#### CIVILWORKS, INC.

Civil Engineers Land Surveyors

P.O. Box 1166 Dover, NH 03821-1166

603-749-0443 (Facsimile) 603-749-7348

GEOLVED

APR - 9 2012

Planning Degl.

April 10, 2012

City of Rochester Planning & Development Department 31 Wakefield Street Rochester, NH 03867-1917

Attn: Michael Behrendt, City Planner

Subject: Minor Site Plan Application

Lydall – Wastewater Treatment System Upgrades

Tax Map 216, Lot 32

134 Chestnut Hill Road, Rochester

Our Reference No. 11125

Dear Mr. Behrendt:

Please find attached the following materials submitted on behalf of our client, Lydall Filtration/Separation, Inc., for consideration by City staff and the Rochester Planning Board:

- 1) Ten (10) copies of Minor Site Plan Application;
- 2) Ten (10) copies of Project Narrative Accompanying Minor Site Plan Application;
- 3) Ten (10) reduced size (11"x17") copies of plans entitled "Lydall Wastewater Treatment System Upgrades, Tax Map 216, Lot 32";
- 4) Abutters List;

M. Behrendt, Rochester Planning Board Lydall, Chestnut Hill Road, Rochester, ORN 11125 April 10, 2012 Page Two

5) Check payable to the City of Rochester for the sum of \$364.60 calculated as follows:

Application fee \$ 300.00 Abutter notices = 19 notices x \$3.40  $\frac{$64.60}{$364.60}$ 

We look forward to discussing this application at your Technical Review Group (TRG) meeting. Once a date is set, please let us know. Please feel free to contact us if you should require any additional information.

Best Regards,

CIVILWORKS, INC.

Dana C. Lynch, P.E.

**Enclosures** 

cc: Stephen Raymond, GZA GeoEnvironmental, Inc.



### MINOR SITE PLAN APPLICATION

### City of Rochester, New Hampshire

Date: April 10, 2012 [office use only. Check # Amount \$ Date paid ]
Property information
Tax map #:216; Lot #('s):32; Zoning district:Industry 2
Property address/location: 134 Chestnut Hill Road
Brief project description: Installation of a 25 ft. diameter x 42 ft. tall tank as part of wastewater treatment system upgrade
Property owner
Name (include name of individual):Lydall Filtration/Separation, Inc.
Mailing address: 134 Chestnut Hill Road, Rochester, NH 03867
Telephone #: (603) 332-4600 Email address: tdingman@lydall.com
Applicant/developer (if different from property owner)
Name (include name of individual):SAME
Mailing address:
Telephone #: Email address:
Engineer/surveyor/designer (if applicable)
Name (include name of individual):
Mailing address: P.O. Box 1166, Dover, NH 03821-1166
Telephone #:(603) 749-0443 Email address:civilworksdover@comcast.net
Check one:
Nonresidential project
Residential project

Nonresidential proje	ects (if applicable)	
Check all that apply:		
change of use	new building	building addition
new parking area	expansion of existing	ng parking area
new signage;	exterior lighting	other site changes
Describe current use/natu	ure of property: <u>Industri</u>	al - manufacture of filtration materials
Describe proposed use/a	ctivity: <u>Same</u>	
# parking spaces: existing	g: <u>106</u> ; total propo	osed: 106
Current square footage o	f building <u>167,160</u> ; Prop	posed square footage of building 167,160
City water? yes X no	; How far is City v	water from the site?
City sewer? yes X no	; How far is City s	sewer from the site?
If City water, what are the	estimated total daily nee	eds? 470,000 gallons per day
Where will stormwater be	discharged? No change	2
Residential projects		number of proposed dwelling unite
		number of proposed dwelling units:
		cations to existing building(s)?
Describe proposed use/a	ctivity:	
# of parking spaces: exis	ting: total prop	osed.
TO parking spaces. Call	ting.	030W
Comments		
Please feel free to add ar	y comments, additional i	information, or requests for waivers here:
See attached narrative		

#### Submission of application & acknowledgement about process

This application must be signed by the property owner, applicant/developer (if different from property owner), and/or the agent.

I (we) hereby submit this Site Plan application to the City of Rochester Planning Board pursuant to the City of Rochester Site Plan Regulations and attest that to the best of my knowledge all of the information on this application form and in the accompanying application materials and documentation is true and accurate. As applicant/developer (if different from property owner)/as agent, I attest that I am duly authorized to act in this capacity. I also acknowledge that this project could be referred to the Planning Board for a new, full Planning Board review at the request of any person after any Minor Site Approval and that I would need to renotify abutters in that case (in accordance with RSA 674:43 III).

