The electronic version of this file/report should have the file name:

Type of document . Site Number . Year-Month . File *Year-Year* or Report name . pdf

letter._____ ._____-___.CorrespondenceFile_____.pdf

example: *letter . Site Number . Year-Month . CorrespondanceFileYear-Year . pdf*

report. hw932038 .1994-03. M2P2Report1994-1996 .pdf

example: *report . Site Number . Year-Month . ReportName . pdf*

if a non-foilable site: add ".nf.pdf" at end of file name

Project Site numbers will be proceeded by the following:

Municipal Brownfields - B
Superfund - HW
Spills - SP
ERP - E
VCP - V
BCP - C

New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials
Bureau of Waste Reduction & Recycling
50 Wolf Road, Albany, New York 12233-7253
518-457-6072 FAX 518-457-1283

Michael D. Zagata
Commissioner

SEP 9 1996

Please send to mike Hinton too

Mr. Russell H. Steiger
Health, Safety & Environmental Manager
TAM Ceramics, Inc.
4511 Hyde Park Blvd.
P.O. Box 67
Niagara Falls, NY 14305-0067

Dear Mr. Steiger:

Re: Hazardous Waste Reduction Plan (HWRP) - 1995
Annual Status Report: TAM Ceramics, Inc.
EPA ID# NYD 097 649 016

Based on our review of your 1995 Annual Status Report submitted on June 27, 1996 and August 28, 1996, we find that your reports meet the requirements of Article 27, Section 0908 (6) of the Environmental Conservation Law.

Please note that a biennial update of your plan is due on July 1, 1997 and every two years thereafter.

We encourage you to make pollution prevention an ongoing process and to look for additional hazardous waste reduction technologies that can be implemented at your facility. The development and implementation of a waste reduction training program for your facility personnel is an important ingredient for successful waste reduction.

If you have questions, please contact Mr. Richard Kasprosicz, at 518-457-6072.

Sincerely,

Dennis J. Lucia, P.E.
Supervisor
Hazardous Waste Minimization Section

cc: F. Shattuck, Reg. 9

Webster O~Ti~
Asc ...
Reg 9
NJH
CW cc

Commitment '96
Partnership In Excellence

The New TAM
A COOKSON COMPANY

August 28, 1996

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New York State
Department of Environmental Conservation
Bureau of Western Hazardous Waste Programs
Division of Hazardous Substances Regulation
50 Wolf Road, Room 212
Albany, NY 12233-7251

Attn: Dennis Lucca

Subject: **TAM Ceramics, Inc.**
Hazardous Waste Reduction Plan - Annual Status Report
EPA 10 No. NY0097649016
Supplemental Submission

Dear Mr. Lucca:

Enclosed are record Tables 1 and 2 of the subject report for TAM Ceramics, Inc.

Please call at (716) 278-9423 if you have any questions.

Sincerely,

Russell H. Steiger
Health, Safety & Environmental Manager

RECEIVED
AUG 30 1996
BUREAU OF WASTE
REDUCTION AND RECYCLING
DIVISION OF SOLID AND
HAZARDOUS MATERIALS

jh:hwanlrpt
Enclosures

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016

RECEIVED
AUG 30 1996
BUREAU OF WASTE REDUCTION AND RECYCLING
DIVISION OF SOLID AND HAZARDOUS MATERIALS

June, 1993- Revised March, 1994- Revision for Status Report June 1994-Revision for annual status report Auygust 1996

Revised August 1996 (Annual status)

Hazardous Waste Generation Summary (Table 1)

				Quantity of Waste Generated (tons)			Indices (lb waste generated/lb product produced)		
Waste ID No.	Name of Waste	Source of Generation	Disposal Method	1994	1995.	1996 est	1994	1995	1996 est
01	Low pH wastewater	Chemical Reaction in production process- see Figure 1	On-site pH adjusment and clarification	62550 (est)	73809 (est)	87000 (est)	7.7	7.6	7.6
02	Barium filter cake	Clarification of low pH wastewater (01 above)- see Figure 2	Off-site landfill	411.8	563	600 (est)	0.51	0.62	0.6
03	Lead contaminated debris	Lead ceramic production see Figure 3	Off-Site Landfill	103.5	125 (est)	200 (est)	0.125	0.1	0.1
04	Waste oil	Various maintenance functions- see Figure 4	Incinerated	10.3	9.2	10 (est)	see note 5	see note 5	see note 5

Notes

1. The waste streams identified above represent the non-acute hazardous waste generated in each calendar year in amounts greater than 5 tons.
2. Actual flow data for the low-pH wastewater is not available and must be estimated.
3. No acute hazardous waste is generated at TAM Ceramics.
4. 1996 data are estimated values
5. An index is not provided for waste oil . Due to the number of machines that are lubricated and the various products and intermediates that are moved through the equipment, a meaningful index cannot be developed. The information most useful to measure the waste reduction efforts is the number of tons generated per year.

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016

June, 1993
Revised March, 1994;Revision for status report June 1994, revision for annual status report August 1996

Revised August 1996 (Annual status)

Hazardous Waste Reduction Program (Table 2)

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
01	Low pH Wastewater	Filtrate from belt filter	Install drip pan to reduce volume of solids and water. *Reduction in volume* **Drip pan installed Nov 1993**	45 **42 tons per year have been reduced per Dept**	payback (based on solids removal)	0.04 yrs	11/93	COMPLETE Goal is to save product and reduce waste solids- reported est reduction in tons is for avoidance of solids to downstream wastewater treatment
01	Low pH Wastewater	floor washings	Use mechanical floor cleaner vs excess rinsing with water hose *Reduction in volume*	620 **Floor cleaner used more often**	N/A	N/A	on-going	avoids water purchase and sewer, but saves only 150, 000 gal/year **Difficult to quantify impact**

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 2

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	Barium Filter Cake	Slurry before final filter press	add binder to slurry to fixate barium and declassify waste to non-hazardous-*Reduction in toxicity*	no reduction in tons - (reduction in toxicity)	N/A	N/A	1/97	no cost estimate available **Suitable binder has not been found**
02	Barium Filter Cake	Slurry before clarification	Evaluate substitution of hydrate with oxide to *reduce waste volume*	100	N/A	N/A	1/97	no cost estimate available- preliminary only **No significant headway on this project**
02	Barium Filter Cake	Filter cake	install sludge dryer to *reduce waste volume*	150	payback	2 yrs	done	**Dryer installed June 1995**
02	Barium Filter Cake	Filter cake	Find suitable reclamation outfit for beneficial use of sludge vs landfill disposal.*Potential removal from hazardous waste cycle?*	0	unknown	N/A	1/97	Samples have been sent for evaluation. Possible use of sludge is raw material in structural glass or abrasives. **No significant results have been achieved to date**

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 3

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	**Barium Filter Cake**	Filter cake	*Reduce toxicity* of sludge to levels below hazardous waste characteristic criteria	0	N/A	N/A	1/97	Evaluating process chemistry upstream to bind maximum amount of free barium prior to treatment; to result in a sludge that passes the TCLP procedure. **No significant results have been achieved to date**
03	**Lead contaminated debris**	Lead contaminated debris	Compact waste and dispose in bulk roll-off vs drums and cubic-yard boxes. *Reduction in volume*	25	N/A	N/A	3/95 done	COMPLETE

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 4

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
03	**Lead contaminated debris**	Lead contaminated debris	Reduce quantity of "free" lead that is available to contaminate debris such as Tyvek suits, gloves, rags, etc. This is accomplished by engineering controls *Reduction in volume and toxicity*	3	N/A	N/A	1/97	Engineering controls are in design and installation stage
03	**Lead contaminated debris**	Lead contaminated debris	Find a uniform vendor willing to accept lead-contaminated uniforms (vs disposable Tyvek suits). *Reduction in volume.*	N/A	N/A	N/A	1/97	no cost estimate available- preliminary only <u>NO RESULTS YET</u>
03	**Lead contaminated debris**	Lead contaminated debris	Evaluate purchasing work uniforms and laundering on-site	N/A	N/A	N/A	1/97	Many local uniform suppliers will NOT acept work uniforms contaminated with lead
03	**Lead contaminated debris**	Lead contaminated debris	Evaluate thermal recovery of lead via off-site reclaimer *Potential removal from hazardous waste cycle?*	0	N/A	N/A	1/97	no reclaimer located yet

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 5

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
04	Waste oil	waste oil	Locate oil recycler willing to accept waste oil and associated impurities *Potential removal from hazardous waste cycle?*	0	N/A	N/A	1/97	working with recycling facilities
04	Waste oil	waste oil	Minimize equipment leakage and small spills that generate clean-up waste	1	N/A	N/A	1/97	on going
04	Waste oil	waste oil	Minimize need to purchase and use virgin oil	1	N/A	N/A	1/97	no headway
04	Waste oil	waste oil	Evaluate recycle of spent oil in-house	3	N/A	N/A	1/97	no headway
04	Waste oil	waste oil	Evaluate viability of extending oil service life while in use or purchasing oils with longer service life	1	N/A	N/A	1/97	no headway

TAM
A COOKSON COMPANY

ASR
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Commitment '96
Partnership In Excellence

The New TAM

July 1, 1996

New York State
Dept. of Environmental Conservation
Bureau of Western Hazardous Waste Programs
Division of Hazardous Substances Regulation
50 Wolf Road, Room 400
Albany, NY 12233-7251

Subject: **TAM Ceramics, Inc.**
Hazardous Waste Reduction Plan - Annual Status Report
EPA 10 No. NYD097649016

The attached status report describes:

1. Progress in achieving time schedules for waste reduction activities.

2. Any reasons that waste reduction activities did not meet the noted time schedule.

   Note: Only variances from the HWRP are noted

Please call me at (716) 278-9423 with any questions.

Sincerely,

Russell H. Steiger
Health, Safety & Environmental Manager

jh:hwrpanrc
Attachment

JUL 03 1996

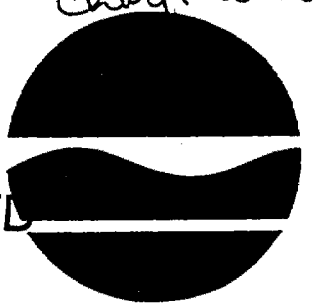
TAM Ceramics, Inc., 4511 Hyde Park Blvd., P.O. Box 67 • Niagara Falls, New York • 14305-0067
716-278-9400 • FAX 716-285-3026 • TWX 710-524-1659

A Cookson Company

WASTE ID NO.	NAME OF WASTE	VARIANCE FROM PLAN & REASON
02	Barium Filter Cake	1. A suitable binder has not been identified to fixate the free barium. There is no time schedule to implement until a binder is found. 2. Substitution of hydrate with oxide is not feasible - it will impact the final product unfavorably. 3. A reclamation outfit has not been located for the barium filter cake. There is not time schedule to implement until a suitable reclamation outfit is found. 4. Reducing toxicity of sludge to date has not been feasible. This project is still ongoing
03	Lead Contaminated Debris	1. A suitable uniform vendor has not been located. 2. Tyvek suits have been found to be the most cost effective work uniform. 3. Thermal recovery of lead has not yet been shown to be feasible.
04	Waste Oil	1. Oil has high levels of debris (metal shavings, etc.) that are unsuitable for recycling.

Shattuck
Mark Hand (MH)
Cheryl Webster cw

New York State Department of Environmental Conservation
Bureau of Pollution Prevention
50 Wolf Road, Albany, New York 12233-8010
Telephone: 518-457-2553



Michael Zagata
Commissioner

January 4, 1996

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Mr. Russell H. Steiger
Manager of Health, Safety & Environmental
TAM Ceramics, Inc.
4511 Hyde Park Blvd.
P.O. Box 67
Niagara Falls, NY 14305-0067

Dear Mr. Steiger:

RE: Hazardous Waste Reduction Plan - Biennial Update for
TAM Ceramics, Inc. - Niagara Falls
EPA ID No. NYD097649016

Based upon our review of your Biennial Update of the Hazardous Waste Reduction Plan, submitted on June 29, 1995, we find that your biennial update meets the Hazardous Waste Reduction Planning requirements of Article 27, Section 0908 of the Environmental Conservation Law.

Please submit a status report on July 1, 1996, on your progress in achieving the time schedule in your revised plan for implementing technically feasible and economically practicable waste reduction alternatives identified in your plan. The status report must include an update of Table 1 and Table 2 and must be submitted by July 1 for each year that a hazardous waste reduction plan biennial update is not submitted. Please note that a biennial update of your plan is due on or before July 1, 1997 and every two (2) years thereafter.

We encourage you to make pollution prevention and ongoing process and to look for additional hazardous waste reduction technologies that can be implemented at your facility. The development and implementation of a waste reduction training program for your facility personnel is an important ingredient for successful waste reduction.

If you have any questions, please contact Mr. Richard Kasprowicz, of my staff, at 518/457-2553.

Sincerely,

Dennis J. Lucia, P.E.
Supervisor
Waste Minimization Section
Bureau of Pollution Prevention
Division of Pollution Prevention and
Waste Reduction

Enclosure

cc: R. Kasprowicz

bcc: w/enc. - J. Reidy, EPA, Region II
F. Shattuck, Region 9
File

bcc:w/o enc. -J. Iannotti
D. Lucia

RK/cjk

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

HAZARDOUS WASTE REDUCTION PLAN/BIENNIAL UPDATE

FACILITY SUMMARY SHEET

DATE: January 4 1996

EPA ID #	NYD097649016
COMPANY NAME	TAM Ceramics Inc.
ADDRESS	4511 Hyde Park Blvd.
CITY	Niagara Falls
STATE	New York
ZIPCODE	14305-0067
FACILITY CONTACT	Mr. Russell H. Steiger
PHONE #	(716) 278-9400
SIC CODE	2819, 3253, 3356
REGION (NYS)	Nine (9)
FINAL RCRA PERMIT EFFECTIVE DATE	N/A
FINAL NYS PART 373 PERMIT EFFECTIVE DATE	N/A

DESCRIPTION OF ORIGINAL PROCESS:

The processes consist of mix tanks, settle & decant tanks, belt filters, holding tanks and calciners. The facility produces ceramic wall and floor tiles.

DESCRIPTION OF WASTE REDUCTION ACTIVITY:

1. Installed drip pan to reduce volume of solids and water.
2. install sludge dryer.
3) evaluate thermal recovery of lead via off-site reclaimer.
4) evaluate recycle of spent oil in-house.
5) Minimize equipment leakage and small spills that generate clean-up waste.
6) Evaluate viability of extending oil service life.

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016

June, 1993- Revised March, 1994- Revision for Status Report June 1994

Revised June 1995 (Annual status and biennial update)

Hazardous Waste Generation Summary (Table 1)

Waste ID No.	Name of Waste	Source of Generation	Disposal Method	Quantity of Waste Generated (tons) 1993	1994	1995	Indices (lb waste generated/lb product produced) 1993	1994	1995
01	**Low pH wastewater**	Chemical Reaction in production process- see Figure 1	On-site pH adjusment and clarification	57960 (est)	62550 (est)	73809 (est)	7.58	7.7	7.6
02	**Barium filter cake**	Clarification of low pH wastewater (01 above)- see Figure 2	Off-site landfill	391.4	411.8	370 (est)	N/A	0.51	0.62
03	**Lead contaminated debris**	Lead ceramic production see Figure 3	Off-Site Landfill	36	103.5	100 (est)	N/A	0.125	0.1
04	**Waste oil**	Various maintenance functions- see Figure 4	Incinerated	4.13	10.3	11 (est)	see note 7	see note 7	see note 7

Notes

1. The waste streams identified above represent the non-acute hazardous waste generated in each calendar year in amounts greater than 5 tons.
2. Spent grease has been eliminated from this report. TAM Ceramics and the NYDEC recognize that this material does not meet the definition of hazardous waste in New York.
3. Actual flow data for the low-pH wastewater is not available and must be estimated.
4. No acute hazardous waste is generated at TAM Ceramics.
5. 1995 data are estimated values
6. Waste oil and lead contaminated debris are reported for the first time beginning this report.
7. An index is not provided for waste oil . Due to the number of machines that are lubricated and the various products and intermediates that are moved through the equipment, a meaningful index cannot be developed. The information most useful to measure the waste reduction efforts is the number of tons generated per year.

