

MEMORANDUM

RELEASABLE

**DATE:** October 4, 2010

**TO:** Al Keller, Manager, BOW/DWPC – Permit Section

**FROM:** Tim Zook, BOL/DRM – Remedial Project Management Section

**SUBJECT:** Arnold Magnetic Technologies      BOL No. 1110650003  
Arnold Engineering Corporation      BOW Operating Permit No. 2006-EO-0690  
(Marengo Facility)      Request for Additional Monitoring

The subject site was enrolled into the Voluntary Site Remediation Program in May 2008. A wastewater treatment system has operated at the site for years, under a series of Operating Permits – the most recent of which is Permit No. 2006-EO-0690, issued April 21, 2006, with an expiration date of March 31, 2011.

In order to assist with the assessment of the property for the Site Remediation Program, I am requesting that the following items be added to the Operating Permit when it is renewed.

FIRST, I recommend that 1,1-Dichloroethene be added to list of parameters that are routinely sampled once a month at the monitoring wells (MW-1, MW-2, MW-3, MW-A4, MWA5, MW-A6, MW-A7 and MW-A8) listed in the current Water Pollution Control Operating Permit. In recent sampling performed for the Site Remediation Program, this compound was found in several groundwater samples at the site, in concentrations greater than the Class I Groundwater Remediation Objective. The addition of 1,1-Dichloroethene to the list of parameters routinely sampled in the DWPC-Permitted monitoring wells will provide information useful in determining the extent of contamination.

SECOND, it is requested that off-site monitoring well MW-A9 be sampled on the same schedule and for the same parameters as the other monitoring wells – if it still exists. If MW-A9 does not still exist, it is recommended that a replacement well be installed in approximately the same location, with appropriate sampling started.

**General Background Information on Arnold Magnetic Technologies:**

The owner of the reported approximately 72-acre property is 300 West LLC, per the DRM-1 Form (for enrollment into the Site Remediation Program) received in May 2008. (In casual discussions, personnel affiliated with the site generally refer to “John Daley” as being the owner.)

October 4, 2010  
Memorandum to Al Keller  
Arnold Magnetic Technologies  
Arnold Engineering Corporation

RELEASABLE

Arnold Magnetic Technologies (formerly Arnold Engineering) evidently owned and occupied the site from the early 1900s until circa 2006, when the property was purchased by 300 West LLC. According to the consultant, Bill Lennon of Environmental Group Services, Ltd., a Comprehensive No Further Remediation Letter is sought for financing purposes. 300 West LLC/Daley reportedly purchased the property with an agreement that Arnold could stay there for up to ten years, but plans to eventually develop the site for residential or mixed uses.

Arnold utilizes the site for the manufacturer of the manufacturer of magnetic components and rolled metal products. Per the *Phase I Environmental Site Assessment*, the property was originally developed in the late 1890s and first used as a rail yard and railroad engine manufacturing/maintenance facility. The property was then purchased by Arnold in the early 1900s, with magnetic operations/manufacturing beginning in the 1950s.

**Background Information Regarding Off-Site Monitoring Well MW-A9:**

In response to a requirement in DWPC Permit No. 2004-EO-0971, in November 2004 a new well, MW-A9, was installed off-site, in the railroad right-of-way approximately 300 feet downgradient of MW-3. Starting in November 2004, MW-A9 was sampled on the same schedule as the other monitoring wells, 1/month for 1,1,1-TCA, PCE, TCE, TDS, Nickel and pH. *Monthly sampling was performed from November 2004 through April 2006, with all VOCs results reported as less than laboratory detection limits. Sampling was discontinued after April 2006; I am not aware of any explanation for this.*

I would like an opportunity to review the DRAFT renewal of the Operating Permit, before it is finalized. Call me at 557-8085 if there are any questions.

cc: Darin LeCrone/Shu-Mei Tsai, BOW/DWPC - Permit Section  
Karen Katamay, BOW/DWPC – Des Plaines Region Office  
Tom Rivera, BOL/DLPC – Des Plaines Region Office  
BOW/DWPC/FOS/Records Unit  
BOL Records Unit



**ARNOLD**  
MAGNETIC TECHNOLOGIES

**Environmental Health & Safety  
Department**

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

October 15, 2010

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, Illinois 62794-9276  
Attn: Shu-Mei Tsai

1001-10  
**RECEIVED**  
OCT 25 2010

Environmental Protection Agency  
WPC-Permit Log In

RELEASED

**Subject: WPCP Renewal Application: Permit No. WPCP 2006-EO-0690**

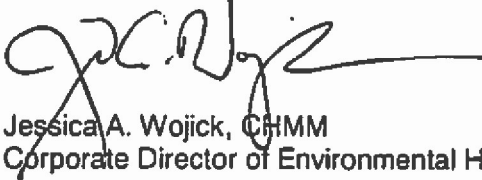
Dear Ms. Tsai:

Attached is our application for renewal of our water pollution control permit (currently WPCP 2006-EO-0690) including forms WPC-PS-1, Schedule J, and Schedule N. The current permit will expire March 31, 2011.

We are in the midst of further characterizing our wastewater to fully complete Item 3 of Schedule N. We request that IEPA accept these additional materials as part of our permit renewal application. IEPA should receive the updated Schedules by November 15, 2010.

Please direct all permits and written correspondence to my attention at the address above. If you require further information or if you have any questions, please contact me directly at (585) 385-9010 x 289.

