- Number and types of injuries (if any);
- Media affected or threatened by the discharge (i.e., water, land, air);

- Weather conditions at the incident location; and
- Any other information that may help emergency personnel respond to the incident.

Contact information for reporting a discharge to the appropriate authorities is listed in Section 2.7 of this Plan and is also posted in prominent locations throughout the facility (e.g., in the O&M Building, etc.).

In addition to the above reporting, *40 CFR Part 112.4* requires that information be submitted to the USEPA Regional Administrator and the appropriate state agency in charge of oil pollution control activities (see contact information in Section 2.7) whenever the facility discharges (as defined in *40 CFR Part 112.1(b)*) *more than 1,000 gallons of oil in a single event,* or discharges (as defined in *40 CFR Part 112.1(b)*) *more than 42 gallons of oil in each of two discharge incidents within a 12-month period.* The following information must be submitted to the USEPA Regional Administrator and to NYSDEC within 60 days:

- Name of the facility;
- Name of the owner/operator;
- Location of the facility;
- Maximum storage or handling capacity and normal daily throughput;
- Corrective action and countermeasures taken, including a description of equipment repairs and replacements;
- Description of facility, including maps, flow diagrams, and topographical maps;
- Cause of the discharge(s) to navigable waters and adjoining shorelines, including a failure analysis of the system and subsystem in which the failure occurred;
- Additional preventive measures taken or contemplated to minimize possibility of recurrence; and
- Other pertinent information requested by the Regional Administrator.

A standard report for submitting the information to the USEPA Regional Administrator and to NYSDEC is included in Appendix C of this Plan.

4.12.5 Clean-Up Contractors and Equipment Suppliers

Contact information for specialized spill response and clean-up contractors is provided in Section 2.8 of this Plan. These contractors have the necessary equipment to respond to a discharge of oil that affects neighboring bodies of water (i.e., streams, creeks, lakes, etc.), including floating booms and oil skimmers.

Spill kits are located inside the O&M Building. Once assembled, the inventory of response supplies and equipment will be documented in the spill response kit inspection checklist located in Appendix C of this Plan. The inventory will be verified on a monthly basis. Additional supplies and equipment may be ordered from the following sources:

Dival Safety	(800) 343-1354
Grainger	(585) 427-8570

4.13 Practicability of Secondary Containment

40 CFR 112.7(d)

The ASTs will be designed to contain 110% secondary containment in accordance with application state and federal regulations. In addition, where required by regulations, all AST piping will have secondary containment. Drums and pails will be staged on secondary containment structures.

The wind turbine generators are not required to have secondary containment; however, they do have internal collection systems that are designed to prevent leaks from spreading outside their nacelles. They are also located on concrete pads allowing visual inspection. Each turbine will be inspected from the ground on a weekly basis. In addition, routine O&M activities are conducted on turbine equipment every six months at which time gear oil, hydraulic oil and yaw oil are topped off or changed out. Additional O&M work completed at this time would include lubrication and filter change outs. The equipment will be inspected at that time and documented on inspection forms similar to those contained in Appendix C. A spill kit, stored at the O&M Building, will be used in the event of any leak or spill.

5.0 INSPECTION AND RECORDS

40 CFR 112.7(e)

5.1 Construction Phase

Construction personnel will regularly inspect all oil storage areas during the construction of the facility. In addition, the supervisory personnel will conduct routine inspections of all generators, construction vehicles, and the surrounding areas, noting the condition of vehicle tanks, drum storage, and generators. Examples of inspection forms are provided in Appendix C. The inspection procedures and a record of the inspections, signed by the EHS Coordinator or designee or inspector, will be maintained in the construction records in the on-site construction trailer or O&M Building. These records will be maintained for a period of three years.

5.2 Operation and Maintenance Phase

Facility O&M personnel will regularly inspect all oil storage areas during normal facility operations. In addition, the supervisory personnel conduct routine inspections of all turbines, ASTs, the O&M Building, the electrical substation, and the surrounding areas, noting the condition of transformers, associated containment structures, drum storage, and turbines. Examples of inspection forms are provided in Appendix C. The inspection procedures and a record of the inspections, signed by the EHS Coordinator or designee or inspector, will be maintained in the facility records in the O&M Building. These records will be maintained for a period of three years.

6.0 PERSONNEL TRAINING AND RECORDS

40 CFR 112.7(f)

6.1 Construction Phase

The EHS Coordinator should ensure that all construction personnel are familiar with proper operation and maintenance of equipment to prevent discharges of oil. All personnel should be familiar with applicable pollution control laws, regulations, and rules. The EHS Coordinator will schedule periodic spill prevention briefings at intervals frequent enough to assure adequate understanding of this SPCC Plan. These training sessions will include descriptions of known spill events or failures, malfunctioning components, and recently developed precautionary measures.