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016

June, 1993
Revised March, 1994;Revision for status report June 1994

Revised June 1995 (Annual status and biennial update)

Hazardous Waste Reduction Program (Table 2)

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
01	Low pH Wastewater	Filtrate from belt filter	Install drip pan to reduce volume of solids and water. *Reduction in volume* Drip pan installed Nov 1993	45 42 tons per year have been reduced per Dept	payback (based on solids removal)	0.04 yrs	10/93	Goal is to save product and reduce waste solids- reported est reduction in tons is for avoidance od solids to downstream wastewater treatment
01	Low pH Wastewater	floor washings	Use mechanical floor cleaner vs excess rinsing with water hose *Reduction in volume*	620 Floor cleaner used more often	N/A	N/A	on-going	avoids water purchase and sewer, but saves only 150, 000 gal/year Difficult to quantify impact

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 2

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	**Barium Filter Cake**	Slurry before final filter press	add binder to slurry to fixate barium and declassify waste to non-hazardous-*Reduction in toxicity*	no reduction in tons - (reduction in toxicity)	N/A	N/A	1/96	no cost estimate available **Suitable binder has not been found**
02	**Barium Filter Cake**	Slurry before clarification	Evaluate substitution of hydrate with oxide to *reduce waste volume*	100	N/A	N/A	1/96	no cost estimate available-preliminary only **No significant headway on this project**
02	**Barium Filter Cake**	Filter cake	install sludge dryer to *reduce waste volume*	150	payback	2 yrs	done	**Dryer installed June 1995**
02	**Barium Filter Cake**	Filter cake	Find suitable reclamation outfit for beneficial use of sludge vs landfill disposal.*Potential removal from hazardous waste cycle?*	0	unknown	N/A	1/96	Samples have been sent for evaluation. Possible use of sludge is raw material in structural glass or abrasives. **No significant results have been achieved to date**

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 3

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	**Barium Filter Cake**	Filter cake	*Reduce toxicity* of sludge to levels below hazardous waste characteristic criteria	0	N/A	N/A	1/96	Evaluating process chemistry upstream to bind maximum amount of free barium prior to treatment; to result in a sludge that passes the TCLP procedure. **No significant results have been achieved to date**
03	**Lead contaminated debris**	Lead contaminated debris	Compact waste and dispose in bulk roll-off vs drums and cubic-yard boxes. *Reduction in volume*	25	N/A	N/A	3/95 done	**COMPLETE**

TAM
A COOKSON COMPANY

Hazardous Waste Reduction Program (Table 2)- Page 4

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
03	**Lead contaminated debris**	Lead contaminated debris	Reduce quantity of "free" lead that is available to contaminate debris such as Tyvek suits, gloves, rags, etc. This is accomplished by engineering controls *Reduction in volume and toxicity*	3	N/A	N/A	8/95	Requires $300K capital investment to be approved prior to installation of Engineering controls. Appropriation request submitted 6/95
03	**Lead contaminated debris**	Lead contaminated debris	Find a uniform vendor willing to accept lead-contaminated uniforms (vs disposable Tyvek suits). *Reduction in volume.*	N/A	N/A	N/A	8/95	no cost estimate available- preliminary only **NO RESULTS YET**
03	**Lead contaminated debris**	Lead contaminated debris	Evaluate purchasing work uniforms and laundering on-site	N/A	N/A	N/A	1/96	Many local uniform suppliers will NOT acept work uniforms contaminated with lead
03	**Lead contaminated debris**	Lead contaminated debris	Evaluate thermal recovery of lead via off-site reclaimer *Potential removal from hazardous waste cycle?*	0	N/A	N/A	1/96	

TAM
A COOKSON COMPANY

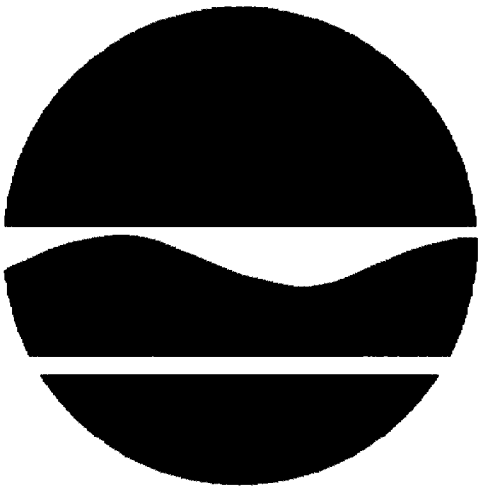
Hazardous Waste Reduction Program (Table 2)- Page 5

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
04	**Waste oil**	waste oil	Locate oil recycler willing to accept waste oil and associated impurities *Potential removal from hazardous waste cycle?*	0	N/A	N/A	1/96	
04	**Waste oil**	waste oil	Minimize equipment leakage and small spills that generate clean-up waste	1	N/A	N/A	10/95	
04	**Waste oil**	waste oil	Minimize need to purchase and use virgin oil	1	N/A	N/A	1/96	
04	**Waste oil**	waste oil	Evaluate recycle of spent oil in-house	3	N/A	N/A	1/96	
04	**Waste oil**	waste oil	Evaluate viability of extending oil service life while in use or purchasing oils with longer service life	1	N/A	N/A	1/96	

TAM
A COOKSON COMPANY

FINAL

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION



MULTI-MEDIA/POLLUTION PREVENTION INSPECTION REPORT

TAM CERAMICS INC.
4511 HYDE PARK BLVD
TOWN OF NIAGARA
NIAGARA COUNTY

MULTIMEDIA POLLUTION PREVENTION INSPECTION
of
TAM CERAMICS INC.
4511 HYDE PARK BLVD.
TOWN of NIAGARA
NIAGARA COUNTY

INSPECTION TEAM:

Division of Air	Jacqueline DiPronio
Division of Hazardous Substances Regulation	Nelson Schnabel
Division of Hazardous Waste Remediation	Michael Hinton
Division of Regulatory Affairs	Michael McMurray
Division of Solid Waste	Cheryl Webster
Division of Spills Management	James Stack
Division of Water	David Leemhuis

FACILITY MANAGER:

Division of Hazardous Waste Remediation	Michael J. Hinton P.E.

REPORT DATE: 9-2-94

INSPECTION DATE: JUNE 22,1994

TAM Ceramics Inc.
M2P2 Inspection

EXECUTIVE SUMMARY

TAM Ceramics Inc. is located on Hyde Park Blvd. in the Town of Niagara, Niagara County, New York. TAM Ceramics manufactures ceramic intermediates and dielectric powders for the ceramic and electronic industries.

TAM Ceramics Inc. was chosen by Region 9 as a FY 1994-1995 target facility for meeting the multi-media/pollution prevention initiatives of the Department. Tam Ceramics was selected based on its presence on the list of 400 firms that create 95% of the releases to environment in New York State and its multiplicity of involvement with the environmental quality Divisions of the Department.

TAM Ceramics has initiated several pollution prevention/waste minimization programs since 1991. These initiatives included removal of Barium solids from the POTW discharge, installation of containment systems in the production process to minimize solids, modifications of work practices, grease consolidation and packaging modifications to reduce waste.

TAM Ceramics is planning future pollution prevention/waste minimization activities that include the installation of sludge dryers to reduce volume of waste generated, process changes to reduce toxicity of sludges, installation of dedicated compaction and bulk containerization of waste to reduce volume. TAM Ceramics stated goal is to eliminate completely the generation of hazardous waste.

The TAM Ceramics facility is on the New York State Registry of Inactive Hazardous Waste Sites as a class 2A site. The company is conducting a Preliminary Site Assessment (PSA) under an Order on Consent with the Department. The PSA is designed to investigate the historic disposal areas in the undeveloped portion of the site. The PSA when completed will provide sufficient information to allow proper site classification as defined in 6NYCRR Part 375.

An inspection of the facility was conducted on June 22, 1994. The inspection team included personnel from the various units in Region 9 along with representatives of the City of Niagara Falls Waste Water Treatment Plant. During the inspection, no significant problems or violations were identified.

FACILITY MANAGER: Michael J. Hinton

MICHAEL J. HINTON P.E.

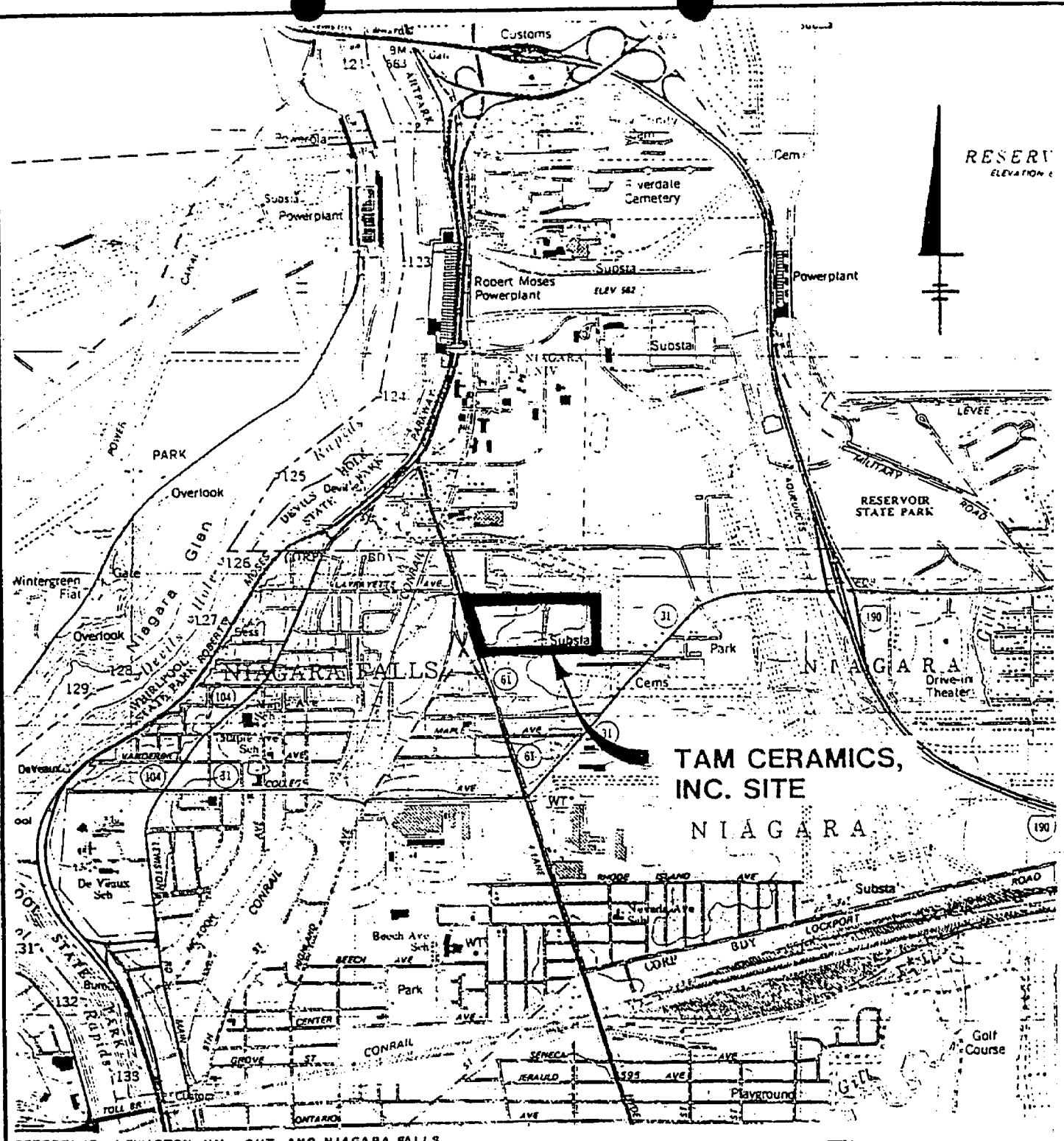
TABLE OF CONTENTS

Figures

Tables

Graphs

Attachments



REFERENCE: LEWISTON, N.Y. - ONT. AND NIAGARA FALLS, N.Y. - ONT. 1980 QUADS.

2000' 0 2000'

APPROX SCALE: 1" = 2000'

QUADRANGLE LOCATION

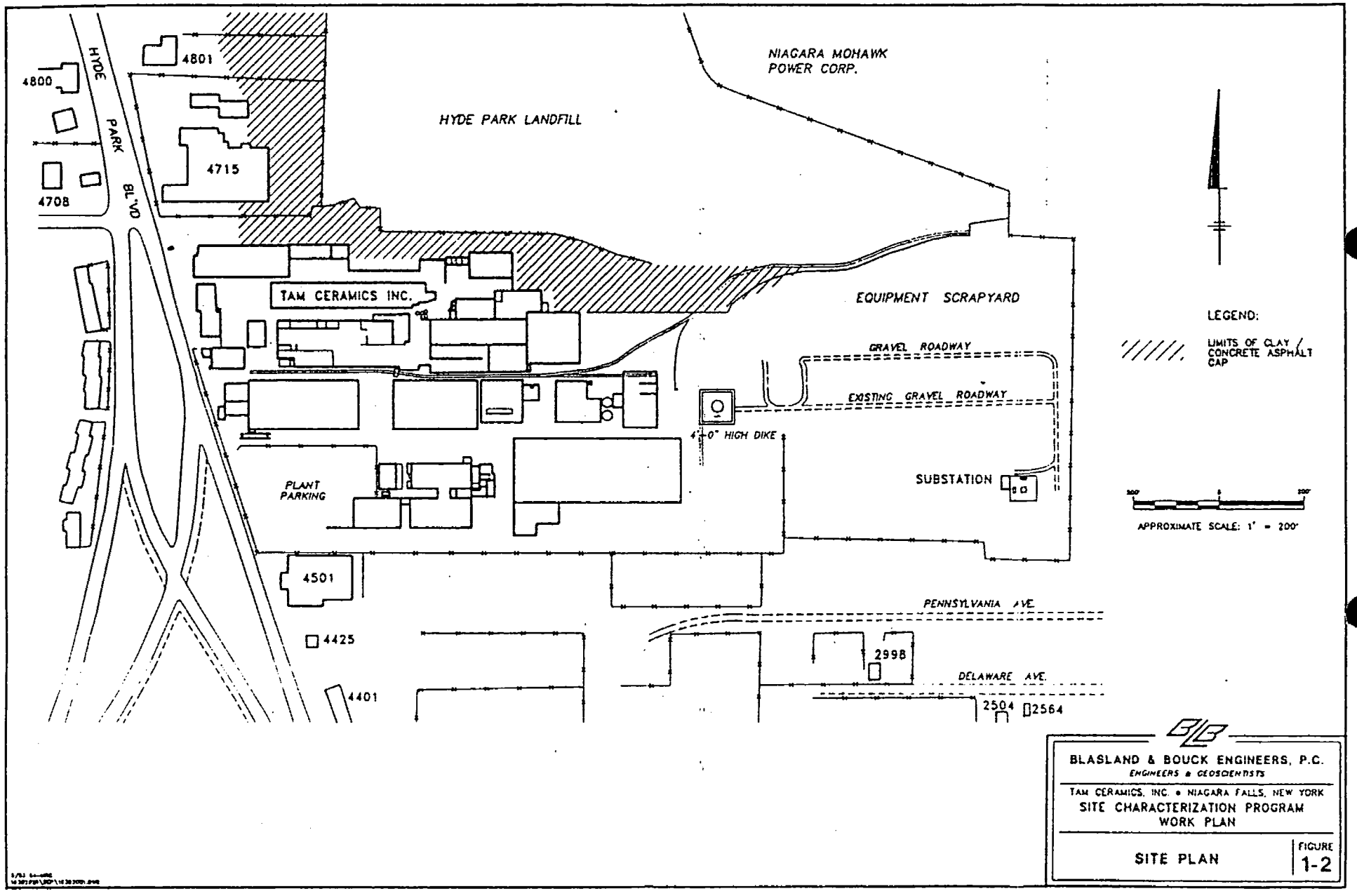
JAN. 1993 JVM
163.02.02

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

TAM CERAMICS, INC. • NIAGARA FALLS, NEW YORK
SITE CHARACTERIZATION PROGRAM
WORK PLAN

SITE LOCATION MAP

FIGURE 1-1



BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

TAM CERAMICS, INC. • NIAGARA FALLS, NEW YORK
SITE CHARACTERIZATION PROGRAM
WORK PLAN

SITE PLAN

FIGURE 1-2

MULTIMEDIA INSPECTION OF TAM CERAMICS INC.

PART I

I-I INTRODUCTION

The TAM Ceramics Inc. facility is located on 4511 Hyde Park Blvd. in the Town of Niagara, Niagara County, New York. TAM Ceramics was selected by Region 9 as a FY 1993-1994 target facility for meeting the multimedia/pollution prevention (M2P2) initiative of the Department. TAM Ceramics Inc. was selected based upon its high ranking on the list of 400 firms producing 95% of the contaminant releases to the environment in New York State, and on its multiplicity of involvement with the environmental quality Divisions of the Department.

The overall goal of the M2P2 program is to provide an integrated approach to the environmental management of a facility. The program is intended to produce several important advantages, including:

- No significant environmental problems are overlooked.
- The relationships among releases become well understood thereby guaranteing that releases into one environmental medium are not shifted to other medium with little or no environmental improvement.
- The establishment of a balanced approach on the facility's overall environmental issues.
- Remedial work, when needed, can be prioritized and scheduled to solve the most significant problems first.
- Optimize utilization of industry and the Departments time, efforts and resources.
- Waste reduction and pollution prevention measures can be more readily identified and implemented.
- Permits can be more carefully crafted to reflect an integrated strategy for the management and reduction of facility releases.

To meet the M2P2 commitment, a facility team was formed of the following members and Divisions:

Mr. Michael Hinton	- DHWR
Mr. James Stack	- DSM
Ms. Jacqueline Dipronio	- DAR
Mr. David Leemhuis	- DOW
Mr. Michael McMurray	- DRA
Ms. Cheryl Webster	- DSW
Mr. Nelson Schnabel	- DHSR
Mr. Michael J Hinton P.E.	- Facility Manager

An initial team meeting was held on April 28, 1994. At this meeting, team members discussed the background and current involvement of their division with the TAM Ceramics facility. The M2P2 inspection was conducted on June 22, 1994.

I-II FACILITY BACKGROUND

The TAM Ceramics, Inc. facility is a 35 acre manufacturing complex of which approximately 20 acres are undeveloped.