Sincerely,  
Arnold Magnetic Technologies



Jessica A. Wojick, CHMM  
Corporate Director of Environmental Health & Safety Affairs



770 Linden Avenue  
Rochester, NY 14625

Jessica A. Wojick, CHMM  
Corp. Dir. Environmental  
Health and Safety Affairs

Tel 585-385-9010 x 289  
Cell 585-303-5344

jwojick@arnoldmagnetics.com    www.arnoldmagnetics.com

*Our world touches your world every day...*

Attachments

cc: Al Keller, IEPA                      w/o attachment

770 Linden Avenue, Rochester, NY 14625  
1-800-593-9127 or 1-585-385-9010 • Fax: 1-585-385-5825

*Our World Touches Your World Every Day...*

[www.arnoldmagnetics.com](http://www.arnoldmagnetics.com)

R 000019

10/25/2010

# SPEED OF PROCESSING FORM

DATE RECEIVED: 10/25/2010

PROJECT NAME: ARNOLD ENGINEERING CO

LOG NUMBER: 1001 LOG YEAR: 2010

PROJECT DESC: ITP MARENGO

ENGINEER: SMT

PROJECT TYPE: ITP

UNIT: I

LOCATION: MARENGO

PLANS: B

REGION: 2

## RELEASABLE

FIPS COUNTY: 111

ORIGINAL LOG NO:

45 DAY FIELD: .F.

PREVIOUS PERMIT NO: 2006E00690

LOAN/GRANT:

CARD SENT: ( Y or N )

### FEE SUBMITTED

CHECK NUMBER: 0 CHECK AMOUNT: 0

CHECK NUMBER: CHECK AMOUNT:

### 30 DAY REVIEW PERIOD ENDS

IDNR: / / IHPA: / /

### SIGN-OFF AUTHORIZATIONS

	INITIALS	DATE
ENGINEER:	<u>SMT</u>	<u>1-6-2011</u>
UNIT MANAGER:	<u>DEL</u>	<u>1/12/11</u>
SECTION MANAGER:	<u>MLC</u>	<u>1/12/11</u>
DATE MAILED:	<u>ASD</u>	<u>1-12-11</u> <u>BSW</u>

ACTION: X PERMIT: \_\_\_\_\_ DENIAL: \_\_\_\_\_ VOIDED \_\_\_\_\_ NPR: \_\_\_\_\_ NOI: \_\_\_\_\_

PERMIT NUMBER: 2011-E0-1001

LOADING: \_\_\_\_\_ P.E.

ISSUE DATE: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
GPD DAF

EXPIRATION DATE: \_\_\_\_\_



**ARNOLD®**  
MAGNETIC TECHNOLOGIES

**Environmental Health & Safety  
Department**

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

January 14, 2011

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, Illinois 62794-9276  
Attn: Shu-Mei Tsai

RELEASABLE

1278-11  
RECEIVED  
JAN 25 2011

Environmental Protection Agency  
WPC-Permit Log In

**Subject: WPCP Updated Renewal Application: Permit No. WPCP 2006-EO-0690**

Dear Ms. Tsai:

Attached is our updated application for renewal of our water pollution control permit (currently WPCP 2006-EO-0690) including forms WPC-PS-1, Schedule J, and Schedule N. The current permit will expire March 31, 2011. Contained in this package is the updated Schedule N which now contains all the necessary data for the full characterization of our wastewater.

As part of the process to renew our WPCP, we are requesting an opportunity to meet directly with you as a representative of the Water Pollution Control Division so we may have the chance to discuss the operational conditions of the permit before the renewal is issued. If possible, we would like to schedule this meeting either the first or second week of February 2011. I will contact you directly to set up this meeting.

Please direct all permits and written correspondence to my attention at the address above. If you require further information or if you have any questions, please contact me directly at (585) 385-9010 x 289.

Sincerely,  
Arnold Magnetic Technologies

Jessica A. Wojick, CHMM  
Corporate Director of Environmental Health & Safety Affairs

Attachments

cc: Al Keller, IEPA w/o attachment

770 Linden Avenue, Rochester, NY 14625  
1-800-593-9127 or 1-585-385-9010 • Fax: 1-585-385-5625

Our World Touches Your World Every Day...

[www.arnoldmagnetics.com](http://www.arnoldmagnetics.com)

R 000021



Illinois Environmental Protection Agency  
 Permit Section, Division of Water Pollution Control  
 P.O. Box 19276  
 Springfield, Illinois 62794-9276

12-18-11  
 For IEPAC USE  
**RECEIVED**  
 JAN 25 2011  
 Environmental Protection Agency  
 WPC-Permit Log In

Application for Permit or Construction Approval  
 WPC-PS-1

**RELEASABLE**

1. Owner Name: Arnold Magnetic Technologies  
 Name of Project: Arnold Magnetic Technologies - Arnold Engineering Wastewater Treatment and Recycle System  
 Township: Marengo County: McHenry

2. Brief Description of Project:  
 Renewal of Operating Permit 2006-EO-0690 for the existing sanitary and industrial water recycling system. Original permit application was submitted in 1975 and the system has been in operation since that date, however the discharge from the system has decreased significantly. See Schedule J for process diagram and description.

3. Documents Being Submitted: If the Project involves any of the items listed below, submit the corresponding schedule, and check the appropriate boxes.

	Schedule		Schedule
Private Sewer Connection/Extension	A/B <input type="checkbox"/>	Spray Irrigation	H <input type="checkbox"/>
Sewer Extension Construct Only	C <input type="checkbox"/>	Septic Tanks	I <input type="checkbox"/>
Sewage Treatment Works	D <input type="checkbox"/>	Industrial Treatment/Pretreatment	J <input checked="" type="checkbox"/>
Excess Flow Treatment	E <input type="checkbox"/>	Waste Characteristics	N <input checked="" type="checkbox"/>
Lift Station/Force Main	F <input type="checkbox"/>	Erosion Control	P <input type="checkbox"/>
Fast Track Service Connection	FTP <input type="checkbox"/>	Trust Disclosure	T <input type="checkbox"/>
Sludge Disposal	G <input type="checkbox"/>		

Plans: Title Arnold Magnetic Technologies - Arnold Engineering Water Recycling System

\_\_\_\_\_ No. of Pages: \_\_\_\_\_

Specifications: Title NA

\_\_\_\_\_ No. of Books/Pages: \_\_\_\_\_

Other Documents: NA  
 (Please Specify)

3.1 Illinois Historic Preservation Agency approval letter: Yes  No

4. Land Trust: Is the project identified in item number 1 herein, for which a permit is requested, to be constructed on land which is the subject of a trust? Yes  No

If yes, Schedule T (Trust Disclosure) must be completed and item number 7.1.1 must be signed by a beneficiary, trustee or trust officer.

