BEST MANAGEMENT PRACTICES PLAN

NORLITE CORPORATION
628 SOUTH SARATOGA STREET
COHOES, NY 12047

Revised: 5/2003; 12/2004, 7/2005, 4/2006

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1.0 INTRODUCTION

At the request of the New York State Department of Environmental Conservation (NYSDEC), Norlite Corporation has developed a Best Management Practices Plan, herein referred to as the BMP Plan or the Plan. Following transfer of ownership of the Norlite facility to American NuKEM Corporation, Revision 0 of the Plan, dated 4/30/92, was prepared to address specific concerns enumerated in Order on Consent R4-0768-90-01. This revision complied with requirements of 40 CFR Part 125, Subpart K and guidelines established in EPA's NPDES Best Management Practices Guidance Document (EPA-600 9-79-045, December 1979). Per this document, any facility that uses, manufactures, stores, handles or discharges any pollutant listed as toxic under Section 307(a)(1), or as hazardous under Section 311 of the Clean Water Act (CWA), is required to prepare and implement a BMP Plan. During September 1995, the Plan was revised (Revision 1) to comply with the terms of Order on Consent R4-1734-94-08, which stipulated that the Plan be updated to comply with storm water management requirements contained in 40 CFR 122.

Revision 0 of the BMP Plan was developed following numerous facility reviews by ENSR Consulting and Engineering (ENSR). ENSR investigated the site hydrological characteristics and conducted an in-depth manufacturing area assessment to identify equipment function, operational procedures, health and safety standards, inspection records and potential sources of hazardous materials contamination. Later revisions to the Plan were prepared exclusively by Norlite Corporation.

The BMP Plan addresses the following key areas in which storm water runoff has the potential to come in contact with hazardous materials:

* Low Grade Fuel (LGF) Storage;
* Process Operations (Kiln);
* SPDES Process Water Outfalls: closed landfill leachate pond 004, Quarry Water Discharge 003 and Stormwater Runoff 007 all to the Salt Kill Creek, and Process Water Outfall 006 to the Mohawk River;
* Shale Fines Landfill Leachate;
* Baghouse Dust Processing;
* Waste Water Treatment; and
* General Facility Site Runoff from product piles.

Since the original Consent Order was issued, Norlite Corporation has implemented several Best Management Practices related to dust control, general housekeeping and facility access. These established practices, and additional practices that Norlite Corporation plans to implement, are presented herein.

Revision 0 of the BMP Plan described storm water and other recommended management practices based on facility conditions in existence on April 30, 1992. Since that time, but prior to preparation of Revision 1, the following capital improvements were made to Norlite's facility:

*Kiln 1 Air Pollution Control System Upgrades.
*Construction of an interim Wastewater Treatment Plant,
*Construction of a New LGF Tank Farm and aboveground line,
*Addition of Office and Laboratory Facilities,
*Addition of pneumatic lines for APC dust conveyance,
*Construction of new roads and seeding of unused portion of the facility for dust control,
*Filling in of the mid-pond and former surface impoundment, and
*Relocation of plant entrances and security points.

Concurrent with preparation of Revision 1 to the Plan, construction of a permanent Wastewater Treatment Plant was nearing completion. Additionally, to comply with a separate provision of Order on Consent R4-1734-94-08, Norlite has adopted improved practices, and shall make additional improvements to the plant, that shall substantially reduce emission of fugitive dusts.

Further improvements to the BMP Plan shall be identified as the BMP Committee continues its work and implements this Plan. As improvements or modifications are identified, the BMP Plan shall be revised by the Committee, and revisions shall be forwarded to NYSDEC. For this reason, this Plan should be viewed as a "living" document that is subject to improvements and updates as more is learned through its implementation. The BMP Committee shall forward any revisions to the Plan to NYSDEC within 10 working days of making a revision.

1.1 CONTENTS OF THE BMP PLAN

The BMP Plan is divided into the following four sections:

Section 2.0, This section presents a description of the Norlite facility, the existing hydrology/drainage characteristics of the site, and the existing industrial operation. In addition it identifies potential areas where hazardous materials may come in contact with storm water runoff or where the slightest potential exists for a spill or release to migrate to surface or ground water.

Section 3.0, This section presents baseline BMPs that are generally applicable to industrial sites and describes how Norlite meets or exceeds industrial standards. These BMPs require personnel commitments and procedural actions, and are usually incorporated by reference into other environmental programs (e.g., Contingency Plans, Safety Programs, etc).

Section 4.0, This section describes the plant BMP compliance manufacturing area assessment, compliance improvements, and a storm water management plan for the site.

Appendices, The Appendices contains BMP reference information such as a list of drawings, an Engineering Certification, site drainage maps, Personnel Organization and Training documentation, Contingency Plan, etc.

1.2 STATEMENT OF NORLITE CORPORATION ENVIRONMENTAL POLICY

Through implementation of the BMP Plan, Norlite Corporation shall demonstrate a commitment to comply with NYSDEC concerns and BMP standards. It is the intent of Norlite Corporation to operate the facility in a safe and environmentally sound manner. Norlite shall operate the facility in accordance with all applicable state and federal environmental regulations. To achieve this goal, Norlite shall conduct appropriate training, develop and implement proper emergency procedures, use good engineering practices, and frequently and formally inspect facility operations.

As a part of this review process, Norlite has established a BMP Committee. This Committee is charged with reviewing existing and proposed equipment, procedures, documentation, practices and the preparation of recommendations relating to control of pollutants. Norlite Corporation management has made a decision to fully support the BMP Committee and assures NYSDEC that all facility resources are available for the Committee's use.

1.3 GENERAL BEST MANAGEMENT PRACTICES

Norlite's BMP Plan specifies two categories of practices, baseline and advanced. Baseline BMPs are defined as those management practices generally considered to be standard practices that are practical and broad in scope. They are independent of specific chemicals or groups of chemicals and physical site conditions. Baseline BMPs include Spill Prevention Containment and Control (SPCC) Plans for oil and hazardous materials or products, Occupational Health and Safety Programs, Spill Control Committee functions, and procedures relating to fire protection, spill reporting, employee training, inspection, preventative maintenance, good housekeeping, materials compatibility and security. Baseline BMPs require personnel commitments and procedural actions.

Advanced BMPs are defined as practices that are specific to groups of toxic or hazardous substances, and are related to one or more ancillary sources. These BMPs include site specific procedures for prevention, containment, mitigation, and transport of hazardous materials. Advanced BMPs are identified in Section 3.

2.0 FACILITY DESCRIPTION

Section 2.1 describes the Norlite facility, the baseline or existing environment, the types of processing and product manufactured on the 200-acre site, and identifies specific operations which handle hazardous materials. Section 2.2 describes present Norlite BMPs concerning hazardous materials handling and spill prevention.

2.1 Description of the Norlite Facility

The Norlite facility is located on the southern boundary of the City of Cohoes, New York. The Norlite site is located in Cohoes, New York, as shown in Figure 2-1. The facility layout is depicted on Figure 2-2. A tributary stream, the Salt Kill, traverses the facility site from the northwest. The basic industrial operations conducted on the site are: mining of shale from an active quarry, and the production of lightweight aggregate building material for construction industries.

Norlite also practices energy recovery by incineration of low grade fuel (LGF) to provide radiant heat energy to expand the shale in kiln operations, producing the lightweight aggregate. The lightweight aggregate is produced by heating crushed shale in a rotary kiln. The heating process expands the mineral to a porous substance having physical properties useful to the construction industry as an additive to cement. When cooled, this material has different physical strength and lighter unit weight than its shale form. This 'aggregate' material is the product Norlite provides for sale to customers. The product is useful in certain construction activities, such as bridges and high rise buildings, where a lightweight concrete mix is desirable.

Since December 1995, Norlite has been operated by United Oil Recovery, Inc. There are two independent organizations at the facility, each one reports independently to the corporate President. Norlite Operations Staffing consists of a director of operations and department managers responsible for key operational areas of the Norlite facility. In addition, as part of Norlite's commitment to health, safety and environmental compliance, Norlite maintains an independent compliance organization with a dedicated staff of compliance professionals. The organizational chart of the Norlite Corporation is shown in Figure 2-3.

Since a new SPDES permit was issued February 1, 1992 (and renewed in February, 1997), Norlite has undertaken a number of best management practices (BMP) to improve safety, and protect down-stream receiving waters. The current SPDES permit expires February 1, 2007. Examples of steps taken include:

* Removal of a large coal pile near the Salt Kill Creek;
* Placement of gravel in parking areas, entrance roads and some work areas to reduce runoff collection, erosion and dust;
* Relocation of truck entrance roads and weigh scale to eliminate truck traffic near residences, restrict trucks to only prepared road surfaces, and minimize truck passage through the facility site;
* Placement of covers on raw material and product conveyor units to control dusting;
* Installation of pneumatic conveying systems to transfer baghouse dust;
* Placement of roadside berms to reduce runoff and erosion storm water;
* Closure of a shale fines settling pond and placement of settled residues in a permitted landfill with an SPDES permitted leachate Outfall 004;
* Removal and filling in of mid-pond system;

* Construction of wet scrubber system secondary containment units;
* Construction of a surface runoff drainage trench/silt trap system at Salt Kill on east side of facility;
* Relocation of long-term product storage piles to area away from Salt Kill drainage zone;
* Removal and closure of old underground and uncontained vehicle fuel storage tanks near the eastern facility boundary.
* Paving of various sections of roadways where feasible.
* Flaps placed over holes in the 3/4s stacking tube for dust reduction.
* Reduced drilling and blasting allowing for selected meteorological favorable conditions to prevent fugitive dust from leaving the area.

These BMP improvement plans are detailed in Section 4.

Figure 2-1

Norlite Corp: 518-235-0401
628 Saratoga St
Cohoes NY
12047 US

Notes:

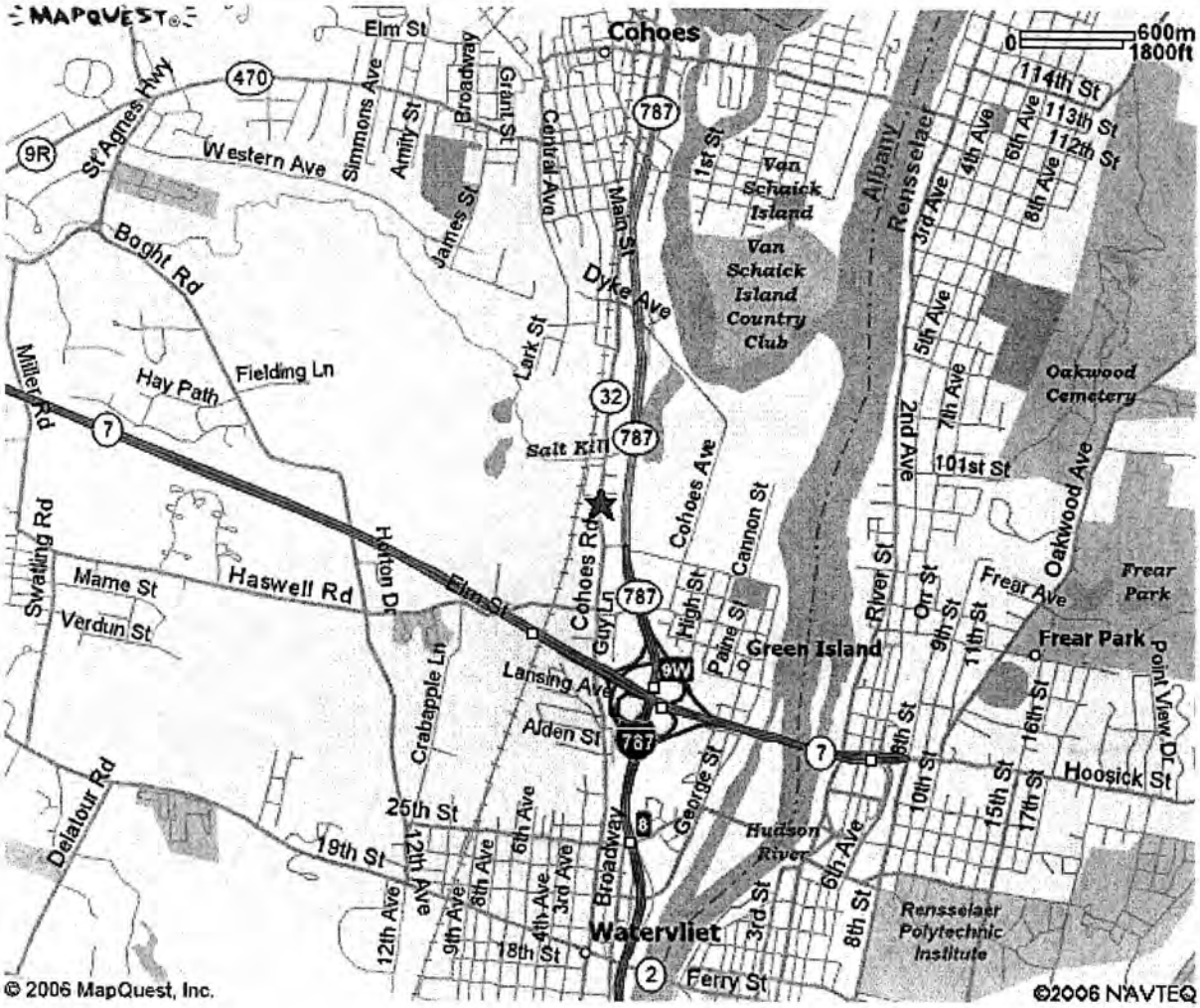

Figure 2-2

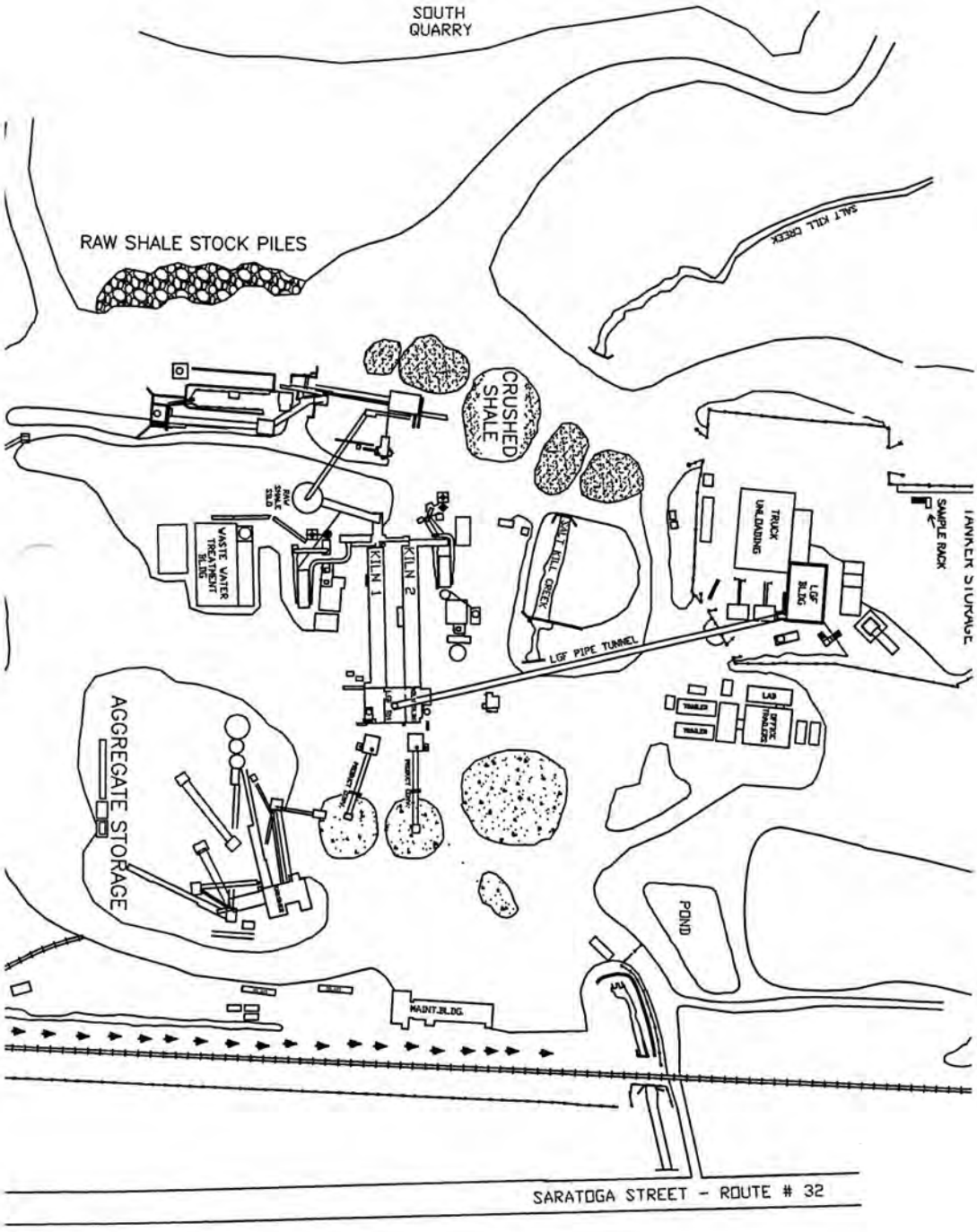
SOUTH
QUARRY
RAW SHALE STOCK PILES
SALT KILL CREEK
CRUSHED
SHALE
RAW
SHALE
SILO
WASTE WATER
TREATMENT
BLDG.
KILN 1
KILN 2
KILL KILL CREEK
TRUCK
UNLOADING
LGF
BLDG.
SAMPLE RACK
TANKER STORAGE
LGF PIPE TUNNEL
TRAILER
TRAILER
LAB
OFFICE
TRAILER
AGGREGATE STORAGE
POND
MAINT.BLDG.
SARATOGA STREET - ROUTE # 32

Figure 2-3

NORLITE CORPORATION

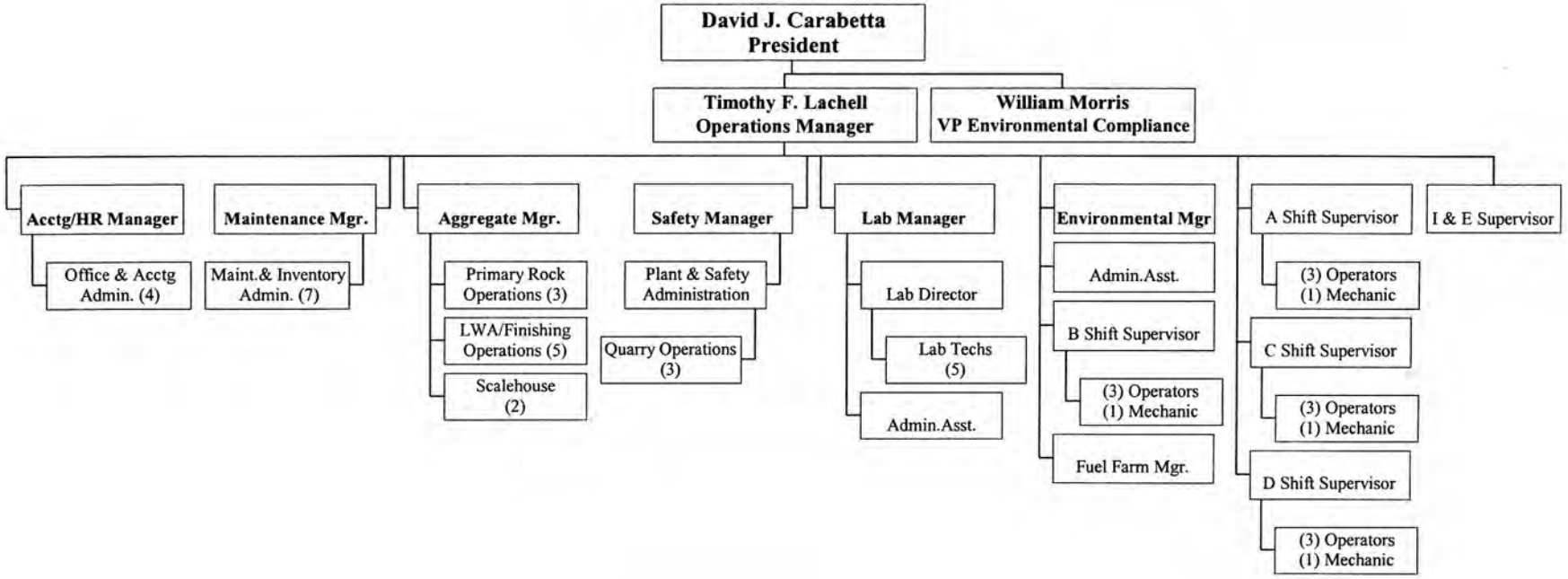

Figure 2-6

Storm Water Discharge Check Sheet

Discharge Date _____

Start Time _____

End Time _____

Discharge Location _____

Reporting Person _____

Approval to Discharge _____ (Compliance Coordinator or Supervisor Signature)

(Note: Discharge Approval Must Be Obtained Prior to Discharge)

Description of Impounded Water Prior to Discharge

(Describe color, any presence of sheen, turbidity, etc.)

Note: If sheen is present notify Supervisor or Compliance for approval to discharge.

_____

_____

_____

_____

_____

Condition of Remaining Water in Impoundment

(Note color, presence of sheen, turbidity, etc.)

_____

_____

_____

_____

_____

Comments

_____

_____

_____

_____

Compliance Review _____ Date _____

Note: Return Completed Form to Compliance

Figure 2-6 (cont.)

Discharge Observation Log

Date / Time	Observer	Observation (Sheen or Oil Residue*)	Date / Time	Observer	Observation (Sheen/Oil Residue*)

Note: * If sheen or evidence of contamination is observed, stop discharge and notify supervisor or Compliance.

2.1.1 Types of Facility Operations

2.1.1.1 Quarry Operations

The raw material for the aggregate, shale, is quarried from a 75 acre area west of the kiln operation on the site. The quarry has been in operation for over 35 years and is currently under license to operate in accordance with NYSDEC mining regulations. Equipment operated in the quarry area includes large front-end loaders drill rigs and dump trucks. Since raw shale is a non-hazardous mineral composed of about 95 percent silicon, iron, magnesium and calcium oxides, the quarry operation does not pose hazardous material handling concerns. Storm water and groundwater control in the quarry pits is managed by controlled pumping to the Salt Kill via an SPDES permitted Outfall 003.

2.1.1.2 Shale Crushing Operation

The shale mined on site is transported to crusher hoppers where the raw material is crushed to uniform particles and moved by covered conveyors as feed stock to a storage silo. From the feed silos, the raw material is introduced to the kiln. The shale crushing operation is located west of the kiln area as shown on Figure 2-2. The shale crushing operation does not involve hazardous materials handling operations. Dusting and particulate emissions from the crushing operation are controlled by water sprays at the discharge of the crushed shale conveying system. The design of the spray nozzle system is being upgraded to reduce the volume of runoff water generated by this operation.

2.1.1.3 Kiln Operation

The kiln receives crushed raw shale material for firing to temperatures between 1,700 F and 2,100 F, at which point the heated shale reaches the heat of incipient fusion. In a semi-plastic state, internal gases expand, creating an aggregate (product) with voids. There are two kilns operational. The kilns are fired with fuel oil, natural gas and a recycled fuel signified as low grade fuel (LGF). Both kilns have identical emission control systems with wet and dry emission control devices for the collection of particulate matter, hydrogen chloride (HCL), and other gaseous species. Details concerning kiln operations and related environmental controls are included in Appendix A. BMPs for kiln operations are discussed in Section 1.2.

2.1.1.4 Product Pile and Finish Plant

The short-term product pile area is located in the southeast corner of the site. This four-acre temporary storage area receives final sorted aggregate product that is removed from the site continuously by large haul trucks or railcars under purchase order. The product is conveyed to the product pile area by conveyors from crusher/sorter areas. Front-end loaders are operated in the area to load product onto trucks or railcars and manage product piles. Because of the crushing operations carried out here, fugitive dust emissions are the primary BMP concern in this area.

Dusting and particulate emissions are controlled by water sprays at the discharge of the product conveyor systems. These are undergoing design changes to reduce the volume of product pile runoff by approximately 50 percent.

A long-term product storage pile is located near the Elm Street entrance gate. This storage area allows for larger inventories of product material to be stored while minimizing contact with storm water runoff drainage to the Salt Kill. It also reduces the potential for dust transport to the neighboring apartment complex at the eastern boundary of the facility.

2.1.1.5 LGF Storage Area

LGF is transported to the site by truck. Trucks are directed to the sampling station near the truck staging area and are sampled. After sampling has been performed, trucks are parked in the truck staging area until waste characterization has been completed and offloading has been approved by the laboratory manager or his/her designee. The trucks are then directed to the offloading pad and the contents of the tanker are pumped into storage tanks. Norlite is permitted for 144,000 gallons of hazardous liquid storage by the NYSDEC and EPA. The LGF is a recycled waste fuel that is monitored as received in order to comply with specifications contained in the facilities "Waste Analysis Plan." Norlite does not manage reactive waste, only wastes that are flammable and combustible. Also located in the LGF storage area are filter and tank sludge wastes generated from filtering the LGF before storage, particulate material that settles in the storage tanks, and drummed liquid wastes from outside generators. The wastes are either processed or shipped offsite for disposal. Approximately four to six bulk tank trucks deliver LGF to the storage areas daily, amounting to 20,000 to 30,000 gallons per day. Details concerning Norlite BMPs for the LGF area are provided in Section 2.2

2.1.1.6 Scale Area

A new scale area is located near the Elm Street entrance on the southern boundary portion of the site. Previously, the scale was directly east of the underground fuel storage tanks. The fuel stored in this area was used to supply on-site mining and product moving equipment and plant vehicles. These tanks did not have secondary containment and were removed by July 1995. The replacement tanks for these fuel storage needs (i.e., diesel and gasoline for site vehicles) has been relocated to the Elm Street entrance of the facility. These are aboveground storage tanks.

2.1.1.7 Truck Staging Area

The Truck Staging Area (or Staging Area) is the area in which trucks containing LGF, SLGF, waste oil, hazardous waste, non-hazardous waste and / or other chemicals are parked prior to being processed into proper plant storage facilities or prior to transfer to off-site facilities. This Staging Area has been graded, sloped and engineered to maintain secondary containment for the contents of at least 10 fully loaded LGF tank wagons. The secondary containment consists of a graded, sloped base of 12- 18" compacted clays, covered with a 40 mil HDPE liner. The HDPE liner is with a protective layer of shale fines materials to protect the liner from truck and vehicle traffic. The containment is graded and sloped towards the northeast corner to provide for collection and removal of storm water.

2.1.2 Norlite Site Hydrology

The purpose of this section is to present existing runoff conditions and to identify potential sources of contamination within the site area.

2.1.2.1 Hydrology Assessment

The 200-acre Norlite site lies in the watershed of the Salt Kill. This small stream has a watershed drainage area of approximately 2.5 square miles. Average annual runoff for the Troy region is approximately 1.3 inches per square mile. Therefore, the average annual discharge for the Salt Kill is approximately 3 cubic feet per second. The Salt Kill has been observed during the summer months with limited flow. The Salt Kill meanders east of the facility shale quarries and traverses

the site between the LGF area and the kilns. It flows from west to east exiting the facility near the Saratoga Street entrance. A small dam was constructed (during previous ownership) north of the kiln area to provide cooling tower makeup water. This was the location for former discharge outfalls 001 and 005. These outfalls have been out of service since the September, 1994 installation of a new SPDES outfall (# 006) which discharges directly to the Mohawk River. Sections of the Salt Kill above and below the pond flow through culverts. The areas above the culverts have been back filled and graded to accommodate truck traffic on the facility site. Embankments along the dam and pond section of the Salt Kill have been leveled off and regraded to prevent a majority of roadway and site runoff into the Salt Kill at this location.

Norlite Corporation commissioned ENSR Consulting and Engineering, Acton, MA. to do an analysis of runoff conditions observed during storm events throughout 1992. Based on field observations of runoff conditions and drainage patterns, the 1.3-inch storm event was selected to predict the 0.5-inch runoff volume within drainage areas identified on the site. For the Norlite site, a 1.3-inch storm over a 24-hour period generates approximately 0.5 inches of runoff, or the "first flush" storm event.

Since 1992, however, Norlite has observed that much of the facility surface is highly pervious and first flush runoff is quite limited especially after several weeks of dry weather. As a result, Norlite is reassessing the practicality of installing first flush volume retention systems and providing, instead, flow velocity reducing silt-trap systems.

2.1.2.2 Runoff Analysis

The U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) TR-55 Urban Hydrology Method was used to determine runoff volumes on the Norlite site. This method is accepted by the NYSDEC for calculating runoff conditions for storm water management features for proposed land development projects (Storm water Management Guidelines for New Development, April 1990). A summary of the hydrology of the Norlite site follows.

Existing Runoff Conditions

The watershed boundaries within the Norlite parcel can be divided into subdrainage basins, as shown on Figure 1-5 (attached). These basins are referred to as:

Drainage Area 1 - south of the Eastern Watershed
Drainage Area 2 - the southern portion within the Eastern Watershed
Drainage Area 3 - the Western Watershed

As depicted, these sub-drainage areas indicate where runoff flows are divided by topographic gradients and the direction in which runoff flows on site. The runoff discharge rates for the 1.3-inch storm in the Troy area for the sub-drainage areas in the Eastern Watershed are:

Drainage Area 1 = 5.2 cfs
Drainage Area 2 = 3.0 cfs
Drainage Area 3 = TBD

Drainage Area 1

Drainage Area 1 encompasses 8.37 acres and is located south of the Eastern Watershed. Facility components located in Drainage Area 1 include portions of the rotary kilns and outside aggregate-processing areas. The majority of surface runoff within this drainage area flows toward the off-site wetland located southeast of the site. Runoff generally flows as sheet flow towards the southeast and into a large emergent wetland. An existing railroad, located east of the emergent wetland, impedes drainage flows from the wetland.

Recent and on-going construction activities in this area are changing the topography which may change runoff patterns and volumes. Improvements planned for this area are described in Section 4.3.

Drainage Area 2

Drainage Area 2 is approximately 6.1 acres in area. Facility components located within the watershed area include the general management offices, maintenance facilities, parking areas, laboratory, low grade fuel storage area, and portions of the rotary kiln and lightweight aggregate processing areas.

A new silt trap-drainage system has been installed in Drainage Area 2. These improvements for storm water control are described in Section 4.3. Based on field observations since 1991, runoff from the roads and outside processing areas flows to the Salt Kill near the existing dam or to the downstream end of the Salt Kill prior to exiting the site. This new system intercepts these runoff flows and reduces silt and suspended solids discharges to Salt Kill Creek.

Erosion channels have been minimized on roads by providing berms and placement of heavy gravel on surfaces. These roads presently convey storm flows to the Salt Kill as it exits the western boundary of the site.

Drainage Area 3

Drainage Area 3 is comprised of approximately 23.70 acres. This area contains the quarry pits and undeveloped areas to the north of the quarry. Surface runoff during storm events enters the Salt Kill by overland flow along its banks. Runoff is conveyed along quarry access roads to the Salt Kill or to the inactive quarries. A discussion of site storm water runoff control is provided in Section 4.3.

2.2 Description of Potential Sources of Hazardous or Toxic Materials

The objective of the BMP Plan is to describe the primary sources of toxic and hazardous pollutants and define control measures that shall minimize the potential of such theoretical releases. On the Norlite site, if there were no proper engineering controls and good management practices, the following would be potential theoretical sources of release of chemical materials:

* three SPDES permitted Outfalls (Outfalls 003,004 and 006) discharged at specific locations shown on Figure 2-2;
* site storm water runoff from the LGF area;
* spillage or leaks from tanker trucks, storage tanks, or storage drums of LGF;
* release of sludge or waste disposal of filtered solids stored in tanks or drums;
* chemical and sludge handling areas of the APCS scrubber wastewater treatment plant (see Section 4.2).

2.2.1 SPDES Outfalls

2.2.1.1 Description of the Existing SPDES Outfalls

The Norlite facility produces collected runoff water, groundwater and wastewater which is managed on-site and discharged to the Salt Kill or Mohawk River pursuant to New York SPDES permit #-0004880. The sources of each effluent outfall are described as follows:

Outfall 003 - Quarry Water discharge - includes storm water and groundwater from the quarry area which is periodically discharged by controlled pumping to the Salt Kill.

Outfall 004 - Landfill Leachate - leachate generated from rainfall which has come in contact with the non-hazardous 'shale fines' landfill collected in the facility leachate collection system and drains to the existing permitted leachate collection basin. This is periodically discharged via Outfall 004 to the Salt Kill.

Outfall 006 - Air Pollution Control Saline Water - Blowdown and non-contact cooling water from the kiln air emissions treatment and scrubber water systems is discharged to the Mohawk River. An existing wastewater treatment plant treats the blowdown discharges and non-contact cooling water from two kiln systems.

Outfall 007- Storm Runoff - stormwater from site that is directed to outfall where it is pumped thru a silt bag before it enters the Salt Kill Creek.

Descriptions of the discharge limits imposed under the current conditions of the NYSDEC SPDES permit are provided in Appendix B.

2.2.1.2 SPDES Permit Compliance Issues

SPDES Outfalls 001 and 005, which were previously used to discharge cooling waters, boiler water and scrubber blowdowns to the Salt Kill, have been taken out-of-service.

SPDES Outfalls 001 and 005 have been replaced by a single Outfall 006 which discharges to the Mohawk River through an NYSDEC permitted force main pipeline.

An interim (modular) wastewater treatment system was installed to pretreat scrubber blowdown and non-contact cooling water prior to discharge through Outfall 006.

A NYSDEC approved WWTP was constructed to permanently replace the interim WWTP.

Outfalls 003 (quarry), 004 (leachate collection system) and 007 (storm Runoff) are intermittent discharges used only when storm water accumulation necessitates.

The NYSDEC approved a SPDES modification to allow for the direct flow of non-contact trunnion cooling water into the effluent tanks in an effort to maintain proper temperature of the effluent.

2.2.2 Description of Principal Sources of Potential Hazardous Releases

This section describes the principal hazardous materials handling areas, and the potential for spill, release and/or migration of these materials into the nearest waterbody, the Salt Kill. Causes of releases, such as equipment failure, improper operation, or contact with site runoff are discussed. Existing good operating practices are incorporated with the present level of protection provided by the best management practices implemented by Norlite to prevent release of hazardous materials to the Salt Kill.

2.2.2.1 Low Grade Fuel (LGF) Area

Norlite's primary hazardous waste activity consists of the receiving and storage of low grade fuel from customers who are individually responsible for transport handling. There are numerous sources for the LGF which are described in the facility Part 373 Permit waste analysis plan. As previously noted, the LGF is stored in tanks located in the LGF area. The transportation, storage and burning of this recycled hazardous waste in industrial furnaces is regulated under 40 CFR Parts 261-266 of the Federal RCRA regulations and New York State under Hazardous Waste Regulations 6 NYCRR Part 373. As such, the characteristics and identification of the original source of the recycled material is made by the generators or blenders of the material, and these characteristics are confirmed by analysis in Norlite's laboratory. All shipments must be analyzed by a New York Department of Health Certified laboratory. In accordance with regulations (40 CFR Section 266.44 and 261.20(e)), Norlite must notify each generator with a written and signed notice that Norlite has the appropriate permit(s) and that Norlite has notified EPA under Section 3010 of RCRA to operate the LGF area and beneficially reuse these wastes as fuels.

The LGF area is located to the north of the kiln area as shown on Figure 2-2. LGF is transported to the Norlite site in licensed tankers and directed to the Truck Unloading area which has provisions for spill containment. The material is pumped into storage tanks. There are ten (10) storage tanks of varying sizes with nominal capacities ranging from 7,300 gallons to 26,000 gallons. The total LGF storage tank capacity at the Norlite facility is 144,000 gallons. Four LGF storage tanks are glassed-lined (corrosive resistant) carbon steel shell constructed in accordance with ASME Code Section VIII. Six new agitated tanks were installed to replace previous Tanks 100 and 200. The characteristics of these tanks are described in Appendix D.

2.2.2.1.1 LGF Spill Control and Containment BMP

All the tanks have identical loading, unloading, and control systems. The LGF tanks are filled with nitrogen gas to displace oxygen in the tanks and prevent ignition of the LGF; known as "nitrogen blanketing". To prevent LGF tank overflow during pumping (unloading) operations from trucks, a high level switch shuts the pump off before the tank is full. Each tank is equipped with a level indicator, pressure and vacuum rupture discs. The foundation details for tank installation are provided on Sheet 9. The exterior tanks are imbedded in two feet of coarse sand compacted with a vibrating plate to provide uniform support along the entire length of the tank. There are three impermeable layers beneath the sand, an impermeable liner consisting of several layers i.e. 40 mil HDPE geo-membrane, 6 to 12 inch compacted clay, 40 mil HDPE geo-membrane and 12 inches of clay.

The exterior tank system also includes two networks of leak detection piping consisting of perforated drain pipes wrapped with filter fabric installed above each HDPE geo-membrane. The lower set of drain pipes discharges to the secondary spill containment area. The liner is sealed to the drain pipes at the locations where the pipes pass through the liner. There is extensive detail concerning the storage tanks in the Norlite document 6 NYCRR Part 373 Renewal Permit Application (Page D-16) and, therefore, shall not be elaborated upon herein.

The truck unloading area is constructed of eight inches of reinforced concrete, the load bearing thickness adequate for the largest truck. The unloading area is equipped with 110 percent containment area totaling 7,250 gallons (the largest tank truck volume is 6,500 gallons). The piping for these tanks is within the containment system including the LGF and vent lines that go to the kilns.

The LGF off loading pumps are equipped with filters to remove particulate. These LGF filters are cleaned as needed during truck off loading and the material stored in rolloff containers for off-site disposal. The LGF tanks are cleaned on an as needed basis or at least annually. Tank cleaning generates from 5 to 10 drums of LGF sludge which are temporarily stored in the truck unloading area or the Solids Processing Building while arrangements are made for disposal.

Cathodic protection has been installed for corrosion protection and the tanks are installed with "grounded loop" to protect against static electric charges. All openings, joints and gaskets on the tanks are sealed with chemically compatible materials such as Teflon. Also, the tanks were imbedded in slightly alkaline sand material to further inhibit corrosive activity. The clay cap and liner installed as part of the tank system prevents groundwater from seeping into the medium surrounding the tanks. Tank leak detection systems are in place.

Inlet and outlet valving is manually operated except for the fire safe valve and solenoid valve on the tank outlet. Tank level is indicated by a Brooks Model 5310 level indicator. There is also a tank level indicator meter that can be inspected by the tank operator at all times. Tank pressure is monitored with gauges (PI 103) mounted on the vent nozzle of the tanks and pressure relief is provided by 6-inch rupture discs (150# ANSI).

During the kiln fueling operation, a manual valve on the tank outlet is opened and the outlet pump is activated. Flow rates are operated manually, however, pressure is monitored with a pressure switch activated to shut down the system by closing the tank outlet solenoid valve (FCV 101) and shutting off the pump.

In the truck unloading station, the tank filling operation is accomplished using quick-disconnect hose fittings attached at the truck outlet and the pump inlet. One of two off loading pumps are used to discharge the material to the storage tanks . Grounding cables are attached to the tank truck to prevent any static electric charges.