The facility was first owned by Titanium Alloy Manufacturing Company (TAMCO), with production operations beginning in 1906. The first product was a high carbon ferrocarbon titanium that was used by the steel industry as a deoxidizer in the production of rail steel. In 1915, a sulphate process was developed using ilmenite ore, for producing titanium dioxide (TiO_2). The Titanium Pigment Company was formed as a subsidiary of TAMCO and began as a manufacturing plant for titanium dioxide.

Titanium and zirconium metal was first produced by TAMCO at the facility in 1918. Experimental work on zirconium products began in 1914, and by 1918 a zirconium opacifier was produced. Milled zircon (zirconium silicate) ore was also produced and distributed from 1921 to 1937.

In 1920, NL Industries bought half the Titanium Pigment Company, and acquired the balance in 1933. NL Industries acquired TAMCO in 1948. NL Industries continued the same type of manufacturing operations at the facility.

In 1978, NL Industries sold the facility to TAM Ceramics Inc. (TAM), as part of the Anzon America Inc., a wholly owned subsidiary of Lead Industries Group. TAM Ceramics continues to produce ceramics and ceramic products.

A summary of the manufacturing processes and products produced prior to 1978 is presented in Table 1. A summary of the manufacturing processes and products produced by TAM Ceramics Inc. since 1978 is presented in Table 2.

TABLE 1

TAM CERAMICS INC.
NIAGARA FALLS, NEW YORK

NL INDUSTRIES
INDUSTRIAL PRODUCTS AND PROCESSES

PROCESSES UTILIZED	YEARS
Grinding of zircon, rutile and zirconia	1948 - 1975
Arc furnacing of zircon and zirconia	1948 - 1975
Arc furnacing of ilmerite and rutile	1948 - 1955
Calcinating alkination of earth carbonates and titanium dioxide	1948 - 1975

PRODUCTS PRODUCED	YEARS
Iron-carbon-titanium alloys	1948 - 1970
Iron-aluminum-titanium alloys	1948 - 1965
Zircon and zirconium oxide (powders and grains)	1948 - 1975
Alkaline earth titanites and zirconates	1948 - 1975

TABLE 2

TAM CERAMICS INC.
NIAGARA FALLS, NEW YORK

INDUSTRIAL PROCESSES AND PRODUCTS
1979 TO PRESENT

PROCESSES UTILIZED

Arc furnacing of zircon
Milling of zircon and zirconia
Calcination of zircon and zirconia
Mixing of dielectric powders
Calcining of dielectric powders

PRODUCTS PRODUCED

Zirconium silicate
Zirconium oxide
Titanium oxide
Sodium Titanate
Potassium Titanate
Calcium carbide with silicas
Silicas with fluorides and aluminum oxide
Dielectric powders

I-III MANUFACTURING PROCESS

TAM Ceramics Inc. primary operation is the production of zircon products used primarily in opacifiers and zirconium products used primarily in high temperature refractories. TAM Ceramics also produces, but to a lesser degree, dielectric powders, used in the electronics industry.

The raw material used in the production of the zirconia products is zirconium silicate sand that is shipped to the plant in bulk rail cars and trucks. The process used to manufacture the finished product is dependent on the customer specifications. Generally, the process involves arc furnacing the zirconium silicate to drive off the silica, crushing, screening, calcining and milling. The final product is a powder of various grain size and purity. The final product is shipped to the customer where the material is used for the manufacture of consumer products such as ceramic tiles and bathroom fixtures.

As a secondary product, TAM Ceramics produces dielectric powders used in the electronics industry. These products are Barium Titanium Oxidate (barium titanate) in various forms.

The barium titanate is produced by combining barium chloride, titanium tetrachloride and oxalic acid in a mix tank that produces a barium titanate precipitate that is processed through a filter and calciner prior to packaging for the customer. Various other inorganic materials such as lead oxide, magnesium, etc. are added to the titanate prior to the calcining operation depending on the customer specification.

I-IV WASTE GENERATION

Because of the TAM Ceramics Manufacturing process, hazardous and non-hazardous waste is generated.

These waste and by-products are:

- - fume silica from electric-arc fusing of zircon
- - low pH waste water
- - heavy metal contaminated wastes and wastewater treatment sludge
- - lubricants and oils from machine operations
- - smaller quantity wastes such as batteries, rags, capacitors, personal protective equipment

Based on the SARA Title III Toxic Release Inventory, barium compounds represent the most significant contaminate released from this facility.

TABLE 3

BARIUM COMPOUNDS (lbs/year)

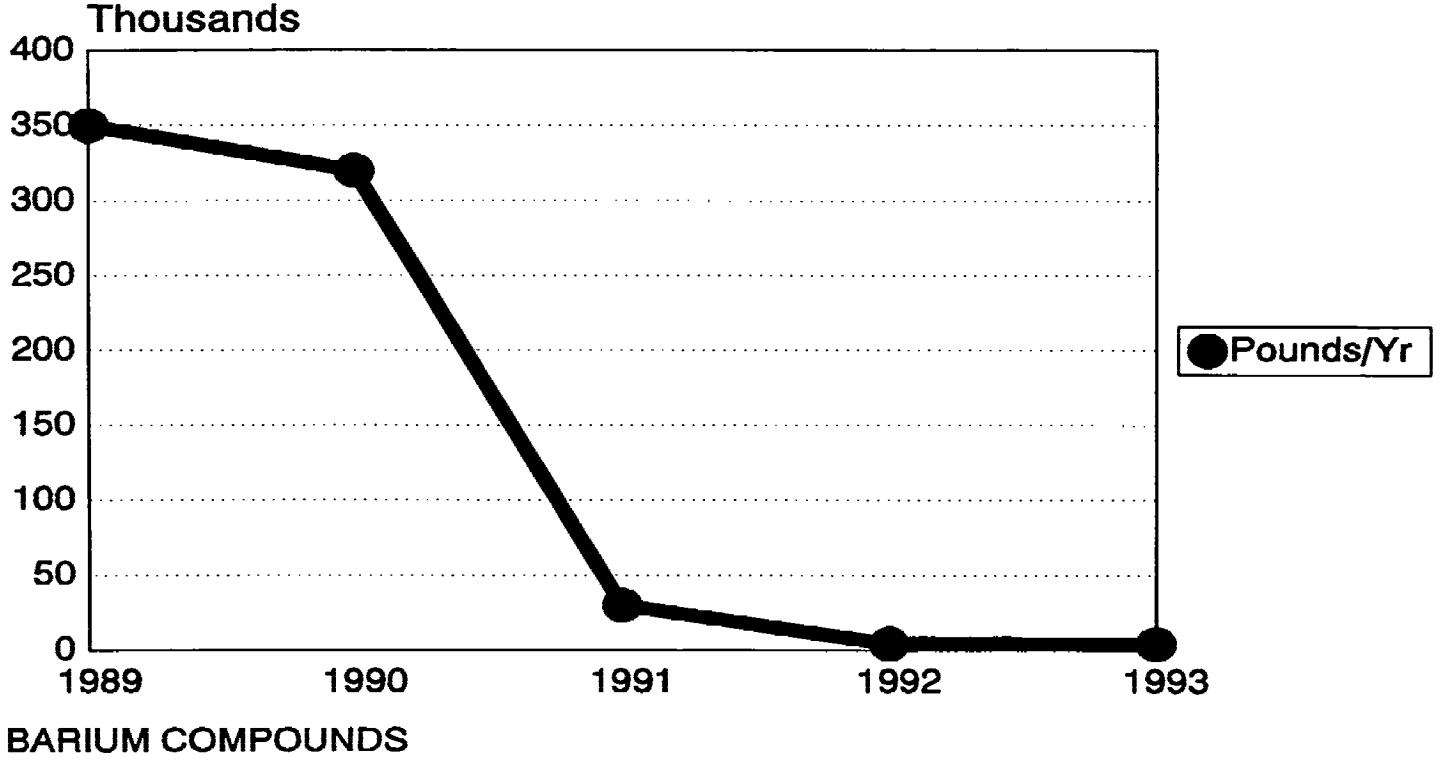
YEAR	AIR EMISSIONS		DISCHARGE	IN STATE TRANSFERS	TOTAL
	NON-POINT	STACK			
1988	0	4095	130,000	95,500	229,595
1989	0	3684	350,000	138,863	492,547
1990	0	3690	320,000	62,800	386,490
1991	10	3860	30,000	260,730	294,600
1992	10	3860	4,500	379,800	388,170
1993	100	4323	4,500	469,838	478,761

In 1991, TAM Ceramics installed equipment to remove solids from the discharge to the POTW. This equipment has dramatically reduced the barium loading to the POTW but has caused a significant increase in the generation of a hazardous sludge that is disposed off site at a permitted TSDF.

The following graphs represent the SARA Reportable discharges from TAM Ceramics since 1989.