5. This is an Application for (Check Appropriate Line):

- A. Joint Construction and Operating Permit
- B. Authorization to Construct (See Instructions) NPDES Permit No. IL00 \_\_\_\_\_
- C. Construct Only Permit (Does Not Include Operations)
- D. Operate Only Permit (Does Not Include Construction)

6. Certifications and Approval:

6.1 Certificate by Design Engineer (When required: refer to instructions)

I hereby certify that I am familiar with the information contained in this application, including the attached schedules indicated above, and that to the best of my knowledge and belief such information is true, complete and accurate. The plans and specifications (specifications other than Standard Specifications or local specifications on file with this Agency) as described above were prepared by me or under my direction.

Engineer Name: NA

Registration Number: \_\_\_\_\_  
(3 digits) (6 digits)

Firm: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone No: \_\_\_\_\_

Signature X \_\_\_\_\_ Date: \_\_\_\_\_

(Seal)  
**RELEASABLE**

7. Certifications and Approvals for Permits:

7.1 Certificate by Applicant(s)

I/We hereby certify that I/we have read and thoroughly understand the conditions and requirements of this Application, and am/are authorized to sign this application in accordance with the Rules and Regulations of the Illinois Pollution Control Board. I/We hereby agree to conform with the Standard Conditions and with any other Special Conditions made part of this Permit.

7.1.1 Name of Applicant for Permit to Construct: NA

\_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Signature X \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Phone No: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

7.1.2 Name of Applicant for Permit to Own and Operate: Arnold Magnetic Technologies - Arnold Engineering

\_\_\_\_\_

Address: 300 N. West Street

City: Marengo State: IL Zip Code: 60152

Signature X  Date: 10/15/2010

Printed Name: Jessica A. Wojcik, CHMM Phone No: (585) 392-5211

Title: Corporate Director of Environmental Health & Safety Affairs

7.2 Attested (Required When Applicant is a Unit of Government)

Signature X \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_  
(City Clerk, Village Clerk, Sanitary District Clerk, Etc.)

7.3 Applications from non-governmental applicants which are not signed by the owner, must be signed by a principal executive officer of at least the level of vice president, or a duly authorized representative.

7.4 Certificate By Intermediate Sewer Owner

RELEASABLE

I hereby certify that (Please check one):

- 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the environmental Protection Act or Subtitle C, Chapter I, or
- 2. The Illinois Pollution Control Board, in PCB \_\_\_\_\_ dated \_\_\_\_\_ granted a variance from Subtitle C, Chapter I to allow construction of facilities that are the subject of this application.

Name and location of sewer system to which this project will be tributary:

NA \_\_\_\_\_

Sewer System Owner: NA \_\_\_\_\_

Address: NA \_\_\_\_\_

City: NA \_\_\_\_\_ State: NA \_\_\_\_\_ Zip Code: NA \_\_\_\_\_

Signature X \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: NA \_\_\_\_\_ Phone No: \_\_\_\_\_

Title: \_\_\_\_\_

7.4.1 Additional Certificate By Intermediate Sewer Owner

I hereby certify that (Please check one):

- 1. The sewers to which this project will be tributary have adequate reserve capacity to transport the wastewater that will be added by this project without causing a violation of the environmental Protection Act or Subtitle C, Chapter I, or
- 2. The Illinois Pollution Control Board, in PCB \_\_\_\_\_ dated \_\_\_\_\_ granted a variance from Subtitle C, Chapter I to allow construction facilities that are the subject of this application.
- 3. Not applicable

Name and location of sewer system to which this project will be tributary:

NA \_\_\_\_\_

Sewer System Owner: NA \_\_\_\_\_

Address: NA \_\_\_\_\_

City: NA \_\_\_\_\_ State: NA \_\_\_\_\_ Zip Code: NA \_\_\_\_\_

Signature X \_\_\_\_\_ Date: \_\_\_\_\_



Printed Name: NA Phone No: \_\_\_\_\_

Title: \_\_\_\_\_

7.5 Certificate By Waste Treatment Works Owner

RELEASEABLE

I hereby certify that (Please check one):

- 1. The waste treatment plant to which this project will be tributary has adequate reserve capacity to treat the wastewater that will be added by this project without causing a violation of the Environmental Protection Act or Subtitle C, Chapter I, or
- 2. The Illinois Pollution Control Board, in PCB \_\_\_\_\_ dated \_\_\_\_\_ granted a variance from Subtitle C, Chapter I to allow construction and operation of the facilities that are the subject of this application.
- 3. Not applicable

I also certify that, if applicable, the industrial waste discharges described in the application are capable of being treated by the treatment works.

Name of Waste Treatment Works: NA

Waste Treatment Works Owner: NA

Address: NA

City: NA State: NA Zip Code: NA

Signature X \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: NA Phone No: \_\_\_\_\_

Title: NA

Please return completed form to the following address:

Illinois Environmental Protection Agency  
Permit Section, Division of Water Pollution Control  
P.O. Box 19276  
Springfield, Illinois 62794-9276

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that Section. Failure to do so may prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center.