Records of the briefings and discharge prevention training will be kept on the form shown in Appendix C and maintained with this SPCC Plan for a period of three years.

6.2 Operation and Maintenance Phase

The EHS Coordinator will ensure that all personnel are familiar with proper operation and maintenance of equipment to prevent discharges of oil. All personnel will be familiar with applicable pollution control laws, regulations, and rules. The EHS Coordinator will schedule periodic spill prevention briefings at intervals frequent enough to assure adequate understanding of the SPCC Plan. These training sessions will include descriptions of known spill events or failures, malfunctioning components, and recently developed precautionary measures.

Records of the briefings and discharge prevention training will be kept on the form shown in Appendix C and maintained with the SPCC Plan for a period of three years.

7.0 SECURITY

40 CFR 112.7(g)

Since both the temporary off-loading facility and proposed permanent slip (see Section 4.5) are subject to U.S. Coast Guard Regulation *33 CFR 105* (Maritime Security: Facilities), the following will be conducted prior to the start of the project:

- A Facility Security Assessment, per *33 CFR 105 Subpart C*, will be conducted;
- Security measures will be established to address the findings of the aforementioned assessment and pursuant to *33 CFR 105 Subpart B*; and,
- If required, a Facility Security Plan will be generated in accordance with *33 CFR 105 Subpart D*.

7.1 Construction Phase

At the end of each day, to the extent possible, construction vehicles will be parked in a central staging area. This staging area will be equipped with sufficient lighting to conduct inspections and, if necessary, any required clean-up operations.

The secondary containers used for drum storage, cited in Section 4.10 of this plan, will be in mobile box structures, with lockable doors.

All ASTs will be protected via temporary barriers that are capable of stopping typical construction vehicles. All AST fill ports will be locked, and controls for the fuel pumps associated with these ASTs (if any) will be protected via lockout/tag out procedures.