2.2.2.1.1 Release Assessment for LGF Area

A spill in the LGF area would occur on concrete, contained and diked area. There is, therefore, no potential for runoff or contact with soil or storm water. Small spills are contained in the 100-gallon curbed area around the pump/strainer and

collected with absorbent. For small spills in the LGF area, an absorbent is used to absorb the accidental liquid spill. The contaminated absorbent is placed in a 55-gallon drum and stored in the drum storage area. For larger spills, absorbent booms and pads would be used to contain and remove the liquid; cleanup materials are stored in 55-gallon drums. Spills greater than 100 gallons shall overflow into the drum storage area providing secondary containment. For even larger spills, tertiary containment is provided by the scupper overflowing into the truck unloading area (7,250 gallons). Any spills or leaks in the kiln supply pump area shall be contained in the 400-gallon, curbed spill containment slab. The pump containment slab has a new secondary containment culvert which directs flow to the containment area in the LGF building. This containment is sufficient to hold the entire contents of the LGF tanks. The total secondary containment for any spill is 158,000 gallons or 110% of the LGF quantity stored in the tanks. Therefore, in the event of failure of the tank, no release of LGF to storm water or groundwater would occur.

In the unlikely event of a rupture of any one or more of the four LGF tanks resulting in a release greater than 24,000 gallons, the material would be contained within the sand layer of the secondary containment system below the four tanks. Only if the top HDPE synthetic liner were also ruptured would LGF flow to the pump pad containment culvert tied in with the LGF building. The LGF storage building provides complete containment for any of the six 7,300 gallon agitated inside tanks. The LGF tanks are equipped with liquid level controllers (page D-2a Part 373 Renewal Permit Application). If there is breach in the first liner, a leak would be detected by liquid flowing to the existing pump slab from the tell-tale pipe under the tank. This pipe is a 4-inch perforated drain pipe that is positioned under the center of the tank and directly on top of the clay liner. The perforations face downward, and any liquid leaking from a tank and through the synthetic liner enters the pipe and runs out onto the pump containment slab. This system essentially provides detection and leak prevention of LGF release resulting from relatively slow leaks. A rupture or large leak or release is directed by the grading of the tank substrate and a clay and polyethylene liner system to the containment area. Details concerning the LGF spill containment system and calculations on containment capacity are provided on page D-25 (D) of the Norlite Part 373 Renewal Permit Application for the new tank farm, containment system, and LGF building submitted January 23, 1992. Portions of this are also included in Section 3.0, Appendix D.

2.2.2.1.3 BMP Improvements to the LGF Tank Storage Area

The LGF tank farm was improved as required by the New York State Part 373 permit, Condition VI (A). The improvements include six (6) 7,300 gallon tanks within a contained building. The LGF storage building is also sufficient secondary containment for the four tanks outside of the building. The below-ground LGF line to the kiln was replaced with new above-ground lines that are enclosed in a 90-inch secondary containment pipe tunnel located between the LGF storage area and the kiln. The tunnel and lines are sloped back to the LGF building such that a leak in a line shall be collected in the secondary containment system in the LGF building. With the new tank farm and feed lines, there is virtually no potential for a significant release of LGF to the Salt Kill or other areas of the facility. Details concerning these LGF best management practices are included in Section 4.1, 4.2 and Appendix D.

2.2.2.2 Truck Staging Area

2.2.2.2.1 Description

The Truck Staging Area (or Staging Area) is used to temporarily stage incoming hazardous waste, used oil and plant chemicals deliveries (if necessary) for the time necessary to complete waste acceptance procedures. This area has been designed to ensure that in the event that a leaking delivery tanker or trailer is received, the leaking tanker or containers can be managed in a manner to prevent releases to the environment. This area is located immediately to the north of the LGF off-loading and fuel farm area and is shown on Figure 2-2.

2.2.2.2.2 Truck Staging Area Spill Control and Containment

In the event that a spill does occur, Norlite shall isolate the leaking tanker in the Truck Staging Area to minimize the potential for impacting other vehicles that may be present in the Staging Area. The source of the spill shall then be stopped and in accordance with Norlite's Contingency Plan, appropriate measures shall be taken to minimize migration of spilled materials in the containment area. After the situation has been stabilized, Norlite shall remove and manage any contaminated materials in accordance with the Contingency Plan and Norlite's Safety policy.

2.2.2.2.3 Release Assessment for Truck Staging Area

A spill in the Truck Staging Area shall be contained by the lined, bermed, containment area thereby preventing any runoff or contact with surrounding areas. Smaller spills shall be contained in the immediate area of the spill since the shale fines cover acts as an absorbent and shall effectively prevent the migration of small spills. Larger spills may migrate downslope towards the northeast corner where it can be collected for subsequent treatment and disposal. Any contaminated shale fines shall be removed for proper treatment and/or disposal.

As noted above, the containment area has been designed with capacity sufficient to hold the contents of at least 10 bulk tankwagons. Norlite shall manage the staging of shipments in the Truck Staging Area so that the RCRA containment volume standards are not exceeded.

2.2.2.2.4 Truck Staging Area BMP

The Truck Staging Area is an area in the Norlite plant in which there is a potential for storm water to contact LGF or non-hazardous waste materials. Accordingly, Norlite's Staging Area spill control procedures require that all spills be removed in a timely fashion to prevent the potential for contact with storm water. Through proper maintenance of the Staging Area, Norlite can manage the storm water as non-contaminated media.

Norlite shall remove storm water in accordance with the procedures described below to help ensure that any storm water that does collect in the Staging area shall not be impacted in the event of a spill.

All water in the LGF Truck Staging area is either left to evaporate during the summer months or is removed and either incinerated on-site or sent to a wastewater treatment facility.

To ensure that storm water removed from the Staging Area does not contain any significant contaminants, prior to any discharge of storm water, the collected water shall be checked to determine presence of a sheen which may indicate the presence of contaminants. If no sheen is detected, the storm water shall be discharged to the north and west of the Staging Area. If a sheen is detected, the storm water can either be treated using a carbon adsorption system or by removing the contaminated water for subsequent treatment at an approved facility.

In the event that the carbon system is used to treat the storm water, a water sample shall be taken from the system discharge at least once for every storm event that the discharge occurs. The sample is to be analyzed for EPA Method 624 / 625 parameters that are indicative of petroleum hydrocarbons. Also, the system operator shall collect a sample and examine at least once per hour during all discharges to check for sheen or other visible contaminates. If contamination is observed, the discharge shall be immediately terminated until the cause of the contamination is identified and corrected. All discharge events are to be logged on the Storm water Discharge Log Sheet (see Figure 2-6).

To ensure that the carbon system maintains effective treatment, the results of sample analyses shall be reviewed to determine the proper frequency for changing or refreshing the carbon system.

*** The SPDES modification which addressed the discharge of water from the LGF Truck Staging Area and petroleum storage containment area was withdrawn on April 13, 2006. Norlite reserves the right to introduce a new modification addressing this issue should it choose to.**

2.2.3 Drum Storage Area

2.2.3.1 Description

As mentioned previously, filter sludge material is generated by straining the LGF before storage. The strained material is transferred to drums and moved to the drum storage tank area. The drums stored in this area contain filtered LGF solids and any incidental hazardous waste materials separated from the LGF tank operation. The drum storage area is located at the north side of the truck unloading area as shown on Figure 2-2. This area is separated from the unloading area by a concrete berm equipped with a scupper sloped at 1/10 inches per foot and joints sealed. The drum storage area has the capacity to store (214) 55-gallon drums. The drum storage area incorporates the existing concrete slab adjacent to the existing truck unloading pump plus a new extension to this slab and pump. A containment area has been constructed to contain up to 72 percent of the expected drums or 6,350 gallons. All sealants and coatings have been selected to be chemically compatible with the constituents of LGF.

2.2.3.2 Drum Storage Spill Control and Containment BMP

LGF filter sludge is stored in steel or fiber 55-gallon drum which meet U.S. Department of Transportation specifications (Nos. 1A1 or 1A2). Drums are identified with the appropriate markings included a completed label. The drum storage area is coated with a protective phenolic finish called Phenoline 300. In addition, the area is constructed with reinforced concrete. There are no sources of ignition in the vicinity of the drum storage area. All drums remain sealed at all times. Full drums remain in place until arrangements are made to remove the lot. Should a leaking drum be discovered during daily inspection procedures, it would be removed from the drum storage area to the truck containment area using a manual hand-truck and its contents transferred to another drum or the entire drum placed in an "overpack" drum.

Run-on between the truck storage area and the Solids Processing Building is prevented by the presence of a 3 1/2 inch curb at the perimeter of the storage building. There is no potential for spills or leaks from drum storage to reach storm water or groundwater.

2.2.4 Kiln Area

There are two potential contacts with hazardous material handling associated with the kiln area; the kiln pump house and the trunnion apparatus. Each area is described as follows.

2.2.4.1 Description of LGF Tunnel & Equalization Building

Waste fuel is transferred from the LGF building to the kiln burners via the LGF tunnel. The LGF piping system is contained in an above ground walk-through tunnel that is ninety inches in diameter. This tunnel provides for primary and secondary protection from accidental leaks and ruptures. The primary piping system is constructed with a corrosion resistant material with a pipe wall thickness that meets ANSI standards. Secondary protection of this pipe is provided by a second 90-inch diameter pipe that houses the primary piping. Tertiary protection is provided by a stiffening pipe, also 90 inches in diameter and enclosed within the secondary system. Within the tunnel leak detection sensors monitor LEL (Lower Explosive Limit)continuously, thereby insuring that any leak in the LGF piping system fuel shall be identified. The LGF tunnel is sloped toward the LGF building, in the event of a release in the LGF tunnel all fuel would drain into the LGF building containment.

The equalization room is located in between the kiln control rooms. The tunnel pipe work system enters this building overhead in this area LGF may be transferred

into four (4) 1000 gallon equalization tanks or fed directly to the kilns. This building has secondary containment in a case of a release, and is continuously monitored by the LEL sensors.

Additional details concerning BMP improvements to be made by Norlite are provided in Section 4.1.

2.2.4.2 Description of Trunnion Apparatus

The trunnions are rollers that the kiln tires ride on as the kiln rotates. The trunnions have a sealed lubrication system. Damage to the seals could result in a release of lubricating oil. The overall preventative maintenance program of the kiln trunnions and bases has been improved to eliminate oil leaks. A system has been installed to prevent contamination from the Trunnion lubricants. Gradual drippings or leakage of lubricating grease from the Trunnion bearings is diverted through specially constructed collection channels with 55-gallon drum receivers for proper storage and disposal. Thus, grease and oils are prevented from leaking into the ground or being transported to surface waters via storm water runoff.

2.2.5 Dust Control

Norlite is improving the strategy for controlling fugitive dust emissions in order to minimize the potential for dust particulate setting on the facility site roads and storage areas from becoming waterborne in storm water runoff. Additional work, initiated by Norlite in conjunction with dust control experts, shall further improve the effectiveness of the dust control systems. The following BMP items detail the activities which have either been completed or are planned for dust control on the Norlite Site:

1. Remote area spray system(s):

   All short term storage piles shall have water spray systems to control dust.

2. Roads

   Plant roads were graded with railroad ballast in 1992. The south plant entrance road off of Elm Street was paved with lightweight aggregate during the summer of 1994 to minimize dust emissions from that road. This paving is still being monitored for dust control effectiveness. A procedure shall be written to maintain the mobile road watering system since previous reports by SCI-TECH have stated that continual road watering is not necessary. Additional roads in the facility have been paved more recently.

   As of June 30, 1992, entrance to the plant through the South Saratoga Street entrance has been restricted to passenger cars and light trucks. In addition the plant speed limit was lowered to 10 miles per hour to further minimize dust.

3. Long-term storage piles:

   All product storage piles shall be sprayed with water or shaped with a loader or other machine to control dust. Pile shaping shall be done to minimize jagged edges on the leeward side of piles. Jagged edges cause turbulent air which makes loose dust particles airborne.

4. Hard Piping of water lines:

   Hard piping shall be installed at fixed emission points to control dust emissions determined by Norlite and SCI-TECH in the Fugitive Dust Plan. Flexible piping shall be used to connect sections of hard pipe for ease of installation. All piping shall be insulated and drains shall be included in the design to allow water suppression systems to operate as long as practically possible in sub-freezing weather.

5. Enclosure improvements;

Metal sheeting has been replaced on the screen enclosure buildings and dust covers have been installed on all conveyors as of April 1992.

6. Other Dust Control Improvements:

   i. 1500 cubic yards of coal was removed from the site in February 1992 eliminating this source of dust emissions.
   ii. All baghouse dust piles present at the time of the plant's acquisition by American NuKem in 1991 were placed in an on site solid waste landfill.
   iii. All baghouse dust is now pneumatically conveyed to two dedicated silos.
   iv. The dedicated silos were rebuilt and fitted with new bin vents.
   v. Flaps were installed on the rotary stacker to eliminate dust emissions.
   vi. A change in quarry operations allows for fewer days of drilling and blasting which provides for selection of more favorable meteorological conditions.

7. New kiln dust seals were designed and installed on both Kiln #1 and Kiln #2

3.0 Baseline Best Management Practices

Norlite is committed to operating in full compliance, being a good neighbor, and controlling, if not eliminating, emissions. The reduction in fugitive emissions resulting from Norlite's operational modifications has led to the improvement of site runoff water quality.

3.1 Spill Control Committee

The Spill Control Committee at Norlite is responsible for implementing and maintaining the Best Management Practices (BMP) program. The Committee's responsibility and authority are assigned Norlite's management for carrying out policy and achieving BMP program objectives. The mittee is responsible for identifying and properly maintaining the hazardous materials handled at the Norlite facility.

Norlite's hazardous waste activity consists of receiving and storing Low Grade Fuel (LGF) to be burned in Norlite's rotary kilns for energy recovery. The heat in the kilns expands the crushed shale obtained from the onsite quarry. The resulting product is a lightweight aggregate.
The committee is also responsible for identifying any potential spill sources including the following:

* Low Grade Fuel Storage
* Air Pollution Control Dust
* Vehicle/Equipment Maintenance Materials
* Wastewater Treatment Plant
* Tanker Staging Area
* Equalization Building
* Ancillary Piping

The Spill Control Committee shall set up spill reporting procedures and inspection programs as described in later sections of this plan. The Committee shall advise management on the technical aspects of environmental incident control and shall coordinate activities for spill cleanups. Procedures for the notification of authorities in case of a spill are maintained by the Committee. The Committee shall recommend and help establish training and education programs for facility personnel.

The BMP program shall be evaluated and reviewed by the Spill Control Committee on an annual basis or whenever potential spill sources change. The Committee shall meet regularly to evaluate the effectiveness of the complete BMP program. Recommendations for changes to the gram shall be made to management in support of Norlite's policy on BMP related matters.

The Spill Control Committee/BMP Committee is comprised of the following Norlite personnel listed in Table 3-1.

Table 3-1

Spill Control Committee/BMP Committee

NAME	TITLE	CONTACT NUMBER
Tim Lachell	Director of Operations	(518) 857-9164
Brian Decatur	Safety Manager	(518) 376-0913
Bill Morris	Environmental Director	(203) 537-2322
Brian Roberts	Kiln Supervisor	(518) 857-5737
Ken O'Brien	Supervisor	(518) 376-8634
Prince Knight III	Laboratory Manager	(518) 857-2969
Jeff Nusbaum	Fuel Farm Manager	(518) 365-5478
Tom Sullivan	Environmental Manager	(518) 365-0443

Committee membership shall be reviewed annually by the Committee. The Committee shall recommend new members or changes in membership as necessary to keep this aspect of the BMP functional. Committee membership is subject to Norlite management approval. It is intended to keep key individuals from various disciplines and responsibilities actively involved as committee members.

3.2 Spill Reporting Procedures

In an event involving a significant release of LGF, fuel oil, or other hazardous materials, Norlite personnel must follow the RCRA Part 373 Permit Contingency Plan (See Appendix H, Norlite Contingency Plan).

Wastewater treatment chemical spills (a BMP improvement detailed in Section 4.0) are summarized as follows:

Wastewater building itself serves as a containment area, therefore, there shall not be any opportunity for hazardous materials to migrate out of the wastewater area. Due to the fact that no materials from this area will flow into the Salt Kill, reporting procedures shall differ slightly from the other hazardous material on site.

The chemicals in the wastewater treatment area include:

Hydrochloric Acid
Sodium Hydroxide
Polymer - Flocculent
Carbamate compound - Mixed precipitate
Methanol
Ethylene Glycol

As soon as a spill is identified the WWT and Kiln Supervisors shall be notified. Any spill shall be contained and cleaned following WWT procedures delineated in the WWT Operating Manual. Any additional reporting to comply with permit requirements shall be determined via the Spill Report by the Compliance Manager or Director of Operations. If necessary, the appropriate paperwork (examples provided in Tables 3-3 and 3-4) shall be completed.

Once an emergency coordinator has been notified, he/she shall:

A. Immediately identify the character, exact source, amount, and extent of release. In the event that the released material cannot be identified, samples shall be obtained for analysis. Reporting of analytical results of these samples shall be based on an objective turn-around time.

B. If the release of toxic or hazardous materials poses a potential or immediate threat to site personnel, sound the warning alarm system. The Norlite facility has a warning system with a specific alarm signal consisting of a loud horn to initiate evacuation of all plant areas. The evacuation signal shall be a continuous three (3) minute blast from an air horn readily available on the company's major earthmoving equipment. In addition to the alarm, the internal telephone system and portable radios can be used to notify

plant personnel as to the emergency's nature and recommended action plan. Total plant evacuation is initiated only by the Emergency Coordinator.

C. Notify the following of the incident:

	HOME PHONE NO.
Director of Operations - Norlite Tim Lachell	see Table 3 - 2.
Safety Manager - Norlite Brian Decatur	see Table 3 - 2.

D. Report to the facility to coordinate emergency action.

NORLITE EMERGENCY RESPONSE CONTACT LIST

To be posted near every phone

INCIDENT COORDINATOR	NEXTEL	HOME	PLANT
Tim Lachell (Plant Manager) (Primary) 31 Cooks Court, Waterford, NY 12188	857-9164	373-9569	x.4037
Brian Decatur (Safety Manager) (Alternate) 1251 Babcock Lake Rd, Hoosick Falls, NY12090	376-0913	686-9824	x.4005
Jeff Nusbaum (Fuel Farm Manager) (Alternate) 253 Casey Road, Schaghticoke, NY 12154	365-5478		x.4028
Security Gate (Elm Street)	-	-	x.4084
PLANT MANAGERS	**NEXTEL**	**HOME**	**PLANT**
Prince Knight (Lab Manager)	857-2969	478-9190	x.4049
Dave Carabetta (President)	(203) 537-3223	(203) 271-2707	x.4014
Bill Morris (Compliance Manager)	(203) 537-2322	(860) 349-1497	-
Kiln Supervisors	857-5737		x.4073
Ken O'Brien Jr. (Aggregate Production Mgr)	376-8634	395-3344	x.4021

FOR PLANT EMERGENCIES - FIRE - POLICE - EMS DIAL 911

LOCAL FIRES	PHONE NUMBER
Cohoes	237-2211
Colonie*	783-2744
LOCAL POLICE	**PHONE NUMBER**
Cohoes	237-5333
Colonie*	783-2744
SPILL RESPONSE	**PHONE NUMBER**
West Central Environmental	272-6891
CHEMTREC	(800) 424-9300
NYSDEC Spill Hotline	457-7362
LOCAL EMERGENCY PLANNING COMMITTEE	765-2351
EPA NATIONAL RESPONSE CENTER	(800) 424-8802
DOCTORS	**PHONE NUMBER**
Access Health 776A Watervliet Shaker Road Latham, NY 12110	782-2200 FAX 786-1875
St. Mary's Hospital	272-5697
MISCELLANEOUS	**PHONE NUMBER**
SRI Fire Sprinkler Corp.	459-2776
MSHA	489-0573
Niagara Mohawk Power	356-6471

*West of the power lines

12/13/2005

NORLITE, 628 SOUTH SARATOGA STREET, COHOES, NEW YORK 12047 235-0401

TABLE 3-3

MEMO OF EMERGENCY CALL

DATE: TIME:

PERSON CALLING: NAME -

TITLE -

AGENCY CALLED: [ ] USCG [ ] NYS DOT

(check one) [ ] USEPA [ ] OTHER

[ ] NYS DEC

GOVERNMENT PERSON SPOKEN TO:

NAME -

TITLE -

SUBSTANCE OF MESSAGE

LOCATION

TYPE OF EMERGENCY

WATERWAYS EFFECTED

NATURE OF MATERIALS INVOLVED

POTENTIAL HAZARDS

ACTIONS BEING TAKEN

PERSONNEL PRESENT

PERSONNEL SUMMONED
OTHER (Use back if necessary)

TABLE 3-4

REPORTING FORM FOR EMERGENCY EVENTS

(Note: This table for BMP Plan reference only)

_____

Name, address and phone number of owner or operator

_____

Name, address and phone number of facility

_____

Date, time and type of incident (e.g., fire, explosion, etc.)

_____

Name and quantity of material(s) involved

_____

Extent of injuries (if any)

_____

Assessment of actual or potential hazards to human health or the environment (if applicable)

_____

Estimated quantity and disposition of material recovered from the incident

_____

_

Send to:

(1) U.S. EPA, Region II
Regional Administrator (EPA)
26 Federal Plaza
New York, NY 10278

(2) Commissioner
N.Y.S. DEC
625 Broadway
Albany, NY 12233

3.3 Source Identification and Assessment

Section 2.0 of this document identifies and assesses all manufacturing areas, hazardous materials handling areas, and the primary sources for possible releases. Norlite also maintains MSDS listings containing specific descriptions of physical, chemical, toxicological, and health information on the hazardous substances handled at the facility. The Spill Control Committee shall periodically review the facility operations to identify and assess all the hazardous material spill risks at Norlite.

In summary, the specific areas identified as potential spill/release sources at the Norlite facility are as follows:

* Low Grade Fuel Storage Area
* Process Operations Area - Salt Kill Dam Area
* Quarry Water Discharge - Outfall 003
* Shale Fines Leachate - Outfall 004
* Air Pollution Control Saline Water (Scrubber Blowdown)
* Wastewater Treatment Facility

Under the existing Spill Prevention, Containment, and Countermeasures Plan (SPCCP), Norlite provides information on the procedures that shall be taken to prevent accidents during loading and unloading operations. Also included are procedures to prevent undue contamination from the surface water runoff from hazardous waste handling areas, procedures to prevent groundwater contamination, and procedures to mitigate the releases from an equipment failure or power outage. Detailed information is provided in Section G of Norlite's New York State Part 373 permit application.

All new materials that are brought into the operations at the Norlite facility must first be evaluated for compatibility with storage and transfer. MSDS information shall be reviewed and maintained at the facility. The Spill Control Committee shall also review and discuss spill prevention and control of new materials. The committee shall evaluate the potential of toxic and hazardous substances for discharging into receiving waters.

3.4 Employee Training

Norlite provides initial 24 hour training to all employees actively involved with in-plant job functions. In addition, Norlite conducts on-the-job training for specific work tasks. All new employees are familiarized with specific duties and Norlite's standard operating procedures (SOP's) by experienced supervisory staff. During the initial 24 hour training program, employees are instructed on (1) the hazardous nature of chemicals and chemical wastes in general, (2) the importance of maintaining compliance with RCRA regulations, (3) the hazardous nature of the wastes being stored at the facility, (4) proper handling and storage procedures, (5) emergency procedures and Contingency Plan, and (6) Safety and Hazard Communication. A copy of the Norlite Training Program is included in Appendix I.

All new employees are made familiar with Norlite's BMP program, safety requirements, the Contingency Plan, and the specific responsibilities under the New York State Environmental Conservation Law and the New York Department of Environmental Conservation (DEC) regulations which are relevant to their positions. A copy of the Norlite Contingency Plan is included in Appendix H.

Norlite personnel receive regular supervision and continual training as required. Training sessions are conducted, at a minimum, annually. Monthly sessions, regarded as "Tool Box Talks", occur as needed to discuss current issues and industry related topics. As needed, supervisory staff review job requirements and duties with personnel and provide additional training for expanded duties.

In addition, each employee involved in hazardous waste handling/mining operations receives eight (8) hours annually of continuing health and safety training (hereafter referred to as "OSHA/MSHA training"). Supervisory personnel involved in hazardous waste operations receive an additional eight (8) hours of initial training.

The objectives of the BMP training policy is to instill a complete understanding of the following:

a) The BMP program
b) Processes and materials with which they are working
c) Safety hazards
d) Practices for preventing unintentional discharges
e) Procedures for responding properly and rapidly to hazardous materials incidents

The BMP training program can be covered with other related training programs required by OSHA, RCRA, etc. At a minimum, the employees shall be trained in the following Best Management Practices:

a) Source Identification and Assessment

- Identification and awareness of critical equipment and systems
- Reporting incidents and potential dangers

b) Material Storage

- Hazard Communications Program
- Materials compatibility
- Proper uses of materials
- Health risks and safe handling procedures for chemicals used

c) Loading and Unloading Operations

- Good housekeeping
- Material handling
- Ergonomics (relationships between employee and equipment)

d) Plant Run-off

- Emergency operations - Spill response drills
- Spill response teams and equipment
- Absorbents, jelling agents, foams and neutralizing agents
- Spill reporting procedures
- Maintaining containment areas and spill pumps
- Proper disposal of containment area discharges
- Procedures for off-site spill cleanup

e) Preventive Maintenance

- Lock-out procedures
- Equipment inspection procedures and practices
- Procedures for equipment decontamination and certification

f) Inspection Records and Reports

In-plant operating records
Critical parameters concerned with LGF and hazardous waste storage/transfer areas
Safety and security (OSHA, RCRA, In-house)
Tank inspection reports

g) Periodic Meetings

Employee awareness of their roles in plant operations
Emergency operations and equipment
Medical considerations
Incident prevention and control
Review of past issues (spills and causes)

h) Individual Training Programs

Contractors
Employees
Supervisors
Temporary Personnel

Details concerning Norlite's training policy and procedures are included in Appendix I.

3.5 Visual Inspection

Norlite personnel inspect the facility continually to detect spills or evidence of potential spills or other conditions that could lead to an environmental incident. Formal inspections of hazardous waste management facilities are the responsibility of the following Norlite personnel:

* Environmental Manager
* Trunnion Operator
* Fuel Operator
* Burner Operator
* Lab Technicians

Each person is responsible for regular inspections of hazardous waste management facilities and the initiation of corrective action if deficiencies are noted. Appendix J contains the inspection forms used by Norlite personnel. These inspection procedures are thoroughly described in Section F of the Part 373 permit application.

3.5.1 Areas that need to be inspected on a regular basis

Regular visual inspections shall be performed by area supervisors and include visual observations of loading and unloading areas, storage areas, process equipment secondary containment areas, runoff from the aggregate piles, storm water collection systems, detention basins, and the leachate pond for the detection of, or potential for, leaks and spills. The inspections shall be made routinely. Spills shall immediately be reported to the Emergency Coordinator, the Safety Manager, or the Compliance Manager. Potential spill issues shall be reported to a member of the Spill Control Committee for determination of corrective action. Visual inspection program considerations relative to each of the ancillary sources are discussed below.

For loading and unloading operations, visual inspections shall be performed during transfer of hazardous chemicals to permit immediate response if a spill occurs. The condition of pipelines, pumps, valves and fittings for liquid transfer systems (and pneumatic conveying

systems used for transferring dry materials) shall be inspected. Visual inspections together with monitoring shall be used to ensure that the transfer of material is complete before flexible or fixed transfer lines are disconnected prior to vehicle departure. Before any tank car or tank truck is unloaded or filled, the lower-most drain valve and all outlets of such vehicles shall be closely examined for evidence of leakage, deterioration and, if necessary, tightened, adjusted, or replaced. Before departure, all tank trucks shall be closely examined to ensure that all transfer lines are disconnected and that there is no evidence of leakage from any outlet.

Raw-material storage areas for dry chemicals shall be inspected for evidence of, or the potential for, wind-blowing of materials to other areas. Also, evidence of the buildup of solids on the ground should be noted. Liquid (LGF) storage areas shall be inspected for leaks and corrosion of tanks, for deterioration of foundations and/or supports, and for closure of drain valves in containment facilities. Inspection shall include an examination of seams, rivets, nozzle connections, valves, and pipelines directly connected to a tank. Internal examination or inspection of storage tanks shall involve identifying evidence of corrosion, pitting, cracks, abnormalities, and deformations. Evidence of any damage, deterioration, etc, shall be evaluated by the Spill Control Committee. Pressure testing and thickness determination of tanks are performed on a scheduled basis in accordance with Section D and F of the Part 373 permit application.

For runoff from aggregate piles, visual inspections shall be used to examine the integrity of the storm water collection system and diversion or overflow structures and for ensuring that drain valves and pumps for diked areas are properly closed. The quality of runoff from aggregate piles shall be verified by visual and/or testing procedures to be developed when runoff control systems are in place.

The storm water collection system, detention basins, and the leachate pond shall be inspected for potential spills from the deterioration of containment structures or overflows.

3.5.2 Areas that may require detailed investigations

Detailed inspections shall be performed by facility personnel responsible for the individual processes. During normal operations these inspections shall include examinations of valves, pipe fittings, and containment structures. Other areas that shall require detailed inspections are the trunnions on the rotary kilns, the pumps from the collection basins, and the leachate collection pond liner. These inspections are also utilized to evaluate the adequacy of the preventive maintenance and good housekeeping best management practices.

3.6 Preventive Maintenance

The Norlite Preventative Maintenance (PM) has been implemented to eliminate or minimize spills of hazardous or toxic substances to the ground, air, or water. The Spill Control Committee shall identify equipment and systems to which the PM program should apply by analysis for potential failures, spills, and spill impacts. Additionally, the PM program has been developed to provide a safe work environment and provide upkeep of the capital investments in plant equipment. The equipment and systems shall be maintained by repair, adjustments, or replacement of worn parts before the equipment or system fails. The BMP preventive maintenance program is an extension of the current Norlite PM program.

The equipment and systems included in the preventative maintenance program along with the maintenance schedule are contained in Figure F-1 of the Part 373 permit application (also included in Appendix 2C of this document).

All PM records for equipment and systems shall be maintained in the main office at the Norlite facility.

3.7 Good Housekeeping

BMP good housekeeping is essentially the maintenance of a clean and orderly work environment and should be practiced by all facility personnel. A clean and orderly work area reduces the possibility of accidental spills caused by mishandling equipment and should reduce safety hazards to facility personnel.

The methods for achieving good housekeeping goals are to maintain regular housekeeping inspections by supervisors and discuss housekeeping at safety meetings.

Examples of good housekeeping include the following:

* Neat and orderly storage of chemicals
* Prompt removal of small spillage
* Regular garbage and rubbish pickup and disposal
* Maintenance of dry and clean floors by use of brooms, vacuum cleaners, etc.
* Proper pathways and walkways and no containers that protrude onto walkways
* Minimum accumulation of liquid and solid chemicals on the floor in a building

The specific sources of potential spills or releases of toxic or hazardous materials shall be managed with good housekeeping practices as described above. During daily operations, facility personnel shall be maintaining a neat and orderly work environment.

3.8 Material Compatibility

Material compatibility at Norlite shall focus on:

The compatibility of the container with its environment.

Precautions taken in the container storage area to prevent accidental fire and explosion include: the proper storage of containers (e.g., stacking, aisle space, labeling, and sealing of containers); dikes; sump areas and sump pumps; and, appropriate warning signs (e.g. "NO SMOKING" and "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT").

Details of the container storage systems are included in Section D-1a(2) and D-1a(3) of the Part 373 permit application.

Ensuring that the materials of construction are appropriate for the contents of the container.

The Norlite BMP shall review and approve material's compatibility prior to the installation of new equipment and systems used for handling toxic and hazardous materials. Norlite shall also periodically check material safety data sheets (MSDS) to review the physical and chemical properties of the chemicals being handled at the site for compatibility with the materials of construction of containers, pipelines, tanks, valves, etc.

The compatibility of chemicals and Low Grade Fuel when blending.

The procedure for acceptance of all Low Grade Fuel is described in the permit, Part 373, Section C - the Waste Analysis Plan. The Waste Analysis Plan covers the waste codes that are acceptable at the facility and SOP #3 describes, in detail, the compatibility tests that are performed prior to unloading a tanker and prior to tank blending.

A main safety concern is posed by Norlite's storage operations and the potential hazard of an accidental ignition of LGF, therefore, flammable wastes are only stored in the LGF storage tanks and the container storage building. Norlite has taken numerous precautions to prevent an accidental ignition in the tank storage area including oxygen monitoring, nitrogen blanketing, tank grounding, and other requirements under NFPA 30. (The particulars of the tank design features and the management practices aimed at preventing accidental ignition are described later in this document and in the RCRA Part 373 permit under Sections D-2c, D-2d, F-1b and F-4a.)

3.9 Security

Norlite operates with a security system that prevents accidental or intentional entry to the facility that could result in a chemical release. Protection measures against vandalism, theft, sabotage or other improper or illegal use of the facility include: routine patrols of the facility by security and compliance personnel; fencing to prevent intruders from entering the LGF handling facility site; proper lighting; vehicular traffic control; a guardhouse (Elm street entrance), and controlled entrances to the facility.

Security personnel are instructed to monitor for leaks from tanks, valves or pipelines while patrolling the facility and are instructed to notify the primary emergency coordinator or Compliance Coordinator if such a leak or spill is detected.

Norlite operates portions of its facility 24 hours per day, 7 days per week, 365 days per year. During periods of normal kiln operation, at least three employees are on duty at all times. During periods when the kilns are not operated, at least one employee is on duty at the site at all times. The Trunnion Operator makes an inspection of the LGF areas three times each shift (six times daily) to check security and to inspect the items listed in the Trunnion Operator's Shift LGF Inspection Report.

Ample lighting is provided throughout Norlite's facility except for the quarry area which does not contain hazardous waste and does not operate at night. In addition, most facility areas are connected to an internal telephone system that is also used for communications outside the facility.

The majority of the facility is protected by a security fence. The hazardous waste storage area that includes bulk storage, drum storage, and loading/unloading areas is entirely enclosed by fencing. Fenced areas shall remain locked at all times except during periods of loading and unloading. During these times, Norlite personnel shall be in attendance. A concrete building located in the truck unloading area is used for the storage of safety equipment as well as a telephone to provide direct internal and external communication.

The kiln area is protected by the facility fencing. This area is continuously monitored by Norlite personnel to prevent unauthorized access 24 hours per day, seven days per week.

In addition to the 24-hour surveillance system, Norlite has posted warning signs in the active portions of the facility. The signs are legible from a distance of 25 feet and are posted outside the LGF storage tank area. These signs are visible from all angles of approach and bear the legend: "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT", and "NO SMOKING". Signs have also been posted at appropriate locations in the kiln area, drum storage area and unloading area.

Television monitoring cameras are located on the Norlite site to facilitate site security at entrances and in work areas requiring a higher degree of surveillance.

4.0 BMP IMPROVEMENTS

Section 4.0 is comprised of the following three subsections:

4.1 Norlite Facility Compliance Improvements
4.2 Plant BMP Committee Manufacturing Area Assessment
4.3 Storm water Runoff Control Improvements

4.1 Norlite Compliance Improvements

The Norlite Facility located at 628 South Saratoga Street in Cohoes, New York manufactures two types of products. These are:

1. Expanded LWA (light-weight aggregate) for use in structural applications such as concrete flooring, soil drainage enhancement, and roadway sub-bases.

2. Block mix additive for structural block production.

Two drawings, Simplified Block Diagram (Figure 4-1) and Site Plan of Operating Area (Figure 2-2) define the manufacturing process steps and define the products manufactured.

Norlite operates two kilns each capable of feeding 27 tons per hour of shale to produce LWA. Up to 10.1 gallons per minute of liquid LGF (low grade fuel) is fired to manufacture the expanded LWA. Supplemental commercial fuels such as off-spec fuel oil, #4 fuel oil, and natural gas are fired to augment insufficient supplies or heat contents of LGF.

Appendix A: APCD, Scrubber and Block Mix Additive

As per NYSDEC Permit Part 373, the #1 Kiln Air Pollution Control Devices were upgraded similarly to Unit #2. Norlite installed a baghouse, modified the scrubber, and added a new dispersing stack. Appendix A defines the existing baghouses, scrubber systems, and dust handling systems

Appendix B: Wastewater Treatment Improvements

Norlite currently operated a wastewater treatment plant (WWTP) to remove metals and suspended solids from the scrubber blowdown streams. The plant was capable of treating a total of 30 to 40 gpm of combined kiln blowdown water and trunnion cooling water. The permanent WWTP, which was completed in September 1995, is capable of processing 60 gallons per minute of combined blowdown and trunnion cooling water and comply with NYSDEC Order on Consent R4-1680-94-05 and Norlite s SPDES Permit. Appendix B includes a process narrative for the new WWTP and a simplified PID.

Appendix C: Instrument and Control (WFCO) Improvements for Kiln, APC, and Scrubber Systems

Appendix C defines the instrument and control improvements provided for these systems to support LGF firing at 10.1 gpm per kiln as per Norlite's March 20, 1992 public notice relating to New York State Part 373 Permit and EPA Region II HWSA permit.

Appendix D: LGF Improvements

The existing Norlite LGF facility was replaced in part by an improved facility that complies with RCRA Part B, NFPA fire regulations and OSHA safety standards. This upgrade was performed in 1992 as part of Project 9511-003 managed by ENSR C&E.

The RCRA Part B requirements for the LGF Facility have been previously approved by NYSDEC (1/92). Appendix D defines the details of these improvements. Appendix D includes a description of the LGF Storage and Feed Systems.

The following LGF improvements were installed as part of Project 9511-003:

1. RCRA Part B compliance relating to secondary containment.

2. Improved the fire safety of the operations as per NFPA regulations.

3. Removed existing in place LGF systems associated with 25,000 gallon tanks TK-100 and TK-200 which lacked secondary containment.

4. Expanded the 55 gallon drum LGF/ Solid Fuel Storage Facility capacity to 214 drums.

Table 4-1

Drawing List for Section 4 of Norlite BMP Plan

The drawings listed below represent the key information required for the BMP Plan. Other drawings are available in other documents in NYS DEC's possession, such as the Part 373 Permit Application, air permit application, and SPDES Permit application documents.

Narrative	
NY003-D-1420	Simplified Block Diagram
NY-F-C-3039	Construction Site Plan
Appendix A	
NY003-D1404	P&ID- APC Multiclone/Heat Exchanger/Baghouses
NY003-E-1404	P&ID- APC: Fan/Scrubber/Stack
NY003-D1405	P&ID- Lime Storage Silo
NY003-D1406	P&ID- Carbonate Silo
Appendix B	
NY029-1003	WWT Plant
NY029-1004	WWT Plant
Appendix D	
NY-D-M-6002	Arrangement- LGF and Equalization Tanks
NY-E-D-5003	P&ID- Unloading and F.O. Storage
NY-E-D-5004	P&ID- LGF Storage and Feed Transfer
NY-E-D-5006	P&ID- Waste Feed Cut Offs
NY-E-D-5008	P&ID- LGF Equalization and Feed- Kiln #1
NY-E-D-5010	P&ID- Solids Reprocessing
NY-E-D-5011	P&ID- Solid LGF Feed
NY-E-D-5013	P&ID- P&ID- LGF Equalization and Feed- Kiln #2

4.2 Plant BMP Committee Manufacturing Area Assessment

The following 27 pages summarize the results of an in plant evaluation of BMP Manufacturing areas requiring future action. To the best of its knowledge, the BMP Committee addressed all plant operations in detail to identify all potential problems. The BMP Committee reviewed both new project work as per Section 3.1 and all other operating and manufacturing support areas. Storm water runoff and upgrades were evaluated separately and necessary corrective actions are defined in Section 4.3.

The Members of the BMP Management Committee are listed in Table 3-1.