FOR IEPA USE:  
LOG  
DATE RECEIVED:

1278-11  
**RECEIVED**  
JAN 25 2011

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF WATER POLLUTION CONTROL  
PERMIT SECTION

Environmental Protection Agency  
WPC-Permit Log In

Springfield, Illinois 62708

SCHEDULE J INDUSTRIAL TREATMENT WORKS CONSTRUCTION OR PRETREATMENT WORKS

**RELEASABLE**

1. **NAME AND LOCATION:**

1.1 Name of project Arnold Magnetic Technologies - Arnold Engineering

1.2 Plant Location

1.2.1	<u>NW</u>	<u>35</u>	<u>44N</u>	<u>5E</u>	<u>3rd</u>
	Quarter Section	Section	Township	Range	P.M.
1.2.2	Latitude	<u>42</u> deg.	<u>15</u> min.	<u>14</u> sec.	"NORTH
1.2.3	Longitude	<u>88</u> deg.	<u>37</u> min.	<u>14</u> sec.	"WEST
1.2.3	Name of USGS Quadrangle Map (7.5 or 15 minute) <u>Harvard IL-WI 15 Minute</u>				

2. **NARRATIVE DESCRIPTION AND SCHEMATIC WASTE FLOW DIAGRAM:** (see instructions)

Original application was submitted in 1975. Permit updates were submitted in 1984, 1989 and 1993. Except flow rates, operation of the system has remained essentially the same since 1993. See attached description

2.1 **PRINCIPAL PRODUCTS:**

Industrial and commercial magnets and magnetic materials.

2.2 **PRINCIPAL RAW MATERIALS:**

Aluminum, nickel, cobalt, iron, steel, acids and oils

3. **DESCRIPTION OF TREATMENT FACILITIES:**

- 3.1 Submit a flow diagram through all treatment units showing size, volumes, detention times, organic loadings, surface settling rate, weir overflow rate, and other pertinent design data. Include hydraulic profiles and description of monitoring systems.
- 3.2 Waste Treatment Works is: Batch  , Continuous  , No. of Batches/day \_\_\_\_\_ , No. of Shifts/day \_\_\_\_\_
- 3.3 Submit plans and specifications for proposed construction.
- 3.4 Discharge is: Existing  ; Will begin on \_\_\_\_\_

4. **DIRECT DISCHARGE IS TO:** Receiving Stream  Municipal Sanitary Sewer  Municipal storm or municipal combined sewer

If receiving stream or storm sewer are indicated complete the following:  
Name of receiving stream NA ; tributary to NA ;  
tributary to NA ; tributary to NA ;

5. Is the treatment works subject to flooding? Yes  No  If so, what is the maximum flood elevation of record (in reference to the treatment works datum) and what provisions have been made to eliminate the flooding hazard?

[Empty box for flooding hazard details]

6. **APPROXIMATE TIME SCHEDULE:** Estimated construction schedule:

Start of Construction \_\_\_\_\_ ; Date of Completion \_\_\_\_\_  
Operation Schedule \_\_\_\_\_ ; Date Operation Begins \_\_\_\_\_  
100% design load to be reached by year \_\_\_\_\_

7. **DESIGN LOADINGS**

- 7.1 Design population equivalent (one population equivalent is 100 gallons of wastewater per day, containing 0.17 pounds of BOD<sub>5</sub> and 0.20 pounds of suspended solids;  
BOD \_\_\_\_\_ ; Suspended Solids \_\_\_\_\_ ; Flow \_\_\_\_\_
- 7.2 Design Average Flow Rate NA MGD.

- 7.3 Design Maximum Flow Rate NA MGD.
- 7.4 Design Minimum Flow Rate NA MGD.
- 7.5 Minimum 7-day, 10-year low flow NA cfs NA MGD.  
Minimum 7-day, 10-year flow obtained from NA
- 7.6 Dilution Ratio NA : NA

8. FLOW TO TREATMENT WORKS (if existing):

- 8.1 Flow (last 12 months)
  - 8.1.1 Average Flow 0.163030 MGD
  - 8.1.2 Maximum Flow 0.217333 MGD
- 8.2 Equipment used in determining above flows

RELEASEABLE

9. Has a preliminary engineering report for this project been submitted to this Agency for Approval?

Yes  No  . If so, when was it submitted and approved. Date Submitted 9/30/1964  
 Certification # 19640-FA-546  
 Dated 10/9/1964

10. List Permits previously issued for the facility:

1994-EO-1340-2; 1999-EO-4027; 2004-EO-0971; 2006-EO-0690

11. Describe provisions for operation during contingencies such as power failures, flooding, peak loads, equipment failure, maintenance shut downs and other emergencies.

Back up pumps are present to provide emergency assistance in case of a main pump failure.

12. Complete and submit Schedule G if sludge disposal will be required by this facility.

13. WASTE CHARACTERISTICS: Schedule N must be submitted.

14. TREATMENT WORKS OPERATOR CERTIFICATION: List names and certification numbers of certified operators:

James B. Roozee - Industrial Wastewater Treatment Works Operator (Issued 2/2/2010)

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 1/2, Section 1039. Disclosure of this information is required under that section. Failure to do so may prevent this form from being processed and could result in your application being denied.