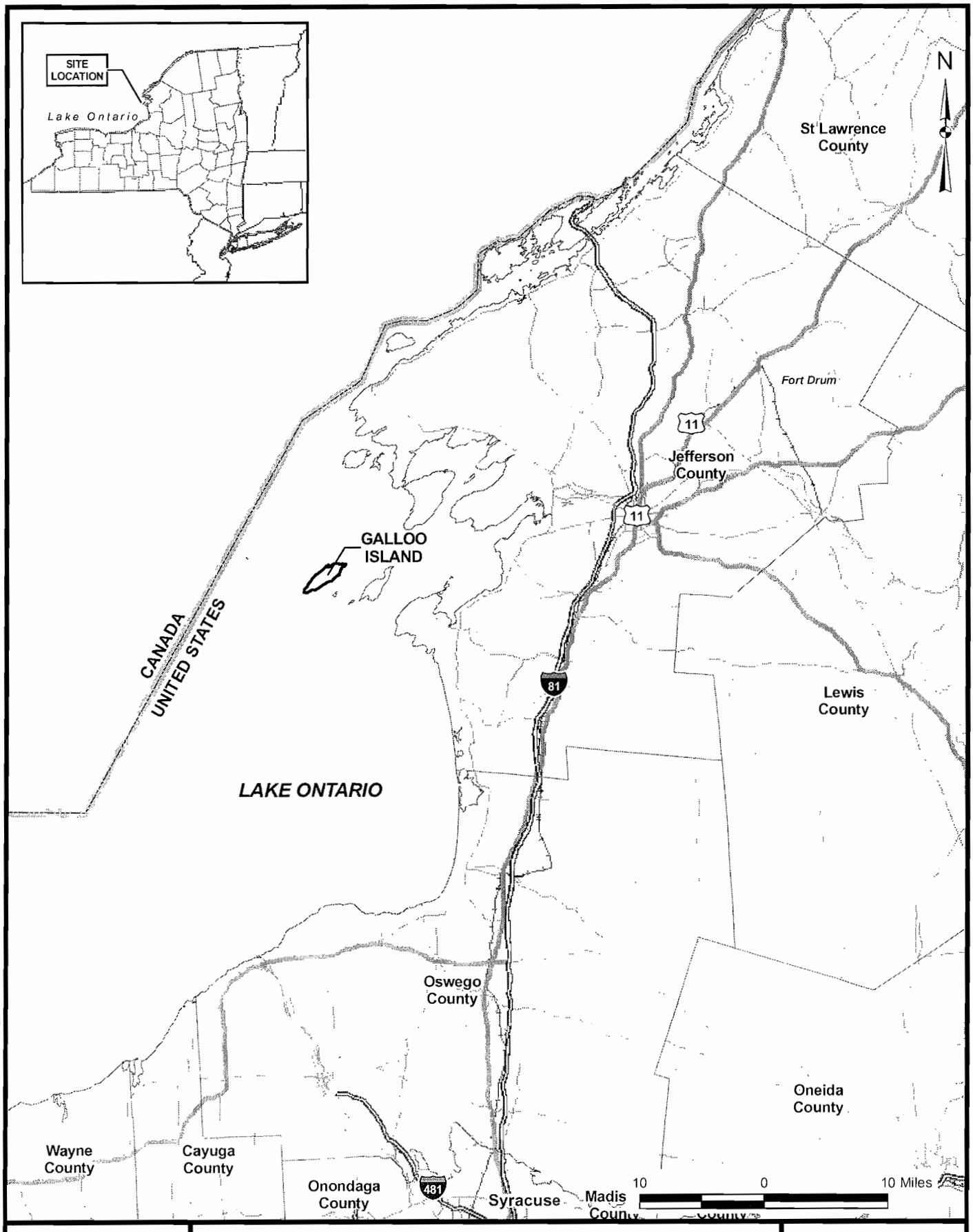
7.2 Operation and Maintenance Phase

The Proposed Hounsfield Wind Farm will operate 24 hours a day, seven days a week. Wind farm operations personnel will be on-site 24 hours a day, seven days a week. The O&M Building is

locked when staff is not present. In addition, the access door to each turbine will be locked unless undergoing inspection or maintenance activities. The electrical substation will be surrounded by a chain link fence with a locked gate. Visitors are registered and escorted through the project site, unless the Operations Supervisor or designee waives the escort requirement, such as routine maintenance personnel, landowner guests, etc. Individuals in vehicular traffic granted entry into the wind farm area are warned verbally or by appropriate signs to ensure vehicles do not endanger oil-related equipment. The O&M Building and electrical substation will be equipped with sufficient lighting to conduct inspections and if necessary, any required clean-up operations.

All ASTs will be protected via concrete bollards that are capable of stopping typical service vehicles. All AST fill ports will be locked, and controls for the fuel pumps associated with these ASTs (if any) will be protected via lockout/tag out procedures.