Signature of property owner: Terro	ence P. Dingman - Operations Manager June Vienn	
	Date: 4/5/2012	*********
Signature of applicant/developer:	Terrence P. Dingman - Operations Manager June Juy	il (
	Date: 4/5/20/2	
Signature of agent: TanaC.	-ynch, P.E. Jana C. lepich	
	Date: 4/9/2012	

#### Authorization to enter property

I hereby authorize members of the Rochester Planning Board, Zoning Board of Adjustment, Conservation Commission, Planning Department, and other pertinent City departments, boards and agencies to enter my property for the purpose of evaluating this application including performing any appropriate inspections during the application phase, review phase, post-approval phase, construction phase, and occupancy phase. This authorization applies specifically to those particular individuals legitimately involved in evaluating, reviewing, or inspecting this specific application/project. It is understood that these individuals must use all reasonable care, courtesy, and diligence when entering the property.

Signature of property owner:	Terrence P. Dingman - Operations Mana	ger / www
	Date:	4/5/2012

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# PROJECT NARRATIVE ACCOMPANYING MINOR SITE REVIEW FOR LYDALL-WASTEWATER TREATMENT SYSTEM UPDATE

#### Purpose

The proposed project is primarily a utility upgrade project to facilitate process efficiency improvements within the existing industrial plant. In addition to interior renovations to facilitate pump/tank installations, the system requires installation of a 25 ft. diameter by 42 ft. tall wastewater equalization and storage tank. A more detailed description of the upgrades is included in the attached "Pretreatment Process Description".

#### Site Layout

The proposed tank will be located directly adjacent to the southwesterly corner of the main plant and within the paved area accessed off Lydall Way used for truck loading and employee parking areas. The tank will be protected from vehicles by 6-inch bollards. Displaced parking spaces will be compensated for by restriping the existing parking spaces in a similar, but extended, diagonal configuration. No additional or extended pavement area is proposed. The total parking provision for the site remains unchanged and the loading dock maneuvering space unaltered.

#### Drainage and Utilities

The proposal does not require changes in drainage systems and will not require alterations to other site utilities.

#### Site Amenities

The project "impact" area is surrounded by existing pavement and structure. No tree removal or landscaping is proposed. There are no wetlands within 150 ft. of the proposed tank installation.

#### LYDALL FILTRATION

#### Industrial Pretreatment System Upgrade April 2, 2012

#### PRETREATMENT PROCESS DESCRIPTION

#### PROJECT SCOPE

Lydall Filtration desires to upgrade its existing wastewater pretreatment system in order to improve system performance, reliability and regulatory compliance. The proposed upgrade -- Phase 1 of a possible multi-phase improvement program -- is designed to immediately address the most critical deficiencies with the existing system, which have been identified as follows:

- wastewater equalization and storage capacity
- pH control
- control of pretreatment chemical dosing
- process control
- process monitoring

The project scope as defined by Lydall will be installed primarily by Lydall with Aries Chemical providing the following:

- permitting and engineering services
- new equalization tank and mixing system
- pretreatment mix tanks and mixers

The following scope will be provided by Lydall:

- process pumps
- chemical feed pumps
- electrical and instrumentation control panels
- piping and mechanical installation
- electrical installation

The existing KWI dissolved air floatation system (DAF) system will remain. The system capacity will not be increased, nor will existing loading to the system, which is estimated at 520,000 gpd and 2000 mg/l average influent TSS concentration.

#### PROCESS DESCRIPTION

The upgraded treatment system consists of the following components and their support systems:

#### 1. Process Effluent Collection

Process effluent is collected by the existing floor trench which feeds by gravity to the existing process effluent sump chest, T-1. Supplemental fiber is fed from the existing fiber feed system as needed to enhance wastewater clarification and dewatering of the sludge/float from certain paper grades. This existing fiber feed system is fitted with a flow transmitter to facilitate stable feed control. The PLC system shall monitor flow rate of this existing feed

system. Level control in the sump chest is provided by new level switches and PLC programming.

Wastewater from the sump chest is pumped via new stainless steel piping to the new equalization tank T-2 via duplex 4" heavy-duty solids-handling trash pumps P-1 and P-2 (20 hp, 430 gpm @ 70ft TDH). The duplex pumping system shall have alternating control via PLC programming.

#### 2. Wastewater Equalization and Storage

A new outdoor 156,000-gallon fused glass bolted steel tank, T-2, is provided for process effluent storage and flow equalization. It is 25' diameter X 42' sidewall height and is located next to the new pretreatment building at the southwest corner of the facility. T-2 is supplied with jet mixing that utilizes a 15 hp, 2200 gpm @18TDH pump, P-3, located inside the pretreatment building, and a bottom-mounted FRP jet mixing header inside the tank. This system utilizes recirculated water flow to provide uniform mixing conditions.