For IEPA Use:

Log #

Date Received:

12-8-11  
RECEIVED  
JAN 25 2011

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF WATER POLLUTION CONTROL  
PERMIT SECTION  
Springfield, Illinois 62764-9276

Environmental Protection Agency  
WPC-Permit Log In

SCHEDULE N WASTE CHARACTERISTICS

RELEASEABLE

1 Name of Project: Arnold Magnetic Technologies - Arnold Engineering

2 FLOW DATA

EXISTING

PROPOSED-DESIGN

2.1 Average Flow (gpd) 163,030 gpd NA

2.2 Maximum Daily Flow (gpd) 217,333 gpd NA

2.3 TEMPERATURE

Time of Year	Avg. Intake Temp. F	Avg. Effluent Temp. F	Max Effluent Temp. F	Max Temp Outside Mixing Zone F
SUMMER	NA	NA	NA	NA
WINTER	NA	NA	NA	NA

2.4 Minimum 7-day, 10-year flow NA cfs NA MGD

2.5 Dilution Ratio: NA : NA

2.6 Stream flow rate at time of sampling NA cfs NA MGD

3 CHEMICAL CONSTITUENT

Existing Permitted Conditions  ; Existing Conditions  ; Proposed Permitted Conditions

Type of Sample:  grab (time of collection) 10/16/2010, 10/19/2010, 11/18/2010, 12/21/2010

composites (number of samples per day) See below

Single 24-hr composite (10/16/2010) for all reported values except total phenols, VOCs, TRC, oil & grease, total cyanide, pH and mercury

(see instructions for analyses required)

CONSTITUENT	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l) Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
Ammonia Nitrogen (as N)	< 0.2 <sup>†</sup>	< 0.2 <sup>†</sup>	NA	NA
Arsenic (total)	< 0.045	0.045 <sup>†</sup>	NA	NA
Barium	0.12	0.084	NA	NA
Boron	0.17 <sup>†</sup>	0.16 <sup>†</sup>	NA	NA
BOC <sub>5</sub>	< 2.0 <sup>**</sup>	< 2.0 <sup>**</sup>	NA	NA
Cadmium	< 0.0050	< 0.0050	NA	NA
Carbon Chloroform Extract	see TOC Dup	see TOC Dup	NA	NA
Chloride	160	160	NA	NA
Chromium (total)	< 0.01	< 0.01	NA	NA
Chromium (total trivalent)	NA	NA	NA	NA
Copper	< 0.018	< 0.018	NA	NA
Cyanide (total)	< 0.0054	< 0.0054	NA	NA
Dissolved Oxygen	NA	NA	NA	NA
Fecal Coliform	NA	NA	NA	NA
Fluoride	< 0.2	< 0.2	NA	NA
Hardness (as Ca CO <sub>3</sub> )	280	180	NA	NA
Iron (total)	0.50	0.54	NA	NA
Lead	< 0.018	< 0.018	NA	NA
Manganese	0.0045	0.005	NA	NA
MBAS	< 0.12	< 0.12	NA	NA
Mercury	< 0.000065	< 0.000065	NA	NA
Nickel	0.088	0.1	NA	NA
Nitrate (as N)	0.17 <sup>†</sup>	< 0.24	NA	NA
Oil & Grease (hexane extractable or equivalent)	0.9 <sup>†</sup>	< 0.67	NA	NA
Organic Nitrogen (as N)	< 0.25	< 0.25	NA	NA
pH	8.8	8.54	NA	NA
Phenols	0.0075	0.00845 (avg), 0.014 (max)	NA	NA
Phosphorous (as P)	120	150	NA	NA
Radioactivity	NA	NA	NA	NA
Selenium	< 0.044	< 0.044	NA	NA
Silver	< 0.0037	< 0.0037	NA	NA
Sulfate	12	12	NA	NA
Total Suspended Solids	4	3 <sup>†</sup>	NA	NA
Total Dissolved Solids	730	700	NA	NA
Zinc	< 0.002 <sup>†</sup>	< 0.002 <sup>†</sup>	NA	NA
Others	see attached	see attached	NA	NA

<sup>†</sup> Analyte detected in method blank

<sup>‡</sup> Result between MDL and LOQ and is therefore less certain.

<sup>\*</sup> Result less than RL but greater than MDL. Value is estimated.

<sup>\*\*</sup> Oxygen depletion less than 2 mg/l. Result is estimated.

Note: All metals are reported as "Total"

Table of Other Inorganic Compounds and Remaining Conventional Parameters

CONSTITUENT	RAW WASTE (mg/l)	TREATED EFFLUENT Avg. (mg/l) Max.	UPSTREAM (mg/l)	DOWNSTREAM SAMPLES (mg/l)
TOC Dup	8.5	1.9	NA	NA
COD	17 <sup>†</sup>	<11	NA	NA
TKN	<0.25	<0.25	NA	NA
TRC	<0.016	0.1	NA	NA
Aluminum	<0.15	<0.15	NA	NA
Antimony	0.088	<0.042	NA	NA
Beryllium	<0.005	<0.005	NA	NA
Cobalt	0.034	0.04	NA	NA
Magnesium	36	36	NA	NA
Molybdenum	0.0068	0.0069	NA	NA
Thallium	<0.017	<0.017	NA	NA
Tin	<0.00061	<0.00061	NA	NA
Titanium	<0.002	<0.002	NA	NA
Bromide	<1.0	<1.0	NA	NA
Sulfide	<0.2	<0.2	NA	NA

† Analyte detected in method blank  
 ‡ Result between MDL and LOQ and is therefore less certain.  
 \* Result less than RL but greater than MDL. Value is estimated.  
 \*\* Oxygen depletion less than 2 mg/l. Result is estimated.  
 Note: All metals are reported as "Total"