Table 4-2
In Plant BMP Committee
Area Assessment

Area 1	Shale Fines Landfill/Leachate System
Area 2	LGF
Area 3	Mid Pond
Area 4	Baghouse Silo Kiln #2
Area 5	Coal Area
Area 6	Kiln #2 Baghouse
Area 7	Off Gas Coolers/Kiln #2 Baghouse
Area 8	Kiln #2 Scrubber
Area 9	Kiln #2 Trunions
Area 10	Kiln #1 Trunions
Area 11	Lube Oil Room
Area 12	Fuel Oil (#4), Diesel Fuel
Area 13	Boiler Room
Area 14	Air Compressor/MCC Room
Area 15	Scrubber Kiln #1
Area 16	Pump House
Area 17	Railroad Steel Loading Operations
Area 18	Lime and Soda Ash Operations
Area 19	Used Equipment, Debris
Area 20	Aggregate Finishing
Area 21	Shale Storage Silo
Area 22	Garage/Maintenance
Area 23	Rainwater, Dust Control
Area 24	By-Product System (Block Mix)

Area 1 - Shale Fines Landfill/Leachate System

The existing leachate system for the shale fines landfill shall remain in service for the immediate future. Monitoring of the leachate is reported to NYSDEC as part of Outfall 004 monitoring for the SPDES permit.

All shale fines were removed from impoundment and placed in a solid waste landfill on site permitted by DEC prior to January 1, 1992. The removal of the shale fines was done in accordance with procedures approved by NYSDEC.

Nothing remains in the lagoon or dewatering ridge along the perimeter of the lagoon. ENSR has completed sampling the soil remaining in the former lagoon to document removal of all of the shale fines. The sampling and analytical plan was submitted to and approved by NYSDEC Division of Solid Waste, Region 4 (James Sacco, P.E.). Likewise, at a point directly north of the LGF Storage area, waste piles consisting of baghouse dust has been stored. These waste piles were moved to the non-hazardous solid waste landfill prior to January 1, 1992 along with the shale fines. ENSR has tested and sampled the soil below the former dust pilews and has documented that all dust was moved to the landfill. This sampling and testing was completed in July 1992 as part of the RFI required under the Part 373 Permit

Since 1992, the shale fines and relocated topsoil piles that were previously located to the north and west of the kiln area were placed in the permitted landfill. The landfill has been capped and seeded to provide a grass cover. The area has been improved by reshaping and resloping the LGF storage area and present office building sites.

All this work was performed in a regulatory compliant manner under the observation of the Norlite compliance staff, and DEC's regional solid waste engineer.

Area 2 -LGF Storage

The LGF improvement plan implemented by Project 9511-003 is defined by Section 4.1 of this BMP. In addition to these improvements, the perimeter around the LGF unloading and storage area was regarded to provide an unlined, earthen containment dike in the unlikely event of a receipt of a leaking tanker. This supplements the tank unloading area that is already provided with secondary containment of non-earthen materials, sufficient to contain an entire tank volume. A spill control station (i.e. absorbent, sand, boom, polyethylene 6 mil. sheeting, lime, clean DOT 55 gallon drums, shovels, etc.) is maintained in the area for emergency response to leaking drums or tankers. Spill control maintenance will assure that chemical and truck fluids do not normally exist on the ground coincident with periods of precipitation or snow/ice melt runoff. Dry sandbags, polyethylene liner, weight blocks, and shovels shall be maintained in the area so that spills can be contained in 15 minutes by 3 men in the unlikely event an emergency spill coincident with receipt of a leaking tank wagon of fuel. Procedures, personnel training and emergency response teams will be instituted to assure essentially no groundwater or storm water contamination in the area.

Any soils removed will be disposed of in a RCRA compliant manner. Compliance monitoring will assure that operations satisfies these requirements.

The LGF tank building provides tertiary containment for the LGF tanks 300-600. In addition, Norlite has replaced the below ground line with a new above ground LGF line totally enclosed within a pipe tunnel. The tunnel provides secondary containment of the LGF line that slopes back to the containment structure within the LGF storage building. Leak detection systems have been installed at intervals along the length of the LGF pipe tunnel.

Area 3 -Mid Pond

The Mid-Pond has been decommissioned in a compliant manner. All of the silt has been placed in a secure, on-site, permitted, lined and capped landfill.

Area 4 -Baghouse Silo Kiln #2

The baghouse silo for Kiln #2 is no longer in use. Dust collected in the Kiln #2 Baghouse is pneumatically conveyed to the dedicated dust silos. See Section 4.1 for a complete description of the dust handling system.

Area 5 -Coal Area

The coal transfer, attrition, and feed systems were removed from Norlite in 1992. The coal reserves were removed from site. The remaining concrete storage vaults and footings cleaned of coal and removed from site and disposed of in a regulatory compliant manner.

Any earth laden with significant traces of coal was removed from site and disposed of in a regulatory compliant manner.

Resultant holes were refilled with clean earth and re-compacted to medium proctor.

The elimination of the use of coal at Norlite represents a significant improvement with regard to abating a fugitive dust source, SO_2 emissions, and storm water runoff control issue.

Area 6 -Kiln #2 Baghouse

Appendix A defines the APC system (including the baghouse) improvements completed by the Norlite Compliance Improvement Project. The maintenance and housekeeping for this area will be maintained as follows:

a) All baghouse dust will be removed and transferred by a system of rotary airlocks and pneumatic lines.
b) Non-routine cleanout of the baghouse modules by vacuum truck will be performed to minimize fugitive dust.
c) All maintenance activity requiring placement of filter bags or any equipment contaminated with baghouse dust on the ground will be done on poly lined surface.
d) Any dust, scrap equipment and maintenance components will be removed from site and disposed of in a regulatory compliant manner as overseen by the compliance staff.

The compliance staff will routinely monitor operations and maintenance to assure conformance to these procedures. Compliance monitoring shall also assure the baghouse is not operated in a method which results in contamination of the atmosphere or ground by baghouse dust from faulty equipment (seals, etc.)

Area 7 -Off gas Coolers

Dust is removed from the excess clinker cooler air by the Barron fan and multiclone system. Currently the dust removed from the air by the multiclone is transferred to the clinker conveyor belt via a chute. SCI-TECH and Norlite have identified this area for the implementation of more elaborate dust control in The Addendum Fugitive Dust Plan, February, 1995.

The transfer chute was modified to allow dust to be conveyed to a sealed hopper. The hopper will be moved with a forklift or other machinery to the clinker pile area. The dust in the hopper will be wetted and mixed into the clinker pile so it can be recycled for beneficial use.

Area 8 -Kiln #2 Scrubber

A spill containment curbing around the perimeter of the Kiln #2 concrete pad prevents the release of scrubber water. The scrubber piping and containment is enclosed with aluminum siding. The inside of the enclosure is heated and insulted for winter operation. All lines that exit the enclosure are heat traced and insulated.

Scrubber maintenance and clean out is performed in accordance with a standard operating procedure. When maintenance is remediating and maintaining the scrubber system, compliance monitoring will assure no earth is contaminated with hazardous debris or scale.

Area 9 -Kiln #2 Trunnions (3)

The lubricating oil from the bearing houses has been routed into a perimeter channel collection launder (all 4 sides) and then into a DOT drum via hose.

The oil is disposed of in a RCRA compliant manner. This oil can also be blended with LGF for supplemental kiln fuel use. Any lubricating greases that inadvertently fall on earth or concrete are collected and disposed of, along with any contaminated earth, in a RCRA compliant manner. The compliance staff monitors the operation to assure operations complies.

Area 10 -Kiln #1 Trunnions (2)

The solutions, procedures, and monitoring programs identified for Area 9 will also be followed for Area 10.

Area 11 -Lube Oil Room Under Kiln#1

1. A curb is provided in the doorway to keep mud and storm water out of this room. The earth around the entrance is graded to eliminate introduction of rainwater. Retaining walls guard the entrance of the doorway against introduction of rainwater.
2. The floor of this building will be kept free of oil and grease through routine inspection and housekeeping by the kiln operators.

Area 12 -Underground Process and Fuel Oil Tanks

Any abandoned in place tanks were removed from service in a RCRA compliant manner. TK-100 and TK-200 and associated subsystems, the Kiln

#1 pump house and the shale fines settling lagoon were identified as abandoned and have been removed from service.

The 3 below grade vehicular fuel tanks have been removed from service in a RCRA compliant manner. These tanks were replaced with above ground tanks which meet state and local building code requirements and have secondary containment.

Two below grade fuel oil tanks (supplemental kiln fuel) which were located south of Kiln #1, were cleaned and removed in a RCRA compliant manner. These two tanks were replaced in 1992 by TK-9, an above-ground off-spec. oil tank with a secondary containment.

Tank 6, also located south of Kiln #1, contained virgin oil for supplemental kiln fuel. This tank was removed in December 1996.

Area 13 -Boiler Room

This system is not currently in operation. When this system is returned to service, operators will routinely monitor this area to ensure that all materials in the boiler room do not impact the surrounding environment.

The ground outside the boiler room was graded so that stormwater will flow away from the entrances.

Area 14 -Air Compressor/MCC Room

1. No problems were identified in the MCC rooms.
2. Floors will be kept clean through routine inspection and housekeeping.
3. Maintenance and operational procedures are in place to minimize and eliminate leaks and accumulation of oil on the floor.

Area 15 -Scrubber, Kiln #1

Kiln #1 scrubber is constructed and maintained in a manner similar to Kiln #2. Both of these systems are described in Section 4 of this BMP.

Area 16 -Pump House/Shale Setting Lagoon

The pump house, shale fines settling lagoon, and associated drainage and piping system were historically used by Norlite as a Kiln #1 scrubber recirculation system.

This system was replaced by an air pollution control device (baghouse/recirculated caustic scrubber) system comparable to the one permitted by NYSDEC for Kiln #2

The pump house, settling lagoon, associated underground gravity culverts, and piping system have been decommissioned and removed from service in a RCRA compliant manner.

Area 17 -Railroad Steel Loading Operations

Railroad cars are no longer loaded with steel at Norlite.

Area 18 -Lime and Soda Ash Operations

Both the lime and soda ash make-up systems provide alkali treatment chemicals for removing acid off-gases (such as sulfur oxides from the shale) from the kiln flue gases. Lime is added prior to the baghouses by pneumatic transfer. The baghouse removes the lime and its by-products (gypsum, etc.). Up to 50 tons of lime is stored in a 2,500 cubic foot silo that is equipped with a fabric filter bin vent to relieve pressure and capture dust while the silo is being filled by a bulk truck.

Lime is gravity fed into feed hoppers located directly under the silo. The flow of the lime is controlled by a rotary airlock and screw feed mechanism. The auger screw feeds the lime into the pneumatic system which injects the lime into the baghouse duct work.

The motor speeds of the airlock and screw are calibrated to the required lime mass feed rate. The on/off switches for the lime feeders and pneumatic blowers and the motor speed controllers are in on the lime feed control panel in Kiln #2 MCC.

The soda ash solution and make-up system supplies 5% to 10% by weight solution to the kiln 1 and 2 scrubber systems. An improved fabric filter bin vent was installed on top of the soda ash silo in May 1995. The new bin vent was designed to collect dust and return it to the soda ash silo. The bin vent filter bags are automatically cleaned "on demand" by pulsed compressed air. Cleaning is controlled by a Photohelic differential pressure gauge.

The level of the soda ash solution tank and the addition of soda ash are controlled automatically by tank level switches. When the level of the tank reaches the low level an electronic switch opens a solenoid valve causing clean water to fill the tank until the high level is reached. While water is being added a screw conveyor pushes crystalline soda ash out of the silo hopper and into the solution tank. The screw conveyor turns off automatically after a set time. The operating time of the screw has been set based on previous experience and is sufficient to maintain a consistent solution concentration. Additionally the tank is agitated by mixers to assure consistency.

The level of the soda ash silo is checked and recorded twice daily. The concentration of the soda ash solution is checked frequently by the kiln personnel.

The base of the soda ash silo and the tank are covered to minimize ground water and storm water contact. The building is heated in the winter to prevent freezing.

Two pumps are housed in the soda ash building. These pumps feed soda ash solution into the suction lines of the scrubber recycle pumps to maintain a minimum pH of 8.0. The pH set point of the scrubber solution may be changed by the burner operator in the Cimplicity Data Acquisition System. There is a manual Caustic Boost option in the system to allow the burner operator to correct for pH upset conditions.

Area 19 -Used Equipment, Debris

1. A systematic, plant wide centralization and evaluation of plant equipment has been performed. Equipment that is unusable will be decontaminated and/or removed from site.

   A substantial amount of unusable equipment was removed from site since 1992. As equipment becomes unusable, either it will be decontaminated (as appropriate) and removed from site or stored in a common area.

2. Any contaminated debris or earth shall be disposed of in a RCRA compliant manner.
3. Valuable used equipment shall be:
    a) Stored either in an area with secondary containment (indoor or out).
    b) And/or cleaned in regulatory compliant manner and stored in one common area.
4. Any contaminated storm water from a concrete storage containment shall be treated in the WWTF or disposed of in a regulatory compliant manner.
5. Norlite's compliance staff will routinely monitor maintenance and operations to insure conformance with these commitments. It will be the responsibility of the Compliance Department to determine the acceptable methods of disposal, equipment remediation, and storage.

Area 20 -Aggregate Finishing Building

1. Propane and gas cylinders shall be secured according to OSHA and MSHA standards. The Compliance and Safety staff monitor the storage areas routinely to assure conformance.
2. Good housekeeping shall be maintained. Compliance staffing shall monitor routinely to assure compliance.
3. The roof shall be maintained so that precipitation does not enter the building and cause run-off problems.

Area 21 -Raw Shale Storage Silo

1. The holes in the roof were sealed to ensure precipitation does not come in contact with the shale.
2. A new fabric filter dust collection system wasinstalled in accordance with recommendations of the Fugitive Dust Plan Addendum.

Area 22 -Vehicle Repair Garage/Plant Maintenance

Norlite has many vehicles (front end loaders, dump trucks, earth movers, etc.) which are used to operate the quarry. In addition, the plant operations (kiln, LGF, aggregate finishing) are maintained.

Lubricants, oils, transmission fluids, and greases are housed at the maintenance facility. Various methods of secondary containment have been installed to prevent contamination of earth, storm water, and groundwater.

When maintenance of engines is performed, it will be done with temporary or permanent spill containment. Outside maintenance will not be performed during periods of excessive precipitation.

Hot water washes will not be performed outdoors during periods of precipitation. Organic solvent cleaners shall not be used outdoors.

Maintenance is performed in two regions of the facility. In the operations areas and at the Advanced Liquid Maintenance Area (North of Fuel Farm). Any equipment to be cleaned of chemicals shall be cleaned in a manner consistent with that described in the previous paragraphs for vehicle engines. The waste and wash waters thus generated shall be disposed of in a RCRA compliant manner.

The compliance staff will routinely monitor the maintenance operations to assure conformance to procedures and standards. All maintenance personnel will receive on the job training by their supervisors to assure conformance to prevent contamination of groundwater and storm water. The maintenance staff and supervision will be expanded and improved to assure compliance.

Area 23 -Dust Control and Associated Control of Groundwater and Storm Water Contamination

Norlite continually attempts to optimize the strategy for controlling fugitive dust emissions in order to minimize the potential for dust particulate settling on the facility site roads and storage areas from becoming waterborne in storm runoff. The dust control systems were improved based on recommendations in SCI-TECH's February 1995 Fugitive Dust Plan report. The following BMP details the activities which have been completed or are planned for dust control at the Norlite site:

1. Road Watering: Norlite has developed a plan for maintaining the mobile road watering units. This plan includes the frequency of watering and maintenance procedures. Continuous road watering was deemed impractical and unnecessary by SCI-TECH. To further suppress dust, some of the roads were rebuilt with railroad ballast while others were paved. A program has been implemented to maintain these roads.
2. Wet dust suppression systems: Norlite has upgraded the wet dust suppression systems, including nozzles and hard piping as recommended by SCI-TECH and engineers at Norlite. These systems will be designed to be as functional as possible in sub-freezing weather by incorporating insulated heat trace systems and drains. Flexible piping will still be used to connect sections of hard pipe, but the hard pipe will run to the emission points. Furthermore, operators will be trained in the proper operation of the wet dust suppression systems in normal and sub-freezing conditions.
3. Traffic Patterns: Traffic through the South Saratoga Street entrance has been closed to all heavy vehicles since June 30, 1992. Only passenger cars and light trucks may enter the plant through this entrance.
4. Long Term Storage Piles: Dust is controlled on long term storage piles by eliminating jagged edges on the leeward side using a loader or other machine. During dry periods the long term storage piles may be sprayed with the mobile water tanker to further suppress dust.
5. Enclosure Improvements: Metal sheeting has been installed and repaired on the permanent screening operations. Metal covers have been installed on all conveyor belts. Drop points have been reduced in height as much as possible. Transfer points and chutes have been enclosed to practical limits.
6. Kiln seals: The seals on the shale feed ends of both kilns have been redesigned to minimize emissions and allow for longer mechanical life.
7. Baghouse Dust: Baghouse dust is pneumatically conveyed and stored exclusively in two dedicated silos. These silos were rebuilt and fitted with bin vents which return all dust to the silo. A BUD was granted by NYSDEC for the use of the dust in blockmix.
8. Dust Collection and Suppression Equipment: Norlite follows proper inspection and maintenance procedures for all of the

dust control equipment installed according to the approved Fugitive Dust Plan Addendum. These procedures have been refined based on recommendations of the manufacturer after the equipment was installed. Each control device will be inspected and repaired, as needed.

Other improvements to be noted:

Norlite has ceased firing the kilns with coal. The coal storage pile and all associated equipment has been removed from the site.

All equipment has been fitted with high intensity strobe lights and audible alarms for vehicle backing. Audible alarms are used during daylight hours, and the strobe lights are used during night time operation. This program was adopted to reduce noise pollution.

Norlite will investigate computer software modeling and meteorological instruments for future use in characterization of dust emissions to plan loading operations.

Norlite is investigating the feasibility and impact on dust emissions of moving the heavy equipment parking from the eastern edge of the plant to the western side of the plant. Dust emissions and heavy vehicle exhaust emissions will be moved further away from the neighboring community.

Area 24 -By-Product System

In the processing of light weight aggregate (LWA) Norlite generates two main by-products. Both of these by-products, WWT filter press cake and baghouse dust, have beneficial use determination (BUD) grants from NYSDEC. The BUD allows bag house dust to be converted into block mix. Filter cake is returned to the hot clinker pile and blended into the finished product.

The bag house dust is collected and pneumatically conveyed to one of two dust silos at the finish plant. There is a third, slightly larger silo at the finish plant to store light weight aggregate fines. Block mix, a combination of 3/8's, light weight aggregate fines, and bag house dust, are produced in the Shipping Tunnel under the three silos. Each constituent is fed onto a conveyor belt by a rotary air lock on the bottom of the silo. When the material is dropped from the conveyor belts to the production pile it is sufficiently mixed to form the product known as block mix.

Solids in the scrubber blowdown water are precipitated and filtered in the WWT plant. Sludge from the clarifier is pumped through a filter press. The filter press separates the solids from the water leaving a hard, dry cake. The cake is removed from the filter press and taken in a bin or loader bucket and blended into the clinker pile. The filter cake is then processed in the finish plant and ultimately ends up in the 3/4's, 3/8's or the block mix.

4.3 Storm Water Runoff Control Improvements

A. **Storm water Runoff**

This section presents proposed runoff features that are designed to control peak runoff velocities, sedimentation, and provide adequate conveyance into receiving water bodies for the typical storm event.

Drainage Area 1

Since 1992, Norlite has constructed earthen berms along facility roads to prevent run-on/run-off and erosion. Facility roads were regraded, reshaped and resurfaced with crushed stone. Modifications to facility roads as well as to other parking areas will minimize dust accumulation, gully formation and uncontrolled runoff. Norlite applies water spray from mobile tanker trucks to all facility roadways and other vehicle access surfaces on a daily basis during dry weather to minimize dusting and transport of airborne particulates. (The road watering areas are highlighted in Figure E-3, Appendix E). This is an effective procedure that is performed several times daily, when required and will be continued. Water spray application to facility roadways help keep road surfaces compact and rigid so erosion and washout during storm events is minimized.

Since a new wastewater treatment facility was constructed in this area (completed in September 1995) and removal of product piles from this drainage area has taken place, resulting drainage pattern alterations and silt transport potentials to the wetland area were further studied. It was determined that no further control measures were required but the area is still monitored for erosion, etc. Site improvements to reduce silt transport potential to the wetland area will be proposed if necessary. Either a french drain system, silt screen system or combination of the two may be proposed.

Drainage Area 2

Significant site improvements have been made in Drainage Area 2 which includes regrading, resurfacing and berming of roads and the filling in of the mid-pond to reduce erosion and transport of silt and sediments to the Salt Kill. All water is directed to the finish plant where it is reused for dust suppression activities. This system works well to reduce both sediment discharges and erosion.

This facility drainage point receives a majority of storm water surface drainage from at least six acres of the active industrial activity area including:

- Portions of the kiln operations, primary crusher and short-term product piles to the west.
- Portions of the product finishing operations and maintenance shop areas to the south end
- Facility roadways, LGF storage and office parking areas to the northwest.

OBJECTIVES OF RE-USING THE WATER AT THE FINISH PLANT.

- To eliminate ponding of water in low elevation approaches to the Salt Kill at east side of facility.
- To trap surface runoff fines and silt in discharges to Salt Kill Creek.

- To control erosion of creek bank by runoff from Norlite facility.

NARRATIVE DESCRIPTION OF THE RE-USE SYSTEM

Water is directed to the center of the Finish Plant where there is a sump and pump. The water is then pumped into a tank and then redirected to various water suppression systems.

B. Process Area Storm water/Groundwater Improvements

The facility operating process area specified for storm water and groundwater runoff improvements is shown in Figure E-3 of Appendix E. This area covers the majority of site drainage areas No. 1 and No. 2

In addition to the storm water runoff and groundwater control improvements to be performed as per Section 4.1 and 4.2, Norlite plans to implement improvements to reduce runoff and groundwater collection in existing process tunnels. The following improvements have been completed:

- Installation of redesigned wet spray systems at product conveyor systems and storage piles to reduce volume of surface runoff and seepage caused by water sprays.
- Collection of tunnel waters for recycle/reuse and elimination of runoff from these sources.

1. Material Process Wet Dust Suppression Systems

The following material handling and product pile operations use stationary water sprays to reduce dusting and airborn particulate transport to on-site and off-site locations.

- Primary jaw crusher discharge conveyor
- Block mix conveyor belt head pulley
- 3/8"product finishing plant conveyor belt head pulley
- Clinker belt pile
- Clinker conveyor belt head pulley
- 12C crusher hopper
- Primary crusher plant surge bin
- Traylor crusher (feed and discharge)

These stationary water spray systems have undergone design changes that have improved effectiveness as dust supressors and reduced the volume of water used.

Proposed improvements to the clinker belt spray systems are described in further detail in Section 8.0 of Norlite's Fugitive Dust Plan Addendum (FDP) revised September 1995. The current spray systems replaced the lawn sprinkler type spray heads with fine mist sprays and patterns based on coverage of only the areas actually occupied by product/material instead of extending to all areas within a circular pattern. Figures E-4 and E-5 (i.e., Figures 8-13 and 8-24 from the FDP) in Appendix E show the equipment specified to make these modifications.

Modifications were made to the "Global" spray system at the finish plant in 1994. Each sprinkler operates in series

with a current cycle of approximately 5 minutes on and 15 minutes off. This change has helped to reduce volume of runoff in this area.

Reduction in volume of spray water is beneficial to control site surface water runoff that is generated as a result of both direct product pile runoff and tunnel drainage sump pumping. When a NESCO spray system was added to the various drop points, all other garden hose spray nozzles were eliminated. The reduction in water volume is dramatic.

2. **Containment Tunnel Discharge Proposed Water Reuse**

Both south and east of the kilns, several tunnels for material conveyor systems exist. These include:

a. Kiln #1 Clinker Cooler tunnel
b. Kiln #2 Clinker Cooler tunnel
c. Primary shale crusher tunnel
d. Finishing building tunnel #1
e. Shipping tunnel

Sump water is discharged from these tunnels on a regular basis as groundwater, spray water runoff and storm water seep into these tunnels. These tunnel water discharges have been sampled to evaluate quality and composition for reuse and recycle purposes within the facility. Figure E-6 in Appendix E shows the tunnel sampling locations. On a continuous basis the following average flow rates have been determined for each sump discharge.

a. Kiln #1 and #2 clinker cooler tunnels combined =9.3 gpm
b. Primary shale crusher tunnel =5.3 gpm
c. Finishing Tunnel #1 = 0.7 gpm
d. Product shipping tunnel =6 gpm

Therefore, an average daily flow rate of approximately 16 gpm of combined tunnel drainage is generated. The maximum daily flow rate estimate for these discharges is 24 gpm. It is feasible to reuse these discharge flows for the following facility process water requirements:

- Product pile and conveyor spray water
- Road surface spray water
- Wet scrubber system make-up water
- Wastewater treatment plant and scrubber process chemical solution make-up water
- Wastewater treatment system filter backwash and equipment washdown supply waters.
- Other possible uses, such as boiler make-up and trunion cooling water.

The preceding facility operations (combined) use more than either the average or maximum tunnel sum combined discharges. To be practical, these combined tunnel discharges will have to be collected in a common supply tank and distributed to these users on an as needed basis from a common supply pump. City water make-up would also be supplied to the same supply tank (for non-potable use) to provide water requirements above the amount that can be supplied by funnel water recovery.

Existing tunnel water sampling and discharge sump locations are described in Appendix E. These water discharges are compliant with existing SPDES outfall limitations with the exception of total suspended solids concentration for the combined sources and (for some tunnel discharges) for pH values. Therefore, a filtration step is proposed for the collected combined water sources that will reduce TSS to concentration appropriate for designated plant uses. Since the water would be reused for plant processes, instead of discharged directly, there is no need to readjust the pH value if it exceeds pH 9.0.

APPENDICIES

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APPENDIX B:	WWT PROCESS NARRATIVE
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APPENDIX A:

APCD, SCRUBBER, AND BLOCK MIX ADDITION IMPROVEMENTS

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APPENDIX A:

APCD, SCRUBBER, AND BLOCK MIX ADDITION IMPROVEMENTS

A.1 PROCESS NARRATIVE

Air Pollution Control System: Gas Handling

Both Kilns have similar emission control systems describe herein and as shown in Drawings NY003-D1403, NY003-E-1404, NY003-D1405, and NY003-D1406. The systems include both wet and dry emission control devices for the collection and removal of particulate matter, hydrogen chloride (HCl), metals, and other gaseous species. The principal collection mechanisms affected are sedimentation, condensation, impaction, filtration and interception for particulate and metals, and absorption for HCl and other gaseous species.

Kiln emissions first pass through a knockout box to recycle large particulate matter and a Barron low pressure multiple cyclone (multiclone) unit. The multiclone incorporates relatively small diameter cyclones operating in parallel with an inlet and outlet to remove coarse particulate matter. Dust collected in the multi-clone accumulates in a hopper and is pneumatically conveyed to one of two silos where it is stored and later mixed with other products to form block mix.

The flue gases then pass through the air to air single pass tube bundle heat exchanger rated at 65,000 ACFM. This unit uses forced draft ambient air as the cooling medium. Gases enter the heat exchanger at approximately 900 °F and exit at approximately 450 °F with a 2 to 3 inch w.c. pressure drop across the unit.

Following the heat exchanger is an Aeropulse, Inc. Power Pulse Collector (fabric filter) with three modules. Each unit is rated for 52,700 ACFM at 450 °F. Kiln 1 has 1200 filter bags that are 12 feet in length and 4 5/8 inches in diameter. Kiln 2 has 810 filter bags that are 17 feet, 3 inches in length and 4 5/8 inches in diameter. Kiln 1 has an air to cloth ratio of 3.02:1 with all three modules operating and 4.53:1 with one down for maintenance. Kiln 2 has an air to cloth ratio of 3.11:1 with all three modules on line and 4.67:1 with one module down for maintenance.

Each module is cleaned independently to maintain a differential pressure range. The differential pressure range is set on the photohelic gauges in the motor control center. When the differential pressure exceeds the photohelic's high set point compressed air cleaning shall commence. The filter media is pulsed one row at a time until the differential pressure drops to the photohelic's low set point. Pressure drop across the unit is rated between 3 and 6 inches w.c., with all three modules on-line.

A modulating air damper automatically adjusts inlet gas temperature (if required) by bleeding in ambient air. The inlet gas temperature is automatically controlled to a set point between 400°F and 440°F.

Hydrated lime ($Ca(OH)_2$), stored in a 2,500 cubic foot silo, is injected into the air pollution control system immediately prior to the baghouse. This is primarily to control sulfur dioxide and sulfuric acid mist from the combustion of LGF in the kiln and to protect the baghouse from corrosion. The lime also neutralizes hydrogen chloride, providing approximately 80% of the removal prior to the wet scrubber. Lime feed

shall vary from near zero to 1,100 pounds per hour. Norlite's operating permit requires lime feed at a minimum ratio of 2.7 pounds per hour of lime for each pound per hour of chlorine. However, Norlite operates at a 3.3:1 lb./hr of lime per lb./hr chlorine ratio to maintain a factor of safety.

Dust from the baghouse is collected and pneumatically conveyed to one of two weatherproofed concrete dust silos. Filter fabric bin vents have been installed on top of each dust silo to capture dust in the displaced air and return it to the silo.

The baghouse is followed by a 400 HP system fan which induces draft through the kiln, knock-out box, multi-clone, heat exchanger and baghouse and provides forced draft on the exhaust gases through the venturi and Ducon mist eliminator shell. Additionally, the fan provides induced draft for a hood installed over the kiln shale feed chute, designed and installed to capture any fugitive emissions emanating from this area.

The induced draft fan carries exhaust gases to a BECO Venturi (MMV) scrubber for acid gas removal. This unit is rated for 53,000 ACFM at 450 °F at the inlet and 38,600 ACFM at 138 °F at the outlet, with 2 to 6 inches w.c. pressure drop. The scrubber's rod design has tubular alloy rods installed in the rows across the throat to provide a series of smaller throats. The intent is to provide the effect of a small venturi throat without incurring the high pressure drop typically associated with conventional high efficiency venturi scrubbers. Additionally, the tubes provide more impaction surfaces for enhanced particulate and HCl collection. The entire air pollution control system is designed for 99% HCl and 68% SO_2 removal efficiencies.

Clean (city) water headers are located directly above the venturi to provide evaporative cooling to the exhaust system. Caustic sodium carbonate (soda ash) solution, comprised of a maximum of 10% dissolved solids (sodium carbonate, sodium chloride and/or sodium sulfate), is recycled through the unit at minimum of 184 gpm. It is partially introduced through tangentially positioned nozzles located above the MMV module. Scrubbing solution is also injected into the transition segment located between the venturi MMV and Ducon mist eliminator shell.

Excess water drains from the venturi exit elbow to the 1,000 gallon settling/recycle tank. The pH of the solution in the recycle tank is automatically maintained at 8.0 or greater by the introduction of 5% to 10% sodium carbonate solution to the venturi feed. The feed rate of the sodium carbonate solution varies with halogen concentrations in the LGF. A minimum of 4.4 gpm blowdown is taken from the recycle tank to maintain a level set point.

Following the BECO unit is a BECO MMV "quad" mist eliminator installed in the bottom of the Ducon mist eliminator shell. The unit, manufactured of PVC, is designed to capture entrained droplets of recycle solution exiting the BECO scrubber. This unit is rated for a pressure drop of 1.5 to 5 inches w.c. This mist eliminator drains into the recycle tank. Above the "quad" mist eliminator is a mesh-type mist eliminator rated at 48,000 ACFM at 140 °F with a minimal pressure drop. Kiln exhaust passes to the atmosphere via a 60 inch diameter FRP stack 120 feet above grade at approximately 41,000 ACFM at 130 °F and 10% moisture (v/v).

A.2 System Upgrades

Baghouse

Several design changes were made to the baghouses in order to provide for higher cleaning efficiency and easier maintenance.

The inlet gases enter at the bottom and exit at the top on Kiln 1 dust collector. This eliminates the abrasive inlet dust hitting the bags at the sides. With this change in flow pattern, bag breakage due to impacting has been eliminated. Baffle plates have been added to the inlet sides of Kiln #2 dust collector for this purpose.

Access to bags on Kiln 1 is via walk-in plenums instead of top-loading doors. This reduces air leakage.

The venturi seals have been eliminated. The filter bags have a snap band collar which forms a contact seal with a hole in the tube sheet. After the bag is snapped into the tube sheet, a one-piece wire cage and venturi are inserted into the bag.

Both inlet and outlet isolation dampers are butterfly type for quicker operation. The original guillotine dampers tended to clog with dust.

Slide gates have been motorized for Kiln 1. Excessive dust will not accumulate in the air locks when turned off. This reduces seal abrasion that is a source of leakage.

The rotary airlocks have been upgraded to lock with adjustable vanes and shoes to eliminate a costly, higher maintenance airlock.

Scrubber

Several components of the scrubber have been upgraded as follows:

- The quench header is fabricated from corrosion resistant alloy.
- The MMV venturi is fabricated from Allegheny Ludlum AL 6XN alloy. This material allows greater corrosion resistance than the original stainless steel.
- The MMV mist eliminator is fabricated of reinforced plastic.
- There are two segmented mist eliminator pads fabricated of polypropylene to eliminate any corrosion. To wash out particulates, a spray of fresh water was placed under the mist eliminator pads. This spray drains into the recycle tank.
- Fresh water makeup is introduced directly into the makeup tank rather than impinging on the mist eliminator.
- The fresh carbonate supply is introduced into the suction line of the recycle pump to allow for a more effective treatment of the scrubber gasses.
- Fresh carbonate solution is controlled by a modulated valve. This ensures a more stable scrubber pH. Maximum design flow rate is 30 gpm to accommodate higher chlorine feed levels.
- Blowdown is taken from the recycle tank, through a pump.

Stack

To improve dispersion of the exhaust gases, the current stack shall be replaced by a 120 ft. high caged steel FRP unit. The gas velocity at the tip shall be a minimum of 60 ft/sec. The current velocity is 37 ft/sec. It shall be equipped with two test platforms, four 4" test ports each. All applicable codes shall be met.

APPENDIX B:

WWT PROCESS NARRATIVE

CONTENTS

WWT PROCESS NARRATIVE

This narrative summarizes the wastewater treatment facility (WWTF) to comply with the SPDES permit requirements for outfall 006. See simplified PID NY029-D1003, Rev. B AND NY029-D1004, Rev. B.

B.1 Untreated Wastewater Collection and Transfer

The sources of untreated wastewaters include:

A. Kiln #1 scrubber blowdown
B. Kiln #2 scrubber blowdown
C. Boiler blowdown*
D. Storm water from process secondary containments**

Note: * - The boiler is presently out of service
* - stormwater may or may not go to wwtf

The combined wastewaters are continuously transferred from these sources to a 25,000 gallon agitated equalization tank (T-4501). The combined wastewater flow ranges from 60 gpm average to 103 gpm peak.

B.2 Overview of Process Design

The Norlite wastewater treatment process is designed to treat primarily the blowdown from the two kiln flue gas scrubbing systems and the trunnion cooling water system. The treatment process utilized physical/chemical unit operations to treat the blowdown to a degree required for discharge to the Mohawk River. Table B-1 displays the typical and maximum concentrations of metals in the blowdown along with the Mohawk River discharge requirements. Treatment of the blowdown will require removal of dissolved metals, suspended solids, pH adjustment, and temperature reduction.

The treatment process includes influent equalization to prevent sudden flow, temperature, or constituent surges to the system. Primary removal of the metals in the equalized blowdown stream is via alkaline precipitation of metal hydroxides and carbonates. This is followed by settling/removal of both precipitated metals and suspended solids in a clarifer. These sludge solids are then reduced in volume by the filter press.

The clarifer scrubber blowdown stream is then passed through a polishing filter and a carbon filter for final removal of minute quantities of suspended solids and organics. For upset conditions, a parallel carbon contact unit filled with sulfur impregnated carbon and a precipitating carbamate addition system is available to ensure final removal of any metals to below discharge limitations.

The treated stream of scrubber blowdown and non-contact trunnion cooling water is then stored in an effluent equalization tank to prevent flow and constituent surges in the discharge. This system also provides retention time for process monitoring to ensure

compliance with effluent limitations. The effluent is then discharged to an underground pipeline that directs it to the Mohawk River.

TABLE B-1

NORLITE SCRUBBER BLOWDOWN METALS CONCENTRATION FOR COMBINED KILN #1 AND KILN #2 SAMPLE COLLECTED JUNE 22, 1994

TYPICAL AND WORST CASE SAMPLES OF WASTEWATER USED IN LABORATORY TREATABILITY TESTS 6/29 TO 7/13/94.

(REF; LAB NOTEBOOK #APCSS-1 AND SAMPLES #78303-1, #7854-1 AND #78433-1, APPENDIX C)

METALS	CONCENTRATION (mg/L)			
	Proposed Mohawk Limit	Unspiked * Blowdown	Typical Monthly Maximum (Spiked)	Worst Case (2 Year Maximum (Spiked)
Arsenic	0.1	<0.25	0.33	1.1
Barium	4.0	0.82	3.0	0.69
Beryllium	2.0	<0.005	0.045	1.3
Cadmium	0.05	0.026	0.46	5.3
Chromium	0.2	0.079	0.43	67**
Copper	0.5	1.10	2.6	6.9
Iron	4.0	13.7	190	89
Lead	0.6	0.25	2.8	6.6
Mercury	0.05	0.19	0.29	6.1
Nickel	1.3	0.081	2.7	64
Selenium	0.1	<2.0	0.28	0.83
Zinc	0.5	0.60	5.6	14

* Laboratory Analytical Sample #78303-1
** Spiked with 97.8 mg/L CR_2O_3

B.3 Feed Stream Characterization

The WWT process will be designed to accept blowdown from the two kiln flue gas scrubbers and the auxiliary boiler (currently not in use). The process design will include a possible future feed stream from backwashing of a raw water reuse filtering system. These streams will be fed to the front end of the treatment process. An additional stream, the kiln trunnion cooling water, will be fed to the process after the clarification step in an overflow collection tank. The design average and peak volumetric flow rates are as follows.

	Average	Peak
Scrubber Blowdown (2)	17 gpm Each	30 gpm Each
* Boiler Blowdown	0.5 gpm	1.0 gpm

Trunnion Cooling	25 gpm	40 gpm
**Alternate Water Backwash	1.0 gpm	2.0 gpm

* The Boiler System is not presently in operation.
** This stream represents a potential future feed resulting from a raw water (quarry water, clinker cooler tunnel water, etc.) reuse filtering system. Reuse could be applied by the scrubber make-up supply, soda ash make-up, and the WWT system backwash and chemical dilution requirements. The low rate presents the treatment rate required for backwash generated from this reuse filtering system.

The scrubber blowdown steam volumetric flow rates were estimated based on the current blowdown rates of 5.5 gpm from each scrubber at a total dissolved solids concentration of 10.8% wt. The optimum precipitation and settling of metal hydroxides and other suspended solids in the scrubber blowdown were found to occur at a TDS of 3.5% wt. Operation of the scrubber at this TDS would require a threefold increase in the blowdown rate or a rate of 17 gpm per scrubber. Peak scrubber blowdown flows are based on 1992 trial burn data when LGF containing higher than existing permit limits for halogen was fired. The scrubber achieved the required acid gas removals at a blowdown of approximately 30 gpm for 9.0% halogens.

Present design objectives however, assume a future maximum halogen concentration of 4.5% in the LGF. Trunnion cooling water flows were based on normal summer and winter flow rates of 40 and 25 gpm respectively.