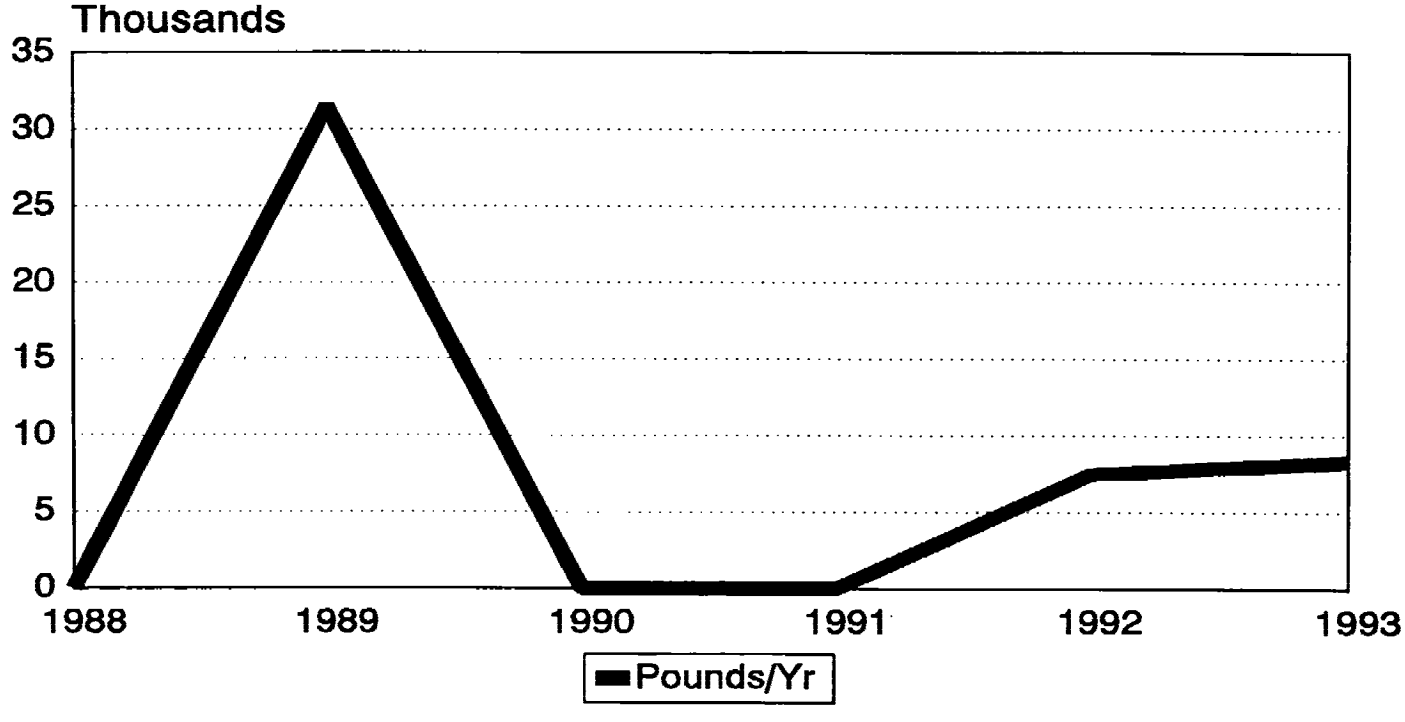
TAM CERAMICS

Discharge to POTW



TAM CERAMICS

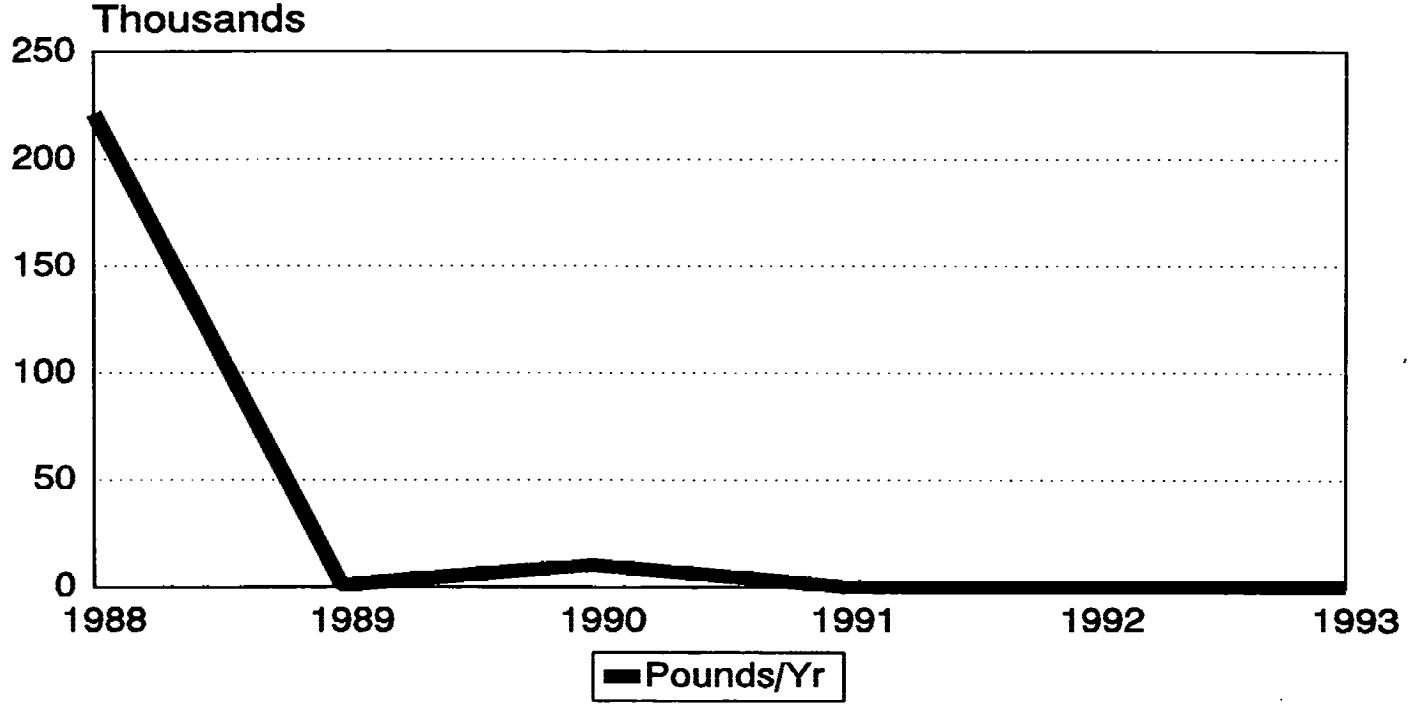
Discharge to POTW



Phosphoric Acid

TAM CERAMICS

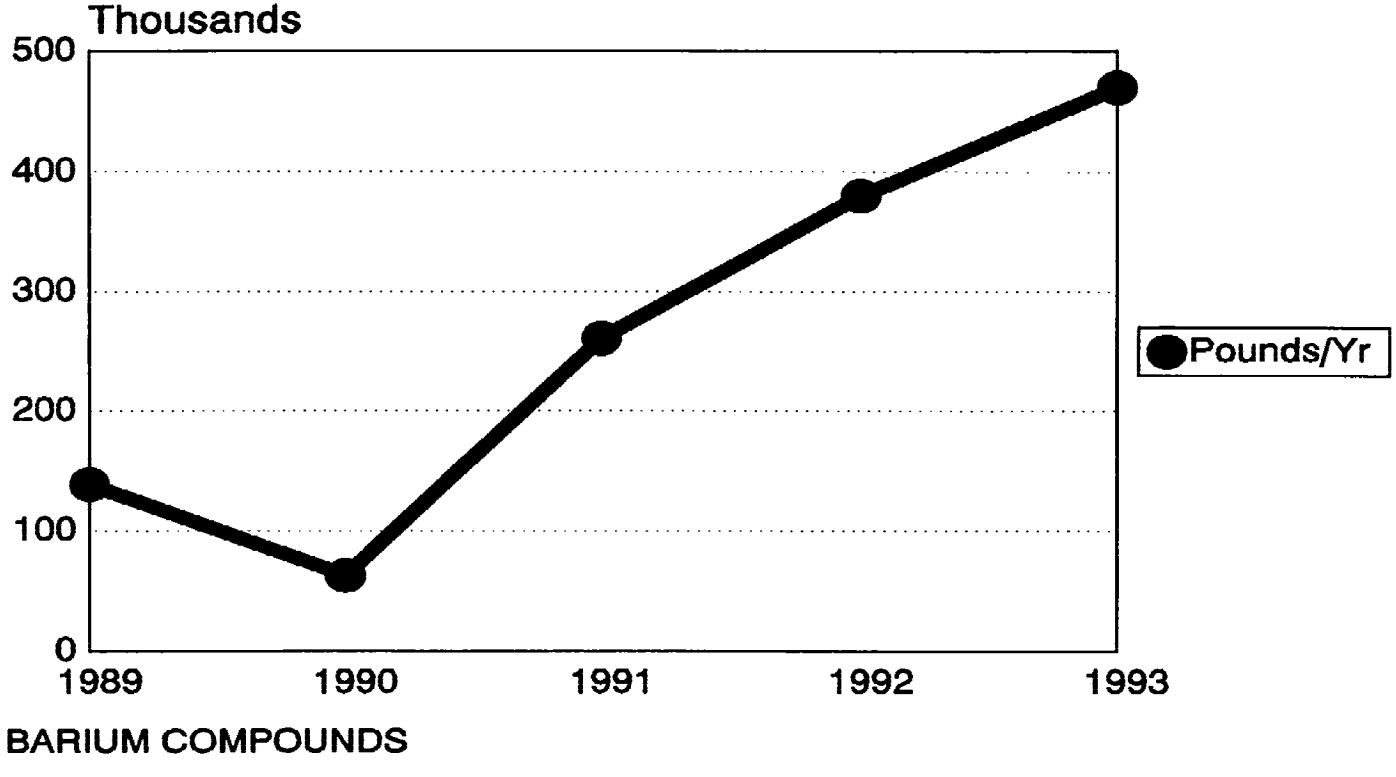
Discharge to POTW



Hydrochloric Acid

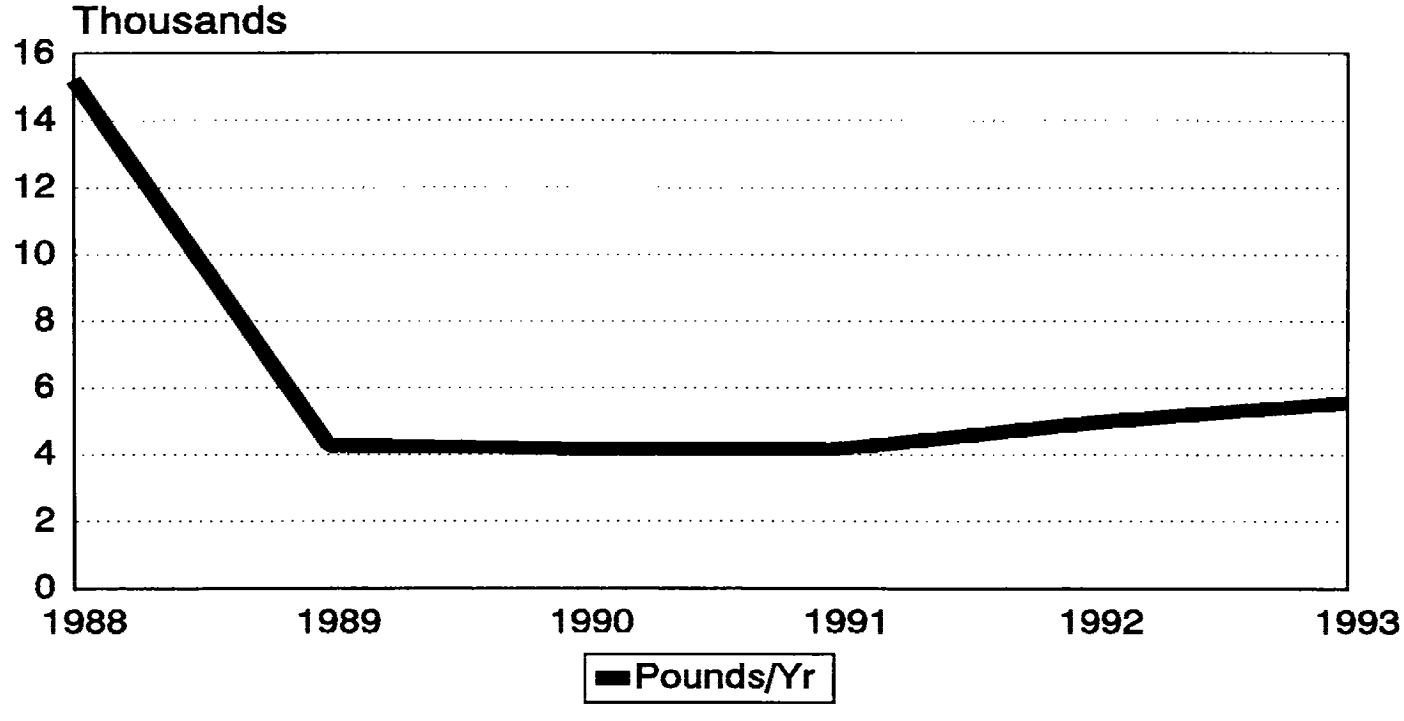
TAM CERAMICS

IN STATE TRANSFERS



TAM CERAMICS

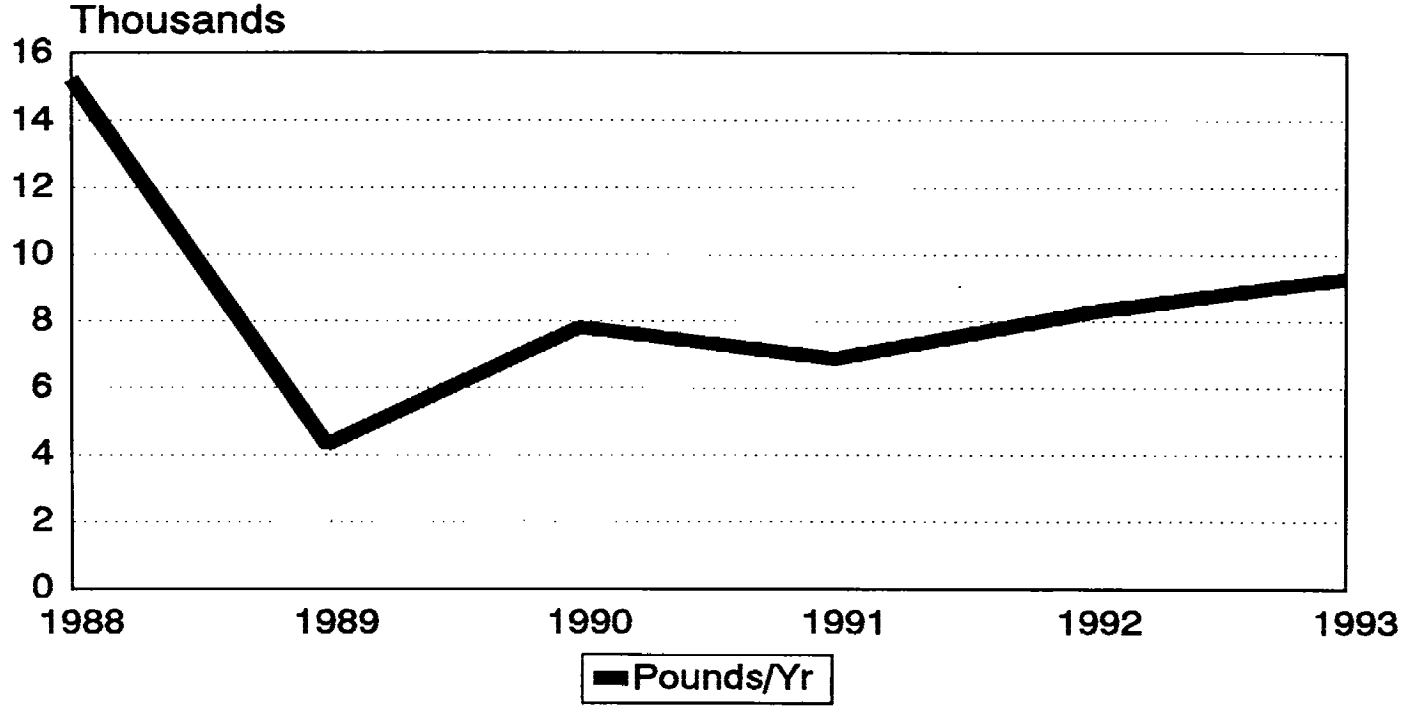
Air Emissions- Point Source



Hydrochloric Acid

TAM CERAMICS

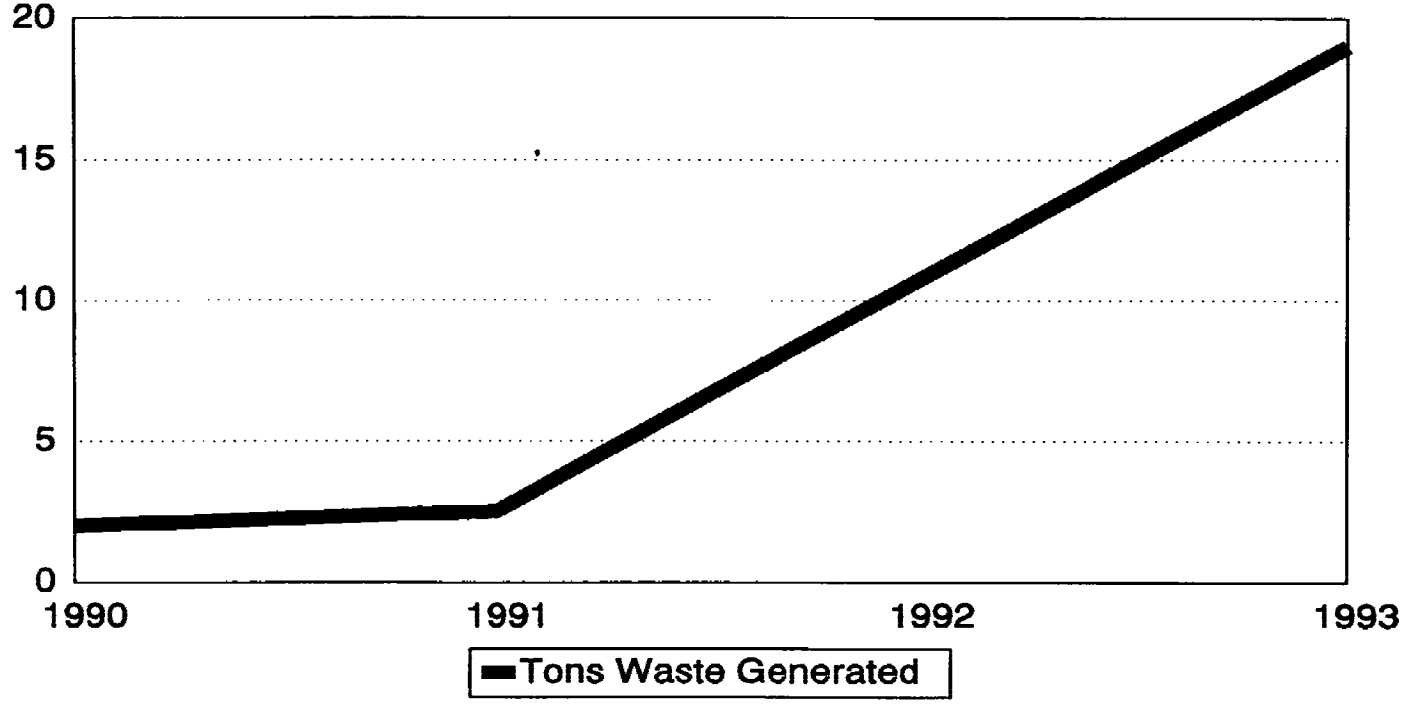
Total Air Releases



Hydrochloric Acid

TAM CERAMICS

Hazardous Waste Generation



Spent Grease

I-V POLLUTION PREVENTION/WASTE MINIMIZATION

TAM Ceramics, Inc. has prepared and submitted a Hazardous Waste Reduction Plan to the Division of Hazardous Substance Regulation. The HWRP has been approved by the DHSR. Under the HWRP the company is evaluating the feasibility of reducing the volume and toxicity of the waste that is generated at the facility.

The waste streams to be evaluated as part of the HWRP and the steps to be taken or studied are as follows:

Low pH wastewater-
- install drip pans to reduce volume of waste water generated, and subsequent reduction of solids from treatment system. 42 tons/year of wastewater was eliminated. Drip pans were installed in December 1993.
- use mechanical floor sweeper in lieu of rinsing with water. Estimated reduction of 620 tons of waste water.

Barium filter cake
- add binder to slurry to fixate barium and reclassify waste to non-hazardous. A reduction of toxicity will be achieved. The company is working on this problem, but to date a suitable binder has not been found.
- evaluate substitution of hydrates with oxides to reduce waste volume. This process will result in a reduction in volume of approximately 100 tons/year. To date no significant headway has been made in achieving this goal.
- install sludge dryer to reduce waste volume. This process will result in a reduction of approximately 150 tons/year of filter cake. Funds for the dryer have been approved and equipment is scheduled to be installed and operational by December 1994.
- find suitable reclamation outfit for the beneficial use of filter cake. Samples of sludge have been evaluated and at least one possible use is being investigated.

Spent greases
- consolidate grease types and purchase grease that do not contain chlorinated solvents. This was implemented in June 1993 and an estimated 4 tons/year of waste is eliminated.
- work with grease supplier to repackage grease to reduce waste. This was implemented in June of 1993 with an estimated reduction of 3 tons/year of waste.
- evaluate installing nylon gears on equipment to reduce maintenance requirements. This is still in the investigation stages with no determination on feasibility made.

Several other waste reduction /minimization programs have been evaluated and found to be not feasible at this time. These programs included reformulating or redesign of end products that would eliminate production inputs or processes that cause the generation of waste, and the substitution of non-toxic or less toxic inputs to the production process that will result in the reduction of the volume or toxicity of waste.

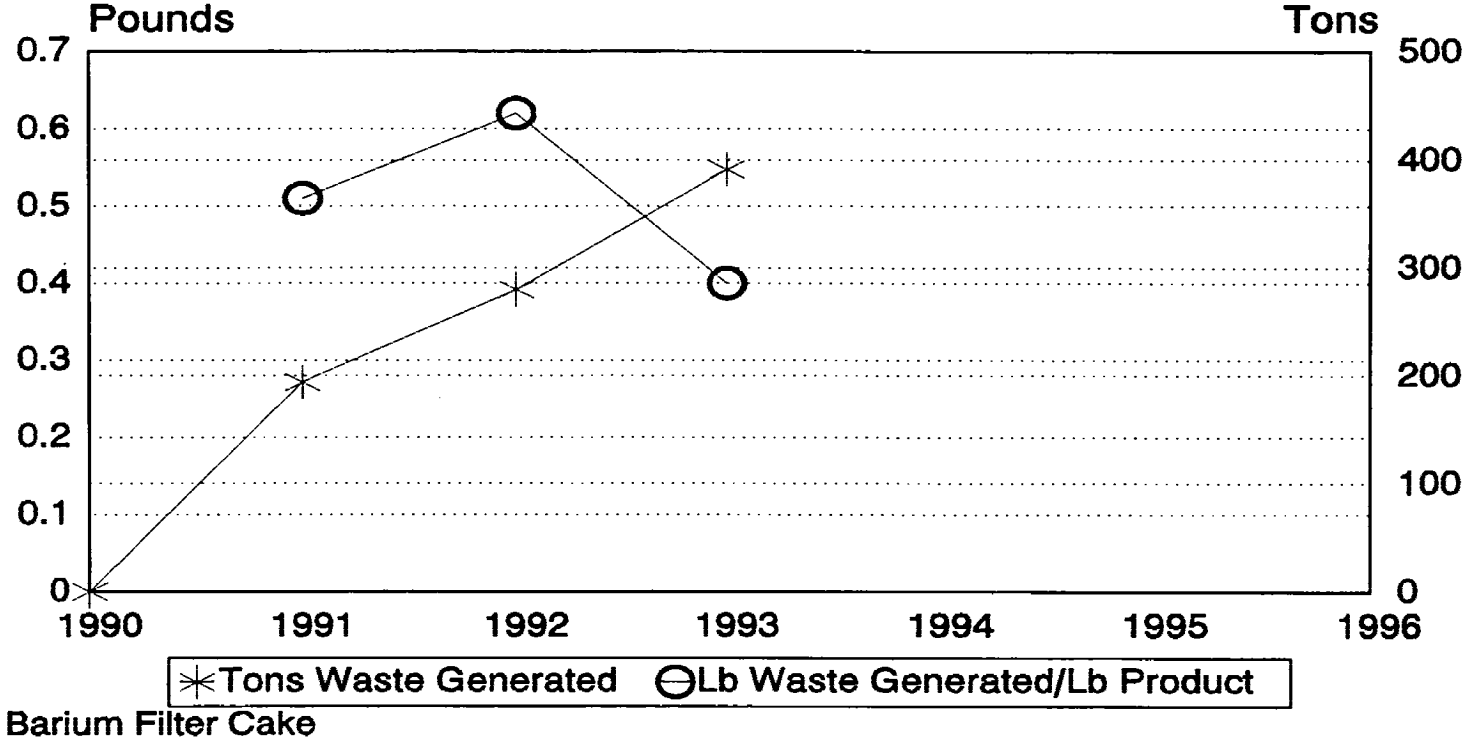
Besides the HWRP that TAM Ceramics Inc. has proposed and is implementing, waste reduction has occurred in other areas. Fume silica that is generated in the arc furnace process was formally disposed of as a non-hazardous waste material at Modern Disposal. Approximately 150 tons of fume silica is generated per year at the plant. This material is now sold to several companies as a raw material and is being put to a beneficial use thereby eliminating the waste stream to Modern Disposal.