RELEASABLE

Table of SVOCs

CONSTITUENT	RAW WASTE (ug/l)	TREATED EFFLUENT Avg. (ug/l) Max.	UPSTREAM (ug/l)	DOWNSTREAM SAMPLES (ug/l)
1,2,4-Trichlorobenzene	<1.4	<1.4	NA	NA
1,2-Dichlorobenzene	<1.2	<1.2	NA	NA
1,2-Diphenylhydrazine	<1.4	<1.4	NA	NA
1,3-Dichlorobenzene	<1.3	<1.3	NA	NA
1,4-Dichlorobenzene	<1.3	<1.3	NA	NA
2,4,6-Trichlorophenol	<1.1	<1.1	NA	NA
2,4-Dichlorophenol	<1.3	<1.3	NA	NA
2,4-Dimethylphenol	<1.6	<1.6	NA	NA
2,4-Dinitrophenol	<8.1	<8.1	NA	NA
2,4-Dinitrotoluene	<1.5	<1.5	NA	NA
2,6-Dinitrotoluene	<1.3	<1.3	NA	NA
2-Chloronaphthalene	<1.4	<1.4	NA	NA
2-Chlorophenol	<1.1	<1.1	NA	NA
2-Nitrophenol	<1.2	<1.2	NA	NA
3,3'-Dichlorobenzidine	<1.3	<1.3	NA	NA
4,6-Dinitro-o-cresol	<5.0	<5.0	NA	NA
4-Bromophenyl phenyl ether	<1.4	<1.4	NA	NA
4-Chlorophenyl phenyl ether	<1.3	<1.3	NA	NA
4-Nitrophenol	<3.6	<3.6	NA	NA
Acenaphthene	<1.5	<1.5	NA	NA
Acenaphthylene	<1.5	<1.5	NA	NA
Anthracene	<1.4	<1.4	NA	NA
Benzbidine	<10	<10	NA	NA
Benzo[a]anthracene	<1.1	<1.1	NA	NA
Benzo[a]pyrene	<1.2	<1.2	NA	NA
Benzo[b]fluoranthene	<1.1	<1.1	NA	NA
Benzo[g,h,i]perylene	<1.4	<1.4	NA	NA
Benzo[k]fluoranthene	<1.4	<1.4	NA	NA
bis (2-chloroisopropyl) ether	<1.4	<1.4	NA	NA
Bis(2-chloroethoxy)methane	<1.4	<1.4	NA	NA
Bis(2-ethylhexyl) phthalate	6.1*	<1.1	NA	NA
Butyl benzyl phthalate	<1.3	<1.3	NA	NA
Chrysene	<1.3	<1.3	NA	NA
Dbenz[a,h]anthracene	<1.4	<1.4	NA	NA
Diethyl phthalate	<1.2	<1.2	NA	NA
Dimethyl phthalate	<1.2	<1.2	NA	NA
D-n-butyl phthalate	<1.2	<1.2	NA	NA
D-n-octyl phthalate	<1.8	<1.8	NA	NA
Fluoranthene	<1.4	<1.4	NA	NA
Fluorene	<1.8	<1.8	NA	NA
Hexachlorobenzene	<1.3	<1.3	NA	NA
Hexachlorobutadiene	<1.5	<1.5	NA	NA
Hexachlorocyclopentadiene	<1.3	<1.3	NA	NA
Hexachloroethane	<1.2	<1.2	NA	NA
Indeno[1,2,3-cd]pyrene	<1.3	<1.3	NA	NA
Isophorone	<1.4	<1.4	NA	NA
Naphthalene	<1.4	<1.4	NA	NA
Nitrobenzene	<1.3	<1.3	NA	NA
N-Nitrosodimethylamine	<5.2	<5.2	NA	NA
N-Nitrosodi-n-propylamine	<1.8	<1.8	NA	NA
N-Nitrosodiphenylamine	<1.8	<1.8	NA	NA
p-Chloro-m-cresol	<1.4	<1.4	NA	NA
Pentachlorophenol	<7.5	<7.5	NA	NA
Phenanthrene	<1.4	<1.4	NA	NA
Pyrene	<1.4	<1.4	NA	NA

† Analyte detected in method blank  
 ‡ Result between MDL and LOQ and is therefore less certain.  
 \* Result less than RL but greater than MDL. Value is estimated.  
 \*\* Oxygen depletion less than 2 mg/l. Result is estimated.  
 Note: All metals are reported as "Total"

Table of VOCs

CONSTITUENT	RAW WASTE (ug/l)	TREATED EFFLUENT Avg. (ug/l) Max.	UPSTREAM (ug/l)	DOWNSTREAM SAMPLES (ug/l)
Benzene	<0.2	<0.2	NA	NA
Bromodichloromethane	<0.2	<0.2	NA	NA
Bromoform	<0.2	<0.2	NA	NA
Bromomethane	<0.5	<0.5	NA	NA
Carbon Tetrachloride	<0.8	<0.8	NA	NA
Chlorobenzene	<0.2	<0.2	NA	NA
Chloroethane	<1.0	<1.0	NA	NA
Chloroform	4.0	4.2	NA	NA
Chloromethane	<0.3	<0.3	NA	NA
Chlorodibromomethane	<0.2	<0.2	NA	NA
1,1-Dichloroethane	<0.5	<0.5	NA	NA
1,2-Dichloroethane	<0.5	<0.5	NA	NA
1,1-Dichloroethene	<0.5	<0.5	NA	NA
cis-1,2-Dichloroethene	<0.5	<0.5	NA	NA
trans-1,2-Dichloroethene	<0.5	<0.5	NA	NA
1,2-Dichloropropane	<0.5	<0.5	NA	NA
Ethylbenzene	<0.5	<0.5	NA	NA
Methylene Chloride	<1.0	<1.0	NA	NA
Styrene	<0.5	<0.5	NA	NA
1,1,2-Trichloroethane	<0.2	<0.2	NA	NA
Tetrachloroethane	<0.5	<0.5	NA	NA
Toluene	<0.5	<0.5	NA	NA
1,1,1-Trichloroethane	<0.5	<0.5	NA	NA
1,1,2-Trichloroethane	<0.25	<0.25	NA	NA
Trichloroethene	<0.2	<0.2	NA	NA
Trichlorofluoromethane	<0.5	<0.5	NA	NA
Vinyl Chloride	<0.2	<0.2	NA	NA
Total Xylenes	<0.5	<0.5	NA	NA

† Analyte detected in method blank

‡ Result between MDL and LOQ and is therefore less certain.

\* Result less than RL but greater than MDL. Value is estimated.

\*\* Oxygen depletion less than 2 mg/l. Result is estimated.