Each of the feed streams contain varying concentrations of suspended and dissolved solids. The design average and peak concentrations are:

TOTAL SUSPENDED SOLIDS

	AVERAGE	PEAK
Scrubber Blowdown (2)	1,000 ppm	10,000 ppm
Boiler Blowdown	1,000 ppm	1,000 ppm
Trunion Cooling	100 ppm	200 ppm
Alternative Water Backwash	5,000 ppm	5,000 ppm

The scrubber blowdown suspended solids concentrations were derived from a review of two years data from the existing scrubbers.

TOTAL DISSOLVED SOLIDS

		AVERAGE	PEAK
Scrubber Blowdown (2)	=	3.5% wt	5.0% wt
Boiler Blowdown	=	0.4% wt	0.5% wt
Trunnion Cooling	=	0.05% wt	.05% wt
Alternate Water Backwash	=	0.05% wt	.05% wt

Note that average suspended and dissolved solids conditions are those that will be present during greater than 90% of the process operation. Peak conditions denote the extreme upper limits that can occur for short durations.

B.4 Process Design

The Norlite WWT process consists of five basic unit operations - influent equalization, dissolved metals precipitation, solids setting and removal, effluent polishing, and effluent equalization/cooling.

B.4.1 Influent Equalization

The combined flows of the scrubber blowdowns, boiler blowdown and alternate water backwash enters a 25,000 gallon agitated Equalization Tank (TK-4601). The operating level in this tank is maintained at 12,500 gallons under normal conditions. This provides approximately 6 hours of equalization at average flow rates and over 3 hours of equalization at peak flows.

The equalization tank has 12,500 gallons of available surge capacity. This provides 6 hours of additional storage in the event of downstream equipment breakdown.

B.4.2 Metals Precipitation

The metals precipitation system consists of a 3,000 gallon capacity agitated Flocculation Tank (TK-4604). This tank receives the flow from the equalization tank via the Equalization Transfer Pump (PC-4603). The flocculation tank is equipped with a pH measurement and control system that adjusts the pH to approximately 10.0 - 10.2 via proportioned caustic addition. At this pH, the dissolved metals form a solid hydroxide precipitate. Jar test performed resulted in the minimum residual solubilities of the various dissolved metals allowing for compliance with the discharge limitations.

Caustic will be fed as a 50% solution via a proportioning pump (Caustic Pump PM-4611). It will be fed at an average rate of 6.0 GPH from a 7,500 gallon receiving and storage tank. Maximum feed rates of 16.0 GPH can be required during high flow and TDS periods. The Caustic Storage Tank (TK-4609) is located inside the WWT building.

B.4.3 Solids Settling and Removal

This portion of the process consists of the flocculent feed system, solids clarifier, sludge storage tank and the filter press.

Flocculent will be added to the Flocculent Tank (TK-4604) to promote the formation of large flocs of metal precipitates and suspended solids. This provides optimum solids settling rates. Flocculent solution is precisely fed by a chemical metering pump (Flocculent Pump PM-4608) from either a pair of 200 gallon Flocculent Storage Tanks (TK-4606 (A&B)). Jar testing indicates that a dosage of up to 10 ppm of flocculent product is required under normal conditions. A maximum addition rate of 20 ppm is assumed to be required during upset conditions. The flocculent solution is

prepared by mixing 500 ml of flocculent product in 180 gallons of city water.

The process slurry of flocculated solids overflows via a still pipe in the flocculation tank into the center well of the Clarifier (CL-4612). The 150 sq. ft. clarifier is sized for a loading of 0.23 gpm/sq. ft. under average flow conditions and 0.4 gpm/sq. ft. during peak flows. Resulting upflow rates of 0.37 and 0.64 inches/minute provide adequate settling time based on measured solids settling rates of 1.3 inches/minute.

The sloped bottom clarifier is equipped with a center feed well and a peripheral overflow weir. A mechanical rake mechanism provides continuous settled solids fluidization and prevents solids clogging of the underflow outlet.

The underflow sludge from the clarifier is periodically pumped (based on the level in the clarifier) to the Sludge Storage Tank (TK-4616). The underflow sludge solids concentration is approximately 5% to 10% wt exiting the clarifier. This 5,800 gallon agitated storage tank has a 7 day storage capacity under normal conditions and a 16 hour capacity during peak conditions. This sludge is pumped (via Filter Press Pump PD-4618) at least once a day through the 10 cu. Ft. Filter Press (FP-4619). This plate and frame filter press produces a filter cake of approximately 40 to 50 wt% solids which is discharged into a collection hopper for disposal. The filtrate from the filter press containing less than 200 ppm of suspended solids is discharged to the Overflow Collection Tank (TK-4613).

The overflow from the clarifier containing less than 200 ppm of suspended solids gravity discharges into the Overflow Collection Tank (TK-4613).

B.4.4 Effluent Polishing

Polishing of the clarified effluent is designed to ensure that the treated water meets discharge limitations. Final pH adjustment, fine particle suspended solids removal and carbon adsorption for selected dissolved metals removal is provided to accomplish final water quality. Reserve availability of carbamate addition for dissolved metals precipitation and a sulfur impregnated carbon adsorption system for additional metals removal capability provides assurance of meeting discharge limitations during worst case and also normal process upset conditions.

Both the clarified blowdown streams and trunnion cooling water are fed to the Overflow Collection Tank (TK-4613). This 7,000 gallon agitated tank provides 2 hours of retention under normal flow conditions and over an hour during peak flow conditions. The tank is equipped with a pH measurement and control system that will proportionately add 30% to 36% hydrochloric acid to the tank contents to maintain a pH of 8.5. The acid is received and stored in a 7,500 gallon tank, Acid Tank (TK-4620). Addition of the acid is provided by an Acid Feed Pump (PM-4622) at a normal rate of 22 gph and a peak rate of 36 gph.

The metal precipitating carbamate is added to the overflow collection tank when necessary to precipitate trace amounts

of dissolved metals from solution. The carbamate is stored in 55 gallon shipping drums and is fed directly from the drum to the system by a Metals Precipitating Agent Pump (PM-4623). It is fed at a rate of 20 to 40 ppm (300-600 ml per hour under normal flow conditions).

The discharge from the overflow collection tank is pumped (via Filter Feed Pump (PC-4624) through a parallel bank of four Polishing Filters (F-4625 A,B,C,D) for fine suspended solids removal. These sock type filters are fitted with a 250 mesh fabric to accomplish the solids removal (including the carbamate precipitated metals). The filtration system is designed for a maximum flow of 120 gpm. Loading under normal flow conditions is 60 gpm and 100 gpm during peak flow conditions. The surplus flow capability of the filters is available to allow re-treatment, if necessary, of final effluent recycled from the Effluent Storage Tanks (TK-4627 & 4628).

The sock filters are backwashed based on pressure differential typically on a once every four hour basis. Backwash consists of the diversion of the discharge flow from three of the filters through the filter to be backwashed for approximately 15 to 30 seconds. The suspended solids containing backwash stream (typically 30 gallons) is directed back to the equalization tank for full re-treatment.

The discharge from the sock filters is normally directed to a pair of Carbon Filters (F-4626 A,B) arranged in series for removal of trace metals. (Note: Significant organic materials are not normally present in these wastewater streams. However, the carbon will also remove organics if present). Piping arrangements allow the feed flow to be directed to either carbon canister first, followed by the second. This provides assurance that the second canister in the series is always the freshest and that in-process exhaustion of the first bed does not reduce the total system removal capability. During upset periods, a parallel sulfur impregnated carbon absorber Carbon Filter (F-4627) is available to remove a higher degree of dissolved metals.

Both of the carbon adsorption trains are sized to treat a peak flow of 120 gpm. Normal throughput will be about 60 gpm. Backwashing of the carbon filters is based on pressure drop across the adsorbers and will utilize city water (or future treated raw water) for backwash. Backwashing is performed at a rate of approximately once per day under normal conditions at a 60 gpm rate for a five minute duration. Periodic analysis of the adsorption efficiency of each unit will be performed to determine when replacement with fresh carbon is required.

Discharge from the carbon filters is directed to the Effluent Storage Tanks (TK-4627 or 4628).

B.4.5 Effluent Equalization

The effluent equalization system consists of two 25,000 gallon unagitated tanks. Discharge from the effluent polishing system is directed to one of the effluent storage tanks which will be controlled at a level of 7,000 gallons. This provides 2 hours of effluent equalization during normal

flow conditions. The remaining 18,000 gallons will be held as reserve storage in the event of poor quality effluent production. The second tank is also held in reserve and provides an additional 7 hours of storage capacity under normal flow conditions and over 4 hours at peak flows.

The combination of effluent equalization and reserve storage provides assurance that poor quality effluent can be captured before discharge to the Mohawk River. Stored effluent will typically require retreatment through the effluent polishing system (with carbamate addition and sulfur impregnated carbon adsorption) to attain discharge quality. Retreatment can be accomplished at a rate of 61 gpm under normal feed flow conditions (less than 7 hours to retreat a 25,000 gallon tank volume).

Providing that acceptable quality effluent is present, the effluent is pumped via the Effluent Discharge Pumps (PC-4629 A&B) through the discharge pipeline to a city stormwater sewer connection that discharges to the Mohawk River.

B.5 SYSTEM CONTROL PHILOSOPY

B.5.1 Introduction

The main goal is to provide enough retention treatment capacity and flexibility to meet effluent discharge limitations under all anticipated influent loadings and conditions. Two related guidelines in the design of the WWTP are minimization of both cost and operator interaction. The WWT process is particularly suited to meeting these goals since it has large capability at both ends of the process and the input flows (scrubber blowdown and trunnion cooling water) are generally constant. Both of these factors will result in relatively slow changes in the process operating conditons.

B.5.2 Process Description

The wastewater treatment process is depicted in the attached process flow diagram. It consists of three basic unit operations, equalization, solids removal, and effluent storage. Process input flows consist of the two scrubber blowdown streams and the trunnion cooling water. Both of these systems will provide relatively steady flow rates of 34 gpm/scrubber and 25 gpm of cooling water (plus 1-6 gpm of miscellaneous sources including boiler water, backwashes and sump and containment discharges) for an average total flow of 60 to 65 gpm. WWT operators have radio access to the kiln operators who have data regarding current blowdown rates from the scrubbers. This will assist the WWT operators in determining the degree of flow adjustments necessary.

Equalization is accomplished via a 25,000 gallon tank (normally operated at 12,500 gallons) that provides a 6 hour retention of the scrubber blowdown flows. The remaining 12,500 gallons will be held available for upset flow absorption.

There are two effluent 25,000 gallon storage tanks. There isminimal retention of treated wastewater in these tanks

under normal conditions. One serves as a wet well for the effluent discharge pump, the other is held spare for collection of non-compliant flows.

B.5.3.1 Flow Measurement

Flow is measured and local indication is provided at three locations- the discharge of the equalization tank, the discharge of the clarifier overflow collection tank, and the discharge from either of the two effluent storage tanks. The readout of these flow meters is at a location that will allow the operator to make manual valve adjustments to a desired flow rate. The effluent storage tank discharge flow meter includes flow totalization.

The existing scrubber blowdown lines are equipped with flow indicating devices. Indication is made in the respective kiln control rooms.

B5.3.2 Level Measurement

Level will be monitored via level switches that will illuminate alarm lights on the WWT annunciator panel. Level switches were installed on the equalization tank, clarifier overflow collection tank, the two effluent storage tanks, and the sludge conditioning tank. Each of the level switches requires an appropriate operator action. Due to the sizing of the tanks, relative steadiness of the process flow rates, and the positioning of the switches, operator intervention is normally not required instantaneously. Generally, an operator has a minimum of 15 minutes before his response is critically required.

B.5.3.3 Total Dissolved Solids Measurement

TDS is measured manually (as well as settled sludge levels in the clarifier) on a two to four hour basis. TDS is also determined by specific gravity measurements on the equalization tank (TK-4601) effluent and increases or decreases in scrubber blowdown rate made to control this parameter.

B.5.3.4 Level and Flow Control

a. Equalization Tank

Equalization Tank - three requirements are necessary in the equalization tank;

1. Maintain minimum suction head for the EQ discharge pump.
2. Control the wastewater level at approximately 12,000 gallons.
3. Prevent overfilling of the tank.

Four level switches will be required to accomplish this:

A low-level switch at approximately 2,000 gallon level alarms to indicate extreme low tank level. The operator has approximately 40 minutes to respond before losing pump suction. Response will be to decrease the discharge rate from the EQ tank by closing down on a manual control valve.

A low level switch at approximately 11,000 gallon level to indicate that the EQ tank discharge rate is exceeding the scrubber blowdown input rate. Operator response is to slightly close the discharge valve. Rapid response is not required.

A high level switch at approximately 12,000 gallons to indicate that the EQ tank discharge rate is less than the scrubber input rate. Operator response is to slightly open the discharge valve. Rapid response is not required, but the levels that accumulate above the high alarm point is the spare tank capacity that should be available for upset conditions.

A high level switch at approximately 23,000 gallon mark to indicate that extreme high levels are present and overflow of the tank is imminent. The operator will have approximately 50 minutes to respond to this alarm. Operator response is to open the discharge valve to draw down the tank level. The discharge rate can be increased to 67 gpm for brief periods without compromising the treatment process.

b. Clarifier Overflow Collection Tank

Clarifier overflow collection tank - There are three level control requirements for this tank;

1) Maintain minimum suction head for the tank discharge pump.
2) Prevent overfilling of the tank.
3) Maintain a minimum of 1 hour of retention time at average flow conditions.

Three level switches will be required to accomplish this:

A low-low level switch at approximately 1,500 gallons will alarm to indicate extreme low tank level. The operator will have approximately 21 minutes to respond before losing pump suction. Response will be decreasing the discharge rate from the tank by closing down on a manual control valve.

A low level switch at approximately 3,600 gallons will alarm to indicate low tank level. This will indicate that the tank level is dropping below minimum retention requirements.

A high level switch at approximately 6,500 gallons to indicate that an extremely high level is present and overflow of the tank is imminent. The operator will have approximately 15 minutes to respond to

this alarm. Operator response is to open the pump discharge valve to draw down the tank level. This discharge rate can be increased to 108 gpm for brief periods without compromising the treatment process.

c. Effluent Storage Tanks

Effluent storage tanks - There are three requirements for level control in this tank;

1. Maintain minimum suction head for the tank discharge pump.
2. Control the wastewater level at approximately 7,000 gallons. This will ensure that maximum upset storage capacity is available in this tank
3. Prevent overfilling of the tank.

Three level switches will be required to accomplish this;

A low-low level switch at approximately 2,000 gallons will alarm to indicate extreme low tank level. The operator will have approximately 30 minutes to respond before losing pump suction. Response will be decreasing the discharge rate from the effluent storage tank by closing down on a manual control valve.

A high level switch at approximately 7,000 gallons to indicate that the effluent storage tank discharge rate is less than the WWT system input rate. Operator response is to slightly open the discharge valve. Rapid response is not required, but the levels above the high alarm point is the spare tank capacity that should be available for upset conditions.

A high-high level switch at approximately 23,000 gallons to indicate that extreme high levels are present and overflow of the tank is imminent. The operator will have approximately 30 minutes to respond to this alarm. Operator response is to open the discharge valve to draw down the tank level. The discharge rate can be increased to maximum pump discharge (or more critically, max discharge rate as to be defined by the NYSDEC permit) as necessary to draw down the tank level.

d. Sludge Storage Tank

Sludge storage tank - There are only two level control requirements for this tank;

1) Maintain minimum suction head for the tank discharge pump.
2) Prevent overfilling of the tank.

This tank will be filled on an intermittent basis by manual operation of the clarifier underflow pump. Discharge will be during a filter press run cycle. Two level switches will be required to accomplish this

A low-low level switch at approximately 1,000 gallons will alarm to indicate extreme low tank level. The operator will have approximately 15 minutes to respond before losing pump suction. Response will be to shut the filter press feed pump off, ending the filtration cycle.

A high-high level switch at approximately 5,800 gallons to indicate that an extreme high level is present and overflow of the tank is imminent. The operator will already be in attendance making the sludge transfer from the clarifier. This alarm will be his signal to stop the transfer.

e. pH Measurement and Control

pH measurement and automatic control are performed in the equalization tank and in the clarifier overflow collection tank. Current design calls for the equalization tank pH control system to add caustic to raise the pH to 10.2. Likewise, the overflow collection tank pH control system adds acid to a pH of 8.8 Local indication of the pH is available at each of the tanks.

f. Annunciator Panels

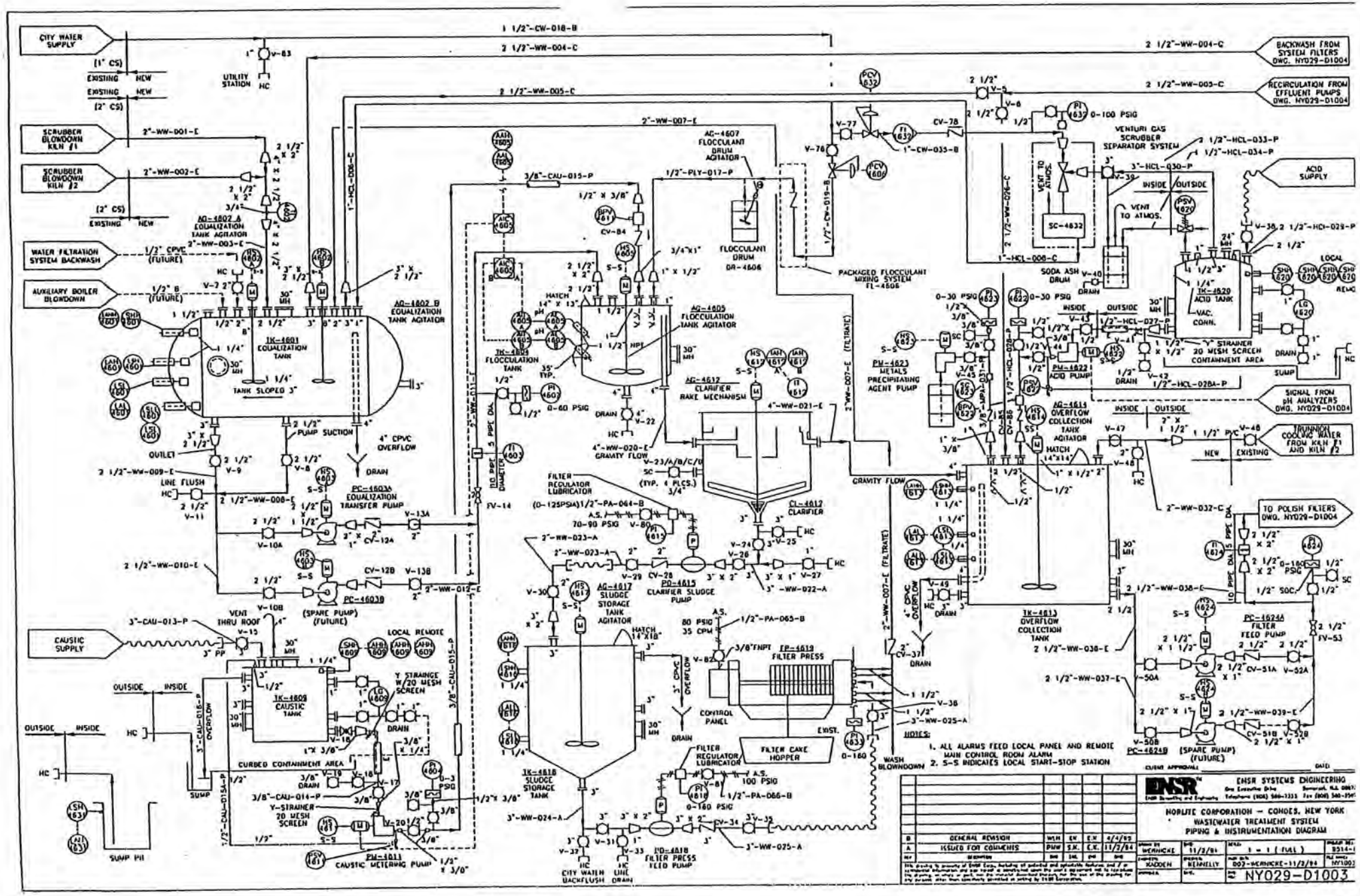
There are two annunciator panels that display level alarms- one in the WWT building and one in each kiln control room. Panel graphics will provide rapid recognition of alarm locations for the operators. Any alarm condition that occurs will require the kiln operators to notify the WWT operators of the alarm so that appropriate actions are taken.

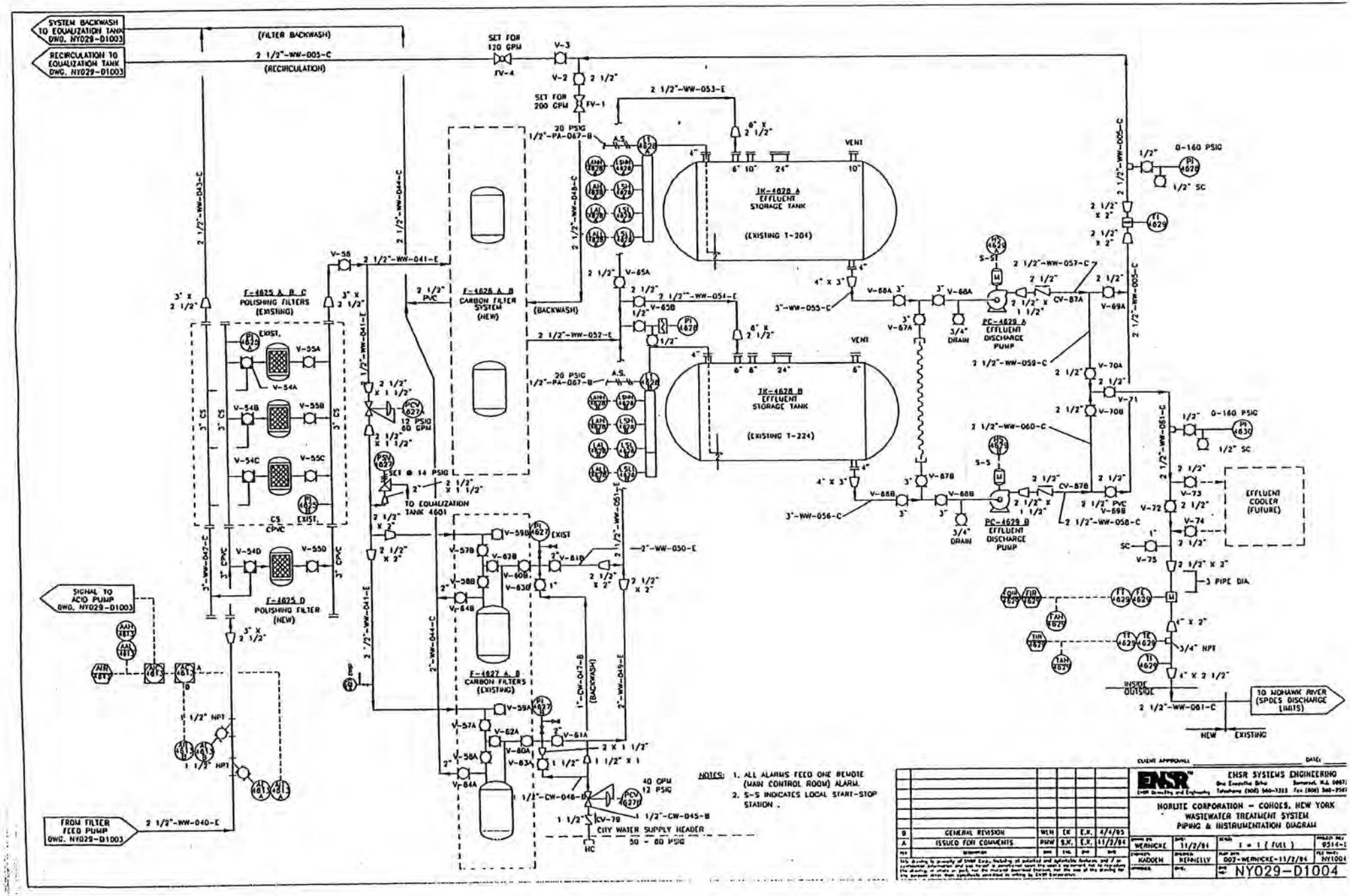
No panel indication of flow rates or pH values will be made. Operators are required to perform thorough hourly plant inspections to log this data.

B.6 Process Flow Diagram

A process flow diagram is included in this section, Drawing No. NY029-D1003 showing the wastewater treatment process influent, effluent and internal flow streams.

B.7 Simplified Piping and Instrumentation Diagram


CITY WATER SUPPLY
SCRUBBER BLOWDOWN KILN #1
SCRUBBER BLOWDOWN KILN #2
WATER FILTRATION SYSTEM BACKWASH
AUXILIARY BOILER BLOWDOWN
CAUSTIC SUPPLY
BACKWASH FROM SYSTEM FILTERS DWG. HY029-D1004
RECIRCULATION FROM EFFLUENT PUMPS DWG. HY029-D1004
ACID SUPPLY
SIGNAL FROM pH ANALYZERS DWG. HY029-D1004
TRUNNION COOLING WATER FROM KILN #1 AND KILN #2
TO POLISH FILTERS DWG. HY029-D1004
AG-4602 A EQUALIZATION TANK AGITATOR
AG-4602 B EQUALIZATION TANK AGITATOR
TK-4601 EQUALIZATION TANK
AG-4605 FLOCCULATION TANK AGITATOR
TK-4604 FLOCCULATION TANK
AG-4607 FLOCCULANT DRUM AGITATOR
FLOCCULANT DRUM DR-4606
PACKAGED FLOCCULANT MIXING SYSTEM FL-4606
AG-4612 CLARIFIER RAKE MECHANISM
CL-4617 CLARIFIER
PW-4621 METALS PRECIPITATING AGENT PUMP
PC-4603A EQUALIZATION TRANSFER PUMP
PD-4615 CLARIFIER SLUDGE PUMP
AG-4617 SLUDGE STORAGE TANK AGITATOR
TK-4618 SLUDGE STORAGE TANK
FP-4619 FILTER PRESS
PW-4611 CAUSTIC METERING PUMP
PC-4603B (SPARE PUMP) (FUTURE)
TK-4609 CAUSTIC TANK
CURBED CONTAINMENT AREA
SUMP
SUMP PH
VENTURI GAS SCRUBBER SEPARATOR SYSTEM
SC-4632
SODA ASH DRUM
TK-4620 ACID TANK
PW-4622 ACID PUMP
AG-4614 OVERFLOW COLLECTION TANK AGITATOR
TK-4613 OVERFLOW COLLECTION TANK
PC-4624A FILTER FEED PUMP
PC-4624B (SPARE PUMP) (FUTURE)
FILTER REGULATOR LUBRICATOR
FILTER CAKE HOPPER
CONTROL PANEL
VENT THRU ROOF
VENT TO ATMOS.
LOCAL REMOTE
Y STRAINER W/20 MESH SCREEN
20 MESH SCREEN CONTAINMENT AREA
TANK SLOPED 3"
4" CPVC OVERFLOW
PUMP SUCTION
OUTLET
LINE FLUSH
GRAVITY FLOW
WASH BLOWDOWN
CITY WATER BACKFLUSH
LINE DRAIN
FILTER PRESS FEED PUMP
NOTES:
1. ALL ALARMS FEED LOCAL PANEL AND REMOTE MAIN CONTROL ROOM ALARM
2. S-S INDICATES LOCAL START-STOP STATION
ENSR SYSTEMS ENGINEERING
NORLITE CORPORATION — CONDES, NEW YORK
WASTEWATER TREATMENT SYSTEM
PIPING & INSTRUMENTATION DIAGRAM
GENERAL REVISION
ISSUED FOR COMMENTS
NY029-D1003


SYSTEM BACKWASH TO EQUALIZATION TANK DWG. NY029-D1003
RECIRCULATION TO EQUALIZATION TANK DWG. NY029-D1003
(FILTER BACKWASH)
2 1/2"-WW-005-C
(RECIRCULATION)
SET FOR 120 GPM
FV-4
V-3
V-2 2 1/2"
SET FOR 200 GPM
FV-1
2 1/2"-WW-053-E
20 PSIG
1/2"-PA-067-B
A.S.
6" X 2 1/2"
VENT
4"
6" 10" 24" 10"
1K-4628 A EFFLUENT STORAGE TANK
(EXISTING T-204)
1K-4628 B EFFLUENT STORAGE TANK
(EXISTING T-224)
2 1/2"-WW-043-C
2 1/2"-WW-044-C
2 1/2"-WW-045-C
2 1/2"-WW-041-E
2 1/2"-WW-052-E
2 1/2"-WW-054-E
2 1/2"-WW-051-E
F-4625 A, B, C POLISHING FILTERS (EXISTING)
F-4626 A, B CARBON FILTER SYSTEM (NEW)
F-4625 D POLISHING FILTER (NEW)
F-4627 A, B CARBON FILTERS (EXISTING)
EXIST.
V-54A
V-54B
V-55B
V-54C
V-55C
V-54D
V-55D
3" CS
3" CPVC
V-56
V-65A
V-65B
(BACKWASH)
3" X 2 1/2"
2 1/2" PVC
2 1/2" X 1 1/2"
PCV 4627 12 PSIG 60 GPM
PSV 4627 SET @ 14 PSIG
TO EQUALIZATION TANK 4601
2 1/2" X 2"
V-59B
V-57B
V-62B
V-60B
V-63B
V-38B
V-64B
2"-WW-050-E
2" V-61B
2 1/2" X 2"
1"
1"-CW-047-B (BACKWASH)
2"-WW-049-E
V-59A
V-57A
V-62A
V-60A
V-63A
V-58A
V-64A
2" V-61A
2 X 1 1/2"
1 1/2" X 1"
1 1/2"-CW-046-B
40 GPM 12 PSIG
PCV 4627B
1 1/2"-CW-045-B
1 1/2" CV-79
CITY WATER SUPPLY HEADER 50 - 80 PSIG
HC
V-68A 3"
3"-WW-055-C
3/4" DRAIN
PC-4629 A EFFLUENT DISCHARGE PUMP
S-ST
2 1/2"-WW-057-C
2 1/2" X 1 1/2"
CV-87A
V-69A
V-68B
3"-WW-056-C
PC-4629 B EFFLUENT DISCHARGE PUMP
S-S
CV-87B
V-69B
2 1/2" PVC
2 1/2"-WW-058-C
2 1/2"-WW-059-C
2 1/2"-WW-060-C
2 1/2"-WW-005-C
2 1/2"-WW-061-C
V-70A
V-71
V-70B
V-73
V-72
V-74
V-75
1/2" 0-160 PSIG
PI 4629
1/2" SC
TI 4629
PI 4630
EFFLUENT COOLER (FUTURE)
1" SC
3 PIPE DIA
3/4" NPT
6" X 2 1/2"
INSIDE DIKE
TO MOHAWK RIVER (SPDES DISCHARGE LIMITS)
NEW
EXISTING
SIGNAL TO ACID PUMP DWG. NY029-D1003
AAH 4615
AAL 4615
AIR 4615
FE 4615
FT 4615
1 1/2" NPT
FROM FILTER FEED PUMP DWG. NY029-D1003
2 1/2"-WW-040-E
NOTES:
1. ALL ALARMS FEED ONE REMOTE (MAIN CONTROL ROOM) ALARM.
2. S-S INDICATES LOCAL START-STOP STATION.
EVERE APPROVALS
DATE:
ENSR SYSTEMS ENGINEERING
HORLITE CORPORATION - COHOES, NEW YORK
WASTEWATER TREATMENT SYSTEM
PIPING & INSTRUMENTATION DIAGRAM
9 GENERAL REVISION WLH CK E.K. 4/4/95
A ISSUED FOR COMMENTS PMW S.K. E.K. 11/2/94
DRAWN BY WEHNICKE
DATE 11/2/94
SCALE 1 = 1 (FULL)
CHECKED HADDEN
DRAWING WEHNICKE
FILE NAME 007-WEHNICKE-11/2/94
FILE NAME NY1004
NY029-D1004

The wastewater treatment system piping and instrumentation diagram is provided in this section as Drawing No. NY029-D1004.

APPENDIX C:

ELECTRICAL POWER, INSTRUMENTATION AND CONTROLS: KILNS, APC'S AND WASTEWATER TREATMENT

CONTENTS

APPENDIX C:
ELECTRICAL POWER, INSTRUMENTATION AND CONTROLS: KILNS, APC'S AND WASTEWATER TREATMENT

C.1 Engineering Basis:

C.1.1 The proposed electrical power, instrumentation and controls for Kiln #1 and #2 to bring the facility into compliance with Norlite's Part 373 Part B permit have been completed as follows:

- Installed new power distribution systems at the Motor Control Centers.
- Installed new PLC based control Systems
- Incorporated LGF Area PLC Systems with Kiln 1 PLC Systems
- Installed New APC System for Kiln 1 and installed Dust Conveyance System for both Kilns.
- Removed obsolete equipment and instrumentation as required.

C.1.2 The Wastewater Treatment facility was constructed in September 1995. A new Motor Control Center was added. Primary control functions are accomplished at the Wastewater Treatment Facility with PLC monitoring interface to Kiln 1.

C.1.3 The Process Control objectives currently and for future expansion are:

- Provide PLC based control systems with operator interface.
- Provide necessary safety and regulatory interlocks.
- Provide necessary data acquisition for regulatory, maintenance, and engineering functions.
- Provide a sufficiently expandable control system without need for new hardware or software.

C.2 General Electrical Specifications

The following listed publications, latest editions and addendums, will be a part of any specification to the extent applicable or specified.

National Fire and Protection Association (NFPA)

NFPA 70 National Electric Code (NEC)
NFPA 78 Lighting Protection Code
NFPA 496 Purged and Pressurized Enclosures for Electrical Equipment in Harardous Locations

National Electrical Manufactures Association (NEMA)

NEMA MG1 Motors and Generators
NEMA MG2 Safety Standards for Construction and Guide for Selection and Use of Electric Motors and Generators
NEMA 250 Enclosures for Electrical Equipment
NEMA ICS 1 General Standards for Industrial Controls and Systems
NEMA ICS 3 Industrial Systems
NEMA ICS 6 Enclosures for industrial Controls and Systems
NEMA FB1 Fittings and Supports for Conduit and Cable Assemblies Instrument Society of America (ISA)
ISA PR60.8 Electrical Guide for control Centers
ISA RP12.1 Electrical Instruments in Hazardous Areas
ISA S12.4 Instrument Purging for Reduction of Hazardous Area Classifications

Joint Industrial Council (JIC)
JIC EL-1 Electronic Standard
JIC EMP-1/EGP-1 Electrical Standard

Underwriters Laboratories (UL)

ANSI C80.1 Rigid Steel Conduit, Zinc Coated
ANSI C80.4 Fittings for Rigid Metal Conduit

Occupational Health and Safety Administration (OSHA)

29 CFR 1910 General Industrial Standard

Any local electrical codes if applicable.

C.3 Design and Operating Description

C.3.1 Waste Feed Cutoff Instrumentation

Introduction
Waste feed to the kiln shall cease whenever any of the system operating conditions approach deviation from the permit limits. Appropriate instrumentation and controls shall be interlocked with the LGF feed line solenoid valve to ensure positive cut off of LGF feed to the kiln.

The instrumentation and controls indicated in Process & Instrumentation Diagram Dwg. #NY-D-I-5006 shall be installed, maintained and calibrated to automatically initiate an Operational Cut Off (OPCO) of LGF feed when the limits in Table C-1 are exceeded. The OPCOs shall be set below the permitted Waste Feed Cut Off (WFCO) values, thusly disallowing transgression of any permit limit.

Kiln Pressure
Kiln pressure is measured by a Magnehelic Differential Pressure Transmitter with a range of -1.0 to +1.0 inches H_2O with an accuracy of $\pm$2%. The kiln is operated at a kiln pressure of less than -0.05 inches of H_2O.

The instrument is calibrated to produce an alarm signal at a kiln pressure of greater than -0.05 inches H_2O. If the kiln pressure is greater than -0.05 inches H_2O, the waste feed cutoff circuit is activated de-energizing the LGF feed line solenoid valve. This is a failsafe system whereby the LGF feed System is shut down when a cutoff limit is reached or a power failure is experienced.

Kiln Exit Gas Temperature (Back End Temp)
Kiln Exit Gas Temperature is measured by a Type J Thermocouple with a temperature range of 32 °F to 1382 °F with an accuracy of $\pm$5 °F. During operation, kiln exit gas temperature prior to the heat exchanger is approximately 900 °F.

The temperature transmitter is calibrated to alarm at 885 °F and 1080 °F. The automatic feed cutoff system is activated if the back end temperature falls to 880 °F Hourly Rolling Average (HRA) or reaches 1086 °F HRA. The LGF Feed Pump shuts off and the LGF feed line solenoid valve is de-energized ensuring a positive cutoff of the LGF feed to the kiln burner.

Oxygen Concentration
Oxygen concentration is determined by an oxygen analyzer which works on the paramagnetic principle with automatic self calibration. The instrument is calibrated to produce an alarm signal at an oxygen concentration of less than 3%.

Carbon Monoxide Concentration in Stack
A non-dispersive infrared gas analyzer with automatic calibration is used to continuously monitor emissions of carbon monoxide (CO) that ends up in the stack. The instrument is calibrated to produce an alarm at CO concentrations of 60 PPM. The automatic waste feed cutoff system is activated if the 60 minute HRA of CO concentration in the stack is greater than 75 PPM.

Scrubber Water Recirculation Flow
Scrubber water recirculation flow rate is measured by a magnetic flowmeter with a maximum flow rate of 250 GPM and an accuracy of $\pm$1.0% of flow. This instrument has an internal calibrator and a self test function to confirm proper operation. An alarm signal will be calibrated for 194 GPM and a cutoff signal if the flow rate falls below 190 GPM.

Combustion Gas Velocity

Combustion Gas Velocity is extrapolated from the induction fan motor current and the position of the induction fan damper. The damper is set at a maximum of 60 percent open. A lower fan current signals a lower kiln gas velocity. As the gas velocity increases the motor current is increased. When the motor current reaches 400 AMPS an alarm is triggered, and at any current greater than 402 AMPS (HRA) the LGF cut off circuit is activated - shutting off the LGF feed to the kiln burner.

Low Grade Fuel Feed Rate
Low Grade Fuel (LGF) flow is measured by a Micro Motion Flowmeter. Calibration of this flow meter is accomplished through an internal calibration system. At 9 gallons per minute (GPM) an alarm is sounded to alert the kiln operator that a waste feed cutoff limit is being approached and some action should be taken to avoid shutdown. If a feed rate of 10.0 GPM (HRA) is reached the LGF cutoff circuit is activated - shutting off LGF Feed to the Kiln Burner.

Scrubber pH
Scrubber pH is measured by an in-line pH probe and electronics package. The calibration of this unit is accomplished through the use of buffer solutions of known pH. The probe must be removed from service, cleaned and submersed in the buffering solutions in the proper order. While setting the output to the known pH of the buffering solution. The LGF valve closes when the pH drops to 8.

Baghouse Pressure Drop
Baghouse Pressure Drop is measured by a Differential Pressure Transmitter. This instrument is calibrated DL line by comparison to a standard reference pressure calibrator. The baghouse pressure drop is an important parameter that indicates when the filter bags require cleaning. If the differential pressure drops below 5.3 inches of H_2O an alarm is sounded for operator action. If the pressure drops below 5.0 inches of H_2O the LGF circuit is activated and closes the LGF feed valve. If the pressure reaches 9.4 inches of H_2O an alarm is triggered and appropriate system adjustments are made.