WASTE MINIMIZATION/POLLUTION PREVENTION **TABLE 4**

	LOW ph WASTE WATER	FILTER CAKE	GREASES	FUME SILICA
TONS GENERATED (avg)	44,793	288	9	150
DISPOSAL FACILITY	NFWWTP	CWM	CWM	MODERN DISPOSAL
IN PLACE REDUCTION (TONS)	665	0	7	150
PENDING REDUCTION (TONS)	0	150	0	0
FUTURE REDUCTION (TONS)	0	100	0	0
PERCENT REDUCTION	1.5%	87%	78%	100%

TAM CERAMICS

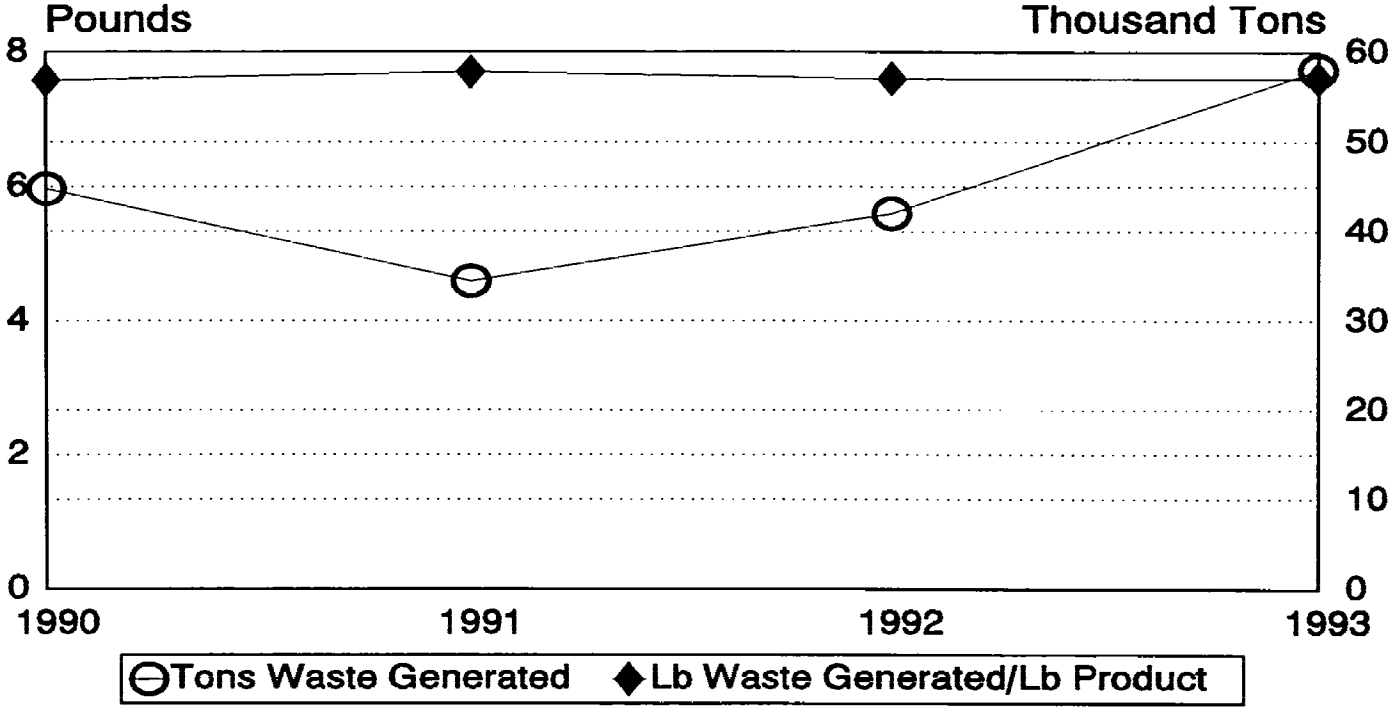
Hazardous Waste Generation



Barium Filter Cake

TAM CERAMICS

Hazardous Waste Generation



Low PH Wastewater

MULTIMEDIA INSPECTION OF TAM CERAMICS INC.

PART II REGULATORY INVOLVEMENT

II-I DIVISION OF AIR

There are 98 active air permits regulating discharges from various processes involved in the production of Zirconium and Barium compositions. In addition, various dielectric powders incorporating heavy metals such as Lead, Nickel and Magnesium are also produced. These powders are used in the manufacture of products as opacifiers, capacitors and other electronic components.

The basic processes involved in the manufacture of various powders, such as titanates and zirconates, are the furnacing, crushing, blending, handling and transfer of raw materials, and the calcination and final milling and packaging of those materials. These operations vary depending on the final product and/or customer specifications. Particulates are the primary air contaminants emitted and are controlled by dust collectors such as cyclones, settling chambers, and fabric filters. Fabric filters are used not only to control air emissions, but also to collect final product from jet milling that produces an extremely fine powder. Collected air contaminants can be recycled into the process or sent to a landfill off-site. The bags in the fabric collectors are checked weekly, along with the pressure drop, and changed as needed.

Besides these dust collectors, an aqueous packed tower scrubber is utilized to control vapors from Titanium tetrachloride storage tank loading, mix tanks, and process tanks.

At this time the facility air emissions are regulated by 6 NYCRR, Part 212; General Process Exhaust. However, the facility is a major source having exceeded the 100 ton per year applicability threshold for particulate emissions and will be required to obtain a Title V operating permit.

SARA reported air emissions have remained constant over the years with increases or decreases the result of refined methods of calculating estimates and some production increases.

The HPZ facility for producing high purity zirconium was not successful and will probably, never be placed into production. There were six associated emission points for this facility. Contaminants of concern eliminated are Chlorine and radioactive materials Uranium and Thorium.

II-II DIVISION OF HAZARDOUS SUBSTANCE REGULATION

TAM Ceramics filed a Notification of Hazardous Waste Activity August 18, 1980. The facility notified as a Generator of hazardous waste and received USEPA ID# NYD097649016. Their RCRA status has not been changed by either the USEPA or NYSDEC since then. The status of generator presently exempts TAM Ceramics from the corrective action requirements of the Hazardous and Solid Waste Amendments (HSWA) of 1984.

A Hazardous Waste Compliance Inspection was conducted at the facility on June 30, 1994. The inspection covered all production and co-production areas that generate hazardous waste, hazardous waste accumulation and storage areas, and applicable paperwork. No violation of State Hazardous Waste Regulations was noted. The inspection report is available for review in the DHSR RCRA files (Drawer R15) located in Room 311.

In August 1990, the New York legislature passed a law requiring facilities that generate hazardous waste to reduce, to the maximum extent possible, the volume and toxicity of hazardous wastes generated in quantities greater than five tons during the previous calendar year. TAM Ceramics generated greater than 50 tons of hazardous waste in 1992, requiring the Hazardous Waste Reduction Plan (HWRP) to be submitted to the NYSDEC by July 1, 1993. TAM Ceramics submitted their base year HWRP on June 29, 1993. The Plan was reviewed and comments sent to the facility on February 3, 1994. Additional information was requested by the NYSDEC. A revised Plan was submitted on June 28, 1994. The HWRP must be updated biennially, and annual status reports must be provided.

The policy of TAM Ceramics is to minimize the volume and toxicity of hazardous waste generated at the facility by using the following measures:

- In-plant practices will be used to avoid or eliminate the generation of hazardous waste.
- When hazardous waste is generated, the waste will be evaluated for recycling potential.
- If the wastes cannot be recycled, processes will be evaluated to minimize the volume and toxicity of the hazardous waste.

II-III DIVISION OF HAZARDOUS WASTE REMEDIATION

The TAM Ceramic facility on Hyde Park Blvd. in the Town of Niagara is listed on the New York State Registry of Inactive Hazardous Waste Sites as registry #932028 and is classified as a 2A site.

The designation 2A is a temporary classification that indicates the site is suspected of containing hazardous waste but additional information is needed to classify the site according to 6 NYCRR Part 375 regulations.

TAM Ceramics Inc. entered an Order on Consent with the Department on 2/17/94 to perform an Interim Remedial Measure (IRM) on site and conduct a Preliminary Site Assessment (PSA). The PSA is designed to collect sufficient information to allow the Department to classify the site.

TAM Ceramics conducted an IRM in March and April 1994 that involved the removal of exposed barium waste that was a known hazardous waste due to an EP Tox failure for Barium. The exposed barium was excavated and disposed of at CWM. A total of 22 cubic yards of soil containing the barium waste was excavated and disposed. The final report on the IRM activities was received and approved in July 1994.

In May of 1994, TAM Ceramics began the PSA with the site survey, electromagnetic survey,

groundwater sampling and groundwater elevation. A supplemental work plan was prepared and submitted on July 27, 1994 that outlined the installation of monitoring wells, test pits and soil sampling based on the preliminary survey data. This next phase of field activities will take place in late August 1994.

The final PSA Report is due to be submitted by December 1, 1994 and a decision on site reclassification is expected by 3/95.

II-IV DIVISION OF REGULATORY AFFAIRS

The Division of Regulatory Affairs handles the environmental permit programs that are subject to the Uniform Procedures Act (6NYCRR Part 621). As part of the application review process, DRA ensures that the requirements of the State Environmental Quality Review Act (SEQRA) (6NYCRR Part 617) are met.

DRA has processed applications for Air Permits at the TAM facility. There are 98 Certificates to Operate a Source of Air Contamination.

Currently pending, there are three applications for new air sources, seven applications for modification and six air sources to be removed from service.

An Environmental Review Checklist, Two Mile Radius Map and RCIS owner/facility printouts are included in this report as Attachment 3.

An Environmental Constraints Analysis was conducted for the facility site and a two mile radius of the site to determine the potential impacts upon Freshwater Wetlands, Protected Streams, Navigable Waters, Coastal Resources, Archaeological/Historic Sites, Principal/Primary Aquifers, Agricultural Districts, 100 year Floodplains, Hazardous Waste Sites and Natural Heritage Sites/Significant Habitats.

On-site, there is one Inactive Hazardous Waste Site, site code 932028, listed on the Registry as priority 2a. The OxyChem Hyde Park Landfill, (site code 932021 and priority 2) is located immediately north of the TAM facility. Some Hyde Park Landfill closure work has occurred on the TAM Property. There are seven other registered inactive hazardous waste sites within a two mile radius.

The scenic Niagara River Gorge is within a two mile radius. The Niagara River, classified as "A" Special, is a protected stream and portions of the river are considered navigable. Also within two miles, Hyde Park Lake is a protected water with a classification of "B." Other nearby streams tributary to the Niagara River are not protected.

Devils Hole State Park, Whirlpool State Park. Niagara University, the New York Power Authority's Power Project and the Hydropower Plant in Niagara Falls, Ontario, are located within two miles. The TAM facility is not within an area identified as archaeologically sensitive. Within a two mile radius, there are several archaeological sites and properties listed in the State and National Registers of Historic Places. The listed sites are Adam Power Plant Transformer House, the DeVeaux School Historic District and the Niagara Falls Public Library.

The TAM property is located outside the 100 year floodplain and Coastal Management Area. There are no state regulated Freshwater Wetlands within a two mile radius. There are no principal or primary aquifers within a two mile radius.

According to NYSDEC Natural Heritage Program records there are several threatened, rare or endangered plants and plant communities within a two mile radius. They are as follows: tall tick clover, slender blazing star, smooth cliff brake, fringed gentian, small skull cap, elk sedge, sky-blue aster, ninebark, golden puccoon, white camas, calcareous talus slope woodland, and calcareous cliff community.

II-V DIVISION OF SOLID WASTE

Various non-hazardous solid wastes, as listed below, are generated at this facility. All these wastes are hauled by Modern Disposal Inc. to Modern Landfill in Model City.

Approval #	Approval Date	Waste Stream	Comment	Amount
M90-1077	8/3/90	Lithium Aluminum Silicate	Off-spec product no resale	8 T
M90-1078	8/3/90	Aluminum Oxide	Off-spec product no resale	3 T
M90-1079	8/3/90	Rutile Sand	Off-spec product no resale	1 T
M90-1107	11/12/90	Zirconium Oxide sludge	Off-spec product no resale	50 T
M91-0104	9/30/91	Zirconium Oxide/ Silicone Dioxide	Off-spec product no resale	22 T
M91-0105	9/30/91	Calcium Zirconium Silicate	Off-spec product no resale	54 T
M93-0321	6/16/93	Wood; residue of ceramic	Tear down of tanks prev. containing ceramic dielectric	10 T
M94-0435	3/7/94	Partially hydrated lime	Waste 100# bags	8 T

TAM Ceramics is going through the re-approval process for the listed waste streams with Modern Disposal, Inc. Copies of the new analytical data and approval/rejection letters were requested from Mr. Russell Steiger of TAM Ceramics.

TAM also generates floor sweepings, general plant trash, and empty bags that are also disposed of at Modern Landfill. Since these items are not considered industrial waste, the industrial waste stream approval is not required.

TAM had been recycling office paper for about two years but were unhappy with the requirements. That program was recently discontinued and the company is searching for a new paper recycling firm.

In a waste reduction effort, TAM is moving away from purchasing raw materials in small containers and drums. Instead, they are trying to use refillable bulk tote containers which hold 220 gallons. They are also buying lubricants in lined drums that have removable linings. The drums are then reconditioned.

In August of 1990, 178 drums were discovered buried on the TAM site during excavation for a relocated railroad spur. The relocation was necessitated by the remedial program at the adjacent Hyde Park Landfill. All of the drums and visibly contaminated soils were disposed of in 1990. However, about 1,000 cubic yards of soil, which was removed during the excavation project but was not visibly contaminated is still on-site. Vegetation has been established on this soil.

One composite sample of this soil was analyzed for the TCLP parameters in 1990. The results were all "Below Quantifiable Limits." The company does not want to remove the soil and dispose of it as a waste. To determine if the soil can be considered uncontaminated, the Division of Solid Waste has requested that five soil samples (one at each corner of the soil stockpile area and one in the middle) be collected and analyzed for total metals. If the results prove to be below typical background levels, TAM will not be required to remove and dispose of the soil at a permitted landfill.

II-VI DIVISION OF SPILLS MANAGEMENT

The company is registered with the Department under the Chemical Bulk Storage program (CBS # 9-000123). The two regulated tanks contain sodium hydroxide and titanium tetrachloride; the former is used for pH control in wastewater discharges to the POTW, while $TiCl_4$ is a starting material for the production of barium titanate ($BaTiO^3$) needed in some types of ceramics. Both tanks are well maintained and meet CBS regulations now going into effect. The $TiCl_4$ is stored under nitrogen to preclude its decomposition and emission of hydrochloric acid fumes.

The company makes extensive use of totes in the production lines. Totes are small reusable containers, owned by the supplier, that are used to ship the chemicals to the customer. They can be brought right onto the production line for use. When empty, they are returned for reuse. This greatly simplifies storage and handling problems as production takes on a modular aspect and regulatory concerns are less a problem. TAM uses totes for both hazardous and non-hazardous chemicals.

TAM Ceramics is also a former Petroleum Bulk Storage site (PBS # 9-040444). By 1992 the company had completed conversion to natural gas and closed down their 100,000-gallon fuel oil tank. The closure documentation has been reviewed and found acceptable. There are two active above ground tanks on the premises. One is used for diesel at the firehouse pump station, and the other is a very small gas tank. These tanks total less in size than the regulatory criterion and are unregulated. However the Department has been notified that TAM Ceramics will be adding petroleum storage tanks at the facility that will require registration as a PBS facility. The former PBS number will be reactivated.

A review of the Spills Information System for the period of 1/86 through 8/94 was made. Five (5) spills of oil or hazardous waste were reported to the Department. All reported spills were satisfactorily cleaned up. No enforcement action through the Regional Attorney was initiated as a result of spills.

The only recomendation is that the company re-stencil the closed rusting fuel oil tank as the label is getting hard to read. No other problems were noted.

II-VII DIVISION OF WATER

On June 22, 1994, a multimedia pollution prevention inspection was held at the TAM Ceramics facility, on Hyde Park Boulevard in the Town of Niagara, Niagara County. The purpose of the inspection was to determine whether the facility has any "discharge" of wastewater, as defined in the Federal Clean Water Act or in the New York State Environmental Conservation Law, which is regulated by the Division of Water under the SPDES Permit program. Based on the results of the inspection, this office has determined that TAM Ceramics does not have any discharges that are subject to permitting requirements under the SPDES program.

All process wastewater, cooling water, and stormwater runoff from the facility is discharged to the City of Niagara Falls Publicly Owned Treatment Works (POTW). The discharges are made through two monitoring stations, which are regulated and permitted by the City of Niagara Falls under their Significant Industrial User (SIU) permit number 28. The inspectors from the City also accompanied Department representatives on the multimedia inspection and they have filed a separate report.

During the inspection, it was reported that contaminated groundwater, possibly including non-aqueous-phase-liquids (NAPL), was being collected and pumped to a neighboring property, known as the Hyde Park landfill. The Hyde Park Landfill is being remediated by Occidental Chemical Corporation, and the groundwater collection from the TAM ceramics site is apparently part of the overall remediation of the Hyde Park site.