Note: All metals are reported as "Total"

RELEASABLE



1078-11  
**RECEIVED**  
JAN 25 2011

NARRATIVE DESCRIPTION OF THE  
ARNOLD ENGINEERING RECYCLE WATER SYSTEM  
REFERENCE SCHEDULE J

Environmental Protection Agency  
WPC-Permit Log In

**RELEASABLE**

The Arnold Magnetic Technologies Corporation recycled water system contains a series of 4 ponds of 3 million gallons total capacity that provides up to 1.5 million gallon per day (M.G.D) of cooling water through a separate distribution system to the manufacturing processes. The recycled water is treated prior to reuse in the plant. Approximately 140,000 gallons per day (gpd) of water pumped from a private well (850' deep) to supply sanitary water, make-up cooling water, and process water. Approximately 90% of the well water (approximately 126,000 gpd) flows into the recycle water system drains which load pond #1.

SANITARY WASTEWATER SYSTEM:

The remaining approximate 14,000 gpd of well water is used in the plant's domestic sanitary sewage system. The sewage is collected in a separate sanitary sewer system and is treated in an Amcodyne extended aeration activated sludge treatment sludge treatment plant with a rated capacity of 30,000 gpd. The principle of treatment is that flocculated biological growths (return activated sludge) are mixed with raw wastewater on a continuous basis and are aerated. The aerobic microorganisms utilize the organic waste matter as a food and energy source to sustain life. The biological growths are then aerated and settled out. A portion of the material is wasted and the rest is recirculated for mixture with additional waste.

The Amcodyne system has a Worthington comminutor that breaks down any large particles before wastes enter the aeration tank. The aeration tank has a capacity of 30,485 gallons. Low-pressure air (less than 6 pounds per square inch (psi)) is supplied to porous diffusers. Spray devices are present to control foam. Activated sludge is returned from the bottoms of the 2 Imhoff cone settling tanks by an air lift method.

## RELEASABLE

The diffusers are placed so that incoming waste is mixed with returned activated sludge. A continuous air supply is provided to maintain aerobic conditions, solids suspension, and contact in the aeration tank. The overflow from the aeration tank goes through 2 Imhoff cones which settle out the solids. The supernatant overflows into an 8 ft. long weir, and a 2 ½" diameter pipe air lift devices return the settled activated sludge to the aeration tank. Valves can be opened to waste part of this sludge to the 1224 cubic foot aerated sludge holding tank. The waste sludge is hauled away by a disposal service as needed. The chlorination tank and related components previously associated with this system have since been removed and are no longer present at the site.

The effluent from the sewage treatment plant has a greater than 4 parts per million (ppm) residual and is pumped into Pond #1 of the recycle system. In 2005, this effluent had an average biological oxygen demand (BOD.) of 6.1 milligram per Liter (mg/L) and total suspended solids (TSS) of 9.4 mg/L. The influent has an average B.O.D. of 231.9 mg/L, C.O.D. of 420 mg/L, and T.S.S. of 180.4 mg/L. Removal efficiency is 97.4% B.O.D., 88% C.O.D., and 94.8% T.S.S. Testing of the mixed liquor and return sludge for settled solids and T.S.S. is done periodically. B.O.D. and T.S.S. are also run on the effluent. Daily maintenance includes inspecting air diffusers in aerating and holding tanks, back flushing sludge return lines so sludge does not build up and skimming off floatable solids from the skimmer. Monthly maintenance includes checking blower operation including belts, air cleaner, air check valves and lubrication.

### RECYCLE WATER SYSTEM:

The recycle water system is diagrammed on the attached schematic layout. The pump station draws from the bottom of Ponds 3 and 4 and is pumped under 60 psi pressure to all of the buildings on the property. Pond 1 is 200' long, 160' wide, and is 8 ½" deep. Ponds 2, 3, and 4 are all 200' long by 80' wide and are 6'6", 7', and 7'6" deep, respectively. Water flows from the bottom of Pond 1 to the surface of Pond 2 and so on to Pond 4. This helps to cool the water by air evaporation.

Ponds 1 and 2 receive the greatest amount of sedimentation which is usually  $\text{FeCl}_3$ ,  $\text{Ca}_3(\text{PO}_4)_2$ , and  $\text{SiO}_2$ . The only chemicals of interest in the ponds are phosphates from



the carlite coating line. The phosphate reacts to form  $\text{Ca}_3(\text{PO}_4)_2$  which settles in the ponds. All the water pumped by the pump station plus approximately 140,000 G.P.D. well water returns to the ponds by means of 4 recycle lift stations.

## RELEASABLE

Basically the water treatment consists of sedimentation of suspended solids. Sodium hypochlorite can be applied at the pump station on an as needed basis to kill any bacteria in the pipe system or equipment and also to Pond #3 and Pond #4 on an as needed basis to control bacteria and algae. A phosphate solution known as AquaMag may be added at the pump station as a corrosion inhibitor. Suspension chemicals are added by metering pumps at the pump station to clean out pipe deposits and keep these in suspension until the slower velocity waters of the ponds allows particles to settle out. An antiscalant and an antifoulant are also added as needed to disperse silt, mud, and sludge deposits and prevent and remove iron oxide and scale deposits. An aquatic herbicide known as Reward may be added as needed to the ponds on an annual basis.

The Pond 4 overflow averages approximately 21,840 gallons per hour when the manufacturing facilities are operational (less evaporation plus precipitation and some storm water flows). The discharge from Pond 4 then flows to Pond 5 for further treatment, evaporation, and percolation.

Normal pumping rate has historically been approximately between 15,000 and 38,000 gallons per hour (g.p.h.) of the return recycle water at the Main and Auxiliary pump lift stations to Pond #1. During very heavy storms some water may overflow at the Main lift station when the pumping rate of 94,000 g.p.h. is exceeded. When additional quantities of storm water are received, the pond system will absorb a significant portion of any excess and it will discharge to the ditch leading to Pond #5 south of Building 11.