FIGURES



J:\11175332.00000\IDB\GIS\SITE LOCATION.mxd 11/3/2008 11:01:11 AM Lumb M

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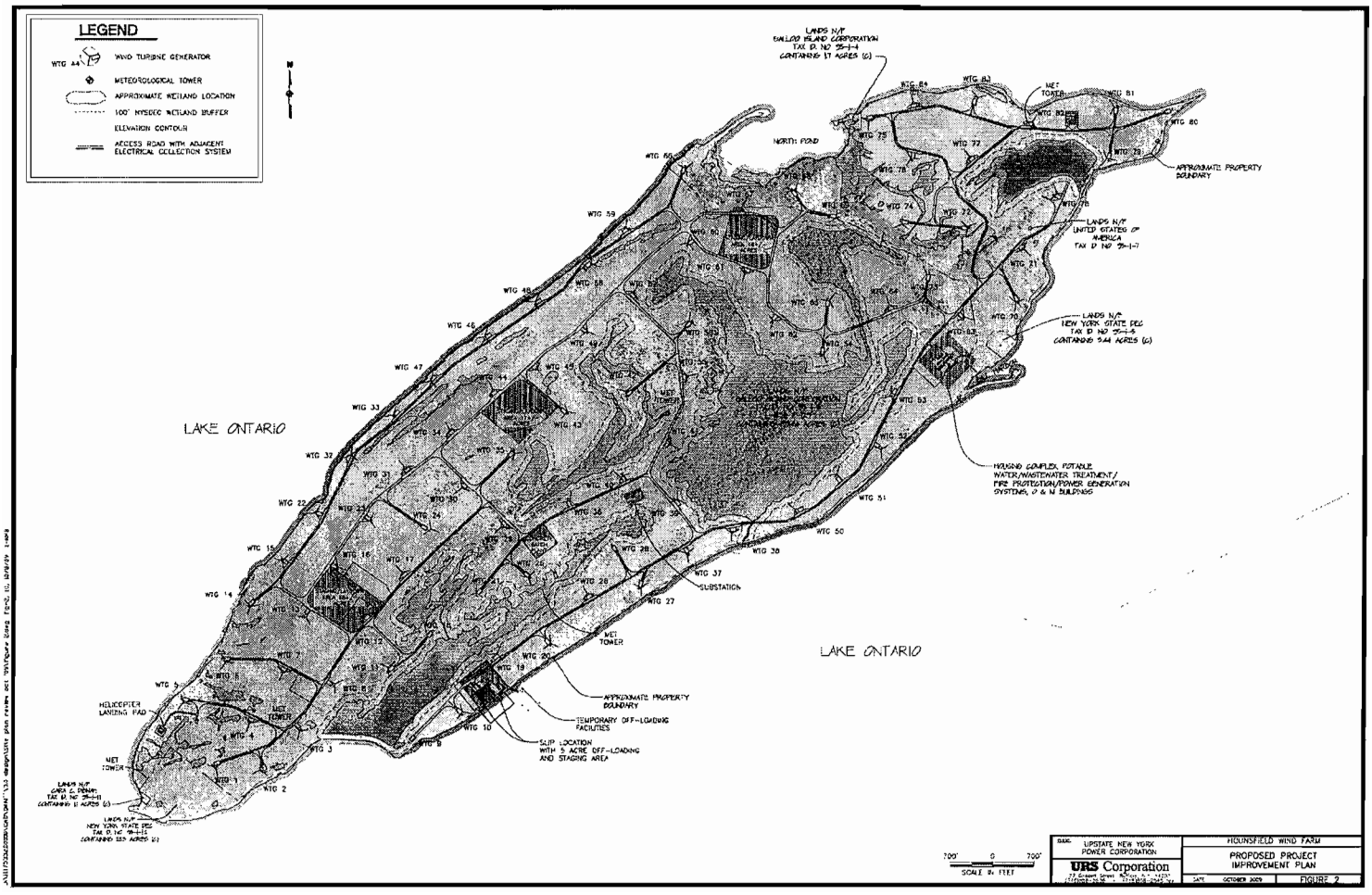
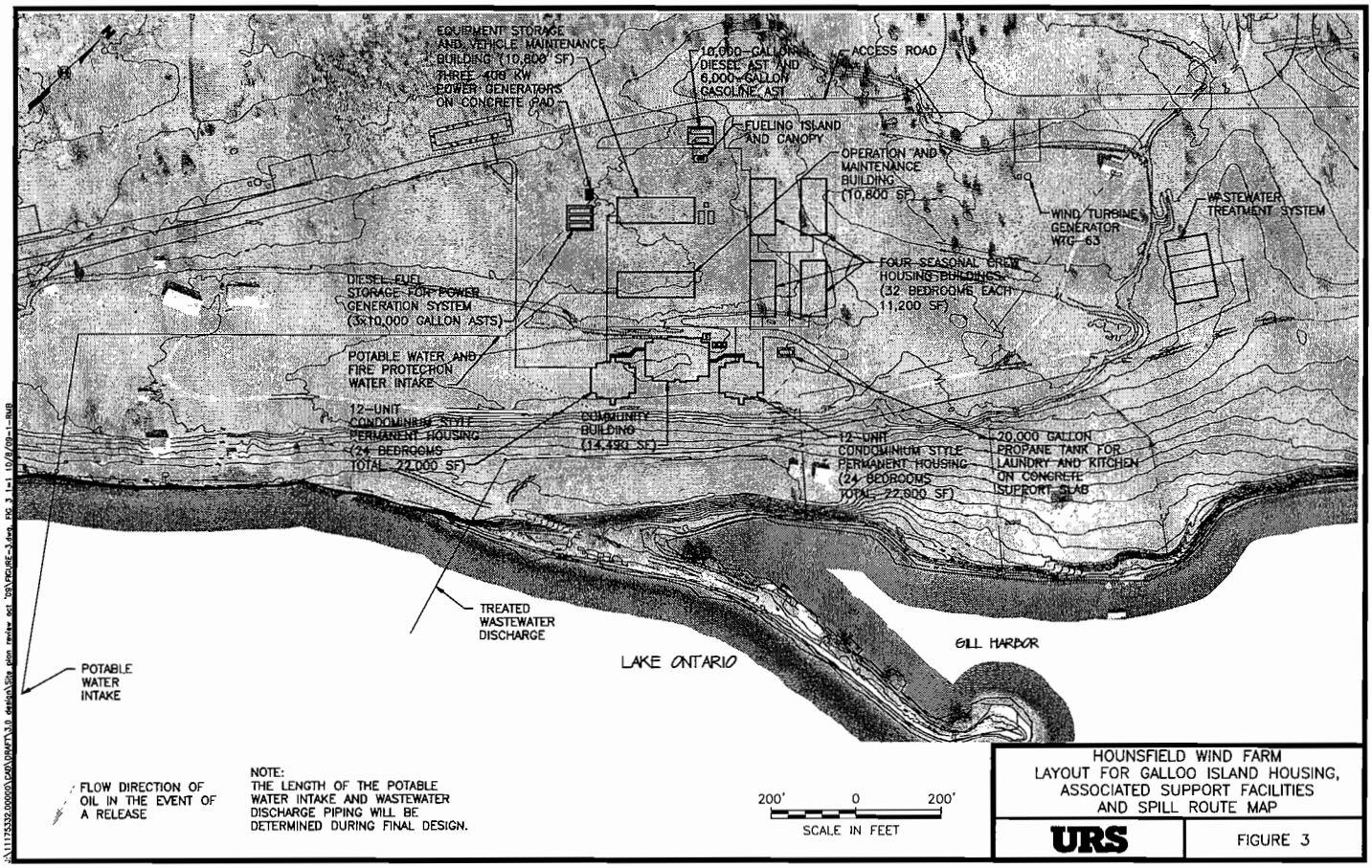
SITE LOCATION MAP
HOUNSFIELD WIND FARM
JEFFERSON COUNTY, NEW YORK