Baghouse Inlet Temperature
Inlet temperature to the baghouse is measured by a Thermocouple. The calibration of the indicating instrument is done by comparison to a standard reference Thermometer. The baghouse inlet temperature is maintained below 440 °F to prevent damage to the baghouse. An alarm is sounded when this temperature reaches 435 °F alerting the kiln operator to take corrective action. LGF feed is automatically stopped at 440 °F

Scrubber Blowdown Rate
Scrubber blowdown rate is measured by a Magnetic Flow Meter with an internal calibrator and a self test function to confirm proper operation.

If the scrubber blowdown rate falls below 5.0 gallons per minute (GPM) an alarm is sounded for operator action.

Scrubber Venturi Pressure Drop
The Scrubber Venturi Pressure Drop is measured by a Differential Pressure Transmitter with an operating range of 0 to 15 inches H_2O. This instrument is calibrated online by comparison to a standard reference calibrator. A higher pressure drop across the Scrubber Venturi produces better cleaning action. To calibrate this instrument it must be compared against a known accurate calibration instrument. The higher the Venturi pressure drop in the scrubber, the better the cleaning action. If the Venturi pressure drop decreases to 2.5 inches of H_2O an alarm is displayed for operator intervention. If the pressure drop decreases to below 2.3 inches of H_2O the LGF cutoff circuit is activated closing the LGF feed valve.

Ducon Scrubber Pressure Drop
The Ducon Scrubber Pressure Drop is measured similarly to the Venturi. If the pressure in the Ducon drops to 2.0 inches of H_2O and alarm will be displayed and if it drops to 1.8 inches the LGF feed is cut off.

Shale Feed Rate
If the shale feed rate reaches 21 tons per hour an alarm will be triggered. If the feed is not reduced, the LGF will automatically be shut off.

TABLE C -1

Norlite Corporation
WFCO/OPCO Test Form

RCRA

0	ALARM SETPOINT	OPCO	WASTE FEED CUT OFF LIMIT (WFCO)
LGF FEED RATE (HRA)	9.0 gpm	10.0 gpm	10.1 gpm
KILN PRESSURE	-.05" H_2O	-.05" for 10 secs.	-.05" for 15 sec.
HIGH COMBUSTION GAS VELOCITY (ID FAN AMPS - HRA)	400	402	404 @ max. damper setting of 60% open
HIGH CO @ BAGHOUSE OUTLET (HRA)	60 ppm	75 ppm	100 ppm @ 7% O_2
HIGH USED OIL CO (HRA)	400 ppm	500 ppm	
HIGH USED OIL FEED RATE ***(setpoint @ 5.0)***	4.5 gpm	5.0 gpm	
LOW RECYCLE TANK pH (HRA) ***PROBE A B***	8	8	7.9
HIGH SHALE FEED RATE TPH (HRA)	21	21	22
SHALE FEED	0	Off 25 mins.	Off 30 mins.
KILN EXIT GAS (back end) low temp (OMA) (switch to normal)	876 °F	871 °F	866 °F
low temp (HRA)	885 °F	880 °F	875 °F
high temp (HRA)	1010 °F	1022 °F	1025 °F
high temp (OMA) (switch at "normal")	1090 °F	1095 °F	1100 °F
HIGH BAGHOUSE INLET TEMP. (OMA) ***manual***	390 °F	398 °F	400 °F
BAGHOUSE PRESSURE DROP high pressure (OMA)	9.4" H_2O		
low pressure (OMA)	5.3" H_2O	5.0" H_2O	4.8" H_2O
SCRUBBER WATER RECIRCULATION FLOW LOW (OMA) ***METER A B***	194 gpm	190 gpm	<184 gpm
VENTURI PRESSURE DROP (OMA)	2.5"	2.3"	<2.0" unless corrected in 3 min.
DUCON PRESSURE DROP (OMA)	2.0"	1.8"	<1.5" unless corrected in 3 min.
LIME FEED		Off	

C.4 Kiln Procedures/Operational Parameters, Monitoring and Control

This section is presented as follows:

C.4.1 System Start-Up Procedure

Cold Start-up: See MACT SOP - SSMP 2-01
Warm Start-up: See MACT SOP - SSMP 2-02

C.4.2 System Shut Down

C.4.2.1 Prepared/Routine Shutdown

See MACT SOP - SSMP 2-03

C.4.2.2 OPCO Shut Down

This is achieved by stopping LGF and converting to fuel oil, natural gas or used oil and maintaining the operation otherwise. If the out-of-compliant parameter(s) continues to be at undesirable levels, the overall system will shut down following the Prepared/Routine Shut Down Procedure.

C.4.2.3 Emergency/Power Failure

See MACT SOP - SSMP 2-03A

C.4.3 Operational Parameters

1. LGF Fuel Pressure	15. Cooler grate speed
2. Secondary air temperature	16. ID fan speed
3. Shale feed rate	17. Fuel oil use/flow
4. Flame Temperature	18. Natural gas use/flow
5. Kiln back-end temperature	19. CO concentration (in flue gas)
6. Stone temperature	20. O_2 concentration (in flue gas)
7. Primary air flow/pressure	21. ID fan current
8. Atomization steam pressure	22. Baghouse pressure drop
9. Atomization air pressure	23. Baghouse inlet temperature
10. Kiln hood pressure	24. Scrubber venturi pressure drop

11. Heat exchanger inlet & outlet temperature	25. Scrubber recirculation tank Ph
12. Flame stability	26. Lime feed rate
13. Cooler vent fan damper	27. Scrubber blowdown rate
14. Cooler pressure/fan dampers (n/s)	28. Ducon scrubber pressure drop

Parameters 1 through 20 are associated with the kiln operations. 21 through 28 are compliance/operational parameters which are associated with APC and peripheral system operations.

C.4.4 Clinker Cooler Control

The primary function of the clinker cooler is to reduce the temperature of the expanded clinker as it exits the kiln. The secondary benefit of the cooler is that it operates as a recuperative heat. The primary components to the cooler are listed: (see figure 2.1)

1) Cooler enclosure
2) Cooler grates
3) ID fans
4) Waste heat fan
5) Oversize discharge
6) Discharge grate/conveyor
7) Cooler screws

Keys to cooler optimization are:

1) Quick cooling of clinker using cooler fans
2) Maximum secondary air temperature
3) Maximum cooling of clinker
4) Minimum waste gas volume
5) Optimum kiln draft

The front cooler fan should be used as the primary cooling source. The back fan should be used secondarily. The kiln hood draft should be controlled with the cooler fans and ID fan. Do not use the waste heat fan to control hood draft.

Weather conditions will affect cooler performance. Temperature of cooling air will affect gas density. The fan gas volume is a function of the gas density. The mass delivered by the fans is affected by the gas temperature.

The automatic loop control will call for setting the under-grate pressure via auto modulation of the respective east and west fan or fan dampers. This control may be manually overriden by adjusting the damper setting.

Manual control of the cooler involves the following:

1. Adjust grate speed
2. Screw conveyors on/off to remove fines from bottom of cooler.
3. Cooler waste heat speed.
4. Clinker belt water application

C.4.5 Kiln Control-Essential Compliance Parameters Associated with Feed Cutoffs (OPCO)

Norlite's NYS Part 373 Permit defines nine process parameters that automatically initiate a waste feed cutoff (WFCO) if one (or more) parameters deviate from predetermined limits. (As described previously, Norlite has established operational cutoffs (OPCOs) to cut off LGF flow prior to reaching any WFCO values.) Additionally there are eight other parameters that are required to be monitored in order to burn hazardous waste.

The OPCO/WFCO control system consists of a Programmable Logic Controller (PLC) and an electronically actuated valve in the LGF line. The PLC receives a 4 to 20 milliamp signal from local transmitters that monitor the compliance parameters. These signals are used by the PLC to determine if the various parameters are within present limits that are defined by the Part 373 permit. When the PLC receives a signal identifying that a parameter is outside of the permit limit, it sends a signal to the OPCO/WFCO valve to close, terminating LGF flow. This system tested weekly under normal operating conditions. All OPCO and WFCO parameters are tested monthly by sending a false high or low signal from the transmitter to the PLC, thusly causing the valve to close.

LGF Flow Control System

The LGF flow control system consists of the LGF flow control valve (manual ball valve), LGF pressure transmitter, Micromotion flow meter, PLC and Cimplicity software interface, and local flow meter display. The WFCO permit limit for LGF flow is 10.1 gpm HRA. The OPCO limit is 10.0 gpm HRA. The PLC continuously monitors the flow rate and reports a one minute average to the Cimplicity system and DEC printer. The one minute average is used to calculate the HRA. At 9.0 gpm HRA an alarm will be activated on the Cimplicity control monitor to notify the operator that the HRA is approaching the OPCO limit.

Kiln Exit Temperature

Kiln exit (back end) temperature is monitored by a thermocouple in the transition duct work between the kiln and the multiclone. The output from the thermocouple is sent to a transmitter that converts the output to a signal that can be sent to the PLC. The WFCO permit limit for kiln exit temperature is a range that must be at least 875°F HRA and less than 1091°F HRA. Alarms on the Cimplicity control monitor will warn the operator that the parameter is approaching a WFCO when the temperature is 885°F or less and 1080°F or higher. The OPCO limits are set at 880°F and 1086°F.

Back end temperature is influenced by a variety of variables, however, thermal input to the kiln (via LGF, #4 oil, waste oil, or gas) is the most dominant. The combustion process creates thermal energy. The thermal energy that is not absorbed by the shale in the expansion process or radiated from the kiln will exit through the back end of the kiln in the form of flue gas energy, i.e., temperature. The exit temperature thermocouple measures the temperature of these gases.

ID fan speed determines the volume and rate at which heated flue gas will be removed from the kiln. As the fan speed setting is increased more gas volume will be removed from the primary combustion zone, thus raising the back end temperature.

A secondary control of the exit temperature is the clinker cooler vent fan speed. The cooler vent fan removes waste heat from the clinker cooler in the form of heated gases. Gases that do not exit the cooler vent stack are introduced into the burning zone as secondary combustion air. Fluctuation of the cooler vent fan speed will affect the exit temperature based on the temperature and volume of the gases.

Carbon Monoxide

The CEM continuously monitors CO in the kiln's exhaust gases. The CEM system consists of carbon monoxide monitors, oxygen monitors, sample conditioners, and data acquisition and control systems.

The system continuously monitors CO and O_2 and uses the monitored O_2 concentration to adjust CO to 7% O_2. The corrected CO measurements are averaged to form a one minute average. The one minute CO averages are, in turn, averaged each minute to calculate a one hour rolling average.

CO and O_2 one minute averages and CO one hour rolling averages are then transmitted to the kiln's PLC for computerized storage in the Cimplicity data acquisition and data base management system. The WFCO for this parameter is 100 ppm HRA. The OPCO is set at 75 ppm HRA. Alarms on the Cimplicity control monitor will warn the operator that the parameter is approaching an OPCO when the CO HRA is 60 ppm or higher.

The primary factors that influence CO are kiln temperature, proper fuel atomization, air to fuel ratio, fuel quality (i.e. Higher Heating Value (HHV), water content, solids content), and uniformity of fuel flow. The kiln temperature is determined by the flow rate and HHV of the fuel processed. In order for the combustion reaction to occur there must be an adequate supply of oxygen to oxidize the carbon atoms of the fuel. The byproduct of complete combustion is carbon dioxide (CO_2). CO is product of incomplete combustion. Primary air is injected to ensure there is enough excess O_2 present to complete the combustion reaction and minimize the amount of CO produced. Atomization air is injected to the burner nozzle to enrich the fuel with O_2 and mechanically atomize the fuel to help facilitate the combustion reaction.

Interruptions in fuel flow delivery to the kiln cause a shift away from the equilibrium of the combustion reaction occurring in the kiln, resulting in the production of CO.

Induced Draft Fan Current

The components of the induced draft fan are the I.D. fan, 400 HP motor, variable speed drive, PLC and Cimplicity software interface. The fan current (amps) is sent to the PLC by a local transmitter. The fan motor amperage is recorded in the Cimplicity data base and printed out each minute on the DEC printer. The WFCO is 404 amperes. The OPCO is set at 402 amperes. Alarms on the Genesis control monitor will warn the operator that the parameter is approaching an OFCO when the motor amperage is 400 or more.

The primary factors affecting fan amperage are the rotation speed of the fan, static differential pressure across the fan, flue gas temperature, and damper setting. With the damper locked at a fixed position (60% open), the motor amps and gas volume flow increase as the fan speed is increased due to the work requirement to turn the fan. The temperature of the flue gas is in direct relationship to the gas density, if the volume flow remains constant and the gas density increases the mass of the gas pumped by the fan will increase, thus requiring more motor horsepower to perform the work.

Kiln Pressure

The kiln pressure monitoring loop consists of: the pressure sensor, pressure transmitter, PLC, and Cimplicity software interface. The kiln pressure is measured by a diaphragm pressure sensor that sends a voltage signal to a local transmitter at the kiln firing hood. The transmitter sends a signal to the PLC that is translated to pressure data on the Genesis control monitor. The WFCO limit is a continuous reading of -0.05 inches H_2O column or greater for 15 seconds (OPCO at 10 seconds). Alarms on the Cimplicity control monitor will warn the operator that the parameter is approaching an OFCO when the pressure is -0.05 inches H_2O column or greater.

The primary control for the kiln pressure is the ID fan. Increased speed of the ID fan increases draft. The clinker cooler vent fan influences hood draft, however it should be used for a secondary control. Overuse of the cooler vent fan will result in a lower hood pressure, but secondary combustion air necessary for proper combustion will be vented from the cooler vent stack. The cooler grate fans also affect kiln draft. The east cooler grate fan should used as a primary cooling source, the west fan should be used for secondary cooling.

Scrubber Water Recirculation Rate

The scrubber water recirculation system consists of the recirculation pumps and motors, magnetic, coil flow meters, local transmitter, recirculation piping and valves, scrubber headers and nozzles, and PLC and Cimplicity software interface. The scrubber water flow rate is monitored by the magnetic coil flow meters. Scrubber water flowing through the meter generates a voltage that is measured by the magnetic coil, this coil amplifies the voltage signal and sends the signal to the local transmitter. The transmitter converts the voltage to a 4 to 20 milliamp signal that is routed to the PLC. This signal is translated to data in gallons per minute on the Cimplicity control monitor.

The WFCO for scrubber water recirculation is a flow rate of 184 gpm or less (one minute average). The OPCO is set at 190 gpm. Alarms on the Cimplicity control monitor will warn the operator that the parameter is approaching an OPCO when the flow rate is 194 gpm. The recirculation rate may be directly controlled by manual valves in the system, however the valves are normally operated in the fully open position. Reduced flow rate is normally a sign of solids plugging of header nozzles due to their accumulation in the recycle tank. Excursion of pH may affect flow meter performance because the conductance of the water changes when acidity is high.

Baghouse Inlet Temperature

The baghouse inlet temperature is monitored by a thermocouple at the duct entering the baghouse. The output from the thermocouple is sent to a transmitter that converts the output to s\a signal that can be sent to the PLC. The WFCO permit limit for baghouse inlet temperature is 450°F or greater, the OPCO is set at 440°F. Alarms on the Cimplicity control monitor will warn the operator that the parameter is approaching an OPCO when the temperature is 435°F or higher.

The baghouse inlet temperature is controlled by the flue gas temperature exiting the heat exchanger and a modulating tempering air damper located in the duct upstream of the baghouse inlet. Normally the temperature of the flue gas exiting the heat exchanger is 500 to 600°F. The exit temperature of the heat exchanger may be adjusted by varying the speed of the heat exchanger cooling fan.

The modulating tempering air damper controls the temperature to a set point predetermined by the operator (normally 430°F). The damper allows cooling air to enter the flue gas stream. The damper may be controlled manually or automatically at the Cimplicity control monitor.

Baghouse Pressure Drop

The components that monitor baghouse pressure are the pressure differential sensor, local transmitter, PLC, and Cimplicity software interface. The pressure differential sensor detects the difference in pressure between baghouse inlet and outlet static pressures. This pressure difference is converted to a voltage by the sensor and a signal is sent to the local transmitter. The transmitter routes a signal to the PLC that is translated to pressure data on the Cimplicity control monitor. The WFCO limit is a continuous reading of -4.8 inches H_2O column (OPCO at -5.0 inches). Alarms on the Cimplicity control monitor will warn the operator that the parameter is approaching as OPCO when the pressure is <5.3 inches H_2O column.. When operating on two baghouses modules, the alarm point and WFCO point is <9.2 inches H_2O and 10.0 inches H_2O, respectively. In addition, if the baghouse pressure exceeds 9.4 inches H_2O, an alarm is triggered. Within 10 minutes of this alarm, and every 30 minutes thereafter, the operator must inspect the kiln seals and APC ducting for fugitive emissions until the differential pressure drops below 9.4 inches H_2O. This is per condition III D(3) (footnote 6) of the Part 373 Permit.

The primary control of the baghouse pressure drop is the dust cake on the filter media. As dust cake builds on the filters in the baghouse the pressure differential increases. When the differential reaches a predetermined set point (usually 5.5 inches H_2O column) the filter is cleaned by high pressure air injected into the throat of the bag. This causes a shock wave along the length of the bag and the dust cake is removed. The filter media is continuously pulled one row at a time. Control is by a 10 position timer.

Baghouse differential pressure is also affected by the position of the tempering air damper used to cool the flue gas exiting the heat exchanger. Cooling air creates a higher pressure in the baghouse, thus creating a higher differential in pressure across the baghouse.

Lime Feed Failure

Lime is gravity fed into three feed hoppers from the lime silo. Each hopper feeds into its own lime feed system. This sytem is designed to have one primary feeder for each baghouse and one feeder as aback up. Each lime feeder may be isolated from the silo by way of a slide gate at the top of each hopper. Each lime feed system is composed of a bladder, paddle, and screw auger. The paddle speed control determines the rate at which lime is introduced from the bladder to the screw auger. The screw auger injects the lime into a pneumatically driven line that feeds the lime into the baghouse system. The pneumatic system is composed of four blowers and three lines. The piping and blower system is designed so that any combination of blower and line maybe used to inject lime into either baghouse.

Lime feed is an WFCO parameter to the kilns and is required to be fed at the rate of 2.7 lbs/lb of halogen introduced to the kilns while burning LGF or waste oil. Lime is also fed at 50 lbs/hour during times at which #4 oil is being processed in order to neutralize small amounts of SO_2 and SO_3 produced during the combustion of this fuel. The lime feed WFCO will occur if the feeder paddle or screw stops for any reason. Before an LGF tank can be fired to the kilns the lime feed rate must be set. The set point for the tank is documented on the WAP-2 fuel certification sheet. The feed rate control is housed in the kiln 2 motor control center. Generally the Trunnion operator is notified by the burner operator anytime there is a required change in feed rate of lime.

APPENDIX D

LGF STORAGE & FEED SYSTEMS
DESCRIPTION OF MODIFICATIONS

Contents

APPENDIX D

LGF STORAGE & FEED SYSTEMS
DESCRIPTION OF MODIFICATIONS

D.1 SUMMARY

Existing facilities for receiving, storing, mixing, and feeding waste fuels to two (2) light weight aggregate kilns are approved with certain exceptions for handling Low Grade (Waste) Fuels, hereafter referred to as "LGF." The exceptions are:

- Tanks 100 and 200 were replaced with six (6) 7,300 gallon agitated tanks with secondary containment as required.
- New fuel feed piping with required secondary containment was installed.
- The fuel feed Booster Pump House located approximately 100' North of Kiln #2 no longer is in the LGF feed system, therefore, eliminating the need for secondary containment.

The additions and other modifications described herein were completed for the purpose of receiving, storing, mixing, and feeding waste fuels in compliance with NYSDEC standards. In order to satisfy these needs and also to provide for the improved handling and storage of fuels, a unified approach was taken in order to achieve both objectives in a technically correct and environmentally protective manner.

In summary, the overall modifications consisted of the following tasks:

(1) Remove tanks 100 and 200 (permit capacity 24,000 gallons each) to an adjacent area for inspection, cleaning, and close out. Work shall include steps to protect existing tanks, testing of the installation area and remediation as necessary.

(2) Remove the shed structure and containment/foundation for the pumps previously used to service Tanks 100 and 200.

(3) Construct a new LGF building to house six (6) 7,300 gallon tanks partially replacing the two (2) removed tanks of 24,000 gallon capacity (ea.). These tanks shall be equipped with mixers, new pumps and controls. Associated piping systems shall be designed to satisfy the requirements of better fuel handling and delivery with improved environmental protection. This building shall be fully enclosed to exclude rainwater, to facilitate heating of the tanks and to protect equipment. The building shall be sized, constructed and lined with an approved coating so as to act as the primary secondary containment volume for the tanks within it as well as other tanks and facilities in the fuels area. Required volatile organic (VOC) monitoring, fire protection, grounding, lighting, ventilation and two means of egress shall be provided.

(4) Upgrade and modify the existing truck tanker Unloading Dock to:

- Provide new containment liner coating of NYSDEC approved type.
- Install two (2) new LGF unloading pumps with strainers.
- Install one (1) waste oil unloading pump
- Construct new offloading pad with two truck capacity
- Construct secondary containment for all unloading piping.

(5) Modify the existing LGF pumping facilities and piping to interconnect with new storage and pumping facilities, including the addition or improvement of secondary containments where needed.

(6) Install a new above-ground 25,000 gallon double wall Waste Oil Tank in the Fuel Farm, including required foundation and secondary containment for pumps and associated piping. Piping shall be provided to rapidly gravity drain to the new LGF Building in the event of failure of both the tank primary shell and containment shell.

(7) Install new above-ground fuel feed and fugitive emissions control piping extending from the new LGF Building to the kiln burner front. This piping is contained inside a new overhead 90" diameter walk-through tunnel supported on a structural steel system of beams, trusses, bents, and concrete foundations. The tunnel drains to the LGF Building for containment of spills and wash down fluids. The tunnel is equipped with required VOC monitoring, fire protection, grounding, lighting, ventilation, and emergency exit locations.

(8) Construct a new Solids Reprocessing Building adjacent to the North side of the existing Unloading Dock to provide storage of drummed solids generated on site from cleanout of strainers, tanks and other equipment, and to house process equipment needed to reintroduce this material into the LGF stream to the kiln burners.

(9) Remove existing fuel Booster Pump House and equipment, test soils in the area, and remediate as may be required after changeover to the new feed piping systems.

(10) Modify Kiln Control Room fuel piping and/or the room structure to provide suitable secondary containment and add required fuel cut-off valves.

(11) Design and install an overall control system for managing fuel storage and feed to the kiln burners.

(12) Remove existing fuel feed and fugitive piping after it is disconnected, including soils testing and remediation as necessary.

The modified Fuel Depot described in this construction plan is environmentally superior for the following reasons:

Secondary containment shall be provided for both the existing four (4) permitted tanks (Nos. 300, 400, 500 and 600), as well as for the pumping and piping system, the unloading operations and LGF feed to the kiln. Under the previous engineering plans, if a line or pump failed outside the Tank 300-600 containment system, the capacity of the tertiary containment bunkers was only 3000 gallons. The containment for the six new 7,300 gallon tanks is sufficient in volume to provide containment for the largest Fuel Tank and all LGF lines and pumps.

Having 6 smaller vertical 7,300 gallon tanks, as opposed to two 24,000 gallon tanks provides for better mixing and control of LGF prior to feed to the kiln. This is beneficial in ensuring that the LGF is homogenous, providing more stable operations and greater uniformity in achieving metal limits.

The six smaller 7,300 gallon tanks provide for more effective testing of metals on a tank-by-tank basis, providing greater assurance of uniform LGF feed. Each tank provide approximately six (6) hours of fuel, allowing one to be filled and tested, while the other is supplying the kilns.

The smaller volume of 7,300 gallons shall allow for quarantining of a given shipment prior to mixing. In this way materials can be isolated and tested on an individual shipment basis prior to use. Any problems identified can be easily resolved, since the shipment shall will be isolated and can be returned to the generator.

D.2 Tank Removal and Other Demolition

D.2.1 Removal of Tanks 100 and 200

The removal and replacement of the existing underground tanks 100 and 200 was conducted in accordance with Norlite's current closure plan. The tanks were decontaminated as described in the closure plan. Soil adjacent to and below the tank were sampled and tested. The tanks are stored on-site for possible future use in non-hazardous service.

Norlite has included in the attachments revised pages for the closure plan. Note that these revised pages are associated with the new replacement tanks, and should be incorporated into the Part 373 permit.

The excavated area necessary to remove the tanks was shored as necessary and remained open for further excavation to construct the new LGF Building. All excavation, backfill and compaction was performed in accordance with applicable ASTM standards and Section D, Subsection 02222 of the Part 373 Permit Application.

Tank removal was the first scheduled activity due to their location in the construction area of the new building.

D.2.2 Tanks 100/200 Pump Shed Demolition

This facility and the pumps have been removed in connection with removal of Tanks 100 and 200. Soils testing was performed and remediation undertaken, as required.

D.2.3 Fuel Booster Pump Building Demolition

This facility remained in service for operation of Kiln #2 until the new fuel feed piping and containment was installed and the burner connections changed over to the new lines.

After being taken out of service, the equipment will be removed, cleaned and stored for potential use in other locations/systems. The building shall be dismantled and materials disposed of in an approved facility. Testing shall be performed similar to that described in Section 2.1 above to determine the need for remediation.

D.2.4 Buried Feed and Fugitive Piping Removal

After being taken out of service the existing underground fuel feed and tank fugitive piping was drained, flushed, capped. They are to be removed for disposal in an approved facility. Testing shall be performed to determine the need for remediation.

D.3 TANKS, MIXERS, PUMPS AND MISCELLANEOUS EQUIPMENT

All metal equipment shall be provided with attachment points for grounding, and where appropriate, bonding shall be provided between sections of equipment separated by non-conductive materials.

D.3.1 New LGF Tanks

New LGF Tanks, six (6) total, shall be identical 7,300 gallon (operating capacity) vertical tanks supported on concrete piers to allow bottom drainage, and are designed and fabricated in accordance with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1. See Drawing NY-D-M-6002 for configuration and connections.

All tanks shall be fabricated to allow future installation of external heating jackets to maintain 75 - 80 F (maximum), and are provided with agitator mounting flanges and floor

access manholes. Fluid inlet and outlet connections are extended to a level near the bottom of the tank. Additional nozzles for pressure relief, sampling, bottom drain, nitrogen blanketing and fugitive venting are provided.

Two of these tanks are typically be used to mix and prepare the various LGF materials for transfer to the kiln. The other four tanks are normally be used for storage of as-received material.

D.3.2 New LGF Tank Agitators

Agitators are of a standard vertical tank flange mounted type with fully enclosed gearing, totally enclosed fan cooled (TEFC) motors and control components complying with requirements for the area classification. Mounting flange and shaft seals are designed to contain LGF vapor.

D.3.3 New LGF Pumps

New pumps to be installed at the Unloading Station, new LGF Building and new Feed Pump Room are types well adapted to efficient handling of a wide range of fuel materials. Two (2) pumps shall be located at the Unloading Station, six (6) in the LGF Building and four (4) in the Feed Pump Room. Two (2) of the LGF Building pumps are designed for fuel transfer to the Feed Pump Room and arranged such that either pump can maintain fuel delivery in the event of failure or problems with the pump in use.

These pumps shall have TEFC motors and other features necessary to comply with area classification requirements.

D.3.4 Existing LGF Tanks and Pumps

Four (4) existing 24,000 gallon tanks and associated pumps continue in service as previously used.

Pumps now located in a small building North of Kiln #2 remained in service without modification until their function was replaced by the new above-ground LGF transfer piping and new burner feed pump systems. The deficiency at this booster pump facility related to inadequate secondary containment shall be corrected by removal of the pumps and building structure followed by remediation as determined necessary by testing of soils in the area.

D.3.5 Activated Carbon Adsorbers

Fugitive vapor and nitrogen from all LGF Tanks is normally directed to the kilns where hydrocarbon content is burned.

At times when both kilns are shut down, there is still the need to vent fugitives from the storage tank systems. Under these shutdown conditions fugitives are redirected to an activated carbon (or other applicable packing material) adsorption unit located in the Fuel Farm area. The adsorber is sized to satisfy the maximum flow resulting from the simultaneous filling of two (2) of the largest LGF storage tanks.

D.3.6 Ventilation Equipment

The new LGF Building, new LGF Pipe Tunnel, new Solids Reprocessing Building, new Feed Pump Room, and new Solid LGF Feed Room are fully enclosed structures. Ventilation of the LGF Building, LGF Pipe Tunnel and Feed Pump Room, which are open to each other, shall be achieved by redundant exhaust fans at the kiln end of the pipe tunnel and an additional fan at each of the LGF buildings and rooms to provide required floor level exhaust of VOC. Outside air is drawn into the LGF Building and Feed Pump Room through suitably located louvers, through the buildings, through the tunnel and exhausted above the kiln structures. Exhaust fans are designed to provide ventilation necessary to prevent accumulation of excessive levels of VOC and as required for fire protection purposes.

Ventilation air from the Solids Processing Building will be exhausted by a separate fan through the Fuel Depot adsorber unit when solids reprocessing is to be done in this area.

Ventilation air from the Solid LGF Feed Room will be exhausted by a separate fan into the normal Fugitive Emissions System to the kilns when his processing is started. When both kilns are shut down, manual valves are provided to redirect this flow to the Fuel Depot adsorber unit.

D.4 PIPING AND VALVES

D.4.1 Piping

All piping systems to contain LGF, waste oil and fugitive vapor from the storage tanks shall be designed, fabricated and installed in accordance with NFPA 30 and ANSI/ASME B31.3, Chemical Plant and Refinery Piping. All other pressure piping was designed, fabricated and installed in accordance with ANSI/ASME B31.1, Power Piping. Vent and pressure relief piping from LGF and fuel oil tanks shall comply with the requirements of NFPA 30 and/or UL 142 and 6 NYCRR Part 614 as applicable.

Additional requirements of the NYS Fire Prevention and Building Code are incorporated. All piping systems within NEC classified areas are grounded and bonded across gasketed joints.

D.4.2 Valves

All valves were selected on the basis of pressure-temperature rating for the pipe line service in which used. LGF valves shall typically be full-flow ball valves having seat and stem packing material compatible with the chemical properties of LGF.

Where specific types of valves are required by applicable codes and regulations, these requirements shall be implemented.

D.4.3 Power Actuated and Control Valves

Valves requiring power actuation and control valves with external operators were selected for the required pipe line rating, process function, and have pneumatic actuation. All electrical control or instrumentation devices satisfy the area classification requirements for the installed location.

D.5 FOUNDATIONS, CONTAINMENTS AND SUPERSTRUCTURES

All new structures and modifications to existing structures were designed and constructed in accordance with NYS Fire Protection and Building Code requirements and the following as applicable:

- American Concrete Institute (ACI), 318.
- American Institute for Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, 9th edition.
- American Society for Testing and Materials (ASTM) standards.
- American Welding Society (AWS), D1.1, Structural Welding Code.
- Metal Building Manufacturers Association standards.
- Steel Joist Institute standards.

Basic design parameters were Seismic Zone 2A, 100 mph wind speed, a snow load of 45 pounds/square foot and a 50" frost depth.

D.5.1 Foundations

Based on existing soil boring information, some foundations were supported by piles to bedrock. Specific pile depth and soil bearing information were developed from new borings taken at locations determined from the new building and structure layout. Pile caps shall be reinforced concrete and designed in accordance with the structure supported.

D.5.2 Secondary Containment System

Secondary containment required for unloading, storing, pumping and pipe transfer of fuels is of reinforced concrete, with the exception of the LGF Pipe Tunnel for fuel transfer to the kiln Feed Pump Room (see below), the containment areas in the Control Rooms and the Waste Oil Tank. Curb and wall heights shall allow for sufficient freeboard above the maximum expected spill depth. Containment volume calculations are in the permit application.

All secondary containments were shielded from rainwater entry at or above a slant angle of 45 by a roof with eaves extending beyond the containment working in conjunction with partial metal siding walls where necessary, or be fully enclosed.

Each containment has a lined blind sump at the low point to facilitate pump removal of spills to a suitable container for disposal.

D.5.3 Containment Liner Coatings

Concrete containments are lined with an impervious and chemical resistant coating, similar to that previously used at this facility and approved by NYSDEC.

Steel containments shall have a chemical resistant epoxy type coating with compatible primer applied either during fabrication or at the time of construction on site. Coating systems data shall be presented to NYSDEC for approval.

D.5.4 Fuel Feed Piping Containment

Containment Tunnel:

Fuel transfer and fugitive emission piping secondary containment is provided by a walk-through tunnel 90 inches in inside diameter extending from the new LGF Building enclosure to and across the roof of the kiln building to the Feed Pump Room. The tunnel shall be constructed of sections of double wall steel pipe. The inner wall is smooth to facilitate sealing by application of a liner coating, and wash down or other cleaning which may be required in the event of a spill. The outer wall is corrugated for strength. The wall layers are integrally joined during fabrication.

Containment tunnel sections were joined with a sealing type connector band externally applied and further sealed with a chemical resistant caulk on the interior. Expansion provisions shall be included at intervals as required.

Maintenance and compliance inspection access is provided by normal entry points at the ends of the tunnel and manways in the roof of the tunnel. The latter is located at intervals as required by the NYS Fire Prevention and Building Code for egress. External platforms and ladders with cages shall be attached to the tunnel support structure.

Containment Tunnel Support Structure:

The tunnel is continuously supported by a system of steel trusses and bents as shown on attached drawings. Each section of tunnel pipe is attached to the support structure by a minimum of two stainless steel bands. Adequate truck and heavy equipment clearance is provided at all intersecting roads.

Containment Tunnel Internal Features:

A steel grating walkway shall be constructed at the bottom center of the tunnel pipe allowing a 6'-9" clearance at the center. The walkway was supported on steel structural members within the tunnel. The bottom of the tunnel pipe beneath the walkway shall provide the drain path for spills and wash down fluids. The overall slope of the tunnel is toward the new LGF Building which shall serve as the containment volume for the horizontal portion of the tunnel.

Vertical steel channel supports for piping, conduit, lighting and instrumentation were provided on both sides of the tunnel at approximately 10 foot intervals.

Ladders shall be provided for internal access to overhead manways.

D.5.5 Burner Feed Pump Room*

Three (3) 1,000 gallon Equalization Tanks and three (3) Feed Pumps are included as an integral part of the LGF transfer and feed system. These tanks were installed to provide more uniform fuel feed and to meet the specific pumping requirements of the burners when we start reprocessing solids. The equalization tanks provide a point for mixing LGF feed prior to introduction to the kiln, to ensure that any solids remain suspended during feed. This equipment is housed in a new room located between the kilns and within the Kiln Building in an area previously occupied by pulverized coal fuel equipment which was removed.

A previously existing concrete pit was partially utilized and expanded with a new concrete floor at a higher elevation. The walls to grade shall provide a containment volume substantially larger than required. Existing concrete surfaces shall be cleaned by sand blasting and the containment volume shall be lined with Dudick Reinforced Protecto-Line 900.

Because this room is contiguous to the Kiln Building structure, the room above the concrete containment was constructed with 3-hour fire rated walls to comply with NFPA 30. Two means of egress, VOC monitoring, fire protection, equipment grounding, lighting, emergency and exit lighting and ventilation were provided in accordance with NYS Fire Prevention and Building Code. All electrical equipment was selected to comply with the area classification.

*__Note__: The three equalization tanks are currently not in use as feed tanks to the kiln.

D.5.6 Solids Reprocessing Building*

A new building shall be constructed to stage drums of solids generated on site and to house processing equipment required to reintroduce these solids into the LGF materials in LGF Tanks. This building is located adjacent to the existing Unloading Dock and to the LGF Building. The concrete floor and curbs are matched to the elevation of the Unloading Dock to permit a ramp to be constructed from the Unloading Dock for forklift movement of drums into and within the Solids Reprocessing Building. The concrete spill containment of the new building was lined in the same manner as the Unloading Dock.

The building was enclosed by a steel frame and metal siding enclosure with an eave extending over the Unloading Dock roof to exclude rainwater entry to the ramp area.

Two means of egress, VOC monitoring, fire protection, equipment grounding, lighting, emergency and exit lighting and ventilation were provided in accordance with NYS Fire Prevention and Building code. All electrical equipment shall be selected to comply with the area classification.

D.5.7 Solid LGF Feed Room

A portion of the expanded area between the kilns (previously occupied by coal pulverizing equipment) was separated from the Feed Pump room to provide an area for the Solid LGF Feed equipment. The walls of this room are fire rated and constructed similarly to those of the Feed Pump Room. Two means of egress, VOC monitoring, fire protection, equipment grounding, lighting, emergency and exit lighting and ventilation was provided in accordance with NYS Fire Prevention and Building Code. All electrical equipment was selected to comply with the area classification.

D.5.8 Kiln Control Room Modifications

Kiln Control Room modifications associated with fuel systems improvement consist of providing physical isolation from the control and operational area and secondary containment of new and/or modified fuel supply piping.

All instrumentation and control readouts, indicators, annunciators and other control components whether existing or new are located within the Control Rooms external to the fuel piping containment.

D.6 ELECTRICAL POWER SYSTEM

D.6.1 Area Classifications

All of the below listed areas related to fuel systems will be classified as Class I, Division 2 in accordance with NFPA 70 National Electrical Code (NEC) 500-5(b).

Fuel Farm including new LGF Building, new Solids Reprocessing Building and existing facilities.

LGF Pipe Tunnel.

Feed Pump Room, and Solid LGF Feed Room.

The interior of the Fuel Farm Motor Control Center (MCC) Building will be unclassified on the basis of providing positive pressure forced ventilation. All other plant areas shall remain unclassified.

D.6.2 Electric Power and Lighting

Electric power supplied to the existing and new main service disconnects will be 460 volts, 3-phase, 60 Hertz. Lower voltages, where required, will be obtained from properly rated transformers located in the MCC Building or other unclassified area.

Power distribution throughout the fuel systems shall be in rigid conduit or other raceway complying with area classification requirements.

Lighting shall be provided in all areas for 24 hour operation at illumination levels required to meet OSHA standards (per 29CFR191(c), 25 foot-candles in the absence of daylight). All lighting fixtures shall be selected to satisfy the area classification where installed.

Emergency and exit lighting as required by OSHA and NYS Fire Prevention and Building Code will be provided and will be selected to satisfy the area classification.

D.6.3 Grounding and Lightning Protection

All steel building structures, tanks, equipment and electrical enclosures will be grounded in accordance with NFPA 70 (NEC), Article 250.

Fuel systems structures shall be provided with full lightning protection in accordance with NFPA 78.

D.7 CONTROLS AND INSTRUMENTATION

D.7.1 Control System

A control system for fuel unloading, storage, transfer and feed to burners will be provided using a programmable logic controller (PLC) selected to provide I/O capacity and other features for presently planned additions/improvements and potential future additions. All motor control and instrumentation signals for normal start/stop, operation and alarms will be controlled by the PLC. Pumps, agitators, and any other motor driven equipment will have local start/stop stations which can be activated for maintenance purposes.

Necessary equipment emergency stop pushbutton stations, manual fire alarm stations and any other critical emergency condition circuits will be hard wired in conduit point to point and shall not be processed by the PLC.

D.7.2 Tank Level Control

All tanks shall have level instrumentation for control of contained fluids. Typically tank level controls shall have both high/low and high-high/low-low set points. The high/low set points shall normally cause an alarm condition to alert operators of the approach of a limiting condition so that appropriate action can be taken. The more extreme set points of high-high/low-low shall establish the limits required to prevent overflow or damage to equipment. These set points will be interlocked with pump and agitator motor controls to shut down the affected equipment.

Level instrumentation on the tanks used as fuel feed sources for the burners shall have their level and alarm signals displayed in the kiln Control Rooms for kiln control purposes.