II-VIII NIAGARA FALLS WWTP

Wednesday, June 22, 1994, staff from the NFWWTP took part in the NYS Department of Environmental Conservation (NYSDEC) Multi-Media Pollution Prevention Inspection (M2P2) at TAM Ceramics. Below is a brief outline of the inspection. The pre-inspection meeting got underway shortly after 9:00 a.m. in the conference room at TAM Ceramics. The meeting was opened with a brief outline of the goals of the M2P2 inspection. That was followed by an introduction of the various staff present. The meeting was then turned over to Russell Steiger who is Manager of Health, Safety and Environmental at TAM Ceramics. Mr. Steiger gave a short history of the company and the 35 acres of property that the facility sits on. He then explained the steps TAM has taken to reduce or eliminate various forms of waste.

After an extensive tour of the entire facility and site, the group reconvened in the conference room. Each member was given the opportunity to ask any questions and make any observations. At about 12:45 P.M. the inspection came to a close.

Of particular importance to the NFWWTP was the installation in 1991 of a filter press to reduce the amount of solids that were being discharged to the Niagara Falls Wastewater Treatment Plant (NFWWTP) via the Number 2 Monitoring Station at TAM Ceramics. This reduced the amount of solids being sent to the NFWWTP from 350,000 lbs in 1989 to about 4,000 lbs in each of the years 1992 and 1993. The sludge from this press forms a filter cake that is about 50% solids. TAM Ceramics has proposed putting in a filter cake sludge dryer to drive off additional moisture, bringing the filter cake up to 90% solids. Concern was expressed as to whether TAM would have to seek approval from the NYSDEC or the NFWWTP about this proposal. The conerns are that this might be a change in the pretreatment program at TAM and that the NYSDEC and the NFWWTP oversee TAM's pretreatment program. The feeling from the staff present was that there did not seem to be a need for NYSDEC or NFWWTP approval. The City does not object to this proposed pretreatment project and will monitor the situation. TAM, however, is obligated to notify the City of significant changes to the character of their waste stream pursuant to Section 250.5.3 of the City Sewer Use Ordinance.

We also saw the 10,000 gallon sodium hydroxide tank used to neutralize the wastewater going to Monitoring Station #2. Prior to neutralization the pH is typically 0 and 1. This tank is completely diked, which isolates it from the sewer system. Mr. Steiger stated that TAM always orders far less sodium hydroxide than is required to fill the tank. This helps to reduce the possibility of the tank over flowing during the filling process.

We also inspected both of TAM's monitoring stations that monitor flow and sample the discharge by way of a flow proportioned 24 hours composite sampler 365 days a year.

II-IX DIVISION OF FISH & WILDLIFE

This site is not affected by any New York State Freshwater Wetland.

Two plants, Small Skullcap (Scutellaria parvula var. leonardii) and Golden Puccoon (Lithospermum caroliniense ssp croceum) are located within 1.5 miles of the site. These plants have historical occurrences and are considered rare. They may presently occur on disturbed sites in the area and possibly at your project site.

There are no known threatened or endangered species located directly on the site. This search does not substitute for an on-site inspection by a qualified consultant.

In the event of off-site remediation, please be aware of three managed areas that are within 1.5 miles of the site:

1) Lower Niagara River Rapids - this area includes the Niagara River from the Whirlpool Rapids Bridge downstream to Artpark.

2) Reservoir State Park

3) Devil's Hole State Park

II-X DIVISION OF MINERAL RESOURCES

DOMR staff did not participate in the M2P2 inspection of TAM Ceramics. However, their input was solicited for any concerns of the Mineral Resources Divisions.

The DOMR has responded that there are no mining activities or abandoned wells at or near the TAM facility.

II-XI DIVISION OF ENVIRONMENTAL ENFORCEMENT AND BUREAU OF ENVIRONMENTAL CONSERVATION INVESTIGATION

The DEE and BECI units were not involved in the M2P2 process but were surveyed prior to the inspection and they responded with no outstanding concerns or issues.

II-XII MULTI-MEDIA INSPECTION

An announced multi media inspection was performed at TAM Ceramics on June 22, 1994. The purpose of this initiative was to inspect the entire facility at a point in time to determine facility compliance with environmental laws and regulations. It also gave team members a chance to learn about the facility operations and to improve their knowledge of other program activities at the facility.

The multi media inspection began with a pre-inspection meeting at the TAM Ceramics Inc. office between the team members and Mr. Russell Steiger, Manager of Health Safety and Environmental, of TAM Ceramics, Inc.

The team leader, Mr. Michael J. Hinton opened the meeting with a discussion of the M2P2 goals and objectives. This was followed by a presentation by Mr. Steiger that provided a brief history of TAM Ceramics Inc. products, by-products, pollution prevention/waste minimization initiatives, pollution prevention and minimization - Present and Future and other environmental issues. After Mr. Steiger presentation the team members introduced themselves and briefly explained their role in the M2P2 inspection.

At the conclusion of the pre-inspection meeting the team performed a walk through inspection of the facility. All the various production activities were observed as was the inactive hazardous waste disposal area that is under investigation, petroleum and chemical bulk storage tanks, waste storage areas, waste water treatment plant and discharge monitoring stations.

As a result of this inspection the following comments were received:

DSW:

As a result of the Occidental remediation work, soil has been stockpiled on the plant that was generated by the past drum removal activities. To determine the status of this soil, the DSW requested the analytical data from the sampling performed on the soil. The company is taking the position that the soil is uncontaminated and, therefore, unregulated. Also, current information on waste stream approvals was requested:

DAR:

The DAR requested that TAM provide information on the Carbon Paste vendor, MSDS on carbon and the schedule for bag changes out on the dust collectors.

DSM:

The DSM requested that TAM provide a copy of the tank closure report for the above ground storage tank.

DHSR:

A complete RCRA inspection will be conducted on June 30, 1994.

MULTI MEDIA INSPECTION OF TAM CERAMICS, INC.

PART III RECOMMENDATIONS AND CONCLUSIONS

III-I RECOMMENDATIONS

The multi media inspection of TAM Ceramics Inc. did not reveal any areas of concern to the team members. Any comments or concerns raised during the inspection have been satisfactorily addressed or answered by the company.

TAM Ceramics has submitted a Hazardous Waste Reduction Plan to the Department. This plan has been approved by the DHSR. The company has taken steps to reduce the volume of waste generated and is researching methods to reduce toxicity.

It is the teams' recommendation that the Department work closely with TAM Ceramics, Inc. to ensure that the goals stated in the HWRP are met.

It is also recommended that the M2P2 team be involved with the decision on site reclassification under the Hazardous Waste Remediation Program.

III-II Conclusion

No significant environmental issues or concerns were found during the multi media inspection of the site.

The company has already instituted pollution prevention/waste minimization activities at the plant and they are investigating the feasibility of future pollution prevention measures.

ATTACHMENT 1
MULTI-MEDIA INSPECTION CHECKLIST

New York State Department of Environmental Conservation

MULTIMEDIA INSPECTION CHECKLIST

COVER SHEETS

Facility RCIS# _____ - _____ M2 Inspection Date 6/22/94 Type : RMMI or CMMI (circle one) Region 9

Inspector's Name M.J. Hinton, M. McMurray, J. DiPronio, C. Webster, N. Schnabel, J. Stack, D. Leemhuis

Facility Name TAM Ceramics Inc. Type Manufacturing

Facility Generator Status Large

Facility Address 4511 Hyde Park Blvd., P.O.Box 67
Niagara Falls, NY 14305-0067

Facility Location Town Niagara Village N/A

County Niagara City N/A

Facility Contact's Name Russell Seiger Title Manager of Health Safety & Environmental

Facility Contact's Telephone # (716) 278- 9400

Facility Programs ID-#

Facility Manager _____

Last Program Inspection Date 6/30/94 Program (circle 1) DOA, DOW, DSW, DHSR-HWCR, DHSR-P DHSR-R, DHWR, DSM-BS, DF&W, DMN-M, DMN-G.

Inspector's Name N. Schnabel

Last Multimedia Inspection Date 6/22/94 Type : RMMI or CMMI (circle one)

Inspector's Name Same as above.

Notification to the facility for current inspection, Date -/-/- Person/s interviewed at the facility

Report Prepared By: Michael J. Hinton Date -/-/-

Report Approved By: _____ Date -/-/-

Number of additional pages for/ Site Plan X / Facility Description -X/ Part A X / Part B X / Comments X/ Others

New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Facility RCIS# _____ - _____ M2 Inspection DATE 6 / 22 / 94 Type : RMMI or CMMI (circle one)

Inspector's Name Jacqueline DiPronio

Division of Air

Regulated activities	Permit Number	Operating Hours/Day	Operating Days/Week	Consent Order	Other Enforcement Actions
Incinerator	No				
Boiler	No				
Other Certified Sources	See Below				

There are 98 air permit regulating discharges from various processes. At this time the facility air emissions are currently regulated by 6 NYCRR Part 212 General process exhaust. They will be required to obtain a Title V operating permit.

NOTES

1. Please use extra sheets, if needed, to add more regulated activities and number extra sheets with alphabetical suffixes to the page number (1a, 1b, etc.)

2. CSG: Please attach extra sheets to compile Case Specific Guidance (CSG) regarding the concerns in each program at the facility.

New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Division of Water

Regulated activities	Permit Number	Number of Outfalls	Consent Order	Other Enforcement Actions
Surface Water	None	-	-	-
Ground Water	None	-	-	-

City of Niagara Falls

NY 020-6336

Pretreatment/ Industrial User	SIU #28	2		

NOTES

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Division of Solid Waste

Regulated activities	Closed	Inactive	Operating	Permit Number	Consent Order	Other Enforcement Actions
Municipal Landfill				N/A		
Industrial Landfill				N/A		
Ash Landfill				N/A		
C&D Landfill				N/A		
Incinerator				N/A		
Land Application				N/A		
Composting				N/A		
Liquid Storage				N/A		
Transfer Station				N/A		
Recycling				N/A		
Waste Tire Storage				N/A		
Medical Waste				N/A		
Waste Oil				N/A		

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Hazardous Substances Regulation (DHSR)
Hazardous Waste Compliance/Regulation (HWCR)

Regulated activities	Permit Number	Expiration Date	Operating	Consent Order	Other Enforcement Actions
Container Storage	N/A				
Tank Storage	N/A				
Tank Treatment	N/A				
Landfill	N/A				
Surface Impoundment	N/A				
Incinerator	N/A				
Boiler/Industrial Furnace	N/A/				
Waste Pile	N/A				
Transporter	N/A				
Recycle	N/A				
Other	N/A				

TAM Ceramics has not requested nor do they require any permits under Part 373 for any of the activities listed above.

NOTES

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Hazardous Waste Reduction Plan

	EPA ID No.	Date of Last Biennial Update	Date of Annual Status Report	Consent Order	Other Enforcement Actions
HWRP	NYD09764906	N/A	June 1994	No	No

Initial HWRP submitted June 1993 revised March 1994
First Status Report submitted June 1994.

NOTES

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Division of Hazardous Substances Regulation (DHSR)
Pesticides

Regulated activities	Restricted	Commercial Permit Number	Consent Order	Other Enforcement Actions
Sales	N/A			

Regulated activities	EPA Establishment Number	Consent Order	Other Enforcement Actions
Manufacture/ Repackage	N/A		

TAM Ceramics does not sell, manufacture or repackage pesticides.

TAM Ceramics may use pesticides on plant property. They use permitted applicators for any application of pesticides.

NOTES

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Division of Hazardous Substances Regulation (DHSR)
Radiation

Regulated activities	Permit Number	EP/Outfall	Consent Orders	Other Enforcement Actions
Incinerator	N/A			
Air Emission	N/A			
Surface Water Discharge (WWTF)	N/A			
Sanitary Sewer Disposal (Municipal System)	N/A			
Indoor Storage Area	N/A			
Outside Storage Area	N/A			

Due to High Purity ~~Zirconium~~ ZIRCONIA (HPZ) process that was constructed but never operated. ~~Zirconium~~ ZIRCONIA contains small amounts of Uranium and Thorium. The HPZ process may concentrate the radioactive elements in excess of the source levels.

The NYSDEC Radiation Bureau performs inspections every two years. The next scheduled inspection is planned for the fall 1994.

NOTES

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2. CSG: Please attach extra sheets to compile Case Specific Guidance (CSG) regarding the concerns in each program at the facility.

New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Spills Management
Bulk Storage

Regulated activities	Registration/ License Numbers	Consent Order	Other Enforcement Actions
Petroleum Tanks	9-040444	No	No
Chemical Tanks	#9-000123	No	No

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Fish and Wildlife

Regulated activities	Permit #	Effective Dates	Termination date	Consent Orders	Other Enforcement Actions
Stream /Lake/Pond Protection Article 15/6NYCRR Part 608	N/A				
Freshwater wetland	None				
401 Water Quality Certification	No				
Hydropower License	No				
Tidal Wetland	No				
Article 15/24 Permit	No				

	Other Concerns
Significant Habitat	
Endangered Species	

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Hazardous Waste Remediation

Regulated activities	ID No.	NPL status	Site Class	PSA	IRM	RIFS	Remedial Construction	System Operating	Consent Order	Other Enforcement Actions
Listed /unlisted Site	932028	No	2A	Yes	Yes	No	No	No	Yes	No

3/94 - IRM conducted to remove exposed barium waste that failed EP Tox for barium. Field work completed 3/94. Final IRM Report received and approved 6/94.

5/94 - PSA started - Site Survey, electromagnetic surver, groundwanter sampling completed additional monitoring wells, test pits, soil sampling scheduled for 9/94.

IRM [illegible] Consent Order Index #B9-0430-93-04. Signed 2/17/94

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Mineral Resources (DOMR)
Oil and Gas

Regulated Activity Well:	API Number	Access	Operating	Consent Order	Other Enforcement Actions	Financial Security
Drilling	N/A					
Operating	N/A					
Shut-In	N/A					
Plugged	N/A					

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Mineral Resources
Minerals

Regulated activities	Permit Number/ DEC Approval	Number of Locations	Consent Order	Other Enforcement Actions
Mining activity	No			
SPDES Permit	No			
Air Permit	No			
Blasting	No			
Mining below Water Table	No			
Stream Protection	No			
Fresh Water Wetland	No			

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST

PART B: OBSERVATIONS

Facility RCIS# _____ - ____ M2 Inspection DATE 6 / 22 / 94 Type : RMMI or CMMI
(circle one)
Inspector's Name Michael J. Hinton Facility Manager

(Check any unusual conditions noted, mark on the site plan with location and describe fully under comment section. Any unusual conditions not covered by the check list should also be noted on both the map and comment section.)

DATE OF INSPECTION: 6/22/94 TIME: 9:00 a.m.
WEATHER CONDITIONS: Clear Sunny
TEMPERATURE: 80o F

GENERAL OBSERVATIONS

Dust?	Yes	Stressed Vegetation?	___
Odors?		Stressed, Dead, or dying Wildlife (animal,fish etc)?	___
Spillage?	Yes		
Leachate?		Leaks?	___
Smoke?	___	Open Burning?	___
Poor Housekeeping?	Yes	Monitoring Wells?	
Poor Maintenance?		Inadequate Radiation Signs, Symbol Level?	___
New Construction? (Excavation/Grading Demolition)	___	Inadequate Instruction Posted for Use of Radioactive Material?	___
Discolored Water?	___		
Discolored Soil?	___		

Provide Detailed Description For All Items Checked
(attach additional sheets if necessary) Dust- Process areas are dusty due to nature of materials used and manufactured. Spillage- Process areas inside buildings are coated with powders which have leaked from equipment. Poor Housekeeping- Effort should be made to clean powders from process areas.

Contingency Plan
Does the Facility have a Contingency Plan ? yes/no
If yes, Date of the last Drill __/__/__ ; Briefly Describe the Chain of Command.