FIGURE 1


LEGEND
WTG 44
WIND TURBINE GENERATOR
METEOROLOGICAL TOWER
APPROXIMATE WETLAND LOCATION
100' NYSDEC WETLAND BUFFER
ELEVATION CONTOUR
ACCESS ROAD WITH ADJACENT ELECTRICAL COLLECTION SYSTEM
N
LANDS N/F
GALLOO ISLAND CORPORATION
TAX ID NO 35-1-4
CONTAINING 17 ACRES (±)
NORTH POND
APPROXIMATE PROPERTY BOUNDARY
LANDS N/F
UNITED STATES OF AMERICA
TAX ID NO 35-1-7
LANDS N/F
NEW YORK STATE DEC
TAX ID NO 35-1-5
CONTAINING 544 ACRES (±)
WILSON COMPLEX POTABLE WATER/WASTEWATER TREATMENT/ FIRE PROTECTION/POWER GENERATION SYSTEMS, O & M BUILDING
LAKE ONTARIO
LAKE ONTARIO
SUBSTATION
MET TOWER
APPROXIMATE PROPERTY BOUNDARY
TEMPORARY OFF-LOADING FACILITIES
SLIP LOCATION WITH 5 ACRE OFF-LOADING AND STAGING AREA
HELICOPTER LANDING PAD
LANDS N/F
CARL E. PENNY
TAX ID NO 35-1-10
CONTAINING 12 ACRES (±)
LANDS N/F
NEW YORK STATE DEC
TAX ID NO 35-1-15
CONTAINING 324 ACRES (±)
700' 0 700'
SCALE IN FEET
BASE: UPSTATE NEW YORK POWER CORPORATION
URS Corporation
HOUNSFIELD WIND FARM
PROPOSED PROJECT IMPROVEMENT PLAN
DATE: OCTOBER 2009
FIGURE 2



HOUNSFIELD WIND FARM
LAYOUT FOR GALLOO ISLAND HOUSING, ASSOCIATED SUPPORT FACILITIES AND SPILL ROUTE MAP

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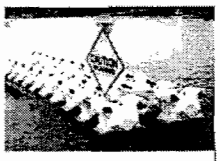
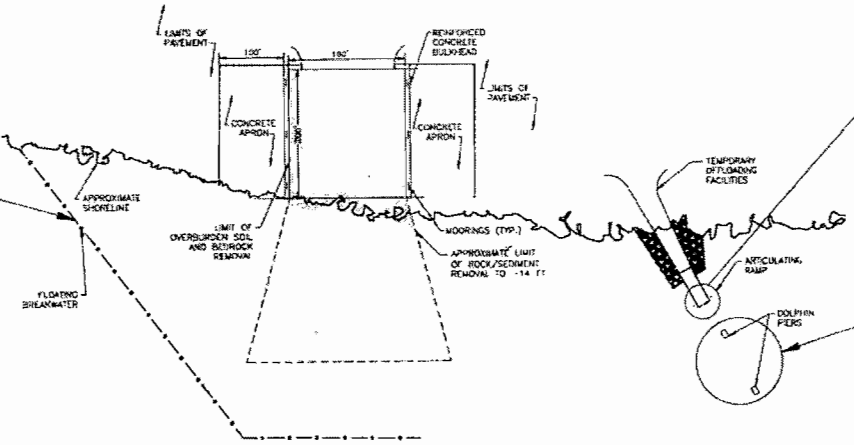
FIGURE 3