Daily maintenance on the recycle system includes adding necessary chemical additions, checking pressure and return pump operation, cleaning pump screen and filters as necessary, switch stand-by pumps on and changing temperature recording charts. Alarm systems warn maintenance when lift or pressure pumps are not operating

or line pressure drops. Routine pump, meter and other equipment maintenance is performed as needed.

POTABLE WATER SYSTEM:

RELEASABLE

Our potable water supply consists of our 850-foot deep well with a submersible turbine pump which pumps on plant demand or to fill up the level in our water tower. The well water is chlorinated to a residual of greater than 0.5 ppm for disinfection. Provision is made to add well water to the ponds to make-up for evaporation losses. There is no connection to the Marengo water supply from our potable water supply. Our water supply is checked annually for coliform bacteria in accordance with regulatory requirements. Normal pump and tower maintenance are performed as needed. The operation of the potable water system is overseen by the sites certified Class K operator.

**The appearance of some of the images  
following this page is due to**

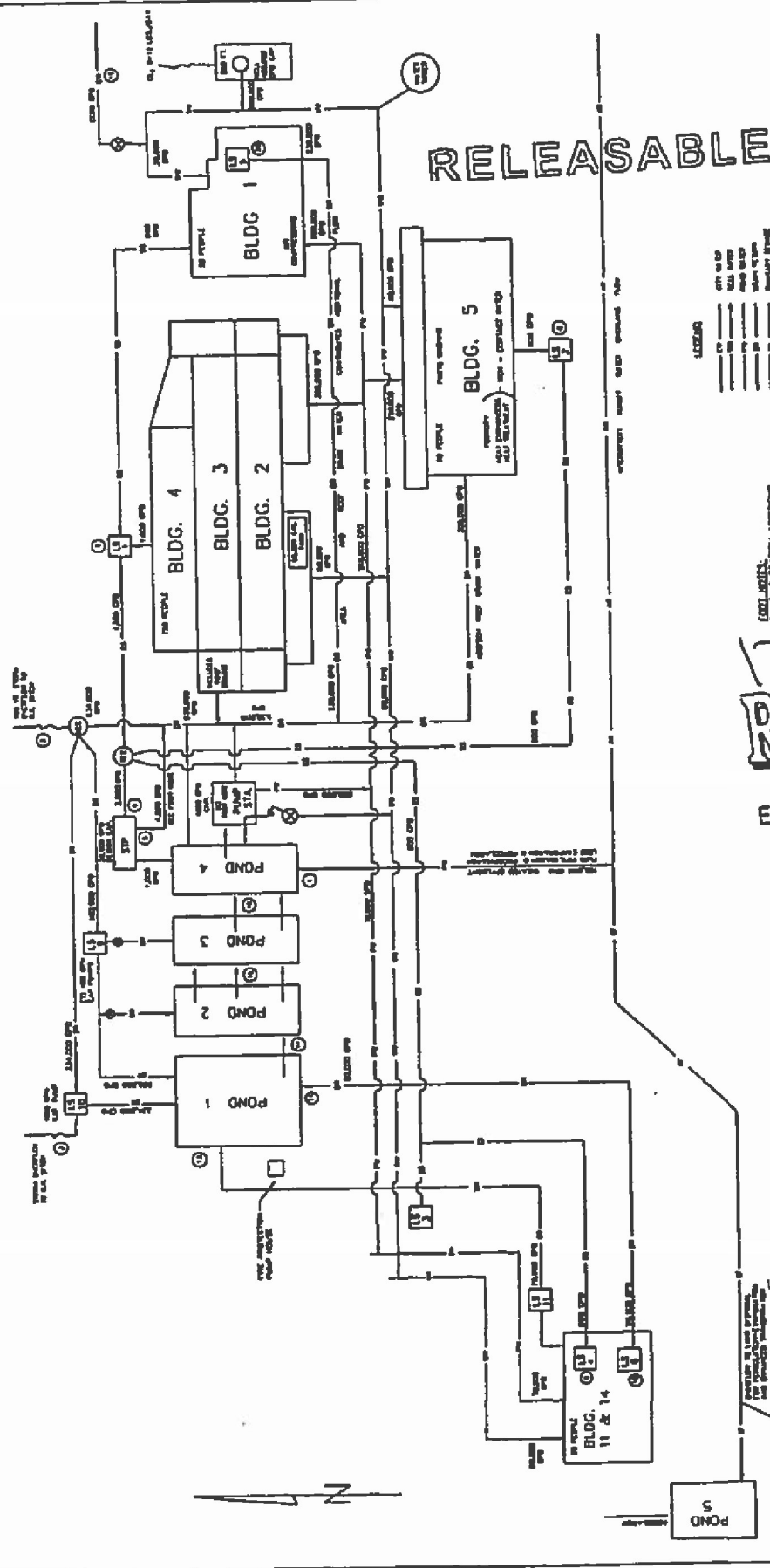
**Poor Quality Original Documents**

**and not the scanning or filming processes.**

**Com Microfilm Company  
(217) 525-5860**

J:\A00160\Alpha Docs.doc

# THE ARNOLD ENGINEERING WATER RECYCLE SYSTEM



RELEASABLE

DWG. NO.  
TG-16083

THIS DRAWING IS APPROXIMATE CAPACITY  
AND HAS BEEN CHECKED & UPDATED  
MAY 18 1994  
JULY 18 1996  
J.E.R.

OBJECT

1	BLDG. 1
2	BLDG. 2
3	BLDG. 3
4	BLDG. 4
5	BLDG. 5
6	POND 1
7	POND 2
8	POND 3
9	POND 4
10	POND 5

NOTE: ALL ADDITIONS  
MAY 18 1994  
JULY 18 1996

RECEIVED

JAN 25 2011

Environmental Protection Agency  
WPC-Permit Log In