PROGRAM CONCERNS
Are There Any Activities That Might Require a Permit Not Noted in Part A? yes/no

DOA
Is There Potential for Fugitive Emissions? yes/no (Dust Piles or Unpaved Roads)

DOW
Are there any areas throughout the treatment facility, or in the effluent, evidencing excessive foam? yes/no

Are there any obvious safety hazards throughout the treatment facility? yes/no
Is there any evidence of unauthorized bypassing throughout the treatment facility? yes/no
Does the Facility have SPDES permit? yes/no
Is storm water contained or retained? No
Is the pavement/flooring in and around the Facility cracked, thereby, allowing infiltration? N/A
Is material storage pile runoff (contaminated storm water) impacting ground or surface water? No

DHSR-HWCR
Is Hazardous or Toxic Waste Disposed on Site ? yes/no
Is Hazardous or Toxic Waste Treated on Site ? yes/no
Are All Storage Areas, Tanks and Containers Properly Marked? yes/no
Is There Secondary Containment for Tanks and Hazardous Waste Storage Areas? yes/no

DHSR- Pesticide
Does The Facility Apply Pesticides yes/no , lawn care yes/no , boiler Treatment yes/no building fumigation? yes/no Does The Facility Hire Pesticide Applicator(s)? yes/no
(Include Name(s) and Address(es) of Firm(s) or Name(s) and ID#(s) of Applicator(s) in Comments Section.)
Does The Facility use their own personnel to do the application? yes/no
If yes are those personnel certified? yes/no

DHSR- Radiation
Does the Facility Incinerate Any Radioactive Material? yes/no
(This item is applicable if there is an incinerator at the site)

DHSR- Hazardous Waste Reduction Plan
Does the Facility have a Hazardous Waste Reduction Program in Place ? yes/no
Has the Facility Installed Equipment, Modified Process/Operations, etc., as per the Waste Reduction Plan? yes/no

DSW
Is Disposal of Solid Waste Occurring at the Site ? yes/no

DHWR
Is hazardous waste investigative or remedial work under way as scheduled? yes/no
If yes, does the scope appear to be consistent with the approved work plan? yes/no
If no, explain in comments section.
Was any oversight being provided? yes/no
By DHWR staff or their consultant? yes/no Name(s) Michael J. Hinton
Russell Steiger
By facility staff? yes/no Name(s) _____
By facility consultant? yes/no Consultant Name Blasland, Bouck & Lee

DSM-Bulk storage
Are There Any Unregistered Tanks? (if over 500 Gallons) yes/no
Are Tank Vent Pipes Visible? yes/no If yes how many? yes/no

DF&W

If there is a hydropower facility, are natural stream channels downstream of impoundment structure dewatered? yes/no N/A

Is there any new construction on site involving dredging, filling, excavating or other disruption in wetlands of water bodies ? yes/no

DMN-Minerals

Is mining activity occurring at the site? yes/no

If so, is there a permit visibly displayed at the site? yes/no

Is there excessive dust being generated at the site? yes/no

Is there processing of minerals occurring at the site, e.g. rock crushing? yes/no

Is there turbid water leaving the site? yes/no

DMM-Oil and Gas

Permit number/API number 31-___-____ N/A

Is the site identified by sign? yes/no N/A

Is the well producing? yes/no

Is there erosion of the site or access road? yes/no

Are there any recent leaks or spills? yes/no

(brine burn, gas leaks, etc.)

Is there a fire hazard? yes/no

Is there a tank to contain brine production? yes/no

Comments:

- Dust, spillage and housekeeping are minor issues confined to the interior of buildings. No excursion noted outside buildings or leaving site.

- Facility uses permitted pesticide applicator to control mosquitos. Applicators are subject to bid with no particular company routinely on site. Company sprays mosquitos only as needed. No pesticide applicator currently on plant.

ATTACHMENT 2
SARA TITLE III, TOXIC RELEASE INVENTORY DATA FACILITY REPORT

New York State Department of Environmental Conservation
SARA Title III, Toxic Release Inventory Data, Facility Report
August 11, 1994

Site : IAM CERAMICS INC.
4511 HYDE PARK BLVD
NIAGARA FALLS, NY 14305
County: NIAGARA
Sortkey : 291010

Public Contact : DOR KANTNER
Phone : (716) 278-9425
SIC Code : 2819
POTW Used : NIAGARA FALLS (C) WASTEWATER
Receiving Waterbodies : NIAGARA RIVER

RCIS # : 9291100088
EPA TRI # : 14305IMCRM4511M
Air Emissions Permit # : 2911000286
RCRA # : 097649016
SPDES Permit # :

Form R Submitted : 6

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	N040 (93) BARIUM COMPOUNDS 100 K+ - < 1 M	N420 (93) LEAD COMPOUNDS 10 K+ - < 100 K	7550450 (93) TITANIUM TETRA- CHLORIDE 10 K+ - < 100 K	7647010 (93) HYDROCHLORIC ACID 10 K+ - < 100 K	7664382 (93) PHOSPHORIC ACID (AS P O4) 10 K+ - < 100 K	7782505 (93) CHLORINE 10 K+ - < 100 K
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	100	0	23	3,720	1 - 10	400
Stack or Point.....	4,323	458	None	5,557	0	100
DISCHARGES TO WATER						
Water 1.....	None	None	None	None	None	None
Water 2.....						
Water 3.....						
UNDERGROUND INJECTION.....	None	None	None	None	None	None
RELEASES TO LAND						
On Site Landfill.....	None	None	None	None	None	None
Application Farming.....	None	None	None	None	None	None
Surface Impoundment.....	None	None	None	None	None	None
Other Disposal.....	None	5	None	None	None	None
OFF SITE TRANSFERS IN WASTE						
Discharge to POTW.....	4,500	50	None	100	8,309	None
In State Transfers.....	469, & 38 0	0	0	0	0	0
Out of State Trans.....	0	0	0	0	0	0
Spills.....	0	0	1	0	0	0

te : TAM CERAMICS INC.
4511 HYDE PARK BLVD
NIAGARA FALLS, NY 14305
County: NIAGARA
Sortkey : 291010

Public Contact : DON KANTNER
Phone : (716) 278-9425
SIC Code : 2819
POTW Used : NIAGARA FALLS (C) WASTEWATER
Receiving Waterbodies : NIAGARA RIVER

RCIS # : 9291100088
EPA TRI # : 14305TMCRM4511H
Air Emmissions Permit # : 2911000286
RCRA # : 097649016
SPDES Permit # :

Form R Submitted : 4

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	N040 (92) BARIUM COMPOUNDS 100 K+ - < 1 M	N040 (91) BARIUM COMPOUNDS 100 K+ - < 1 M	N040 (90) BARIUM COMPOUNDS 100 M+ - < 500 M	N040 (89) BARIUM COMPOUNDS 100 M+ - < 500 M	N420 (89) LEAD COMPOUNDS 10 M+ - < 50 M	1310732 (88) SODIUM HYDROXIDE (SOLUTION) Invalid Amount
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	10	10	None	0	0	None
Stack or Point.....	3,860	3,860	3,690	3,684	543	None
DISCHARGES TO WATER						
Water 1.....	None	None	None	None	None	None
Water 2.....				None	None	None
Water 3.....				None	None	None
UNDERGROUND INJECTION.....	None	None	None	None	None	None
RELEASES TO LAND						
On Site Landfill.....	None	None	None	None	None	None
Application Farming.....	None	None	None	None	None	None
Surface Impoundment.....	None	None	None	None	None	None
Other Disposal.....	100	100	None	None	None	None
OFF SITE TRANSFERS IN WASTE	384,300 #	290,730	382,800	485,863		
Discharge to POTW.....	4,500	30,000	320,000	350,000	None	None
In State Transfers.....	379,800	260,730	62,800	138,863	4,743	0
Out of State Trans.....	0	0	0	0	0	0
Spills.....	0	0				

ite : TAM CERAMICS INC.
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County: NIAGARA
Sortkey : 291010

Public Contact : DON KANTNER
Phone : (716) 278-9425
SIC Code : 2819
POTW Used : NIAGARA FALLS (C) WASTEWATER
Receiving Waterbodies : NIAGARA RIVER

RCIS # : 9291100088
EPA TRI # : 14305THCRM4511H
Air Emissions Permit # : 2911000286
RCRA # : 097649016
SPDES Permit # :

Form R Submitted : 4

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	7439921 (88) LEAD Invalid Amount	7440393 (88) BARIUM TOTAL Invalid Amount	7440666 (88) ZINC Invalid Amount	7550450 (92) TITANIUM TETRA- CHLORIDE 10 K+ - < 100 K	7550450 (91) TITANIUM TETRA- CHLORIDE 10 K+ - < 100 K	7550450 (90) TITANIUM TETRA- CHLORIDE 10 K+ - < 100 K
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	None	0	0	21	16	28
Stack or Point.....	224	4,095	1 - 499	None	None	None
DISCHARGES TO WATER						
Water 1.....	None	None	None	None	None	None
Water 2.....	None	None	None		None	
Water 3.....	None	None	None		None	
UNDERGROUND INJECTION.....	None	None	None	None	None	None
RELEASES TO LAND						
On Site Landfill.....	None	None	None	None	None	None
Application Farming.....	None	None	None	None	None	None
Surface Impoundment.....	None	None	None	None	None	None
Other Disposal.....	None	None	None	None	None	None
OFF SITE TRANSFERS IN WASTE		195,200				
Discharge to POTW.....	None	130,000	282	None	None	None
In State Transfers.....	14,728	95,500	15,859	0	0	0
Out of State Trans.....	0	0	0	0	0	0
Spills.....				1	0	

te : TAM CERAMICS INC.
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POTW Used : NIAGARA FALLS (C) WASTEWATER
Receiving Waterbodies : NIAGARA RIVER

RCIS # : 9291100088
EPA TRI # : 14305TMCRM4511H
Air Emmissions Permit # : 2911000286
RCRA # : 097649016
SPDES Permit # :

Form R Submitted : 4

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	7550450 (89) TITANIUM TETRA- CHLORIDE 10 K+ - < 100 K	7550450 (88) TITANIUM TETRA- CHLORIDE Invalid Amount	7647010 (92) HYDROCHLORIC ACID 10 K+ - < 100 K	7647010 (91) HYDROCHLORIC ACID 1 K+ - < 10 K	7647010 (90) HYDROCHLORIC ACID 1 K+ - < 10 K	7647010 (89) HYDROCHLORIC ACID 1 K+ - < 10 K
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	5	0	3,320	2,700	3,650	20
Stack or Point.....	24	0	4,962	4,170	4,170	4,275
DISCHARGES TO WATER						
Water 1.....	None	None	None	None	None	None
Water 2.....	None	None				None
Water 3.....	None	None				None
UNDERGROUND INJECTION.....	None	None	None	None	None	None
RELEASES TO LAND						
On Site Landfill.....	None	None	None	None	None	None
Application Farming.....	None	None	None	None	None	None
Surface Impoundment.....	None	None	None	None	None	None
Other Disposal.....	None	None	None	1	None	None
OFF SITE TRANSFERS IN WASTE						
Discharge to POTW.....	None	None	100	100	10,250	760
In State Transfers.....	0	0	0	0	2,240	200
Out of State Trans.....	0	0	0	0	0	0
Spills.....			0	0		

te : TAM CERAMICS INC.
4511 HYDE PARK BLVD
NIAGARA FALLS, NY 14305
County: NIAGARA
Sortkey : 291010

Public Contact : DON KANTNER
Phone : (716) 278-9425
SIC Code : 2819
POTW Used : NIAGARA FALLS (C) WASTEWATER
Receiving Waterbodies : NIAGARA RIVER

RCIS # : 9291100088
EPA TRI # : 14305TMCRM4511H
Air Emmissions Permit # : 2911000286
RCRA # : 097649016
SPDES Permit # :

Form R Submitted : 4

CAS Number (Year) Chemical Name Max. Stored on Site (lbs.)	7647010 (88) HYDROCHLORIC ACID Invalid Amount	7664382 (92) PHOSPHORIC ACID (AS P O4) 10 K+ - < 100 K	7664382 (90) PHOSPHORIC ACID (AS P O4) 1 K+ - < 10 K	7664382 (89) PHOSPHORIC ACID (AS P O4) 1 K+ - < 10 K	7664382 (88) PHOSPHORIC ACID (AS P O4) Invalid Amount	7664417 (91) AMMONIA 10 K+ - < 100 K
RELEASES TO THE ENVIRONMENT	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year	lbs./year
AIR EMISSIONS						
Fugative or Non Point...	18	1 - 10	None	None	None	146
Stack or Point.....	15,200	0	None	None	None	8,000
DISCHARGES TO WATER						
Water 1.....	None	None	None	None	None	None
Water 2.....	None			None	None	None
Water 3.....	None			None	None	None
UNDERGROUND INJECTION.....	None	None	None	None	None	None
RELEASES TO LAND						
On Site Landfill.....	None	None	None	None	None	None
Application Farming.....	None	None	None	None	None	None
Surface Impoundment.....	None	None	None	None	None	None
Other Disposal.....	None	None	None	None	None	None
OFF SITE TRANSFERS IN WASTE						
Discharge to POTW.....	221,000	7,440	None	31,500	None	100
In State Transfers.....	0	0	410	350	0	1,070
Out of State Trans.....	0	0	0	0	0	0
Spills.....		0				0

ATTACHMENT 3
ENVIRONMENTAL REVIEW CHECKLIST
HAZARDOUS WASTE SITES
2 MILE RADIUS MAP
NYSDEC REGULATORY COMPLIANCE INFORMATION SYSTEM

ENVIRONMENTAL REVIEW CHECKLIST

APPLICATION ID # 9-2911-00088 REVIEWED BY: M. Maniak/M. McMurray DATE: March 22, 1994

APPLICANT/SPONSOR: TAM CERAMICS, INC. QUAD: Lewiston & Niagara Falls

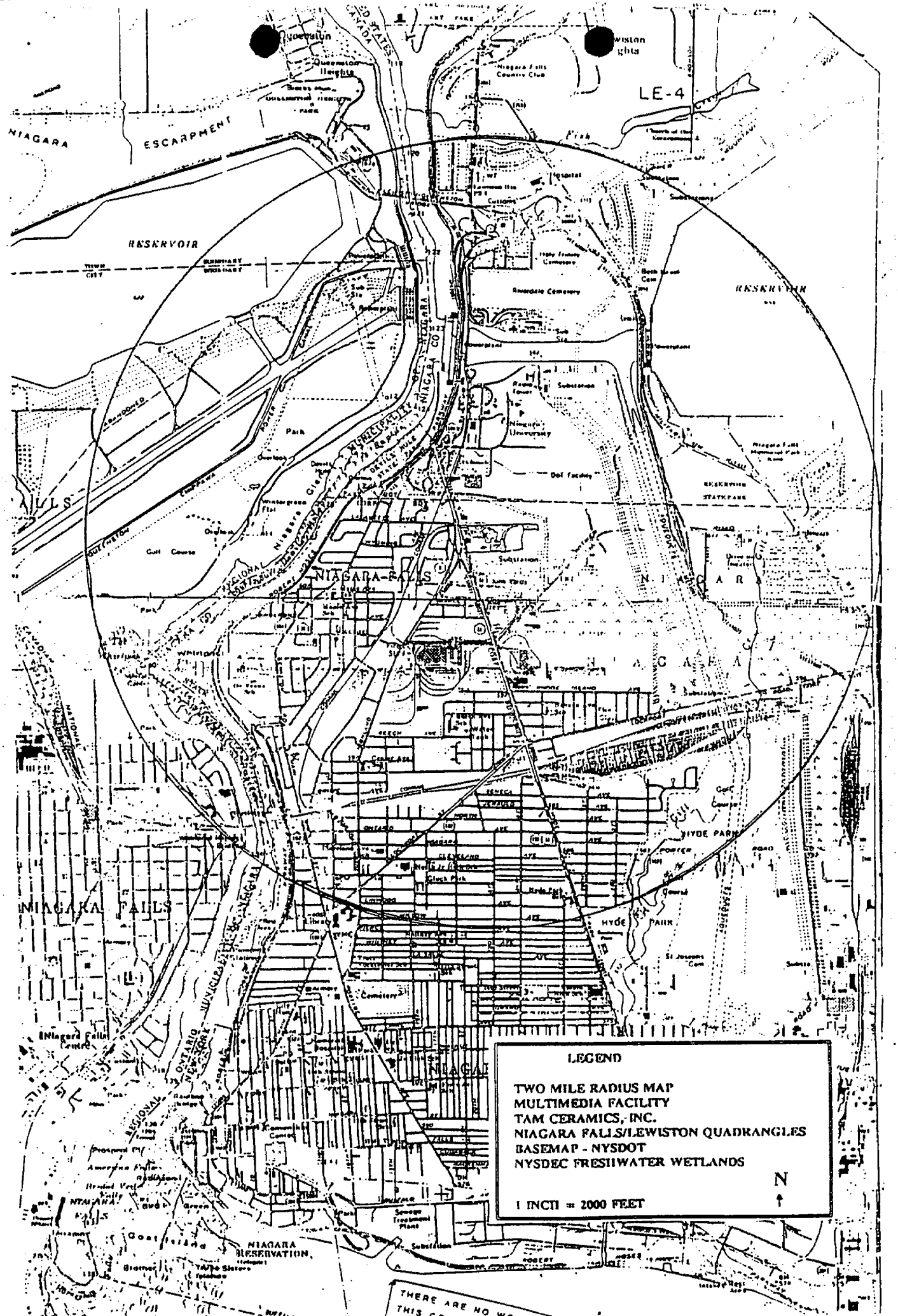
TOWN: Niagara COUNTY: Niagara NYTM E 1 7 1 . 5 N 4 7 8 2 . 9

	Facility	Two Mile Radius
NYS FRESHWATER WETLANDS - American side only Wetland Name_____ ID # _____ Class ____	NO	NO
PROTECTED STEAM Stream Name Niagara River Class A Standard A Special 6NYCRR Part 837.4 Item # 1 Page # 1607	NO	YES
NAVIGABLE WATERS	NO	YES
COASTAL EROSION AREA (PART 505)	NO	NO
COASTAL MANAGEMENT AREA	NO	YES
Significant Habitat	NO	YES
LWRP - Draft / Final	NO	NO
ARCHAEOLOGICAL SITE / HISTORICAL SITE	NO	YES
PRINCIPAL / PRIMARY AQUIFER	NO	NO
AGRICULTURAL DISTRICT Ag. District No. _____ Soil Types 1 or 2 _____ % of site	NO	NO
100 YEAR FLOODPLAIN Floodway # _____ Firm #_____	NO	YES
INACTIVE HAZARDOUS WASTE SITE - Sheet attached Site Name _____ Site # _____ Priority _____	YES	YES
NATURAL HERITAGE SITE QUAD Code 4307921 Lunar Code _____ DOT Code _____ QUAD Code 4307911	NO	YES
NIAGARA RIVER AREAS OF CONCERN (A.O.C.)	NO	NO
SIGNIFICANT HABITAT (Reg. F & W OVERLAY MAPS)	NO	NO
WILD, SCENIC & RECREATIONAL RIVER (Genesee River in Letchworth Park)	NO	NO
SEQR CRITICAL ENVIRONMENTAL AREA Cheektowaga - Reinstein Woods/ Wetlands/Stiglmeier Park/Cayuga Creek & Floodplain Hamburg - 18 Mile Creek, S. Branch 18 Mile Creek (Eden Branch), Hampton Brook	NO	NO