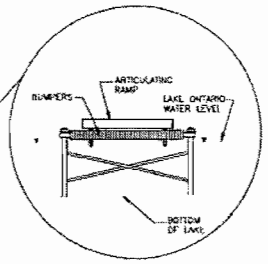


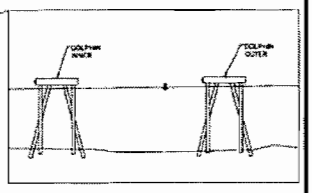


CONCEPTUAL OFFLOADING FACILITIES LAYOUT

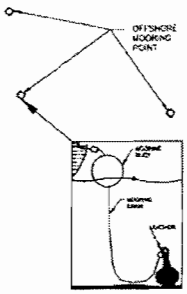
0 70 140

SCALE IN FEET

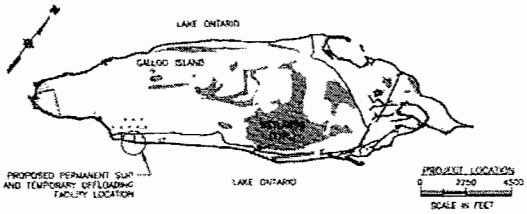




CONCEPTUAL DOLPHIN DESIGN



CONCEPTUAL OFFSHORE MOORING SYSTEM



LEGEND

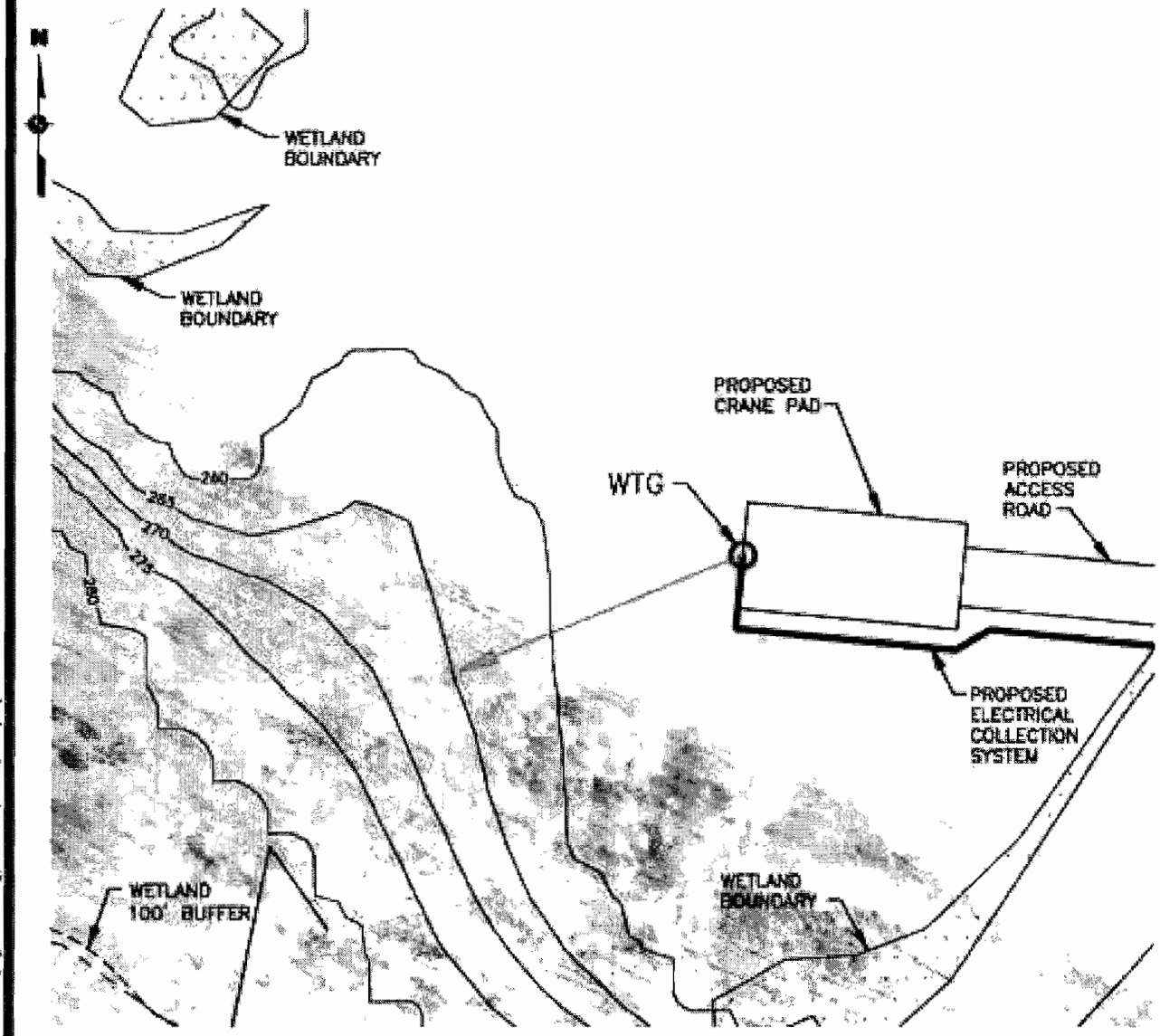
EXISTING ELEVATION CONTOUR (FT.)