D.7.3 Tank Nitrogen Blanket and Fugitive Emissions Control

All LGF tanks shall be nitrogen blanketed.

Tanks are outfitted with pressure instrumentation having high and low set points. At the high pressure set point (less than the tank code pressure relief setting) a valve to the vent system leading to the kilns will be opened and remain open until the pressure has fallen to within the normal pressure range at which time the valve will be closed. Vapor and nitrogen in the tank will be forced through the vent system piping by tank pressure. At the low pressure set point (above atmospheric pressure) a valve from the nitrogen supply system will be opened and remain open until the tank pressure has increased to the normal operating range at which time the valve shall be closed.

Manual valves will be provided to divert fugitive emission flow to the activated carbon adsorber unit when both kilns are shut down. The automatic control system as described above shall remain in operation.

Additionally, nitrogen purging takes place if high oxygen levels are developed in the tanks and vent system. This system is all PLC controlled and was brought on line in August 1995.

D.7.4 Motor Controls

All motors will be controlled by magnetic starters with individual lockout capability at the starter. In addition, emergency stop signals from each power driven item of equipment shall trip its motor starter to a condition requiring reset only after appropriate interlocks have been satisfied, i.e., no remote manual or automatic restart shall be possible prior to meeting established control logic criteria.

All new equipment starters for the Fuel Depot will be located in a common panel in an enclosed MCC Building as described above. New equipment starters for the Kiln Building shall be located in an MCC Panel in that area.

Start/stop controls for power driven equipment will be located on panels in the vicinity of the equipment, but control signals shall be processed by the PLC to coordinate valve operation and prevent actual starting of the equipment under improper system conditions.

D.7.5 VOC Monitoring Systems

Continuous Monitors:

VOC monitoring detectors shall be located at various points within the new facilities as shown on attached drawings. Equipment will be UL, Factory Mutual or CSA approved or rated. Detector set points will be lower than the lowest explosive limit expected for any LGF material.

Monitoring signals will be processed by the PLC system for alarm and control response purposes.

Leak Detection and Repair Program (LDAR)

In addition to the above continuous monitoring, tanks and equipment will be tested and inspected routinely in accordance with 40 CFR Subpart AA, BB and CC. These subparts relate to organic air emissions standards for process vents and equipment leaks. In accordance with this subpart all regulated units shall be marked. With a unique equipment identification number permanently affixed to each unit. A list indicating the location of each unit will be used for comparison with the plot plan. This master list with the location and type of equipment, i.e. pump, valve, flange, etc. shall be established and kept. All such equipment will be kept in compliance by using the weekly or monthly leak detection and repair methods outlined in this section.

Closed-Vent Inspection and Monitoring

Each tank is connected to a closed-vent system leading to the kilns. The system includes a non-regenerative carbon (or other applicable packing material) adsorption canister system as a backup to the closed vent system to the kiln and for the Solids Reprocessing Building ventilation air.

Monitoring of the concentration of organic compounds in the vent of the canister will be conducted on a weekly basis when these canisters are in use. Monitoring will be with an organic vapor analyzer (OVA) or equivalent test unit described below. A canister will be operated with no detectable emissions. No detection is indicated by an instrument reading of less than 500 ppm above background as defined by the regulation. Monitoring will comply with Method 21 in 40 CFR Part 60, App A, as described below.

Replacement of an existing carbon canister with a fresh one will be required when a reading above no detectable emissions is recorded.

Equipment Inspection and Monitoring

All equipment in contact with hazardous organic waste will be inspected for leaks on a daily basis and monitored for leaks on a regular basis in accordance with 40 CFR Subpart 264/265, Sub-parts AA, BB and CC as described above. Units that will be monitored include all equipment in organic service that are not controlled by a closed-vent system. These units include all pumps in light liquid service, pressure relief devices in gas/vapor service, open-ended valves or lines, valves in gas/vapor service or light liquid or heavy liquid service, or flanges and other connectors, and closed-vent systems as outlined above.

The regulated equipment will be identified and listed on a master inspection sheet and in a plant block piping diagrams. Lead detection monitoring of all regulated equipment will be conducted on a periodic basis (generally quarterly unless a leak is detected. Daily inspection of each device will be conducted. The inspection will be for indications of free liquid or leaks. The following schedule will be used to determine the no leak detection limit for a given type of equipment.

Non-Detect Limit, PPM

Type of Equipment	(55 Federal Register 25454)
All pumps, valves and Fittings in organic service	10,000
Pressure relief units	500

If a leak is detected at the non-detection limit, a first attempt at repair will be made. If on retesting, a level above detection limit is obtained, a weather-proof identification tag will be affixed to the leaking component. The tag will be marked with the equipment identification number. The component shall be repaired within 15 days or at the next equipment shutdown if required, as defined by the Volatile Organic Air Emission Standards regulation (Subpart AA/BB/CC) for TSDFs.

All records will be maintained per 40CFR264.1035 and 40CRF264.1064. The records will include the discrete identifying tag number, equipment location, type of equipment, percent-by-weight total organic in the equipment. All records of equipment monitoring, monitoring instrument calibration and repair shall be maintained for three years.

VOC Sampling Methods

Volatile Organic Compound (VOC) Fugitive Emissions Sampling:

Sources monitored include closed vent system exhaust, valve stems, packing glands, seals, fittings, open ended valves, and any other potential leak points. Equipment screened includes those which contain or contact hazardous waste. The leak detection and repair program is performed in accordance with 40CFR264.1034, and 40CRF264.1063 (d). The sampling procedure used is as outlined in EPA Reference 40 CFR Part 60, App. A - Method 21. All required quality assurance and O&M procedures are followed.

The general LDAR procedure is as follows.

1. All potential sources of fugitive VOC emission are screened using a flame ionization hydrocarbon detector, or equivalent unit or a photoionization detector, 'Microtip', or equivalent.
2. Prior to testing, the analyzer is calibrated over the entire operating range using appropriate gases and concentrations specified by Method 21 and the instrument manufacture's operation manual. Calibration results are logged on an Calibration Data Sheet
3. Leak detection testing is performed by placing the instrument probe as close as possible to the device being monitored. The probe is then slowly moved around the surface of the device. If any upscale reading is observed, the probe is then moved such that the maximum reading can be obtained. The maximum reading for each device is recorded on the LDAR Monitoring Data Sheet.
4. If a reading greater than 10,000 ppm is detected with, the device is considered to be leaking. If a device is determined to be leaking above the appropriate threshold, the device is then tagged with a weatherproof, chemical resistant tag. The date time,

device number and instrument reading are written on the label using an indelible marker.

5. A leak Notification form is then completed and given to the appropriate individual responsible for ensuring corrective action is taken.
6. The leak must be repaired within the time frames stated in 40 CFR Part 60 Sub-parts AA/BB.

The frequency of analysis for VOC fugitive emissions from closed vent systems will be in accordance with 40CFR264.1033 and 40CRF264.1060. Weekly emissions checks of the Carbon Adsorption Systems will be taken until a more practical sampling frequency can be determined based on demonstrated experience. A more realistic frequency shall be 20% of the typical elapsed time to exceed a no detectable leak maximum of 500 ppm above background is detected. All other devices will be monitored on a quarterly basis. However, for equipment sampled on a quarterly basis, if a leak is detected, a monthly sampling schedule will be implemented for the next two periods, before going back to a quarterly basis.

D.7.6 Alarms and Trip Conditions

For the automatic organic vapor monitors alarms and equipment trip conditions are annunicated in the Kiln Control Room and at a central location in the Fuel Depot. In addition, audible/visible alarm devices and indicators will be located at points within the systems appropriate to the particular alarm.

D.8 FIRE DETECTION AND SUPPRESSION

Fire detection and suppression systems complying with the NYS Fire Prevention and Building Code, local Fire Department requirements and applicable NFPA standards will be provided at all appropriate locations. Specific details of systems to be used shall be determined during design stages.

As a minimum, appropriate types of hand held extinguishers will be provided throughout the fuel systems facilities and the structures listed below shall be equipped with fusible element activated Aqueous Film Forming Foam (AFFF) sprinkler systems:

LGF Building and related pump stations.
Solids Reprocessing Building.
LGF Pipe Tunnel.
Solid LGF Feed Room.
Equilization Building

D.9 TESTING PLANS AND PROCEDURES

All new construction and modifications to existing structures and new equipment will be tested and inspected in accordance with governing code requirements. Testing and inspections will be required to be satisfactorily completed prior to placing any tanks, equipment or piping in service.

Specific test procedures and standards for acceptable results will be included in specifications for equipment and field construction. Where

contractors are required to provide test procedures, these shall be reviewed by ENSR for compliance with codes and specifications.

ENSR Consulting and Engineering shall provide a written assessment (as required by 40CRF264.192) of storage tanks, tank foundations, tank supports and secondary containment systems reviewed and certified by a qualified engineer registered in the State of New York. Such assessment will be provided before start-up and shall verify that the tank storage systems are properly designed and constructed to be of sufficient strength and compatibility with the wastes to be stored and mixed. The structural integrity of tanks fabricated in accordance with the ASME Unfired Pressure Vessel Code will be considered to be validated by the presence of the authorized ASME stamp on the vessel.

Test procedures for UST and other equipment removal are described in Section 2.1 above.

D.10 MATERIALS OF CONSTRUCTION

All materials of construction will conform to the standards of ASME, ASTM or other nationally recognized publications. Where required by applicable codes, NYS or federal regulations, mill test reports of material shall be obtained. As a minimum, suppliers shall be required to certify in writing that structural or pressure containing material complies with specification requirements.

Concrete mix designs will be required to be pretested in accordance with ACI and ASTM standards.

Tank and piping material will be carbon steel with suitable corrosion allowance.

Detailed bills of material will be developed during design stages and required of all equipment manufacturers.

D.11 GENERAL DESCRIPTION OF LGF SYSTEMS PROCESSES

All LGF process systems are limited to the straightforward functions of transporting fluid and slurry fuel materials to the kilns via piping systems and pumps designed for this type service, and storing LGF in tanks with agitators to maintain suspension of particulate solids and uniform liquid properties. There are no functional processes which alter the as-received material other than the mixing of batches which is both necessary and normal to maintain a steady supply of fuel having properties within regulatory limits to the kilns. Ancillary systems such as Fugitive Emissions Nitrogen, Fuel Oil and various other utilities support the primary LGF systems operation.

Safety and fire protection systems are essentially independent and are provided according to the requirements of applicable regulations, standards and codes.

D.11.1 LGF and Fuel Unloading Systems

Pumps located in the Unloading station take suction from truck tanks via strainers which exclude oversize debris. The Unloading Pumps transfer LGF into the tank systems in two different ways:

(1) Three (3) LGF Pumps deliver to the recirculation pump loop of each of the four (4) existing Tanks

300, 400, 500 and 600. Piping and valving is arranged such that either of these two unloading pumps can deliver to any of the four storage tanks. Provision is made for flushing the unloading piping with Waste Oil when needed.

(2) Three (3) new LGF Pumps deliver directly to any of either the three (3) agitated 100 LGF Tanks or the three (3) 200 LGF Tanks. There is a crossover system that allows the either pump to go to the other tank system. Provision is made for flushing this unloading piping with Waste Oil when needed.

Sampling points at each of these tanks and on the recirculation loops of the existing tanks provide for convenient sampling and testing of LGF properties to assure that feed to the burners is maintained within regulated limits.

An unloading pump is also provided for Waste Oil and transfers only to the aboveground Waste Oil Storage Tank.

All unloading pump controls and associated alarms are interlocked with the level sensors of the tank to which material is being transferred. Interlocking is automatically accomplished by PLC programming initiated when the operator selects the particular tank to which a pump shall discharge. The PLC actuates valves required to enable the desired transfer, registers position switch condition on the receiving tank and transfer pump to establish a permissive which allows the unloading pump to start, and connects the proper level sensor into the pump motor control. If the high level set point is reached prior to completing the unloading operation, an audible and visual alarm is initiated to alert the operators to take appropriate action. In the event the maximum level set point is reached, the pump is automatically tripped off accompanied by another alarm. Once tripped off in this manner unloading pump motor starters can only be reset by specific separate PLC control functions. The tank volume available between the high level and maximum level set points is sufficient to allow flushing of the unloading piping with Waste Oil.

Refer to P&ID Drawing NY-E-D-5003 for further details.

11.2 LGF Storage, Mixing and Burner Feed Transfer

Each LGF tank has an associated pump. In the case of existing Tanks 300, 400, 500 and 600, the pumps are used for feeding LGF to the kilns, recirculation of the tank as well as for transfer operations. The LGF Tank pumps inside are primarily for transfer operations, but may be used for tank recirculation in the event of agitator failure, thereby assuring that reasonable suspension of solids can be maintained.

Piping and valving systems for the four existing tanks are arranged such that a portion of the recirculation flow may be diverted for transfer to any of the other three existing tanks or to any of the six inside tanks.

Piping and valving systems for the six inside tanks are arranged such that LGF may be transferred from any one tank to any of the five other tanks. Piping systems for the new tanks are also arranged such that more than one pump can take suction from any particular tank so as to prevent pump breakdown from disrupting normal operations.

Pumps associated with tanks 100 series and 200 series have the piping and valving required to deliver LGF through the feed transfer piping to the kilns.

As with unloading operations, valve lineups and interlocking of tank level sensors with pump controls is accomplished by PLC programming. Automatic valve positioning and permissives from valve position switches related to the source and target tanks enable pump start. This prevents incorrect transfers. High level and overfilling is controlled in the same manner as for unloading pumps. Low and minimum tank level controls function in a similar manner to assure that agitator blades are not uncovered and solids suspension is maintained.

All LGF Tanks are nitrogen blanketed under low pressure. Tank pressure is maintained within a preset range by admission of nitrogen when pressure falls below the range and by exhausting fugitives when the pressure rises above the range. Nitrogen is delivered from the supply at regulated pressure slightly above the normal tank pressure range. When pressure falls to the low set point, a valve is opened admitting nitrogen until pressure rises to normal at which time the valve is closed. When tank pressure rises to the high set point, as when the tank is being filled, a valve to the Fugitive Emissions Vent line is opened until tank pressure falls to normal at which time the valve is closed. all tanks are connected to a common vent line which delivers fugitive emissions to the kilns in the vicinity of the burners. Tank pressure provides the motive force needed to produce flow of fugitive emissions to the kilns. A manual valve is provided to divert fugitive emissions flow through an activated carbon adsorber when both kilns are shut down.

All LGF Tanks have safety pressure/vacuum relief provided by rupture discs. Discharge is direct to atmosphere, external to the LGF Building in the case of the new tanks. Safety relief connection sizes, set pressures and vent stack sizing are in accordance with ASME Section VIII rules.

LGF for feed stock to the kiln burners is transferred via redundant piping systems within the LGF Pipe Tunnel which provides secondary containment. Duplication is primarily to permit continued operation in the event one line is disabled by plugging or other problems. Low viscosity LGF transfer piping is arranged in duplicate recirculation loops (returned to the source tank) to provide for the high velocity flow required to maintain particulate solids in suspension. As with high viscosity feed transfer lines, duplication is provided primarily for continued operation in the event one of the loops becomes disabled. all LGF transfer pipe lines are provided with cleanout ports placed at frequent intervals to facilitate cleanout.

Refer to P&ID Drawing NY-E-D-5004 for further details.

D.11.3 LGF Equalization and Feed*

Four (4) 1,000 gallon agitated Equalization Tanks in the Feed Pump Room receive LGF from the transfer lines. Four (4) progressing cavity pumps with variable speed drives are located adjacent to the Equalization Tanks with piping and valving arranged to allow two pumps to take suction from either of two tanks and pump to the burner of Kiln #1. The other two tanks and pumps are similarly arranged to feed Kiln #2. The variable speed drives and positive displacement characteristic of these pumps provide the required controlled fuel feed rate. Normally two of the pumps are in use, one feeding each kiln burner. The other two pumps are in ready standby to assure uninterrupted fuel feed in the event of pump breakdown or outage for maintenance. Pump controls and associated alarms, power actuated valve controls and tank level indicators are located in the Kiln Control Rooms.

Equalization Tanks are nitrogen blanketed at low pressure and have fugitive emissions vents. Tank pressure and venting of fugitive emissions is accomplished in the same manner as other LGF Tanks. Level controls and alarms are also similar except that necessary alarm annunciation is repeated at the LGF Building to assist in operation of the LGF Transfer Pumps.

Equalization Tank level is maintained within a preset adjustable range by on/off cycling of transfer pumps in the LGF Building, or by opening and closing a valve from one of the recirculation loops. This operation is automatic under PLC control and allows considerable flexibility in handling LGF of varying viscosity and particulate solids content while assuring a reliable continuous fuel feed to the kiln burners.

Sampling points are provided on each Equalization Tank for verification of the properties of LGF being fed to the burners.

Refer to P&ID Drawings NY-E-D-5008 and NY-E-D-5013 for further details.

***Note:** The equalization room tanks are currently not in use as feed tanks to the kilns. Tank 102B is used as a vent tank.

D.11.4 Solid LGF Feed System

Drum (55 gallon) quantities of solid (extrudable) LGF (SLGF) are processed for direct feed to separate kiln burners by direct pumping from the drum. Solid LGF can be fed to each kiln at the rate of 800 pounds per hour. Closed drums of material are introduced onto a powered roller conveyor through a roll-up door at grade level in the rear wall of the SLGF Room. A drum is moved to a turning mechanism where an air-powered cutter is used to remove the top. The drum may then be moved to either of two (2) pump stations, one serving each kiln.

Pumps are of a special type in which a follower plate fitting the inside diameter of the drum is compressed

against the drum contents by two rams forcing the material into the suction of an air driven extrusion pump which forces the material at high pressure through a steel tubing line to the kiln burner. After being emptied, drums are capped with a suitable plastic cover and removed through the roll-up door to an empty drum storage area awaiting disposal in an approved facility.

Refer to P&ID Drawing NY-E-D-5011 for further details.

D.11.5 Solids Reprocessing System

Drummed debris and sludges produced on site by cleanout of strainers and tanks is reintroduced into the LGF stream by a small system designed to assure that solids are reduced to an acceptable particle size and thoroughly mixed with an appropriate liquid carrier, normally one of the LGF materials on hand.

The system consists of a single drum tipper which is used to empty a drum into the hopper of a shredder. Low solids LGF, or if necessary, No. 2 Fuel Oil, is also introduced both to flush material through the shredder and to provide sufficient fluidity for processing. Material is drawn from the output hopper of the shredder by a macerating pump where solids are further reduced in size and transferred into a dispersion mixer tank. material in the dispersion mixer is essentially identical to other LGF materials and is pumped into one of the LGF Tanks for later delivery to the kiln burners. Provision is made for recycling material through the dispersion mixer tank, if necessary, prior to transfer to an LGF Tank. Empty drums are capped with a suitable lid and returned to an empty drum storage area for reuse or disposal in an approved facility.

Refer to P&ID Drawing NY-E-D-5010 for further details.

APPENDIX E

STORMWATER CONTROL DETAILS

Figure: E – 1, reserved

Figure: E – 2, reserved

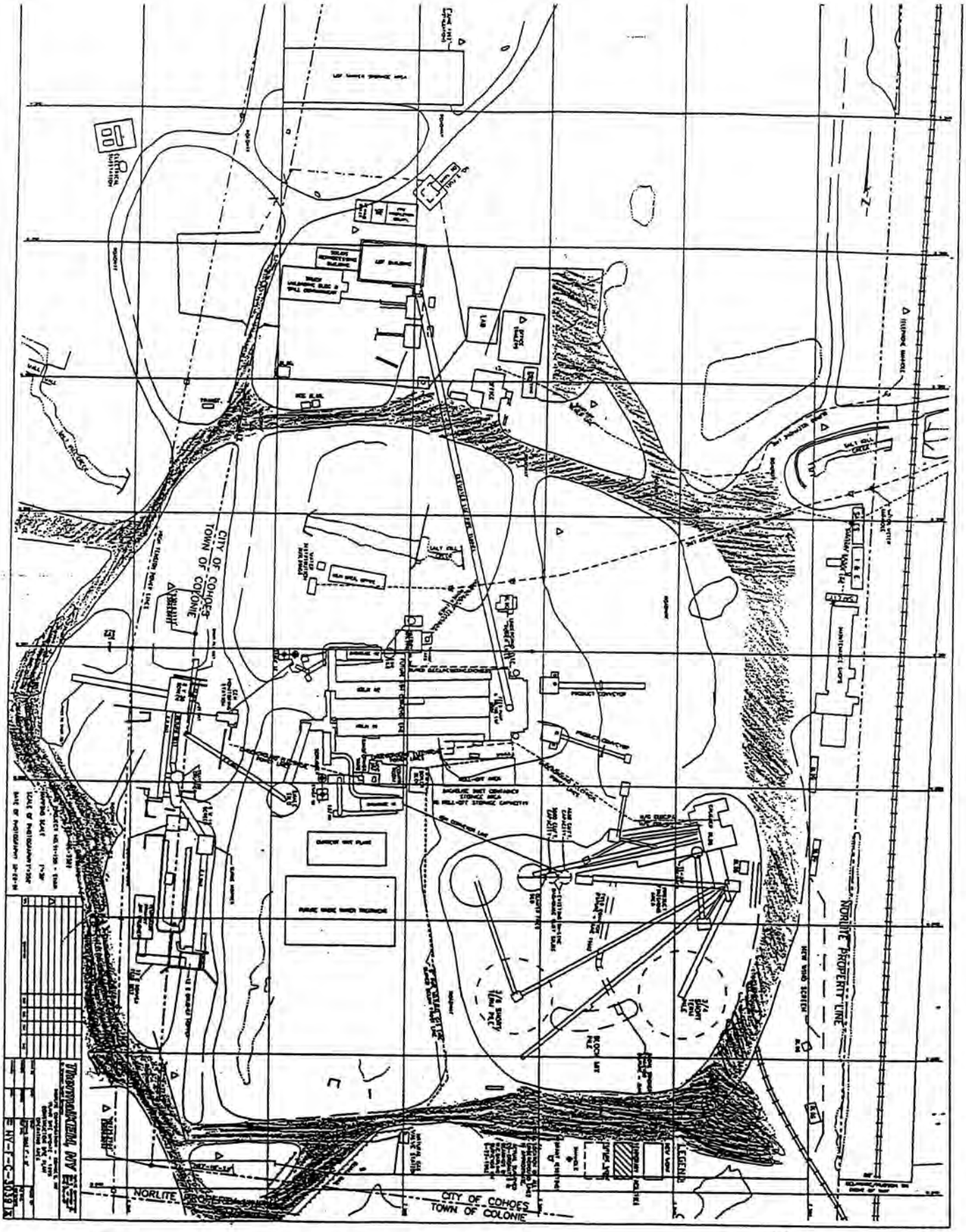


FIGURE: E-3 BMP PLAN APPENDIX E

NORLITE SITE IMPROVEMENT
OPERATING PROCESS AREA

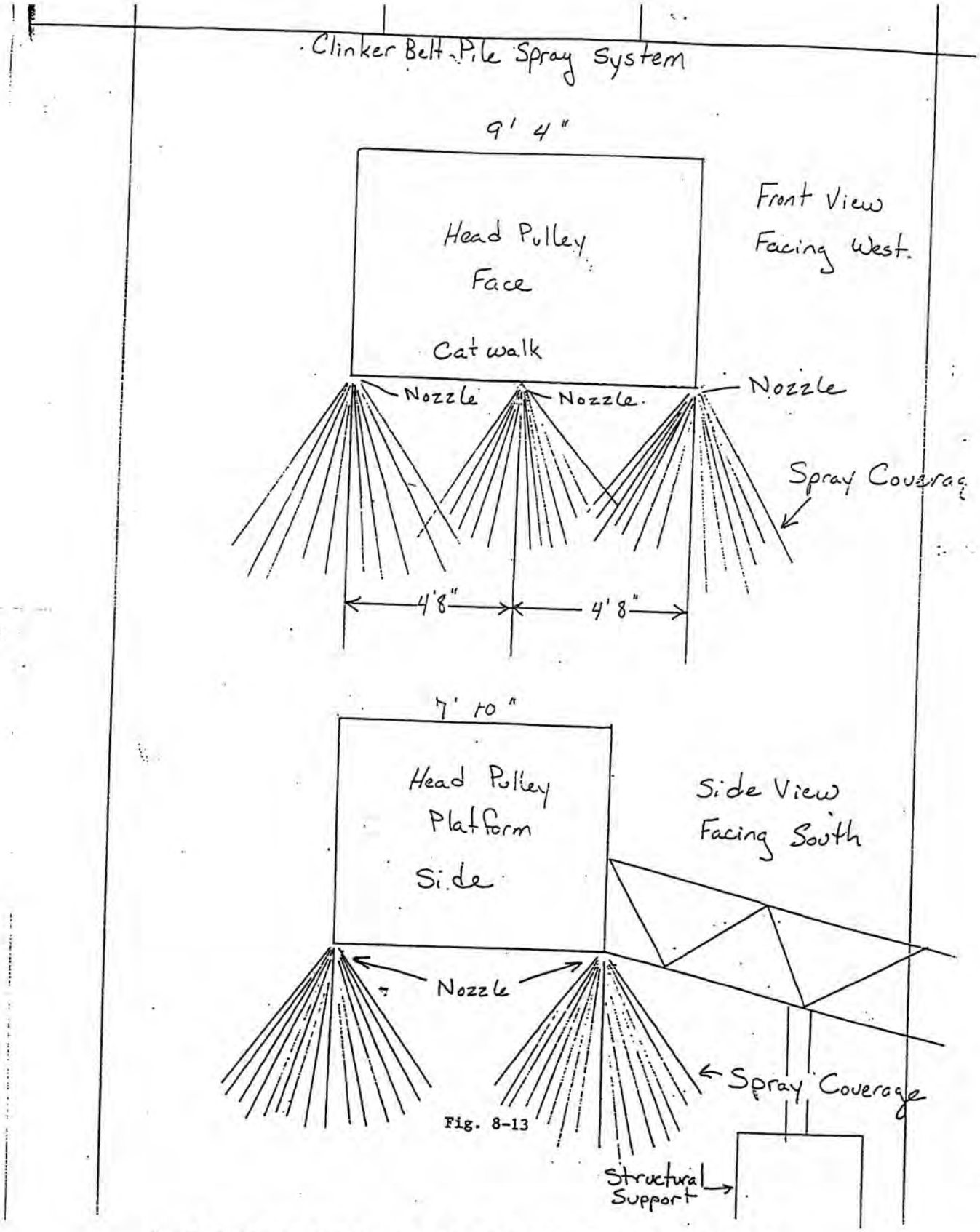


Fig. 8-13

FIGURE: E-4 BMP PLAN APPENDIX E

NORLITE SITE IMPROVEMENT

MODIFIED WET DUST SUPPRESSION SYSTEM SPRAY PATTERN

Norlite Part Specification Sheet

N	100009-Size

Name:	Nozzle, Hollow Cone

		DATE
Written By	A. Popp	4/24/95
Revised By		

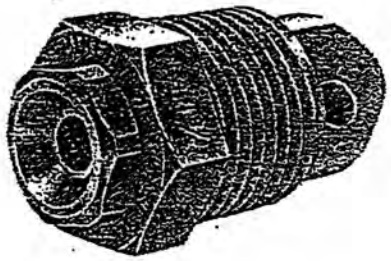
Body Material: Fiberglass Reinforced Nylon

Cap Material: Brass

Pipe Size: 3/8" Male NPT

Maximum Operating Pressure: 500 psi

Vendor: Spraying Systems or equivalent



Size	Orifice Diameter	GPM @ 100 psi	Spray Angle @ 100 psi	Spraying Systems Part Number
1	3/64"	0.25	52	3/8 BDM-2-0.5
2	1/16"	0.36	65	3/8 BDM-2-1
3	5/64"	0.63	69	3/8 BDM-2
4	5/64"	0.69	68	3/8 BDM-3-2
5	3/32"	0.94	75	3/8 BDM-3
6	1/8"	1.6	78	3/8 BDM-5
7	5/64"	1.1	46	3/8 BDM-10-2
8	11/64"	4.3	60	3/8 BDM-20-10

FIGURE: E-5 BMP PLAN APPENDIX E

NORLITE SITE IMPROVEMENT

MODIFIED WET DUST SUPPRESSION SYSTEM SPRAY NOZZLE

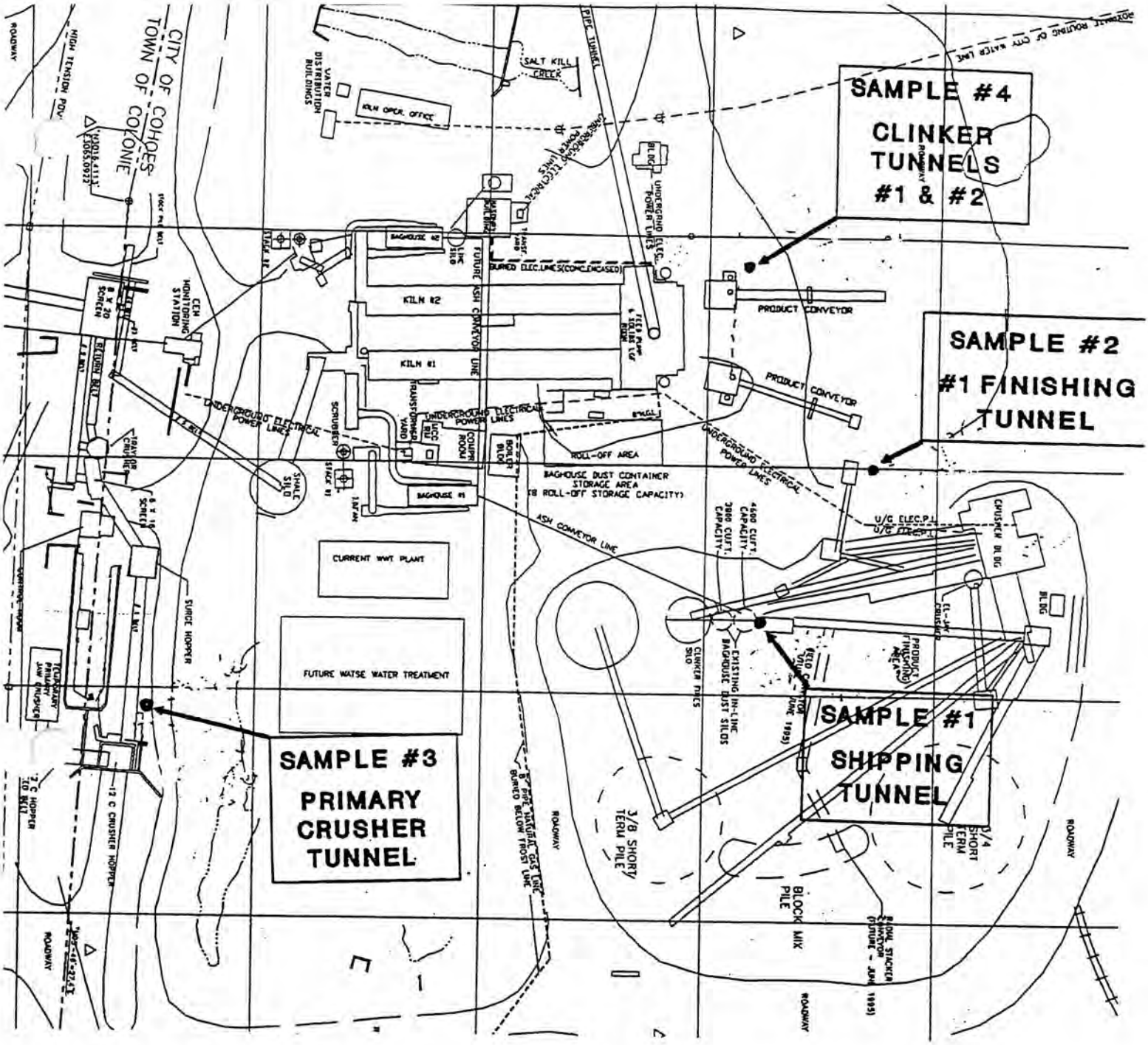


FIGURE: E-6 NORLITE BMP PLAN APPENDIX E

FACILITY CONVEYOR SYSTEM TUNNEL WATER SAMPLING LOCATIONS

APPENDIX F

Air Pollution Control System
Maintenance Manual

Purpose of Air Pollution Control System Maintenance Manual

The goal of the Air Pollution Control System (APCS) Maintenance Manual is to provide minimum operation and maintenance standards and requirements to keep the APCS operating in an environmentally compliant manner. By following these guidelines the operation of the APCS will clean emissions from the kiln to within the requirements and regulatory limits set forth in the Air Pollution Control Permit. This manual presents an overview of the APCS at Norlite and a review of process monitors.

Air Pollution Control System Overview

Both kilns have identical emission control systems that include both wet and dry emission control devices for the collection and removal of particulate matter, hydrogen chloride (HCl), and other gaseous species. The principal collection mechanisms affected are sedimentation, condensation, impaction, filtration and interception for particulate and absorption of HCl and other gaseous species.

The APCS consists of six key components: a Multi-clone, a heat exchanger, a baghouse, an induced draft fan, a scrubber and a demister.

After leaving the kiln, emissions first pass through a mechanical collector (knockout box) and a Barron multiple cyclone unit (multiclone) to remove coarse particulate. This process utilizes relatively small diameter cyclones operating in parallel with a common inlet and outlet. The multiclone captures course dust and is rated for 2-3 in. w.c. pressure drop. Dust and clinker fines collected in the multiclone accumulates in a hopper. A blower and rotary airlock aid in pneumatically conveying the collected material to the baghouse dust storage silos to be recycled as a useful product. The gases then pass to an air-to-air, shell and tube heat exchanger which is rated at 65,000 ACFM. This unit uses forced draft ambient air as the cooling medium. Gases enter the heat exchanger at approximately 900^{0}F and exit at approximately 450^0 F with a 2-3 inch w.c. pressure drop across the unit.

Following the heat exchanger is a Aeropulse, Inc. Power Pulse Collector (fabric filter) with three modules. Each unit is rated for 53,000 ACFM at 450^{0}F. Kiln 1 has 1200 filter bags that are 12 feet in length and 4 5/8 inches in diameter. Kiln 2 has 810 filter bags that are 17 feet, 3 inches in length and 4 5/8 inches in diameter. Kiln 1 has an air to cloth ratio of 3.02:1 with all three modules on line and 4.53:1 with one module down for maintenance. Kiln 2 has an air to cloth ratio of 3.11:1 with all three modules on line and 4.67:1 with one module down for maintenance.

Each module is cleaned independently to maintain a differential pressure range. The differential pressure range is set on the photohelic gauges in the motor control center. When the differential pressure exceeds the photohelic high set point, compressed air pulse cleaning will commence. The filter media is pulsed on row at a time until the differential pressure drops to the photohelic low set point. Pressure drop across the unit is rated between 3-6 in. W. C. with all three modules on-line. If required, a modulating air damper automatically adjusts inlet gas temperature to a set point between 400^{0}F and 450^{0}F by bleeding in ambient air.

The baghouse is followed by a 400 HP system fan which induces draft through the kiln, knock-out box, multiclone, heat exchanger and baghouse. The induced draft fan carries exhaust gases to a BECO Venturi (MMV) scrubber for acid gas removal. This unit is rated for 53,000 ACFM at 450^{0}F at the inlet and 38,600 ACFM at 138^{0}F at the outlet, with 2 to 5 inches of water pressure differential. The scrubber is a rod design that has tubular stainless steel rods installed in rows

across the throat to provide a series of smaller throats. The intent is to provide the effect of a small venturi throat without incurring the high pressure drop typically associated with conventional high efficiency venturi scrubbers. Additionally, the tubes provide additional impaction surfaces for enhanced particulate and HCl collection. The scrubber is designed for 99% HCl and 68% SO_2 removal efficiencies.

Clean (city) water headers are located directly above the venturi to provide sensible cooling to the exhaust gases. Caustic sodium carbonate (soda ash) solution is recycled through the unit at approximately 200 gpm. The scrubbing fluid is introduced through tangentially positioned nozzles located directly above the MMV module. Scrubbing solution is also injected into the transition segment located between the venturi MMV and Ducon Units.

Excess water drains from the venturi exit elbow to the 1000 gallon recycle tank. The pH of the solution in the recycle tank is automatically maintained to 8.0 or greater by the introduction of a 5-10% sodium carbonate solution. Blowdown is taken from the recycle pump discharge to maintain a constant solids concentration in the solution. Blowdown is maintained in excess of 4.4 gpm, depending on the quantity of fuel burned as well as the chloride and sulfur content of the fuel.

Following the BECO Venturi unit is a BECO MMV mist eliminator installed in the bottom of the Ducon mist eliminator shell. This unit, manufactured of PVC, is designed to capture entrained droplets of caustic solution exiting the BECO venturi scrubber and is rated for a differential pressure drop of 1.5 to 4 inches of water. This mist eliminator drains into the recycle tank.

A further modification of the Ducon unit consists of the insertion of a Mist Master plastic mesh-type mist eliminator at the top of the unit immediately preceding the exhaust stack. This unit has a rated capacity of 48,000 ACFM at 140°F with minimal pressure drop. The Ducon unit functions as an entrainment separator for the venturi scrubber. The final APCS exhaust passes to the atmosphere at approximately 42,000 ACFM at 140^0F and 10% moisture (v/v).

Process Monitors

Process monitors consist of sensors for temperature, pressure, scrubber and blow down flow, pH, and gas composition that allow for proper system control and documentation to meet compliance requirements.

Process Performance

The performance of the APCS depends on a number of kiln design and operating parameters, on the compatibility of the APCS to the process and the pollutants to be controlled, and on the specific requirements demanded by the process and applicable air pollution control regulations. The process variables that must be considered in evaluating the operation of the facility APCS include:

1. Gas flow
2. Inlet and outlet gas temperature
3. Liquid flow (in the wet system)
4. Pressure drop across the APCS components
5. Physical and chemical properties of the gas
6. Particulate concentration
7. Particulate size distribution
8. Physical and chemical properties of particulate, and
9. Emission levels of regulated pollutants.
10. Shale mass feed rate and size distribution

These performance parameters have been measured and evaluated by previous trial burn tests overseen by DEC officials and incorporated into an operating permit as regulatory limits.

The APCS will be inspected on a regular basis to verify acceptable operational status. The list below shows the inspection and maintenance schedule for the APCS equipment. Compliance and operational inspections are more frequent than those recommended by the manufacturers of the equipment. These inspections are designed to detect and prevent equipment problems before performance is affected or components fail.

Inspection and Maintenance Frequency

Equipment Parameters	Calibration	Inspection	Alarms	WFCO
Backend Temperature	Monthly	Daily	Weekly	Weekly
Baghouse Inlet Temperature	Monthly	Daily	Weekly	Weekly
Carbon Monoxide	Daily	Daily	Weekly	Weekly
Oxygen	Daily	Daily		
ID Fan Current	Quarterly	Daily	Weekly	Weekly
Kiln Hood Pressure	Monthly	Daily	Weekly	Weekly
Baghouse Pressure Drop	Quarterly	Daily	Weekly	Weekly
Scrubber Water Recycle Rate	Monthly	Daily	Weekly	Weekly
Venturi Pressure Drop	Quarterly	Daily		
Recycle Tank pH	Daily	Daily		
Lime Feed Rate	Quarterly	Daily	Weekly	Weekly
Scrubber Water Blowdown Rate	Quarterly	Daily		
ID Fan Damper Setting	Quarterly	Daily		
Ducon Scrubber Pressure Drop	Quarterly	Daily		

Methods for Detection and Correction of Baghouse Leaks

Two parameters are used to ascertain if the baghouse bags or seals are leaking. A third is under development.