This EQ tank is recommended to compensate for the anticipated future loss of storage capacity when the facility's existing lagoons are decommissioned. It is recommended that the tank be operated at a working level of 40%-60% capacity. The operating level is adjustable and automatically maintained through the PLC control system.

#### 3. Epoxy Batch Treatment

An existing 2500-gallon batch treatment tank is provided for "breaking" (destabilizing) concentrated epoxy-based emulsions that are periodically encountered with certain paper grades. This tank receives the emulsion in batches pumped over from the paper machine by an existing 2" diaphragm pump. Treatment consists of acidification by sulfuric acid utilizing automatic pH control. After emulsion break treatment, the entire pre-treated batch is pumped to T-2 equalization for mixing and processing with the normal waste stream.

#### 4. Mix Tanks and DAF Clarifier Process Feed

Equalized wastewater from T-2 flows to the treatment process via duplex 4" trash pumps P-4 and P-5 (15 hp, 430 gpm @ 50 ft TDH). Each feed pump has a Variable Frequency Drive (VFD), which controls the entire treatment system flow rate. Feed piping is fitted with a flow transmitter. One actuated shut off valve is provided to prevent siphoning from the EQ tank when the DAF feed pumps are shut down. The duplex pumping system shall have alternating control via PLC programming.

#### 5. Chemical Treatment

The pH in the process sump T-1 varies depending on the process operation and at times can be as low as 2.5. Following the duplex trash pumps P-1 and P2 the pH will be adjusted by in-line injection of 50% Sodium Hydroxide (caustic) to pH neutral which will help prevent corrosion in the system.

Chemical treatment in the Mix Tanks is initiated by in-line injection of coagulant (either Ferric Chloride or Aries Chembreak 851, depending on paper grade being run) to the waste stream as it is pumped to the front end of the treatment system. Influent (feed) water is received at the treatment system into a series of three (3) 2500-gallon mix tanks T-3, T-4 and T-5, for pH adjustment, coagulation and flocculation, respectively. Each mix tank has VFD controlled 1.5-hp mixers to optimize mixing conditions.

Chemical metering pumps are equipped for manual or automated chemical dosing via the system PLC, as follows:

- EQ Tank T-2 pH adjust manual or pH-controlled feed of 50% Sodium Hydroxide (caustic) to pH 7.0 8.0, operator adjustable
- In-line coagulation manual or flow-proportional feed of coagulant (either Ferric Chloride or Aries Chembreak 851) at 200 1000 ppmv depending on the paper grade and wastewater concentration, operator adjustable
- T-3 pH adjustment manual or pH controlled feed of 50% Sodium Hydroxide (caustic) to pH 7.0 8.0, operator adjustable
- T-4 pH adjustment manual or pH controlled feed of 93% Sulfuric Acid to pH 7.0 8.0, operator adjustable
- T-5 Flocculation manual or flow-proportional feed of Aries 3184 cationic emulsion polymer solution at 10-15 ppmv, operator adjustable

#### 6. Clarification

Chemically treated wastewater flows by gravity from T-5 flocculation tank to the feed end of the KWI dissolved air floatation clarifier. A recycle stream of clarified water saturated with dissolved air is injected into the incoming stream at an operator adjustable recycle rate. The floating action of microscopic bubbles released into the stream causes separation of the chemically coagulated solids within the DAF's clarification zone, resulting in a "float" layer of concentrated solids and a much larger submerged volume of clarified water. The "float" or sludge is skimmed by a counter-flow surface skimmer system to a beach, from which the sludge is fed by gravity (with flush water assist) directly to a screw press for sludge dewatering. Clarified water discharges via the DAF's effluent discharge system to the existing process effluent sump chest. A portion of the clarified water (30% to 50% of influent flow rate) is pumped by the DAF recycle pump from the effluent collection tank and recycled through the pressurized air dissolving system and then re-mixed with DAF influent for clarification.

#### 7. Effluent wastewater monitoring, storage and discharge

Clarified DAF effluent is pumped from the effluent collection tank via duplex DAF effluent pumps and piping to the existing outdoor lagoons (two, 750,000 gallon capacity each, operated in series).

The facility's existing effluent monitoring system will remain in place for the final effluent discharge to the City sewer system. Wastewater is pumped from the lagoon via the existing effluent monitoring system and to the existing sewer discharge pipe. Effluent pH is adjusted if necessary by the existing automated dosing system in order to ensure compliance with the facility's effluent discharge limits.

#### 8. Sludge (float) dewatering

Sludge skimmed from the DAF is directed from the DAF into the existing screw press. Dewatered cake from the screw press discharges to a portable dumping hopper and removed for disposal by forklift.