NOTES
1. GROUNDSURFACE TOPOGRAPHY FROM 2008 BASE MAPPING
2. BATHYMETRY FROM GEOPHYSICAL SURVEY PERFORMED BY OCEAN SURVEYS, INC AUGUST 2008

HOUNSFIELD WIND FARM
OFFLOADING FACILITY LAYOUT

URS

FIGURE 4



100' 0 100'

SCALE IN FEET

LEGEND

WTG WIND TURBINE GENERATOR

FLOW DIRECTION OF OIL IN THE EVENT OF A RELEASE

CLIENT

UPSTATE NEW YORK POWER CORPORATION

URS Corporation
77 Goodell Street, Buffalo, NY 14203
(716)856-5636 · (716)856-2545 fax

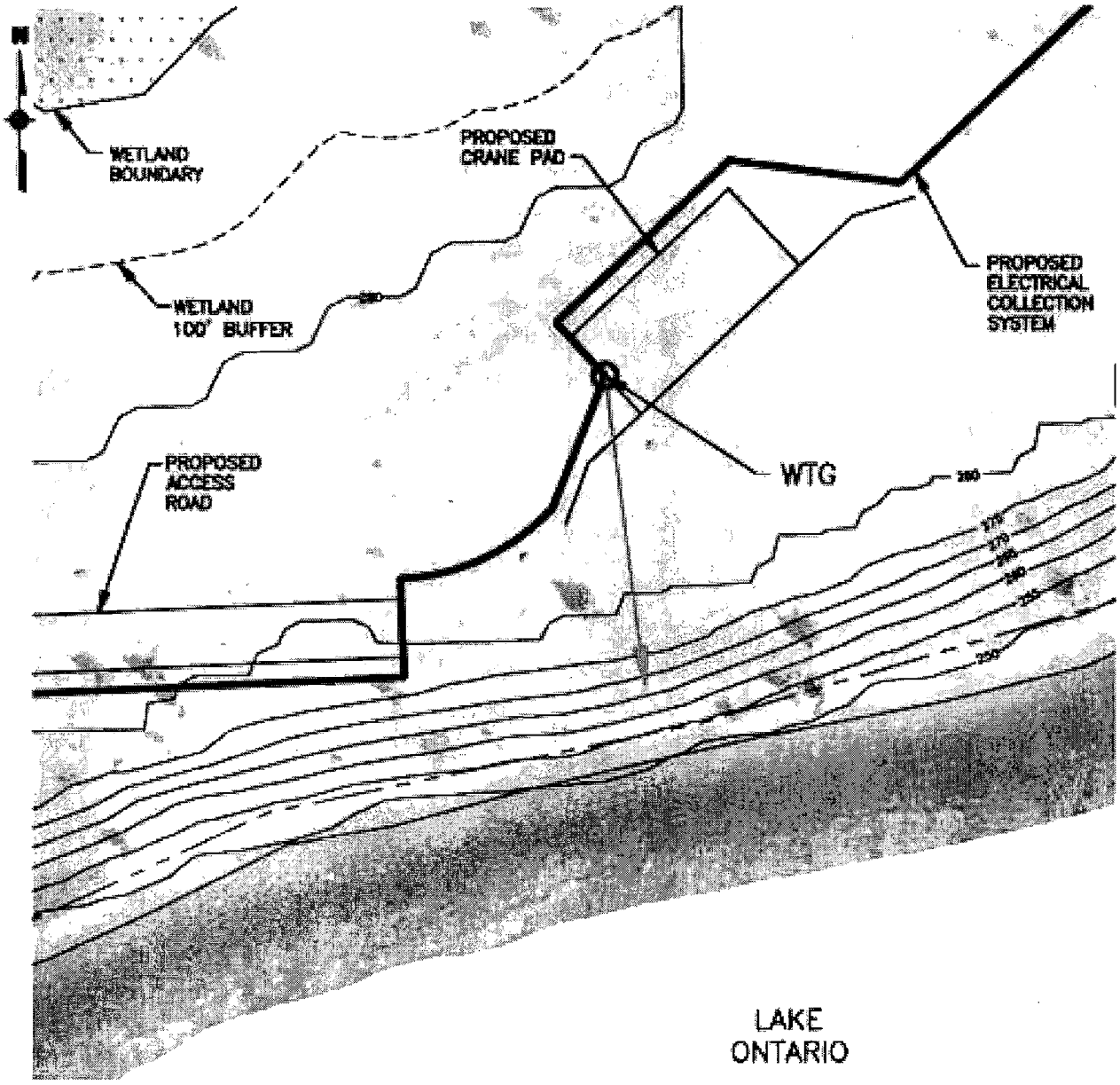
HOUNSFIELD WIND FARM

SPILL ROUTE MAP FOR TYPICAL INLAND WIND TURBINE

DATE: OCTOBER 2009

FIGURE 5

J:\117533\2.00000\CAD\DRAFT\3.0 design\Site plan review oct '09\figure5.dwg, FIG 5, 1:1, 10/8/09 1-RWS