I. The Ducon Scrubber mist eliminator pressure drop normally runs between 1.5 and 2.5 inches of water. If a bag or seal begins to leak, the combination of particulate, lime, and soda ash builds up on the scrubber MMV quadrants and the pressure drop will begin to climb. The maximum recommended pressure drop on the quadrants for good removal efficiency and structural integrity is approximately 4 to 5 inches of water. Once a bag or seal begins to leak the increase usually occurs over a period of 24 hours.

The Ducon pressure drop will be checked and at least once per shift. If the pressure drop reaches 5 inches of water the baghouse will be checked and leaking bags and/or seals replaced. The scrubber will be checked and cleaned as needed.

II. A second indicator of a baghouse bag or seal leak is the turbidity and size of solids in the scrubber blowdown water. When the baghouse is functioning normally the turbidity consists of a fine whitish to slightly brownish cloud that readily settles to the bottom of a sample jar. When a bag or seal leak begins to occur, the turbidity increases, the particles become more coarse, and the color becomes a darker brown. Specific measures on turbidity and color have not been developed, however, standard sample jars will be provided to operators to use as indicators. The scrubber blowdown water sample will be checked and sample taken for comparison at least once per day.

III. A third method under development is the use of a quantitative measuring device that will detect relative particulate removal of the baghouse. A static discharge device known as a Triboflo unit has been under evaluation. The concept of a higher particulate loading removing a static charge from a sensor at a greater rate is being tested. Results are presently limited and will need further evaluation before this type of measure can be validated.

Baghouse bag and/or seal replacement:

Once the Ducon scrubber pressure drop increases to 4 inches of water or the scrubber blowdown water reaches the turbidity standard, the baghouse, or individual chamber (if it can be isolated as the source), is taken out of service. When the top access to each chamber is opened, leaking bags and/or seals are readily detected by observing a deposited dust trail on top of the bag support platform. The trail(s) emanates from and points to the leaking bag(s). The leaking bag(s) are removed and replaced.

In the future improvements will be sought in the bag and seal materials of construction. The goal will be to effect improvements in the static discharge device (Triboflo) or replace it with another technology. Another potential technology consists of opacity measurements in the baghouse exit duct using light transmissivity.

2.3.4 Air Pollution Control System

Preparation for and Performance of Routine Scrubber Maintenance ¾ Draining and Cleaning Scrubber Internals

Overview/Purpose:

Preparation of the scrubber for internal maintenance involves performance of several routine tasks which, if not accomplished properly, could result in injury or the improper handling and disposal of caustic scrubber liquids and solids. Performance of these tasks is hereby standardized via this operating procedure.

Equipment:

1. Personal protective equipment consisting of Tyvek coveralls, chemical resistant gloves and boots, respirator, hard hat and hearing protection;
2. Lockout devices and locks;
3. Water hose(s) and nozzle(s);
4. Shovel(s);
5. 5 gallon bucket(s);
6. Appropriate tools (to remove inspection/access doors); and
7. Steam cleaner.

Precaution:

Physical entry into any of the scrubber vessels constitutes a confined space entry which is controlled by Norlite Policy # F-3, Confined Space Entry Procedure. The provisions of Policy # F-3 shall supplement those contained herein.

Procedures:

1. Shutdown the kiln and Air Pollution Control Systems in accordance with established practices.

2. Tag out the following valves to prevent accidental introduction of liquids into the scrubber:
   - soda ash supply,
   - quench water supply,
   - emergency water makeup
   - mist pad spray bar water supply.
   - close and tag out LGF vent line on burner room floor.

3. Lockout the following equipment at the motor control center from which they receive power:
   - recirculation pumps, and
   - induced draft fan.

4. Drain the scrubber recirculation tank by running the blowdown pump until the tank is empty. When the tank is empty, shutdown the blowdown pump and lock it out at the motor control center.

5. Remove the inspection/access hatches from the recirculation tank, Ducon vessel (2), and venturi vessel.

   Precaution: When removing the inspection/access hatch from the recirculation tank, a small amount of water may still be in the tank.

6. Remove scrubber and transition headers and inspect for plugging and nozzle wear. Nozzles should be replaced as needed. Header hoses should be inspected for wear and plugging.

7. Remove and inspect quench water sprays (4), and rotometers (4). Replace nozzles and pipe nipples as needed.

8. Multiple Miniature Venturi (MMV) inspection:

   a. Verify that there is no plugging of the vertical tubes of the MMV. If plugging is present, remove build up and rinse with the steam cleaner.

   b. Inspect the fiberglass hold down bolts and MMV support ring. Repair/replace as necessary.

9. Mist Pad Inspection:

   a. Inspect the mist pad for excessive solids build up. Remove build up and rinse with steam cleaner as needed.

   b. Inspect spray bar and spray bar nozzle condition. Replace spray bar nozzles as needed.

   c. Inspect mist pad for gaps. Secure mist pad, as needed, using appropriate fasteners.

10. Recirculation Tank Inspection:

   a. Wash sediment from the inside of the tank to the scrubber secondary containment. Exercise caution to ensure that all water and sediment is captured within the containment.

   b. Inspect inlet, outlet, and level probe ports for plugging.

Precaution: The contents of the sump in this containment must be pumped to the WWT Plant influent tank (T-1) for treatment, using the containment sump pump. Solids and sediment which cannot be pumped must be manually removed by shoveling into 5 gallon buckets. The contents of these buckets must be dumped into the WWT Plant clarifier (T-2 or T-4) for treatment.

11. Reinstall headers and replace inspection ports.

12. Remove all lock outs and tag outs.

13. Fill recirculation tank with water and run recirculation pumps. Inspect for leaks and verify that there is adequate recirculation water flow.

14. Perform a final inspection of the area to ensure that all debris and waste materials are removed and disposed properly, and all standing water has been swept into the sump and the sump emptied in accordance with the precaution identified in Step 10.

APPENDIX G

NORLITE CONTINGENCY PLAN

Norlite Corporation

(518) 235-0401

628 South Saratoga Street

Cohoes, New York 12047

SECTION G

NORLITE'S CONTINGENCY PLAN

EMERGENCY

RESPONSE

NOTIFICATION

June 16, 2003

Norlite's Contingency Plan
Table of Contents

I. Introduction:

The information contained herein is submitted in accordance with the requirements of 6NYCRR, Subpart §373-1.5(a)(2)(vii) and Subpart §373-2.4 and constitutes the Norlite Contingency Plan. The intent of this plan is to have established procedures in place to prevent hazards to human health or the environment from fires, explosions or any unplanned sudden or non sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the Norlite Facility.

Every effort is made to properly handle wastes and minimize emergency situations. This is accomplished by use of state-of-the art equipment, maintenance, procedures and controls, containment measures, employee training and supervision, and routine inspections. In the event of an occurrence, procedures are in place to minimize and control such hazards, and meet the requirements of 6NYCRR Subpart §373-2.4.

The provisions of this plan will be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

A description of the wastes and exact processes is contained in Norlite's Part 373 Renewal Permit Application, Section C. A copy of the Contingency Plan is maintained in the main office of Norlite's facility.

II Coordination Agreements and Copies of Contingency Plan [6NYCRR, Subpart §373-2.4(c)(3),(d)(2) & Subpart §373-2.3(g)]

Norlite has made arrangements with the Cohoes Fire Department and West Central Environmental for response in case of an emergency. The Cohoes Fire Department, through their disaster preparedness agreements, mutual aid agreements and civil defense responsibilities, will coordinate emergency services as required in case of an incident. Their coordination of emergency services will include police, ambulance service, hospitals and mutual aide fire department participation as circumstances warrant.

With respect to the coordination agreements and arrangements with the City of Cohoes Fire Department, Norlite has agreed to provide a mechanism during each year of this permit to enable hazardous materials training for members of the Cohoes Fire Department. The

Cohoes Fire Department Chief and members of his staff have visited the facility on several occasions to review emergency procedures and physical layout. Norlite will acquire and maintain an inventory of 3% AFFF (aqueous film forming foam) agent and three (3) foam eductors to enable the Cohoes Fire Department to apply the foam in the event of a fire. To assist in a response to an emergency at the facility, Norlite will maintain a separate access route from the Northwest. To further aid the Cohoes Fire Department, Norlite will ensure that all fire hydrants are readily accessible and capable of supporting all required fire apparatus.

West Central Environmental is available 24 hours a day, seven days a week for any emergency calls. Norlite will maintain emergency response supplies equal to our own level of response, or in agreement with West Central. Specialized equipment will be supplied by West Central.

Copies of the following documents of Norlite's Part 373 Permit Application; Section B (facility descriptions) and Section C (waste characterizations), have been provided to the Mayor of the City of Cohoes and to the Fire Chief for distribution to the appropriate local authorities. In addition, copies are maintained at the facility in the main office, and in the possession of the emergency response agency.

III. Response Personnel [C.F.R. Subpart §1910.120, 6NYCRR, Subpart §373-2.4 (C) (4) & Subpart §373-2.4(f)]

At all times, there will be at least one employee either on the facility premises or on call (i.e. available to respond to an emergency by reaching the facility within a short period of time) with overall responsibility for incident command and emergency response measures.

Response to any emergency situation will follow the structure of Incident Command-Hazardous Sector Operations, under the regulations of 30CFR Subpart §1910.120.

A. Levels of Command, Response and Structure

1. Incident Commander - has total responsibility for all activities conducted during an emergency response event. His top priorities are the health and safety of: 1-employees, 2-public, 3-environment. Specific responsibilities include:

   a. Identification of materials and conditions

   b. Implement appropriate actions

   c. Assure a safety officer is appointed and all areas are evaluated, safe,

and appropriate PPE is determined

d. Assure a Team Leader is assigned to direct activities

e. Assure a Risk Assessment Officer is assigned to determine hazards.

f. Assure an Equipment Officer is assigned to coordinate equipment use and decontamination

g. Limit the number of personnel at the site

h. Establish and maintain site control

I. Termination activities are appropriate

j. Acts as a liaison between outside agencies and internal activities

k. Usually remains in the "cold zone" or command post

2. Health & Safety Officer - responsible for the health and safety of response personnel and coordinating care of victims in an emergency response event. Specific responsibilities include:

a. Knowledge of the conditions, materials, and hazards

b. Determines and monitors emergency conditions, and can halt operations if unsafe or imminent danger

c. Performs last check of any entry PPE

d. Identifies and monitors signs and symptoms of contamination, exposures, heat stress

e. Coordinates medical response

f. Is found at the access control point and is in constant sight of entry operations

3. Team Leader - responsible for coordination of all operations at the emergency response site and provides exclusive direction for response measures. Specific responsibilities include:

a. Assures all eight steps of hazardous materials mitigation's are met and maintained in conjunction with other officers.

1. Site management
2. Identification of materials involved
3. Hazard and risk assessment
4. Select protective clothing and equipment
5. Resource and information
6. Control hazardous material releases
7. Decontamination activities
8. Termination activities

b. Develops answers to IC's problems

c. Provides direct supervision for all activities in the hazard sector, working in the "hot zone"

4. Risk Assessment Officer - responsible for determining risk assessment by assembling data about materials involved to determine hazards. Specifics include:

a. Determine chemical, physical and health hazards of materials.

b. Determine PPE, equipment and materials necessary

c. Determine evacuation distances and necessity

d. Reports information to other officers as appropriate.

e. Monitors for additional hazards, weather conditions, wind directions, runoff, evaluates control procedures and risk of contamination spread.

f. Works within the "warm zone", assisting the safety officer, Team Leader and Incident commander. Does not enter the "hot zone".

5. Equipment Officer - responsible for coordinating all supplies and equipment necessary for response, decontamination and monitors activities at the access control point to ensure proper decontamination of all that leave this zone. Specifics include:

a. Maintains tools and equipment

b. Identifies and segregates used /

contaminated equipment

c. Determines DECON equipment and methods

d. Maintains "clean" and "dirty" sides

e. Monitors DECON of response personnel and equipment

f. Oversees decontamination of equipment before restoring to use, and ensuring appropriate supplies are replenished

g. Works with Risk Assessment Officer and Safety Officer in the "warm" zone.

6. Emergency Coordinator - responsible for initial assessment of emergency conditions. He will make the determination for initial response, and the determination for additional measures. Specific responsibilities include:

a. Determining type and magnitude of the situation

b. Securing area

c. Directing initial containment measures

d. Reporting to Incident Commander

e. Determining if additional steps must be taken

f. Works with Team Leader in controlling hazard.

7. HAZMAT Technician - trained to aggressively approach the point of a release in order to patch

plug or otherwise stop the release of hazardous substances. Employees, spread through all shifts, are trained in this capacity.

8. 1st Responder Technician - trained to defensively contain releases and prevent spreading. Employees, spread through all shifts, are trained in this capacity.

9. 1st Responder - trained to properly identify and report of emergency or potentially emergency situations. All plant employees are trained at the 1st Responder Awareness level.

B Personnel

The personnel designated to fulfill positions as Incident Commander, Health & Safety Officer, Equipment Officer, Team Leader, and Risk Assessment Officer, have been trained and can fulfill more than one officer capacity if the situation warrants, to effectively manage emergency response operations. These positions may be combined if the situation warrants. The Incident Commander's name and address along with alternative Incident Commander's and other officer's are found in Attachment 1.

If an Incident Commander is not on-site, the Kiln Supervisor will take charge as the Emergency Coordinator until relieved by the Incident Commander. There are four kiln supervisors, providing coverage 24 hours a day, seven days a week.

C. Training

These individuals are thoroughly familiar with all aspects of Norlite's Contingency Plan, the plant's operations and hazardous waste handling activity. In addition, they have the authority and training to commit resources needed to carry out the plan.

If the situation requires additional assistance of off-site spill response personnel, these personnel are trained at the forty hour HAZMAT response level, and are capable to handle the materials present at our facility. They have visited the facility to review emergency procedures and physical layout.

In plant response to fires is limited to our systems capabilities and the use of portable fire extinguishers. There is no fire brigade. Fires that cannot be handled by portable or fixed extinguishers will result in the immediate contact of the Cohoes fire department.

Inforamtion regarding training requirements can be found in Section H, Training Requirements.

IV Implementation of the Contingency Plan [6NYCRR, Subpart §373-2.4(b)(2)]

The decision to implement the Contingency Plan depends on whether or not an imminent, or actual incident threatens human health or the environment. This section offers the Incident Commander guidelines for decisions regarding implementation.

The Contingency Plan **will** be implemented in the following situations:

1. Spill or Material Release
   (a) The spill could result in release of significant quantities of flammable liquids or vapors.
   (b) The spill or release of significant quantities of hazardous liquids or toxic fumes which could threaten human health or the environment.
   (c) The spill contained on-site, but potential exists for ground water contamination.
   (d) The spill cannot be contained on-site, resulting in an off-site soil contamination and/or ground or surface water contamination.

2. Fire and/or Explosions

(a) A fire which could threaten health or the environment.

(b) Contamination could result from the use of the water, or water and chemical fire suppressants.

(C) An imminent danger exists such that an explosion could occur.

(d) An explosion has occurred.

3. Floods, storms or Natural Disasters - If flooding, wind, electrical discharge or other damage occurs due to natural causes which causes an event listed above.

Situations may arise that may not initially fall into the criteria for contingency plan implementation, but could develop into these categories. Therefore, emergency response procedures will be followed, and Contingency Plan implementation will be integrated into our emergency response procedures. Any of the above criteria will result in contacting the Incident Commander and following all procedures.

Steps taken to implement Emergency Response Procedures and the Contingency Plan are outlined in Attachment 2.

V **Spill/discharge or Material Release Response Procedures [6NYCRR, Subpart §373-2.4(c)(1) and Subpart §373-2.4(g) and Subpart §373-2.10(d)(3)]**

A. Spill Prevention

1. Spill prevention is the ultimate goal of the facility. All activities are performed to minimize the potential for spills of any hazardous materials onto the ground or into waterways. Releases should, by plant design, be contained within secondary containment areas.

2. Other spill prevention measures are accomplished by:

a. Established traffic patterns and traffic control, both on and off site

b. Primary, secondary and tertiary containment within our fuel systems,

c. Specific procedures for handling hazardous and LGF materials

d. training for all employees handling hazardous materials

Specifics can be found in sections C and D of our Part 373 Permit and in Norlite's Safety Manual.

B. Release Detection and Response

While preventing a spill or discharge is essential to the protection of human health and the environment, spill and discharge control is the necessary

and logical response expected in the event of a release whether on land, in water, or in the air.

1. Release Detection

   a. Our primary release detection is visual inspections on a scheduled basis. This includes per shift, daily and weekly visual observations with remediation as necessary.

   b. An additional release detection system involves the "tell-tale" pipes from the secondary containment system for the outside tanks.

   c. Alarms within the Low Grade Fuel system consist of oxygen sensors and LEL sensors. These monitor air quality emissions within the fuel system.

2. Release response

   a. For any release of LGF or other hazardous materials, the Emergency Coordinator and/or the Incident Commander will be notified. Specific steps, outlined in Attachment #2, will be followed.

   b. Any alarms (fire suppression system, air monitoring, etc.) within the LGF system requires immediate evacuation of all personnel in the area of the alarm.

   c. Release to the air involves a highly specialized area of expertise which is considered to be outside the realm of in-

plant response personnel. In cases where major air releases or carbon releases have occurred which could impact on human health and/or the environment, require immediate response for evacuation and assistance from outside personnel.

d. Small releases (less than 55 gallons) will be handled by the appropriate area personnel under the direction of their supervisor or Emergency Coordinator.

e. Large releases (greater than 55 gallons) will be reported to the Incident Commander by the Emergency Coordinator.

The Emergency Coordinator or Incident Commander, according to availability, will immediately contacted to assess the situation and determine appropriate response procedures to be implemented, up to and including implementing the Contingency Plan.

C. Emergency Response Determination

The Emergency Coordinator and/or the Incident Commander will follow the appropriate steps outlined in Attachment 2, to determine the nature of the situation, and evaluate for all or potential hazards that could threaten the health and safety of employees, surrounding community or the environment. At the first available time

after the Emergency Coordinator has put in motion emergency actions to provide for employee and public safety, and to stop and contain the spill, telephone notices shall be made as may be applicable by the Incident Commander or another responsible person as directed by the Incident Commander. The quantity of material spilled / discharged, where spilled/discharged, and the material discharged, dictates the reporting requirements.

D. Agency Notifications

The following list provides relative information on reporting agencies.

AGENCY	PHONE
City of Cohoes Fire Department (For potential for fire, explosion or if situation may impact areas outside of the facility.)	(518) 237-2211
West Central Environmental (For spill control and assistance.)	(518) 272-6891
New York State 24 Hour Oil and Hazardous Material Spill Hotline	(518) 457-7362
Albany County Health Department (For petroleum releases that could contaminate drinking water supply)	445-7835
National Response Center (24 hours)	(800) 424-8802
	(202) 426-2675
or US Coast Guard	472-6110
	(212) 264-4860
(Immediate notification as soon as there is knowledge of an oil release that violates water quality standard or causes a sheen on navigable waters.)	
D&H Railroad Operations Control Center (If situation involves or interferes with railroad activity.)	271-4414
US EPA Region II	(201) 548-8730

The Emergency Coordinator will use the memo of Emergency Call, Attachment 3, to document all calls.

E. LGF/Discharge Control/Clean-up Procedures

1. The Incident Commander, with the assistance of the Team Leader and Emergency Coordinator must determine if the release can be handled by the company's capabilities or if appropriate external resources must be contacted.

2. Releases that do not extend outside the facility property or pose a significant health and safety risk will be handled by site employees. The following are considered typically to be within this category: Leaks from containers in the storage area; spills during container transfer or loading; spills during tank truck unloading; spills or leakage from piping systems; and/or spills and leakage from pump seals, valves or other equipment. In these cases the Incident Commander will follow procedures in Attachment #2, and will respond appropriately using trained personnel and spill response equipment under the direction of the appropriate Officers or approved procedures.

F. External Control/Cleanup Resources

In the event of a release to the air, soil or water, which could impact on human health and/or the

environment outside of the facility, external resources will be immediately contacted for assistance. Entry for fire fighting, spill control personnel, rescue, or other response activities is prohibited unless specifically authorized by the Incident Commander or Team Leader, and approved by the Safety Officer.

G. Petroleum Releases

1. Upon notification of a release detection of petroleum products, the Emergency Coordinator's response is the same as for other releases and will follow procedures in Attachment #2.

2. Reporting

(a) Petroleum releases must be reported to the DEC within 24 hours of discovery unless they meet all of the following criteria:

(1) The release is known to be less than 5 gallons

(2) The release is contained and under control.

(3) The release has not reached the state's water or any land.

(4) The release is cleaned up within 2 hours of discovery.

(b) File appropriate reports.

(c) For Petroleum releases which are not reportable, they will be handled appropriate under the Emergency Coordinator.

H. Chemical Releases

Upon notification of a release of hazardous chemicals, the Emergency Coordinator's response is the same for other releases and will follow procedures in Attachment #2.

VI Fire/Explosion Procedures [6NYCRR, Subpart §373-2.4(c)(1) and Subpart §373-2.4(g) and Subpart §373-2.10(d)(3)]

A. Controlling fires and/or explosions

Controlling fires is first prevented by minimizing exposures of fuels to oxygen and ignition sources. This is accomplished by proper handling and procedures, good housekeeping, nitrogen blanketing of all fuel tanks and lines, and strict procedures for controlling ignition sources in any areas where fuel is present.

B. Fire/Explosion Detection

1. Oxygen, LEL, heat and infra-red monitors are located throughout the entire fuel system to detect and alert employees to a potential problem in these work areas. The Safety Manager, Emergency Coordinator, or Incident Commander, according to availability, will be immediately contacted to assess the situation and determine the appropriate response procedures to be implemented, up to and including the Contingency Plan.

2. Detection is also accomplished by routine inspections of all work areas.

3. Whenever a fire/explosion is detected the employee's supervisor will be notified and he/she will contact the Emergency Coordinator or the Incident Commander. Appropriate measures will be followed on Attachment #2.

C. Fire/Explosion Control Procedures

1. Upon the discovery of a small, manageable fire, employees are instructed and trained in the use of hand held portable fire extinguishers. These will be used providing the employee is in

a safe position to do so.

2. Our entire fuel system is protected by an automatic AFFF fire suppression system with manual activation, which is designed to handle fires in these areas. It is also designed for the fire department to hook up to, as necessary, if additional fire protection is needed.

3. When a fire could endanger personnel and/or property in a given process area, or throughout the surrounding operations, the local fire department will be contacted for controlling the fire.

VII Emergency Equipment [6NYCRR, Subpart §373-2-4(c)(5)]

Norlite's emergency equipment, its location and a description of its use is described on Attachment 4.

VIII Evacuation Plan [6NYCRR, Subpart §373-2.4(c)(6)]

The Emergency Coordinator will, as circumstances may require, evacuate personnel from the specific plant areas. The Emergency Coordinator will account for all area personnel evacuated.

The following chart generally show the personnel location and the number of personnel typically at each location:

Quarry	3-6
Primary	3
Burner Room (each)	1
Kiln area	4
LGF area	2
Main Office area	20
Security gate	1
I & E	5
Safety	1
Garage	5
Finish Plant	3

At any given moment, however, the actual personnel location may vary from the locations shown on the chart. These numbers reflect weekday operations and designate assigned work areas.

In the event of an uncontrolled release, fire or explosion, the Incident Commander will call for a total evacuation of the facility. Total Plant evacuation is initiated only by the Incident Commander.

The facility has a warning system with a specific alarm signal consisting of a loud horn to initiate evacuation of all plant areas. The evacuation signal will be a continuous three(3) minute blast. In addition

to the alarm, the internal telephone system and hand held portable radios will be used to notify plant personnel as to the emergency's nature and recommended action plan.

Upon signal for a site evacuation, all employees have been instructed as to necessary equipment shut down and will follow those procedures, providing it is safe to do so. All individuals on site will proceed to one of the two security gates, traveling in a cross wind direction. Employees working in the kiln area; which includes the kiln control room, the EQ Tank (101A, 101B, 102A, 102B) area, and half of the LGF tunnel closest to the kiln, will either travel east along the main plant road to Gate #2 or south along the plant road to Gate #1 depending on the wind direction. Employees working at the Fuel farm; which includes the LGF storage building, drums processing building and half of the LGF tunnel closest to the fuel farm, will likewise travel east along the main plant road to Gate #2 or south along the plant road to Gate #1 depending on the wind direction. All visitors will stay under the direction of their escorts. Each of the security gates is at opposite sides of the facility, allowing for distinct evacuation sites.

All individuals on the property are accounted for by either: automated card access, security officer's log, or sign in book. Therefore, all individuals will be accounted for. Vehicles are not permitted at the security gates during a site evacuation to minimize congestion.

IX Post Emergency Clean-up / Restoration [6NYCRR, Subpart §373-2.4(g)(7) and (8)]

A. Storage and Treatment of Released Material

Immediately after an emergency, the Incident Commander will make arrangements for proper treatment, storage and/or disposal of all water and contaminated materials according to New York State and Federal Regulations. Temporary storage of collected material will be in drums or other suitable containers, stored in the LGF storage area. Larger quantities of materials contained and collected by the emergency response contractor would be stored in tank trucks and/or run-off box containers pending completion of disposal arrangements in accordance with New York State and federal regulations. Attempts will be made to treat these materials on-site within the normal process parameters of the waste treatment operations, i.e., released material that has been contained and collected will be incinerated and used for energy recovery purposes if said material is in accordance with Norlite's permit limits. This will be under the coordination of the Risk Assessment Officer and the Lab Manager.

B. Incompatible Wastes [6NYCRR, Subpart §373-2.4(g)(8)(I)]

The Risk Assessment Officer and Lab Manager will insure that incompatible wastes are maintained separately.

X Required Reports [6NYCRR, Subpart §373-2.4 (g) (10)]

A. A thorough investigation must be made into the causes of the emergency and steps taken to prevent a re-occurrence. Operations will not be resumed until the situation has progressed to a point where no hazardous situation is imminent.

B. Prior to the resumption of operations, the Commissioner, and appropriate state and local authorities must be notified that the Facility is in compliance with the following:

1. No waste, that may be incompatible with the released material, is treated, stored, or disposed of until cleanup procedures are complete.
2. All emergency equipment listed in the

Contingency Plan is cleaned and ready for its intended use before operations are resumed.

3. As required by section 373-2.4(g)(10), any emergency event (e.g., fire, explosion, etc.) that required implementing the Contingency plan will be reported in writing within 15 days to the Commissioner, New York State Department of Environmental Conservation. Any releases of reportable quantities will also be appropriately reported. A copy of the reporting form for emergency events is shown in Attachment 6.

XI Amendments to the Contingency Plan [6NYCRR, Subpart § 373-2.4(e)]

The Contingency Plan will be revised and immediately amended, if necessary, whenever:

1. The facility permit is revised.
2. The plan fails in an emergency.
3. The facility changes in its design, construction operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes in the response necessary in an emergency.

4. The list of emergency coordinators changes.

5. The list of emergency equipment materials changes.

EMERGENCY RESPONSE CONTACT LIST

To Be Called In This Order-refer to Confidential Contact List for private numbers

Primary Incident Commander:
Plant Manager: Timothy Lachell*,**
Office: 235-0401 **Plant Ext.:** 4037

Alternate:
Health and Safety Manager: Brain Decatur*
Office: 235-0401 **Plant Ext.:** 4005

Alternate:
Fuel Farm Manager: Jeff Nusbaum*
Office: 235-0401 **Plant ext.:** 4028

*Have been trained as Incident Commanders and may fulfill such position.
** Must be contacted at first available time after the Contingency Plan is implemented.

Initial Emergency Coordinators ***

Kiln Supervisors: 235-0401, ext. 4022 or 4025

Cell phone: 857-5737

Stanley Ashline, Tim Passer, Brian Roberts, Armond Despres

***Only on their appointed shift.

Outside Emergency Responders

City of Cohoes Fire Dept.	**237-2211**
West Central Environmental	**272-6891**

EMERGENCY RESPONSE CONTACT LIST

To be posted near every phone

INCIDENT COORDINATOR	NEXTEL	HOME	PLANT
Tim Lachell (Plant Manager) (Primary) 31 Cooks Court, Waterford, NY 12188	857-9164	373-9569	x.4037
Brian Decatur (Safety Manager) (Alternate) 1251 Babcock Lake Rd, Hoosick Falls, NY12090	376-0913	686-9824	x.4005
Jeff Nusbaum (Fuel Farm Manager) (Alternate) 253 Casey Road, Schaghticoke, NY 12154	365-5478		x.4028
Security Gate (Elm Street)	-	-	x.4084
PLANT MANAGERS	**NEXTEL**	**HOME**	**PLANT**
Prince Knight (Lab Manager)	857-2969	478-9190	x.4049
Dave Carabetta (President)	(203) 537-3223	(203) 271-2707	x.4014
Bill Morris (Compliance Manager)	(203) 537-2322	(860) 349-1497	-
Kiln Supervisors	857-5737		x.4073
Ken O'Brien Jr. (Aggregate Production Mgr)	376-8634	395-3344	x.4021

FOR PLANT EMERGENCIES - FIRE - POLICE - EMS DIAL 911

LOCAL FIRES	PHONE NUMBER
Cohoes	237-2211
Colonie*	783-2744
LOCAL POLICE	**PHONE NUMBER**
Cohoes	237-5333
Colonie*	783-2744
SPILL RESPONSE	**PHONE NUMBER**
West Central Environmental	272-6891
CHEMTREC	(800) 424-9300
NYSDEC Spill Hotline	457-7362
LOCAL EMERGENCY PLANNING COMMITTEE	765-2351
EPA NATIONAL RESPONSE CENTER	(800) 424-8802
DOCTORS	**PHONE NUMBER**
Access Health 776A Watervliet Shaker Road Latham, NY 12110	782-2200 FAX 786-1875
St. Mary's Hospital	(518) 268-5697
MISCELLANEOUS	**PHONE NUMBER**
SRI Fire Sprinkler Corp.	459-2776
MSHA	489-0573
Niagara Mohawk Power	356-6471

*West of the power lines

12/13/05

Attachment 2

STEPS TAKEN TO IMPLEMENT EMERGENCY RESPONSE PROCEDURES AND CONTINGENCY PLAN

SPILL PROCEDURES

The following steps shall be taken if a situation arises relating to spills, or hazardous materials release. INITIAL RESPONSE GOALS ARE TO PROTECT HUMAN HEALTH, SAFETY AND THE ENVIRONMENT!

Discovery of event by an individual

-Note location of the event and the problem.

-Cease work in affected areas and shut down equipment.

-Secure area, prevent unauthorized personnel from entry.

-Notify Emergency Coordinator.

Step 1: Site Management

-Manage the physical layout of the incident.

-Approach releases from an uphill, upwind side.

-Ensure area is isolated and deny entry via barriers, tape, employee guarding.

-Monitor for breached containers, vapor clouds, unusual odors, or released spills.

-Determine if possible, if anyone is injured.

Step 2: Identification of hazardous Materials

-Determine if possible, without entering area or contacting material, what materials are involved and approximate amount.

-If entry into area is required to identify material, than this will only be done under the direction of the full incident command and emergency response team. No further action can be done at this time except to maintain site control and contact the Incident Commander.

-If a determination can be made as to the material and amount, or if the material is known, the Emergency Coordinator can make the determination for response actions or to contact the Incident Commander.

-For small spills (less than 55 gallons) with known materials, emergency response will be handled under the direction of the Emergency Coordinator. For large spills, or unknown

materials, emergency response will be under the direction of the Incident Commander.

-Identification of unknown materials will be done with level A protection, under the buddy system, with back up response personnel in place. If at this time, and identification can be made, than appropriate procedures will be followed. If identification cannot be made, than outside resources will be contacted to handle the response.

STEP 3: Hazard and Risk Assessment

-After specific identification of a material, hazards and risks must be determined. Labels, containers, shipping papers, Manifests, MSDS, or HAZMAT response guides shall be utilized. This is necessary for determining potential risk from additional spills, fires or explosions, and a safety assessment for responders, employees, community and environment, determining PPE and response equipment.

-Assess possible hazards, both direct and indirect, to human health and environment and determine control methods. These include:

- fire,
- explosion
- toxicity
- wind & direction
- other hazardous materials
- ignition sources

-Determine if incident can be handled by company's capabilities or if external resources are necessary.

-Assess the need for implementing the evacuation plan.

-potential for off-site involvement,

-actual or potential threat to human health and/or extent of injuries sustained.

-Establish "hot", "warm", and "cold" zones.

-These items to be accomplished by the Risk Assessment Officer.

-Notify appropriate emergency service groups if threat of public health or the environment outside the facility.

Step 4: Select PPE and Equipment

-PPE and equipment selection will be based on the material and hazards. If not already determined, this will be done by Equipment Officer.

Step 5: Information and Resource Coordination

-A command post shall be established, close enough to view the site, far enough to prevent contamination and be upwind.

-The command post shall be well marked.

-Representatives from other agencies should be available if needed at the command post.

-Identification of key officers is established at this time if not already done so, via vests or other identification measures.

-Checklists shall be handed out at this time (if not already done so) for each officer and their roles.

Step 6: Control and Containment

-Remove all hazards present, including flammable materials, if safe to do so.

-Spill control will be initiated before leak control measures are implemented.

-Controlling vapors and gasses is limited to shutting off the supply if safe to do so. Additional outside resources will be contacted for assistance.

-Liquids are controlled by diverting, diking, or retaining and absorption or contain or direct to sumps.

-Leak control measures will be taken after spill control has been completed. This is controlling the leak at the source or container. This can be accomplished by:

-Emptying or transferring material

-Diverting flow

-Patching or plugging

Step 7: DECONTAMINATION

-This process makes people, equipment and supplies safe by eliminating harmful substances. This is done under the direction of the Equipment Officer.

-Processes utilized will be either dilution, absorption, or neutralization, or a combination of.

-All affected response personnel, equipment and facilities will be deconned prior to entering the "cold zone".

-Arrange for proper disposal of all contaminated materials, including insuring that incompatible wastes are not mixed with released materials.

Step 8: Termination

-Ensure situation is under control.

-All utilized safety equipment must be inspected to be sure it is cleaned and in a ready state.

-Investigation and documentation of the incident.

-Ensure health monitoring of response personnel if appropriate.

-Notification to proper authorities that activities have been completed.

-Determine when an "all-clear" can be given to resume normal activities.

-File report within 15 days of the emergency action.

The following steps shall be taken if a situation arises relating to fires and/or explosions. RESPONSE GOALS ARE ALWAYS TO PROTECT HUMAN HEALTH, SAFETY, AND THE ENVIRONMENT!

FIRE OR EXPLOSION

Discovery of fire by the individual

-Cease work in affected areas and shut down equipment.

-If safely able to do so, use a portable fire extinguisher to attempt to extinguish fire or manually activate fire suppression system if not already in operation.

-Secure area, prevent unauthorized personnel from entry

-If one extinguisher does not extinguish fire, or the employee is unable to safely use a fire extinguisher, than the employee must immediately contact his supervisor, and notify the emergency coordinator.

Step 1: Site Management

-Manage the physical layout of the fire.

-Approach from an uphill, upwind side.

-Ensure area is isolated and deny entry via barriers, tape, employee guarding.

-Determine approximate size and location of fire.

-Determine, if possible, if anyone is injured.

-If applicable, shut down the supply of gas/oil and/or low grade fuel (LGF).

-If applicable, any tank unloading operations will be stopped and all trucks within the affected area moved to a safe unaffected area, providing it is safe to do so.

Step 2: Identification of materials involved

-Determine if possible, **without entering area,**

what materials are involved and approximate amount.

-Entry into a fire area will only be done by the fire department.

Step 3: Hazard and Risk Assessment

-After specific identification of materials, hazards and risks must be determined. Labels, containers, shipping papers, manifests, MSDS or HAZMAT response guides shall be utilized. This is necessary for determining the risk for potential additional spills, fires/explosions and safety assessment for responders, employees, community and environment.

-Determine if other hazardous/flammable materials are in the area.

-Establish "hot" "warm" and "cold" zones.

-Assess the need for implementing the evacuation plan

-Notify fire department and other appropriate emergency service groups if necessary. Based on materials involved, additional HAZMAT resources may be needed.

Step 4: Select PPE and Equipment

-Since fire fighting is a specialized activity, Norlite employees will not participate in actual fire fighting procedures. They may, however, need to respond for clean-up after the fire is fully extinguished, and the area is determined "safe" by the Fire Chief and the Safety Officer. PPE selection will be done under the Risk Assessment Officer.

Step 5: Information and Resource Coordination

-A command post shall be established, close enough to view the site, far enough and upwind for safety.

-The command post shall be well marked.

-Representatives from other agencies shall be available if needed at the command post.

-Identification of key officers is established at this time, if not already done so, via vests or other identification measures.

-Checklists shall be handed out at this time, if not already done so, for each officer and their roles.

Step 6: Control and Containment

-Control and containment of fires and/or explosions will be handled by the fire department, be completed, and determined "safe" by the Fire Chief and the Safety Officer prior to additional HAZMAT response personnel entering area.

-If off-site HAZMAT response personnel are involved, they will primarily handle spill control and containment measures. Norlite employees will assist as needed, or when activities are within their capabilities.

Step 7: Decontamination

-If activities are performed in a "hot zone" all response personnel will be decontaminated under the direction Equipment Officer.

-Processes utilized will be either dilution, absorption, or neutralization, or a combination of.

-Protect clean up personnel.

-Arrange for proper disposal of all contaminated materials, including insuring that incompatible wastes are not mixed with released materials.

Step 8: Termination

-Ensure situation is under control

-All utilized safety equipment is inspected, cleaned, and restored to a ready state.

-Investigation and documentation of the incident.

-Ensure health monitoring of response personnel, if appropriate.

-Determine when an "all-clear" can be given to resume normal activities.

-Notification to proper authorities that activities have been completed.

-File a report within 15 days of the emergency action.