Filtrate and wash-down water from the screw press dewatering operations drains by gravity to the existing process effluent sump chest T-1 which returns this water to the T-2 equalization tank for re-treatment.

#### 9. Chemical Storage and Feed Systems

Existing chemical storage areas and individual chemical feed pumps are provided for each of the following water treatment chemicals:

- Ferric Chloride coagulant
- Aries Chembreak 851 coagulant Sodium Hydroxide 50% Sulfuric Acid 93%

- Aries 3184 Flocculant (drum storage)

#### 10. Control System

New controls and instrumentation related to the wastewater treatment system shall be integrated into the facility's existing PLC control system by Lydall. These include the following devices:

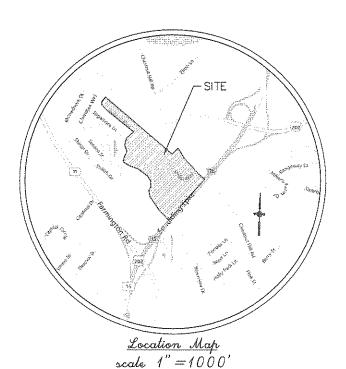
Qty	Description	Manufacture
- American de la company de la	Pressure transmitter, 4-20mA output with 2" isolation ring	Siemens, SITRANS P series with Ashcroft type 80 Iso-Ring
1	Magnetic flow transmitter, 4-20mA output	Siemens, SITRANS series
3	pH sensor with transmitter, 4-20mA output	ABB, TB82 series with TB551 flat tip glass sensor
4	Float level switch	P&F

## MINOR SITE PLAN

# LYDALL - WASTEWATER TREATMENT SYSTEM UPGRADES

TAX MAP 216, LOT 32 134 CHESTNUT HILL ROAD ROCHESTER, NEW HAMPSHIRE ORIGINAL SUBMISSION: APRIL 10, 2012

ABUTTERS LIST			
TAX MAP 216	LOT NO. 26	NAME & ADDRESS Donaid & Bonnie Toy Toys Manufactured Hausing 15 Noshobo Drive Rochester, NH 03867	
216	30, 32, 34	Lydall Eastern, Inc P.O. Box 1960 Rochester, NH 03866	
216	31	State of New Hampshire Department of Transportation 1 Hazen Drive Concord, NH 03301	
216	35	Robert Forcier, Jr. 146 Chestnut Hill Road Rochester, NH 03867	
216	36	Hilda M. Forcier 148 Chestnut Hill Road Rochester, NH 03867	
216	37	Allen Family Trust Leroy & Rosemary Allen, Trustees 125 Wakefield Street Rochester, NH 03867	
216	38	Jonet A. Poulin 39 Howe Street Rochester, NH 03867-3728	
215	39	State of New Hampshire P.O. Box 483 Concord, NH 03302-0483	
216	77	Macmiller Consolidated, LLC 109 Chestnut Hill Road Rochester, NH 03867-5122	
216	78	Mark A. & Karen A. Tremblay P.O. Box 866 Milton, NH 03851	
216	79	Charles W. Moses 133 Chestnut H체 Road Rochester, NH 03667—5123	
215	50	David C. Jacobs 129 Chestnut Hill Road Rochester, NH 03867—5123	
216	81	Lauise J. Brown 121 Chestnut Hill Road Rochester, NH 03867-5123	
221	168	Charles Karacas 3 Fermington Road Rochester, NH 03867-4305	
221	169	State of New Hampshire Bureau of Tumpikes P.O. Box 2950 Concord, NH 03302-2950	
221	172	Murray Marketing c/o Murray Outdoor Comm. 418-420 Boston Turnpike Shrewsbury, MA 01545	
221	182, 183	Jeannette & Wayne E. Goodwin, Sr. 116 Chestnut Hill Road Rochester, NH 03867-5121	
221	184, 185, 186, 187, 188	Lydoll Eastern, Inc. P.O. Box 1960 Rochester, NH 03866	



FINAL APPROVAL BY THE ROCHESTER PLANNING BOARD; CERTIFIED BY:

OWNERS OF RECORD/PREPARED FOR: LYDALL FILTRATION/SEPARATION, INC. P.O. BOX 1960 ROCHESTER, NH 03867

CIVIL ENGINEER: CIVILWORKS, INC. P.O. BOX 1166 181 WATSON ROAD DOVER, NH 03821-1166

ENVIRONMENTAL CONSULTANT:
GZA GEO ENVIRONMENTAL, INC.
380 HARVEY ROAD
MANCHESTER, NH 03103—3347



INDEX	SHEET NO
Cover Sheet Overall Existing Conditions Plan (1"=60') Detailed Site Plan Detail Sheets	1 2 3 4
Project Drawings by Aries Chemical. Inc.	