100' 0 100'

SCALE IN FEET

LEGEND

WTG WIND TURBINE GENERATOR

FLOW DIRECTION OF OIL IN THE EVENT OF A RELEASE

CLIENT: UPSTATE NEW YORK POWER CORPORATION

URS Corporation

77 Goodell Street, Buffalo, N.Y. 14203
(716)856-5636 - (716)856-2545 fax

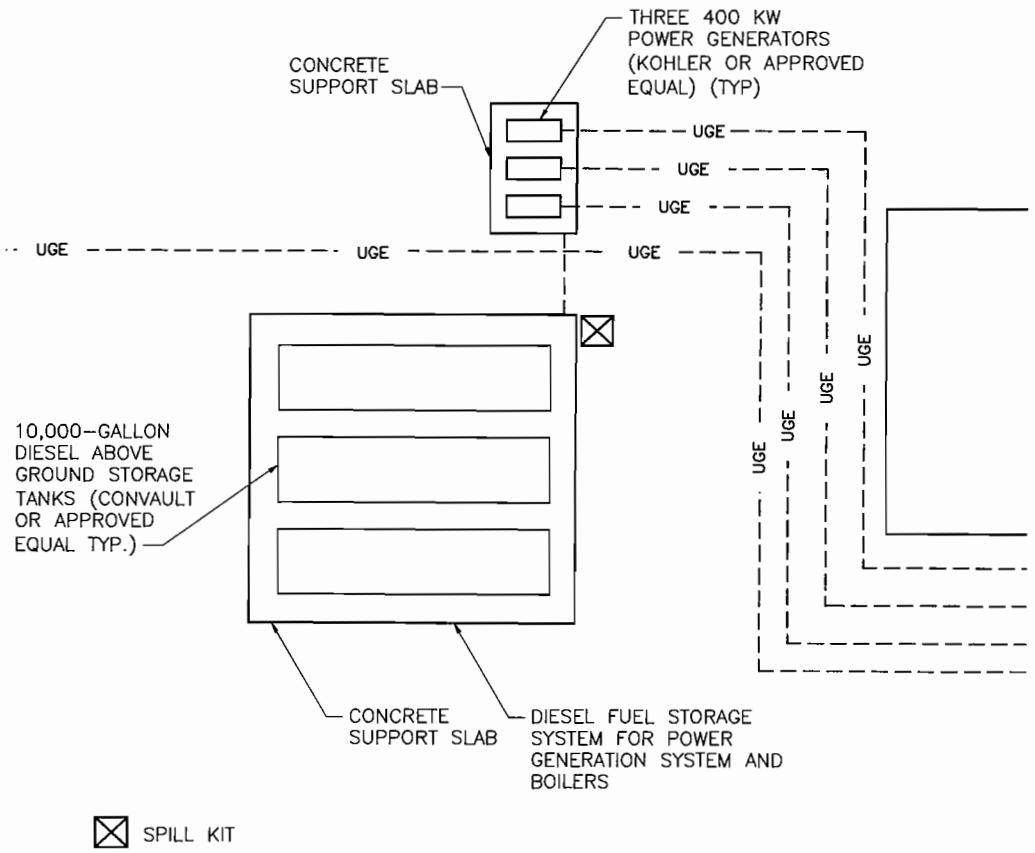
HOUNSFIELD WIND FARM

SPILL ROUTE MAP FOR TYPICAL LAKE SHORE WIND TURBINE

DATE: OCTOBER 2009

FIGURE 6

J:\111753332.00000\CAD\DRAFT\3.0 design\Site plan review oct '09\figure6.dwg, FIG 6, 1:1, 10/8/09 1-RMB



DIESEL FUEL STORAGE TANK AND POWER GENERATION SYSTEMS
OPERATION AND MAINTENANCE AND HOUSING AREA

SCALE: 1" = 30'

CLIENT: UPSTATE NEW YORK POWER CORPORATION

URS Corporation
77 Goodell Street, Buffolo, N.Y. 14203
(716)856-5636 - (716)856-2545 fax

HOUNSFIELD WIND FARM

FUEL STORAGE AND POWER GENERATION SYSTEMS

DATE: OCTOBER 2009

FIGURE 7

J:\11175332.00000\CAD\DRAFT\3.0 design\Site plan review oct '09\FIG-7.dwg, FIG-7, 1:1.11, 10/8/09 1-RMB