EMERGENCY COORDINATOR CHECKLIST

Date:_____ Time:_____ Weather:_____

Reported by:_____

Emergency Coordinator:_____

Incident:_____

Location:_____

1. SITE MANAGEMENT

☐ WORK HAS CEASED AND EQUIPMENT SHUT DOWN

☐ AREA IS SECURED FROM UNAUTHORIZED PERSONNEL

☐ IDENTIFY ANY INJURED PERSONNEL - GET MEDICAL ASSISTANCE

☐ IDENTIFY ANY UNUSUAL ODORS, VAPOR OR SMOKE CLOUDS, OR RELEASED SPILLS

☐ IS THEIR AN ACTUAL FIRE? YES NO CALL FIRE DEPARTMENT

☐ ERT MEMBERS AVAILABLE:

1._____ 2._____

3._____ 4._____

5._____ 6._____

7._____ 8._____

2. IDENTIFICATION OF HAZARDS

☐ DETERMINE WHAT MATERIALS ARE INVOLVED AND APPROXIMATE AMOUNT WITHOUT ENTERING AREA

1._____

2._____

3._____

☐ IF ENTRY INTO AREA IS NECESSARY FOR IDENTIFICATION, NOTIFY INCIDENT COMMANDER, AND PREPARE FOR ERT-SCBA AND BACK UP NECESSARY. INCIDENT COMMANDER NOTIFIED:_____

☐ DETERMINE IF SMALL OR LARGE SPILL:_____

☐ IF SMALL SPILL OF KNOWN MATERIALS, GO TO STEP 3

☐ IF LARGE SPILL, UNKNOWN MATERIALS, OR FIRE, NOTIFY INCIDENT COMMANDER:_____, MAINTAIN SITE CONTROL AND DEFENSIVE MEASURES ONLY: PROCEED NO FURTHER UNTIL IC HAS BEEN CONTACTED

3. HAZARD AND RISK ASSESSMENT

☐ IF SMALL SPILL REVIEW MSDS AND MANIFEST

☐ OBTAIN AIR QUALITY READINGS IF NECESSARY

TIME:_____ O2:_____ LEL:_____ H2S:_____ CO:_____

☐ OBTAIN AIR SAMPLES OF CONSTITUENTS

CONSTITUENT:_____ QUANTITY:_____

CONSTITUENT:_____ QUANTITY:_____

☐ ASSESS OTHER HAZARDS PRESENT

- ☐ FIRE:_____
- ☐ TOXICITY:_____
- ☐ REACTIVITY:_____
- ☐ OTHER HAZMATS:_____

☐ SITUATION EVALUATED AND DETERMINED (CHECK IF APPLY):

- O SPILL COULD RELEASE SIGNIFICANT QUANTITIES OF FLAMMABLE VAPORS
- O RELEASE OF SIGNIFICANT QUANTITIES OF HAZARDOUS LIQUIDS OR VAPORS WHICH COULD THREATEN HUMAN HEALTH OR THE ENVIRONMENT
- O POTENTIAL FOR GROUND WATER CONTAMINATION
- O SPILL CANNOT BE CONTAINED ON SITE
- O A FIRE THAT COULD THREATEN HEALTH OR ENVIRONMENT
- O CONTAMINATION FROM USE OF FIRE EXTINGUISHING AGENTS
- O IMMINENT DANGER OF EXPLOSION
- O AN EXPLOSION HAS OCCURRED

☐ IF ANY OF THE ABOVE APPLY, NOTIFY IC, AND ACTIVATE THE CONTINGENCY PLAN

☐ REQUIRES NOTIFY IC, BUT DOES NOT MEET CRITERIA OF IMPLEMENTING CONTINGENCY PLAN

4. SELECT PPE AND EQUIPMENT

☐ SELECT PPE AND EQUIPMENT PER ESTABLISHED PROCEDURES

1._____ 2._____

3._____ 4._____

5. INFORMATION AND RESOURCE COORDINATION

☐ REVIEW INFORMATION WITH ANY OFFICERS ON CALL AS NECESSARY

_____

☐ REVIEW HAZARDS WITH ERT

6. CONTROL AND CONTAINMENT

☐ REVIEW PROCEDURES WITH ERT:

1. _____

2. _____

3. _____

☐ SPILL MEASURES IMPLEMENTED FIRST (ABSORBENTS, BOOMS)

☐ LEAK CONTROL AND REPAIR COMPLETED

☐ ALL CONTAINERS PROPERLY LABELED

7. DECONTAMINATION

☐ ALL MATERIALS PROPERLY DISPOSED OF

☐ ALL EQUIPMENT PROPERLY DECONTAMINATED

☐ ALL ERT MEMBERS PROPERLY DECONTAMINATED

8. TERMINATION

☐ ENSURE SITUATION IS UNDER CONTROL

☐ ALL UTILIZED SAFETY EQUIPMENT IS INSPECTED, CLEANED, AND/OR REPLACED PRIOR TO RESUMING OPERATIONS

☐ DETERMINE "ALL CLEAR" TO RESUME NORMAL ACTIVITIES

☐ NOTIFY PROPER OFFICERS AND INCIDENT COMMANDER OF SITUATION

☐ INVESTIGATION AND DOCUMENTATION OF INCIDENT

NOTES: _____

_____

INCIDENT COMMANDER CHECKLIST

Incident: _____ Location: _____

Date: _____ Time: _____

Weather: _____

Incident Commander: _____

Emergency Coordinator: _____

GENERAL

☐ REVIEWED SITUATION WITH EMERGENCY COORDINATOR

☐ FIRE ☐ WASTE SPILL ☐ CHEMICAL SPILL

☐ INCIDENT COMMANDER IDENTIFIED BY VEST

☐ COMMAND POST IDENTIFIED

☐ COMMAND POST IN SAFE LOCATION

☐ STAGING AREA ESTABLISHED

OFFICERS ASSIGNED

☐ SAFETY/HEALTH OFFICER _____

☐ RISK ASSESSMENT OFFICER _____

☐ TEAM LEADER _____

☐ EQUIPMENT OFFICER _____

1. SITE CONTROL

☐ HOT ZONE ESTABLISHED & IDENTIFIED _____

☐ WARM ZONE ESTABLISHED & IDENTIFIED _____

☐ EVACUATION DISTANCES IDENTIFIED _____

☐ EVACUATION COMPLETED AND ALL ACCOUNTED _____

2. IDENTIFICATION OF HAZARD

☐ FIRE _____

☐ 1. MATERIAL & AMOUNT _____

☐ 2. MATERIAL & AMOUNT _____

☐ 3. MATERIAL & AMOUNT _____

☐ 4. MATERIAL & AMOUNT _____

3. HAZARD AND RISK ASSESSMENT

☐ LAB PERSONNEL CONTACTED _____

5. INFORMATION AND RESOURCE COORDINATION

☐ REPORT FROM:

- ☐ RISK ASSESSMENT OFFICER

  HAZARDS EVALUATED

  1. HEALTH _____
  2. FLAMMABILITY _____
  3. REACTIVITY _____
  4. PHYSICAL PROPERTIES _____

- ☐ SAFETY OFFICER
  - ☐ LEVELS _____
  - ☐ PPE SELECTED
  - ☐ SCBA'S NECESSARY YES NO
  - ☐ ENTRY PERSONNEL MEDICALLY CLEARED

- ☐ EQUIPMENT OFFICER
  - ☐ EQUIPMENT SELECTED AND READY
- ☐ TEAM LEADER
  - ☐ ERT READY
  - ☐ SITUATION STATUS

☐ CONDITIONS EVALUATED

☐ SOLUTIONS DEVELOPED

1. _____

RISK _____

2. _____

RISK _____

☐ TEAM LEADER AND OFFICERS ADVISED

☐ OTHER RESPONSE PERSONNEL ADVISED AS NECESSARY

☐ PROPER AGENCIES NOTIFIED

6. CONTROL AND CONTAINMENT

☐ PROPER CONTROL TECHNIQUES USED

☐ SECONDARY CONTAINMENT IN PLACE

☐ CONDITIONS MONITORED

☐ LOCATED AT COMMAND POST

7. DECONTAMINATION

☐ DECON IN PLACE/UPWIND PRIOR TO CONTROL OPERATIONS

☐ PROPER DECON USED

☐ DECON PERSONNEL WEARING PROPER PPE

8. TERMINATION

☐ PROPER AGENCIES NOTIFIED

☐ ALL EQUIPMENT DECONTAMINATED

☐ ALL PERSONNEL DECONTAMINATED

☐ ALL EXPENSES RECORDED

☐ ALL WASTES PROPERLY DISPOSED OF

☐ MEDICAL MONITORING OF PERSONNEL COMPLETE

☐ DEBRIEFING OF INCIDENT COMPLETE

☐ "ALL CLEAR" GIVEN

NOTES: _____

HEALTH & SAFETY OFFICER CHECKLIST

Incident: _____ Location: _____

Date: _____ Time: _____

Weather: _____

Incident Commander: _____

Emergency Coordinator: _____

GENERAL

☐ SAFETY OFFICER IDENTIFIED BY VEST

☐ WEARING PROPER PPE

☐ FIRST AID SUPPLIES AVAILABLE

☐ REVIEW OF INCIDENT

☐ FIRE ☐ WASTE SPILL ☐ CHEMICAL SPILL

OFFICERS ASSIGNED

RISK ASSESSMENT OFFICER _____

TEAM LEADER _____

EQUIPMENT OFFICER _____

1. SITE MANAGEMENT

☐ PROPER CONTROL ZONES ESTABLISHED

☐ KNOWS LOCATION OF COMMAND POST, HOT ZONE, COLD ZONE, ENTRY/EXIT POINT

2. IDENTIFICATION OF HAZARDS

☐ FIRE

☐ CHEMICAL IDENTIFIED

1._____

2._____

3. HAZARD AND RISK ASSESSMENT

☐ INFORMATION OBTAINED FROM RISK ASSESSMENT

☐ GAS METER READINGS OBTAINED:

02:_____ LEL:____ CO:_____ H2S:_____ TIME:_____

☐ CHEMICAL CONCENTRATION & METHODS: 1._____

2. _____ 3._____

☐ IDLH IDENTIFIED AS:_____

☐ RISK ASSESSMENT COMPLETED, HAZARDS:

HEALTH:_____

FLAMMABILITY:_____

REACTIVITY:_____

PHYSICAL:_____

IGNITION SOURCES:_____

OTHER HAZMATS:_____

☐ SIGNS/SYMPTOMS OF OVEREXPOSURE IDENTIFIED:_____

_____

_____

☐ TREATMENT FOR EXPOSURE:_____

_____

☐ ADVANCED MEDICAL PERSONNEL CONTACTED: _____

☐ TRANSPORT VEHICLES STAGED: _____

☐ UNKNOWN ENVIRONMENT YES / NO

☐ PERSONNEL ASSIGNED TO ENTRY

1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

7. _____ 8. _____

☐ BACK UP PERSONNEL ASSIGNED

1. _____ 2. _____

3. _____ 4. _____

4. SELECT PPE AND EQUIPMENT

☐ RESPIRATORY PROTECTION: _____

☐ CHEMICAL CLOTHING: _____

_____

5. INFORMATION AND RESOURCE COORDINATION

☐ OFFICER MEETING CONDUCTED

☐ OPERATIONS TO BE PERFORMED

1. _____

_____

2. _____

_____

☐ ERT BRIEFED ON OPERATIONS

- ☐ ERT BRIEFED ON HEAT STRESS
- ☐ ERT BRIEFED ON CHEMICAL EXPOSURE SIGN & SYMPTOMS
- ☐ ERT BRIEFED ON EMERGENCY PROCEDURES
- ☐ ERT BRIEFED ON DECON AREA
- ☐ COMMUNICATIONS IN PLACE AND WORKING
- ☐ PERMISSION GIVEN BY IC OR TEAM LEADER TO BEGIN

6. CONTROL & CONTAINMENT

- ☐ ERT MEDICALLY CLEARED FOR ENTRY
- ☐ MONITOR ERT FOR HEAT STRESS, EXPOSURES, PROPER PROCEDURES
- ☐ LOCATED AT ACCESS CONTROL POINT

7. DECONTAMINATION

- ☐ DECON PERSONNEL HAVE PROPER PPE
- ☐ ERT TO DECON WHEN EXITED

8. TERMINATION

- ☐ ALL ERT MEMBERS ACCOUNTED FOR
- ☐ ALL ERT AND OFFICERS DECONNED
- ☐ HEALTH ASSESSMENT OF ERT
- ☐ BRIEF OF HEALTH EFFECTS OF HAZARDS
- ☐ REVIEW OF INCIDENT

NOTES: _____

_____

_____

RISK ASSESSMENT OFFICER CHECKLIST

Incident: _____ Location: _____

Date: _____ Time: _____

Weather: _____

Incident Commander: _____

Emergency Coordinator: _____

GENERAL

☐ RISK ASSESSMENT OFFICER IDENTIFIED BY VEST

☐ MEET AT COMMAND POST

☐ REVIEW OF INCIDENT

☐ FIRE ☐ WASTE SPILL ☐ CHEMICAL SPILL

OFFICERS ASSIGNED

SAFETY OFFICER _____

TEAM LEADER _____

EQUIPMENT OFFICER _____

1. SITE MANAGEMENT

☐ KNOWS LOCATION OF COMMAND POST, HOT ZONE, COLD ZONE,

☐ ENTRY/EXIT POINT

2. IDENTIFICATION OF HAZARDS

☐ FIRE

☐ CHEMICAL IDENTIFIED

1. _____

2. _____

☐ SHIPPING PAPERS/MANIFEST ACQUIRED

☐ MSDS ACQUIRED

☐ LAB PERSONNEL CONSULTED

☐ DOT GUIDEBOOK USED

☐ MANUFACTURER

☐ CHEMTREC

☐ OTHER: _____

3. HAZARD AND RISK ASSESSMENT

☐ WEATHER FORECAST OBTAINED: _____

☐ GAS METER READINGS OBTAINED:

02: _____ LEL: ____ CO: _____ H2S: _____ TIME: _____

☐ CHEMICAL CONCENTRATION & METHODS: _____

☐ HAZARDS IDENTIFIED

1. HEALTH: _____

2. FLAMMABILITY: _____

3. REACTIVITY: _____

4. PHYSICAL: _____

☐ EVACUATION DISTANCES DETERMINED

1. _____

2. _____

☐ HAZARD MAP CREATED (ZONES) SEE ATTACHED MAP

4. SELECT PPE AND EQUIPMENT

☐ REVIEW PPE WITH SAFETY OFFICER

☐ HAS APPROPRIATE PPE AND EQUIPMENT

5. INFORMATION AND RESOURCE COORDINATION

☐ INFORMATION REVIEWED WITH:

- ☐ INCIDENT COMMANDER
- ☐ TEAM LEADER
- ☐ SAFETY OFFICER
- ☐ EQUIPMENT OFFICER

6. CONTROL & CONTAINMENT

☐ CONTINUE TO MONITOR FOR WEATHER, WIND, RUNOFF, OTHER HAZARDS

☐ EVALUATES CONTROL PROCEDURES

☐ REMAINS IN WARM ZONE

7. DECONTAMINATION

☐ GOES THROUGH DECON AS NECESSARY

8. TERMINATION

☐ FOLLOW UP WITH LAB TO ENSURE PROPER DISPOSAL

☐ REVIEW OF INCIDENT

NOTES: _____

_____

_____

_____

_____

HAZARD ZONE MAP

TEAM LEADER CHECKLIST

Incident: _____ Location: _____

Date: _____ Time: _____

Weather: _____

Incident Commander: _____

Emergency Coordinator: _____

GENERAL

☐ TEAM LEADER IDENTIFIED BY VEST

☐ MEET AT COMMAND POST

☐ REVIEW OF INCIDENT

☐ FIRE ☐ WASTE SPILL ☐ CHEMICAL SPILL

OFFICERS ASSIGNED

SAFETY OFFICER _____

RISK ASSESSMENT OFFICER _____

EQUIPMENT OFFICER _____

PERSONNEL ASSIGNED TO TEAM LEADER

1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

7. _____ 8. _____

9. _____ 10. _____

1. SITE MANAGEMENT

☐ KNOWS LOCATION OF COMMAND POST, HOT ZONE, COLD ZONE, ENTRY/EXIT POINT

☐ ALL NECESSARY EMPLOYEES EVACUATED

2. IDENTIFICATION OF HAZARDS

☐ FIRE

☐ CHEMICAL IDENTIFIED

1. _____

2. _____

☐ SHIPPING PAPERS/MANIFEST ACQUIRED

3. HAZARD AND RISK ASSESSMENT

☐ WEATHER FORECAST OBTAINED: _____

SOURCE: _____

☐ GAS METER READINGS OBTAINED:

02: _____ LEL: _____ CO: _____ H2S: _____ TIME: _____

☐ CHEMICAL CONCENTRATION & METHODS: _____

☐ HAZARDS IDENTIFIED

1. HEALTH: _____

2. FLAMMABILITY: _____

3. REACTIVITY: _____

4. PHYSICAL: _____

4. INFORMATION AND RESOURCE COORDINATION

☐ HAZARDS REVIEWED WITH SAFETY OFFICER AND RISK ASSESSMENT

☐ INFORMATION REVIEWED WITH IC

☐ OPERATIONS DISCUSSED

1. _____

2. _____

☐ REVIEW RISKS, HAZARDS, PPE WITH: ERT, SAFETY OFFICER, EQUIPMENT OFFICER

☐ COMMUNICATIONS IN PLACE AND WORKING

5. SELECT PPE AND EQUIPMENT

☐ HAS PROPER PPE & EQUIPMENT FOR HIMSELF AND ERT

6. CONTROL & CONTAINMENT

☐ HAS PERMISSION TO BEGIN ACTIVITIES FROM IC AND SAFETY

☐ OVERSEE PROPER PROCEDURES ARE FOLLOWED

☐ MONITORS ERT FOR EXPOSURES, HAZARDS

☐ FINAL CHECK OF SITE TO ENSURE ACTIVITIES ARE COMPLETED CORRECTLY

7. DECONTAMINATION

☐ GOES THROUGH DECON

☐ ENSURES ERT GOES THROUGH DECON

☐ ENSURES ERT MEDICALLY BRIEFED AND CHECKED

8. TERMINATION

☐ FOLLOW UP WITH LAB TO ENSURE PROPER DISPOSAL

☐ REPORTS ALL ACTIVITIES TO IC

☐ REVIEW OF INCIDENT

NOTES: _____

EQUIPMENT OFFICER CHECKLIST

Incident:_____ Location:_____

Date:_____ Time:_____

Weather:_____

Incident Commander:_____

Emergency Coordinator:_____

GENERAL

☐ EQUIPMENT OFFICER IDENTIFIED BY VEST

☐ MEET AT COMMAND POST

☐ REVIEW OF INCIDENT

☐ FIRE ☐ WASTE SPILL ☐ CHEMICAL SPILL

OFFICERS ASSIGNED

SAFETY OFFICER _____

TEAM LEADER _____

RISK ASSESSMENT OFFICER _____

PERSONNEL ASSIGNED TO EQUIPMENT OFFICER

1._____ 2._____

1. SITE MANAGEMENT

☐ KNOWS LOCATION OF COMMAND POST, HOT ZONE, COLD ZONE, ENTRY/EXIT POINT

☐ IDENTIFIED ANY WATERWAYS, STORM DRAINS, SEWERS

2. IDENTIFICATION OF HAZARDS

☐ FIRE

☐ CHEMICAL IDENTIFIED

1._____

2._____

3. HAZARD AND RISK ASSESSMENT

☐ GAS METER READINGS OBTAINED:

02:_____ LEL:____ CO:_____ H2S:_____ TIME:_____

☐ CHEMICAL CONCENTRATION & METHODS:_____

☐ HAZARDS IDENTIFIED

1. HEALTH:_____

2. FLAMMABILITY:_____

3. REACTIVITY:_____

4. PHYSICAL:_____

☐ VERIFIES EQUIPMENT IN PLACE AND ACCESSIBLE

4. INFORMATION AND RESOURCE COORDINATION

☐ HAZARDS REVIEWED WITH SAFETY OFFICER AND RISK ASSESSMENT

☐ INFORMATION REVIEWED WITH IC

☐ OPERATIONS DISCUSSED

1._____

2. _____

☐ REVIEW RISKS, HAZARDS, PPE WITH: ERT, SAFETY OFFICER, EQUIPMENT OFFICER

☐ COMMUNICATIONS IN PLACE AND WORKING

☐ ESTABLISHES "HOT", "WARM", "DECON" AND "COLD ZONES

☐ SELECTS APPROPRIATE EQUIPMENT, CONTAINERS AND METHODS

☐ DETERMINES DECON METHODS

5. SELECT PROPER PPE AND EQUIPMENT

☐ HAS PROPER PPE & EQUIPMENT FOR HIMSELF AND ERT

☐ HAS PROPER DECON MATERIALS IN PLACE

6. CONTROL & CONTAINMENT

☐ KEEPS "CLEAN" AND "DIRTY" EQUIPMENT SEPARATE

☐ MONITORS CONTAINERS FOR APPROPRIATE HANDLING AND LABELING

☐ MONITORS ERT FOR EXPOSURES, HAZARDS

☐ REMAINS IN "WARM" ZONE

7. DECONTAMINATION

☐ ENSURES ERT GOES THROUGH DECON

☐ ENSURES ALL EQUIPMENT IS DECONNED

☐ DECONTAMINATES HIMSELF WHEN COMPLETED

8. TERMINATION

☐ FOLLOW UP WITH TEAM LEADER TO ENSURE PROPER DISPOSAL

- ☐ REVIEW OF INCIDENT
- ☐ ENSURES SPILL STATIONS & EQUIPMENT ARE RESTOCKED/READY
- ☐ ORDERS ADDITIONAL SUPPLIES AS NECESSARY
- ☐ NOTIFIES IC AND SAFETY ALL EQUIPMENT IS READY FOR START UP OF OPERATIONS

NOTES: _____

_____

_____

_____

_____

_____

Attachment 3

MEMO OF EMERGENCY CALL

Date: Time:_____ Person calling:_____

(date of call) (time of call)

Agency Called (Indicate, by name, who you spoke with):

City of Cohoes Fire Department 237-2211_____

West Central Environmental 272-6891_____

New York State 24 hour Oil and Hazardous Material
Hotline 457-7362_____

Albany County Health Dept. 445-7835 _____

National Response Center (800) 424-8802_____

(202) 426-2675_____

United States Coast Guard 472-6110_____
(after hours) (212) 264-4800_____

D&H Railroad 271-4414 _____

US EPA Region II (201) 548-8730 _____

I am reporting a fire/spill which occurred at (time)

I am of the Norlite Corporation. (518-235-0401)
(name, title)

The fire/spill is at the plant which is located in Albany County on the Southern boundary of the city of Cohoes just West of New York Route 32 & 787. The address is 628 South Saratoga Street, in Cohoes.

1. Describe the nature of the fire/spill:

-Amount _____ (in gallons) spilled or on fire to the extent known.

-Materials involved (i.e. mainly solvents and alcohols or petroleum) to the extent known._____

2. Describe the affected waterways if applicable (salt Kill)_____

3. Describe the possible hazards to human health, or the environment outside of the facility. _____ In addition, if evacuation of local area may or may not be advisable and why._____

_____

ACTION ALREADY TAKEN:

ACTION TO BE TAKEN:

PERSONNEL PRESENT:

PERSONNEL SUMMONED:

Agencies listed below should receive notice from the other agencies notified, however, if the nature of the emergency effects residents of the city of Cohoes and/or Town of Colonie, they will be notified immediately.

-Region IV, DEC
382-0680

-Albany County Health Dept.
445-7835

-City of Cohoes, Corp. Counsel
237-7811

-Town of Colonie
783-2728

EMERGENCY EQUIPMENT

ITEM	LOCATION	DESCRIPTION AND USE
SCBA'S (60 Min)	Safety Truck 2	Rescue purposes in IDLH environment
SCBA's (30 Min)	Through fuel system	Entry use for identifying materials in unknown environments
Full Face	Employee Lockers	Respiratory protection of known materials & concentrations
Disposable Personal Protection Equipment Equipment	Spill Stations, Central Inventory	Chemical Suits, Gloves, Boots, cartridges for chemical hazards
Safety Showers	Throughout fuel system, Waste Water Treatment	Heat traced units, for decontamination
Drum and Containers	Spill Stations, Fuel Farm	To contain and collect materials
100 Fire Extinguishers	Throughout Facility	Type ABC (dry) combustible Material flammable liquid Electrical
Fire Blankets	Within fuel system	Wool blankets for fire Extinguishing
Fire Hydrant #1	South of Salt Kill 100' North of R/R Track	For use by Fire Department for foam application, etc.
Fire Hydrant #2	South of Salt Kill 400' North of R/R Track	For use by Fire Department for foam application, etc.
Fire Hydrant #3	South of Salt Kill 600' North of R/R Track	For use by Fire Department for foam application, etc.
Absorbent Booms	Spill Station (2) by Gate #2 and Unloading Area	Place across stream to contain and absorb spilled material
Absorbents	Spill Stations and LGF Unloading Area	Absorb spilled material
Crushed Stone	Clinker Storage pile, Primary Area, Finish Area	To contain and absorb materials
Portable Pump	LGF Unloading Area	Transfer spill material into tank
Clay Soil	Over burden storage area	Construct dikes to contain spill
Front Loaders (3)	Quarry, Loading Area	Construct dame and dikes to Contain spills
Vac Truck	Facility Property	To collect materials for transfer
High Pressure Washer	Facility Property	Decontamination surfaces
Sodium Bicarbonate	Waste Water Treatment	Neutralization of Acids
Shovels (Non-Spark Producing)	Spill Station	To build dikes to contain spilled Materials, remove contaminated Soil

ITEM	LOCATION	DESCRIPTION AND USE
First Aid Supplies	Safety Trailer, Safety Truck, Spill Station, Trunnion Trailer	Bandages, compresses, etc.
Emergency Communications system including horn and phones	Office phones, Security Gate #1	Used for external and internal plant Communication
Hand held portable radios	Supervisors, Incident Commander and Officers, Some Hazmat Employees	Internal communications
Wind Socks	Fuel Farm, Kiln, Waste Water Treatment, Finish Plant	Used to identify wind direction in order to determine best evacuation Route
Automated AFFF Alarm System	Fuel System, Control panel at fuel farm And control Room #1	Used to inform facility personnel of AFFF fire suppression system activation
Standpipe System (Fire hose)	Outside LGF pipe tunnel Escape hatches	Used for additional fire fighting capability in Pipe Tunnel
Fire Dept. Connection system	Ground Level. LGF Pipe tunnel escape Hatch ladders	Used to allow fire department to hook into pipe tunnel fire suppression system to supply additional water
Oxygen, LEL, rapid heat rise and flame detectors	LGF Unloading Area and Building, overhead tunnel, equalization Area	Used for detection within the LGF System

ATTACHMENT 5

Attachment #1

INJURY/ACCIDENT/INCIDENT EVENT REPORT FORM

Date and time of event:_____

Date and time event reported:_____

Location of event:_____

Reported by:_____ Reported to:_____

TYPE OF EVENT

Injury	First Aid	Medical Treatment		
Accident	Property Damage	Vehicle/Equipment		
Incident	Near Miss	Potential Hazard	Fire	Spill

Describe event (If necessary, use a separate sheet of paper).

Was an incident coordinator notified? Yes No Name:_____
Date:_____

Was 911 contacted? Yes No Time:_____

Employee Signature:_____ Date:_____

Supervisor Signature:_____ Date:_____

Event Report #:_____

WORK AGREEMENT CONTRACT

Agreement between:

NORLITE CORP.
a Corporation of: UNITED OIL RECOVERY
(herein called "Company")

and

WEST CENTRAL ENVIRONMENTAL CORP.
(herein called "Contractor")

West Central Environmental Corp. shall perform all work as outlined in Exhibit "A", Work Specifications, for the period covering June 01, 1997 to termination of the agreement.

Company shall pay Contractor for said work as per rates outlined in Exhibit "B", except hazardous or toxic material, in which case Exhibit "C" rates shall apply.

Company agrees to use West Central Environmental Corp. as their primary (first call) contractor for spill cleanup services as outlined in Exhibit "A", for work beyond the capabilities of their own company.

* This agreement may be terminated by either party upon (30) day written notice.

WORK AGREEMENT CONTRACT

Exhibit "A"	Work Specifications
Exhibit "B"	Agreement Rates
Exhibit "C"	Hazardous Material Rates
Exhibit "D"	Absorbent Pricing

Contractor:

West Central Environmental Corp.

By _____
Title:_____

_____
Witness or Seal

Company:

Norlite Corporation

By_____
Title:_____

_____
Witness or Seal

WORK SPECIFICATIONS
Oil and Chemical Pollution Control and Cleanup Services

Specifications:

Contractor shall perform the following work in accordance with the following specifications.

GENERAL

Subject to the terms and conditions hereto, Contractor agrees to perform all services deemed necessary by Contractor and Company to attempt to correct the conditions herein after described and in connection therewith to supply the Company such equipment and trained personnel as the Company shall deem necessary or desirable, all in accordance with the rate schedule attached hereto.

Properly contain and recover any spilled product or contaminated materials as directed by Companies designated agent.

Contractor shall provide these services on an "as called" basis, 24 hours per day, seven days per week for the total term of the agreement.

SCOPE OF WORK

Contractor shall provide all supervision, material, labor, tools, equipment and transportation, to properly clean up any product spilled on land, in water or that product which has spilled or leaked and migrated into the subsurface as requested by the company. Product is defined as hazardous substance, hazardous material, hazardous waste or industrial waste.

Contractor shall dispose or arrange for disposal of all collected products or contaminated debris in a manner which is approved by the Company and those governmental agencies having jurisdiction.

Contractor shall perform the services herein above described as an independent contractor in a diligent and professional manner on a 24 hour a day basis, 365 days per year at a preset price schedule, (see Exhibit "B").

When weather conditions exist, or other conditions such as earthquakes, hurricanes, major fires, acts of war, acts of omissions of third parties and or other acts of God, the Company and the Contractor shall determine the best practical method of cleanup, if any, that would be required.

SAMPLING
Contractor agrees to collect, analyze and document the sampling of any spilled oil or chemical at the owners request and expense.

CONTRACTOR'S FACILITIES
Contractor agrees to store company owned equipment at Contractor owned, leased facilities as space availability dictates. There will be no charge for the storage of this equipment.

DOCUMENTATION
Contractor will provide recording and photographs and other audio and visual aids for Company to document all aspects of the spill pertaining to conferences, briefings, overnights, inspections and cleanup activity. All of the Contractor's records regarding this documentation will be made available to the Company OSC. Contractor will also provide administrative and operational information to the company in connection with any efforts to mitigate class action suits.

AUDITS
Contractor will grant to Company audit rights in connection with reviewing billing data pertaining to a particular spill.

COMMUNICATIONS
Contractor will coordinate and provide radio and telephone communications as required by the Company OSC.

TRAINING
All personnel provided will meet or exceed the training standards set forth in CFR 29 Part 1910.

RESPONSE
Contractor agrees to respond to an order to mobilize as follows:

1) During Regular Working Hours
Underway with necessary manpower and equipment within one hour after notification.

2) During Off Hours (Nights/Weekends)
Underway with necessary manpower and equipment within (2) hours after notification.

3) Travel Time (Assuming Average Traffic Flow)
In Addition to above, add one hour for every (40) miles from West Central operations centers. This over-the-road transportation will be carried out with West Central owned tractor/trailer units and various rack trucks.

4) In all cases a Contractor representative will be immediately dispatched to the jobsite to assist the company in evaluating the extent of the spill and corrective action to be taken.

) Contractor agrees to participate in mobilization drills to evaluate all aspects of emergency preparedness relating to contingency plans.

In the event that the Company is not responsible for the incident, and formally requested by a Federal or State agency to act as its agent to clean up the incident, the Company reserves the right to determine the best practical method to be used by the Contractor.

RATES

All rates utilized under this contract shall be firm for the total period of performance.

Company agrees to pay Contractor for the services berein above described at the rates specified. Terms of payment shall be as follows:
Net 10 days from date of invoice.
Interim bills may be rendered at intervals not less than (7) days during the continuation of jobs requiring more than (7) days for completion.

GEOGRAPHICAL AREAS TO BE SERVICED

Cohoes, NY (Primary)
All others requested (Secondary)

WARRANTIES OF COMPANY

Company agrees to use Contractor as primary (First Call) cleanup firm for all oil and chemical spills within the service area of the manned branch office of West Central Environmental Corp. as outlined for spills outside the capability of Norlite's response and cleanup crew. Company agrees to use Contractor for all major oil and chemical spills.

REPORTS

Contractor shall make reasonable efforts to prepare and deliver each day to Company (or it's agent) a report describing the services performed by contractor on the day preceeding the date on which such report is delivered. Company shall promptly report any errors or omissions in these reports. Such reports will be the basis for invoicing.

Upon payment in full to Contractor for services performed hereunder, Contractor agrees to hold Company harmless with respect to claims by third persons for payment for labor, materials and equipment used by Contractor in connection with Contractor's performance of services pursuant hereto; further, Contractor represents that it has and will maintain in force for the period hereto, insurance for liability for property damage, bodily injury and Workman's Compensation in such amounts and in such form as Contractor deems appropriate under the circumstances. Cerfificates evidencing such insurance are ttached herein.

At all times while on Company's premises, Contractor is to observe and be subject to such rules and regulations as Company from time to time may promulgate for security reasons or for minimizing fire and explosion risks and for the maintenance or restoration of good order, and compel observance thereof by Contractor's employees or employees of his subcontractors at all times observe the reasonable rules and regulations while entering, leaving or on Company premises and shall cause them to be removed from such premises upon their failure to comply.

Contractor accepts full exclusive responsibility and liability for payment of federal and state payroll taxes and for contributions for unemployment insurance, old age pensions, annuities, retirement and other benefits, imposed or assessed under any provision of any law, state or federal, and measured by wages, salaries or other remuneration paid or payable by Contractor to employees of Contractor engaged in said work or in any operations incidental thereto, or by voluntary or contractual benefit plans between contractor and its employees which require contributions by Contractor, and agrees that each subcontractor who performs any part of said work will accept the same responsibility and liability with respect to employees of such subcontractor.

SAFETY

The contractor agrees to comply with all OSHA, MSHA, EPA and State environmental requirements. This includes, but is not limited to, the wearing of hard hats, life jackets and the proper clothing based on the job requirements.

PUBLIC RELATIONS

The contractor agrees to compel its employees or representatives not to have communications with the news media. The company will handle all public relations related to all aspects of the spill and the Contractor will comply with the Company policy regarding this matter.

SECURITY

The Contractor will coordinate and provide security at the jobsite as specified by the Company OSC. This is to ensure that all equipment at the the spill site is properly protected against theft and sabotage and all unauthorized persons are kept from entering the spill area and equipment storage areas.

FOOD/LODGING

The Contractor will coordinate and provide for the feeding of work crews and support personnel. Contractor will also provide for sanitary, first aid, portable lighting and berthing accommodations based on the job requirements with prior approval for same being obtained by Company OSC. Contractor will also provide for mobile command posts or trailerized office space if the remoteness of jobsite dictates the need.

PERMITS

The Contractor shall supply copies of all operating permits and authorities, updated annually upon request.

EXHIBIT "B"

P.O. Box 83
Rensselaer, N.Y. 12144
518-272-6891

Poughkeepsie, N.Y.
914-471-1400

WCE

WEST CENTRAL ENVIRONMENTAL
24 HOUR SERVICE

Syracuse, N.Y.
315-472-6500

Binghamton, N.Y.
607-722-6400

EPA ID #NYD000708271
N.Y.S. Waste Haulers #4A-106

TIME AND MATERIAL RATES

LABOR: **September 1, 1994**

Operations Supervisor	**$65.00/hour**
Foreman	**50.00/hour**
Equipment Operator	**35.00/hour**
Cleaners	**30.00/hour**

Time and one-half charges apply to all hours worked before 8:00 a.m. and after 4:00 p.m. weekdays and all day Saturday. Double time will apply to all hours worked on Sundays and Holidays.

Per diem of $85.00 per day per man will be assessed for jobs of more than one day duration 50 or more miles from point of mobilization.

NOTE:

1) There is a four (4) hour minimum for all labor and equipment listed on weekdays, and an eight (8) hour minimum on Saturday, Sunday and Holidays.
2) All charges are portal to portal for men & equipment; including mobilization & demobilization.
3) Equipment rates do not include operator.
4) Terms are net 10 days with consideration for early payment; interest charges of 1-1/2% per month on all past due accounts.
5) All disposal according to State and Federal rules and regulations to be negotiated.

Equipment

Heavy Duty Vactor	**$ 85.00/hr.**
Vacuum Tractor Trailer	**75.00/hr.**
Bulk Tanker Storage	**150.00/day**
Box Van Tractor Trailer	**65.00/hr.**
Dump Truck 30 yd. Trailer	**65.00/hr.**
Rolloff Containers Rental	**75.00/week**
Rolloff Tractor/Trailer	**65.00/hr.**
Utility Trucks	**15.00/hr.**
Hydro-Laser up to 10,000 Psi	**50.00/hr.**
High Pressure High Temp Up to 3000 Psi	**35.00/hr.**
Small Boat Powered with Outboard Motor	**30.00/hr.**
Small Boat w/o motor	**75.00/day**
ıom Rental (daily) – 13"	**.55/ft.**
owered Work Boat 50 - 200 H.P.	**30.00/hr.**
Expendables	**Cost + 30%**
Sub-Contractors	**Cost + 30%**
Pumps	**75.00/day**
Generators	**75.00/day**
Steam Unit	**25.00/day**
Oil Scavenger	**300.00/day**
Personal – Autos	**80.00/day**
Oil Skimmers	**80.00/day**
Trans. Hose – 3"	**15.00/day**
Trans. Hose – 2"	**10.00/day**
Trans. Hose – 1-1/4"	**10.00/day**
Oil & Chem. Absorbents	**as per price list**
Scott Paks	**110.00/day**
Spare Bottles	**50.00/day + air**
Breathing Gear – Hose Mask	**400.00/day**
Emergency Response Mobilization Unit	**170.00/hr.**

WORK AGREEMENT CONTRACT

Exhibit "A"	Work Specifications
Exhibit "B"	Agreement Rates
Exhibit "C"	Hazardous Material Rates
Exhibit "D"	Absorbent Pricing

Contractor:

West Central Environmental Corp.

By _____
Title: Vice Pres.

_____
Witness or Seal

Company:

Norlite Corporation

By _____
Title: _____

_____
Witness or Seal

To be posted near every phone

INCIDENT COORDINATOR	NEXTEL	HOME	PLANT
Tim Lachell (Plant Manager) (Primary) 31 Cooks Court, Waterford, NY 12188	857-9164	373-9569	x.4037
rian Decatur (Safety Manager) (Alternate) 1251 Babcock Lake Rd, Hoosick Falls, NY12090	376-0913	686-9824	x.4005
Jeff Nusbaum (Fuel Farm Manager) (Alternate) 253 Casey Road, Schaghticoke, NY 12154	365-5478		x.4028
Herb Marlow (Maintenance) (Alternate) 14 Grissom Drive, Clifton Park, NY 12065	376-0915	383-3493	x.4018
Security Gate (Elm Street)	-	-	x.4084
PLANT MANAGERS	**NEXTEL**	**HOME**	**PLANT**
Prince Knight (Lab Manager)	857-2969	478-9190	x.4049
Dave Carabetta (President)	(203) 537-3223	(203) 271-2707	x.4014
Bill Morris (Compliance Manager)	(203) 537-2322	(860) 349-1497	-
Kiln Supervisors	857-5737		x.4073
Ken O'Brien Jr. (Aggregate Production Mgr)	376-8634	395-3344	x.4021

FOR PLANT EMERGENCIES - FIRE - POLICE - EMS DIAL 911

LOCAL FIRES	PHONE NUMBER
Cohoes	237-2211
Colonie*	783-2744
LOCAL POLICE	**PHONE NUMBER**
Cohoes	237-5333
Colonie*	783-2744
SPILL RESPONSE	**PHONE NUMBER**
West Central Environmental	272-6891
CHEMTREC	(800) 424-9300
NYSDEC Spill Hotline	457-7362
LOCAL EMERGENCY PLANNING COMMITTEE	765-2351
EPA NATIONAL RESPONSE CENTER	(800) 424-8802
DOCTORS	**PHONE NUMBER**
Access Health 776A Watervliet Shaker Road Latham, NY 12110	782-2200 FAX 786-1875
St. Mary's Hospital	(518) 268-5697
MISCELLANEOUS	**PHONE NUMBER**
SRI Fire Sprinkler Corp.	459-2776
MSHA	489-0573
Niagara Mohawk Power	356-6471

*West of the power lines

4/26/04

NORLITE, 628 SOUTH SARATOGA STREET, COHOES, NEW YORK 12047 235-0401

INJURY/ACCIDENT/INCIDENT EVENT REPORT FORM

Date and time of event:_____

Date and time event reported:_____

Location of event:_____

Reported by:_____ Reported to:_____

TYPE OF EVENT

Injury	First Aid	Medical Treatment		
Accident	Property Damage	Vehicle/Equipment		
Incident	Near Miss	Potential Hazard	Fire	Spill

Describe event (If necessary, use a separate sheet of paper).

Was an incident coordinator notified? Yes No Name:_____
Date:_____

Was 911 contacted? Yes No Time:_____

Employee Signature:_____ Date:_____

Supervisor Signature:_____ Date:_____

Event Report #:_____