TAM CERAMICS, INC. FACILITY ID # 9-2911-00088

HAZARDOUS WASTE SITES

Name	Number	Priority
TAM Ceramics Inc.	932028	2A
Hooker Hyde Park Landfill	932021	2
Union Carbide Corp., Carbon Prod. Div.	932035	2A
Carborundum Co. Globar	932036	2A
Stauffer Chem. Plant - PASNY Site	932053	2
Niagara Town Landfill	932089	3
Part of site is in radius - New Road	932083	2A
SKW Alloy	932001	3
Witmer Road Site	932027	2A


LE-4
NIAGARA ESCARPMENT
RESERVOIR
NIAGARA FALLS
NIAGARA-FALLS
HYDE PARK
NIAGARA RESERVATION
LEGEND
TWO MILE RADIUS MAP
MULTIMEDIA FACILITY
TAM CERAMICS, INC.
NIAGARA FALLS/LEWISTON QUADRANGLES
BASEMAP - NYSDOT
NYSDEC FRESHWATER WETLANDS
1 INCH = 2000 FEET
N
THERE ARE NO WET
THIS COUN

2.4.0 OWNER INQUIRY 94-07-26
NYSDEC REGULATORY COMPLIANCE INFORMATION SYSTEM

SELECTION > SEARCH VALUE >

*** APPLICANT/PERMITEE/OWNER INFORMATION *** OWNER ID [11663]

CORPORATE NAME [TAM CERAMICS]
OR
INDIVIDUAL FIRST [ ] MI [ ] LAST [ ]

STREET [BOX C BRIDGE STA]
CITY [NIAGARA FALLS] STATE [NY] ZIP [14305 -]
COUNTRY [ ]

APO REP [ ]
STREET [ ]
CITY [ ] STATE [ ] ZIP [-]
PHONE ( ) -

SUMMARY > 13 APPLICATIONS 238 HISTORICAL APPLICATIONS 207 PERMITS
MESSAGE > RETURN TO CONTINUE OR F6 FOR SUMMARY LIST
F1) MAIN MENU F2) HELP F9) PAGE BACK F10) EXIT

3.4.0 FACILITY INQUIRY 94-07-26
NYSDEC REGULATORY COMPLIANCE INFORMATION SYSTEM

SELECTION > SEARCH VALUE >

ID [9 - 2911 - 00088]
NAME [TAM CERAMICS INCORPORATED]
STREET [4511 HYDE PARK BOULEVARD PO BOX 67]
CITY [NIAGARA FALLS] ZIP [14305 - 0067]
NYTM-E [171 . 6] NYTM-N [4 783 . 0] SWIS CODE [2911]

CONTACT [RUSSELL H STEIGER]
COMPANY [TAM CERAMICS INCORPORATED] PHONE [(716) 278 - 9423]
STREET [4511 HYDE PARK BLVD PO BOX 67]
CITY [NIAGARA FALLS] STATE [NY] ZIP [14305 - 0067]
PRGM ID [2911000286] PRGM ID [2911000386] PRGM ID [NYD097649016]
PRGM ID [RC2 5/7/93] PRGM ID [ ] PRGM ID [ ]

OWNER ID [11663] OWNER NAME [TAM CERAMICS]

SUMMARY > 13 APPLICATIONS 238 HISTORICAL APPLICATIONS 207 PERMITS
MESSAGE > RETURN TO CONTINUE OR F6 FOR SUMMARY LIST
F1) MAIN MENU F2) HELP F9) PAGE BACK F10) EXIT

ATTACHMENT 4
OIL AND HAZARDOUS MATERIAL SPILL - FACT SHEETS

NYS DEC Region 9
Oil & Hazardous Material Spill - Fact Sheet
08/16/94

Spill Name: TAM CERAMICS
Spill No: 8709087

Spill Time: 900
Spill Date: 01/25/88

Central Office Date: 01/25/88
Central Office Time: 1115

Answering Service Date: / /
Answering Service Time: 0

Regional Office Date: 01/25/88
Regional Office Time: 1100

Material Class: Petroleum
Petroleum Spilled: GASOLINE, ALL
Other Material:

Quantity Spilled: 0.00 GALLONS
Quantity Recovered: 0.00 G
Spill Cause: TANK TEST FAILURE

Spiller: TAM CERAMICS
Street: 4511 HYDE PARK BLVD
City, State, Zip: NIAGARA FALLS, NY 14305
Telephone: 716-278-9400

Spill Source: COMMERCIAL EST. (no petro for sale)
Spill Location: 4511 HYDE PARK BLVD
Municipality: NIAGARA FALLS
County: NIAGARA

Waterbody:
Notifier: Tank Tester

Resources Affected: GROUND WATER
Drainage Basin: 101

Remarks:
3000 GAL UNDERGROUND TANK FAILED TANK TEST

Caller: HENRY CHUDDY
Affiliation: ENVIRONMENTAL TECHNOLOGY
Telephone: 716-675-8855

Pin Number: 0
Status: COMPLETE
Cleaner: Spiller

T/A: 0
Cost Center Code (St.): 0
Clean Date: 07/19/88
Date I.S.R. sent to C.O.: / /

UST Trust Eligible?: No
Cost Center Code (Fed):

PBS Number: 0
Tank ID Numbers:

Close Date: 07/19/88

Investigator: MJH
Last Update: 07/28/88

NYS DEC Region 9
Oil & Hazardous Material Spill - Fact Sheet
08/16/94

Spill Name: TAM CERAMICS
Spill No: 8801183

Spill Time: 900
Spill Date: 05/06/88

Central Office Date: 05/06/88
Central Office Time: 1748

Answering Service Date: 05/06/88
Answering Service Time: 1717

Regional Office Date: 05/06/88
Regional Office Time: 1837

Material Class: Hazardous material
Petroleum Spilled: OTHER or NON-PETRO
Other Material: TITANIUM TETRACHLOR.

Quantity Spilled: 3.00 GALLONS
Quantity Recovered: 0.00 G
Spill Cause: EQUIPMENT FAILURE

Spiller: TAM CERAMICS
Street: 4511 HYDE PARK BLVD
City, State, Zip: NIAGARA FALLS, NY
Telephone: 716-278-9494

Spill Source: TANK TRUCK
Spill Location: 4511 HYDE PARK BLVD
Municipality: NIAGARA FALLS
County: NIAGARA

Waterbody:
Notifier: Responsible entity/spiller

Resources Affected: ON LAND
Drainage Basin: 101

Remarks:
LEAKING COUPLING ON TANK TRUCK

Caller: DARYL KENNEDY
Affiliation: TAM CERAMICS
Telephone: 716-278-9494

Pin Number: 0
Status: COMPLETE
Cleaner: Spiller

T/A: 0
Cost Center Code (St.):
Clean Date: 06/02/88
Date I.S.R. sent to C.O.: / /

UST Trust Eligible?: No
Cost Center Code (Fed):

PBS Number: 0
Tank ID Numbers:

Close Date: 06/02/88

Investigator: MJH
Last Update: 06/06/88

NYS DEC Region 9
Oil & Hazardous Material Spill - Fact Sheet
08/16/94

Spill Name: TAM CERAMICS
Spill No: 8902409

Spill Time: 1730
Spill Date: 06/06/89

Central Office Date: 06/08/89
Central Office Time: 1022

Answering Service Date: / /
Answering Service Time: 0

Regional Office Date: 06/08/89
Regional Office Time: 950

Material Class: Hazardous material
Petroleum Spilled: OTHER or NON-PETRO
Other Material: TITANIUM TETRACHLORD

Quantity Spilled: 2.00 POUNDS
Quantity Recovered: 2.00 P
Spill Cause: EQUIPMENT FAILURE

Spiller: TAM CERAMICS
Street: 4511 HYDE PARK BLVD
City, State, Zip: NIAGARA FALLS, NY 14305
Telephone: 716-278-9400

Spill Source: COMMERCIAL EST. (no petro for sale)
Spill Location: 4511 HYDE PARK
Municipality: NIAGARA FALLS
County: NIAGARA

Waterbody:
Notifier: Responsible entity/spiller

Resources Affected: ON LAND
Drainage Basin: 101

Remarks:
LEAKED OUT WHILE REMOVING PLUG IN STORAGE SYSTEM.

Caller: RUSS STEIGER
Affiliation: TAM CERAMICS
Telephone: 716-278-9400

Pin Number: 0
Status: COMPLETE
Cleaner: Spiller

T/A: 0
Cost Center Code (St.):
Clean Date: 06/19/89
Date I.S.R. sent to C.O.: / /

UST Trust Eligible?: No
Cost Center Code (Fed):

PBS Number: 0
Tank ID Numbers:

Close Date: 06/19/89

Investigator: JDC
Last Update: 07/10/89

NYS DEC Region 9
Oil & Hazardous Material Spill - Fact Sheet
08/16/94

Spill Name: TAM CERAMICS
Spill No: 8903423

Spill Time: 950
Spill Date: 07/05/89

Central Office Date: 07/05/89
Central Office Time: 1457

Answering Service Date: / /
Answering Service Time: 0

Regional Office Date: 07/05/89
Regional Office Time: 1050

Material Class: Hazardous material
Petroleum Spilled: OTHER or NON-PETRO
Other Material: MURIATIC ACID

Quantity Spilled: 10.00 GALLONS
Quantity Recovered: 0.00 G
Spill Cause: HUMAN ERROR

Spiller: TAM CERAMICS
Street: 4511 HYDE PARK BLVD
City, State, Zip: NIAGARA FALLS, NY 14228
Telephone: 716-278-9423

Spill Source: COMMERCIAL EST. (no petro for sale)
Spill Location: 4511 HYDE PARK BLVD
Municipality: NIAGARA FALLS
County: NIAGARA

Waterbody:
Notifier: Responsible entity/spiller

Resources Affected: ON LAND
Drainage Basin: 101

Remarks:
DRUM TIPPED OVER HAD NO BUNG

Caller: RUSS STEIGER
Affiliation: TAM CERAMICS
Telephone: 716-278-9423

Pin Number: 0
Status: COMPLETE
Cleaner: Spiller

T/A: 0
Cost Center Code (St.):
Clean Date: 07/05/89
Date I.S.R. sent to C.O.: / /

UST Trust Eligible?: No
Cost Center Code (Fed):

PBS Number: 0
Tank ID Numbers:

Close Date: 07/05/89

Investigator: RNL
Last Update: 08/08/89

NYS OEC Region 9
Oil & Hazardous Material Spill - Fact Sheet
08/16/94

Spill Name: TAM CERAMICS
Spill No: 8911487

Spill Time: 1230
Spill Date: 03/06/90

Central Office Date: 03/06/90
Central Office Time: 1342

Answering Service Date: / /
Answering Service Time: 0

Regional Office Date: 03/06/90
Regional Office Time: 1320

Material Class: Petroleum
Petroleum Spilled: DIESEL
Other Material:

Quantity Spilled: 50.00 GALLONS
Quantity Recovered: 50.00 G
Spill Cause: TRAFFIC ACCIDENT

Spiller: TRIANGLE QUICKSTOP INC
Street: 309 N MAIN ST PO BOX 129
City, State, Zip: RICHLAND CENTER WIS 53581
Telephone:

Spill Source: COMMERCIAL EST. (no petro for sale)
Spill Location: HYDE PARK BLVD
Municipality: NIAGARA FALLS
County: NIAGARA

Waterbody:
Notifier: Health department

Resources Affected: ON LAND
Drainage Basin: 101

Remarks:
TRUCK DROVE OVER CURB AND RUPTURED FUEL LINE CROSS OVER

Caller: DAVE DRUST
Affiliation: NCHD
Telephone: 716-439-6158

Pin Number: 0
Status: COMPLETE
Cleaner: Spiller

T/A: 0
Cost Center Code (St.):
Clean Date: 05/21/91
Date I.S.R. sent to C.O.: / /

UST Trust Eligible?: No
Cost Center Code (Fed):

PBS Number: 0
Tank ID Numbers:

Close Date: 05/21/91

Investigator: MJH
Last Update: 05/23/91

ATTACHMENT 5
NEW YORK STATE REGISTRY OF INACTIVE HAZARDOUS WASTE SITES

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2a REGION: 9 SITE CODE: 932028
EPA ID: NYD002102473

NAME OF SITE : TAM Ceramics, Inc.
STREET ADDRESS: 4511 Hyde Park Boulevard
TOWN/CITY: COUNTY: ZIP:
Niagara Niagara 14305

SITE TYPE: Open Dump- X Structure- Lagoon- Landfill- Treatment Pond-
ESTIMATED SIZE: 30 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: TAM Ceramics, Inc.
CURRENT OWNER ADDRESS.: 4511 Hyde Park Blvd., Niagara Falls, NY
OWNER(S) DURING USE...: Titanium Alloy Manuf./National Lead,(NL)
OPERATOR DURING USE...: TAM Ceramics, Inc.
OPERATOR ADDRESS.....: 4511 Hyde Park Blvd., Niagara Falls, NY
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1930 To 1976

SITE DESCRIPTION:
This is an operating plant site producing basic ingredients for the manufacture of refractory products.
This site has been used as a storage area for obsolete equipment. Furnace linings and various metallic ore residues were deposited as surface fill. The site is immediately adjacent to the Hyde Park Landfill. Migration of chemicals through the overburden into sewers on the TAM plant site has been observed. The on-going investigation at the Hyde Park Landfill is helping to provide information on the contamination at the TAM Ceramics site. Additional information may be necessary to address the problems at this site. A Phase I Report was completed in Janaury 1989.

In the Summer of 1990, 178 drums of zirconium oxychloride wastes with clay were excavated from a trench at the central portion of the site. Analysis indicate these wastes to be non-hazardous. The drums have been removed for proper disposal at Modern Landfill, Lewiston, NY. Soils remain stock piled on site. Trench excavations and soil/waste sampling was conducted in May 1992. Barium wastes were confirmed.
TAM will perform an Interim Remedial Measure (IRM) on the Barium wastes. TAM has signed a Consent Order in January 1994 requiring the performance of an IRM and Preliminary Site Assessment (PSA). Work on these projects is expected to begin in the spring 1994.

HAZARDOUS WASTE DISPOSED:

TYPE	QUANTITY (units)
uncalcined titanium oxide, ammonium zirconium carbonate, zirconium, alumium oxide, iron-carbon-titanium alloy, silica fume	3,000 tons
zirconium tetrachloride	2 tons

ANALYTICAL DATA AVAILABLE:
Air- Surface Water- Groundwater-X Soil-X Sediment-

CONTRAVENTION OF STANDARDS:
Groundwater-X Drinking Water- Surface Water- Air-

LEGAL ACTION:

TYPE..: State- X Federal-
STATUS: Negotiation in Progress- X Order Signed-

REMEDIAL ACTION:

Proposed-X Under design- In Progress- Completed-
NATURE OF ACTION:

GEOTECHNICAL INFORMATION:
SOIL TYPE: interbedded silty clay, clayey silt, minor sand,gravel
GROUNDWATER DEPTH: 10-15 feet

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Materials disposed by site owner are considered to present little environmental problems. The site is contaminated by chemicals that have migrated from the Hyde Park landfill in the overburden and the bedrock. Surveys have been conducted by Occidental Chemical and the development of the remedial project is underway.

ASSESSMENT OF HEALTH PROBLEMS:

Access to the site is restricted to plant personnel, and is controlled by a fence and 24-hour security. Presence of hazardous waste has been confirmed by soil samples failing TCLP for barium.However, since site access is restricted there is little potential for exposure. All area residences are supplied with public water, and private wells downgradient of the site are not being used.

ATTACHMENT 6
DHSR RADIATION CONTROL PERMIT #135-3
6NYCRR PART 380
INSPECTION REPORT

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7255
518-457-2225 FAX 518-485-8390

Langdon-Marsh
Commissioner

OCT 14 1994

Mr. Russell Steiger
TAM Ceramics, Inc.
Box C, Bridge Station
4511 Hyde Park Boulevard
Niagara Falls, New York 14305

Dear Mr. Steiger:

Re: DEC Permit Number 9-2911-00088/163-9
Program/ Facility Number 135-3

This letter reports the results of the September 8, 1994, inspection of your facility conducted by John Abunaw and myself. The inspection was conducted pursuant to 6 NYCRR Part 380, "Prevention and Control of Environmental Pollution by Radioactive Material." TAM Ceramics is currently operating under Radiation Control Permit Number 135-3, which authorizes the discharge of radioactive material to air in effluents from the High-Purity Zirconia (HPZ) project at TAM.

The inspection was an examination of activities conducted at TAM Ceramics and those authorized under Radiation Control Permit Number 135-3 to assess compliance with: (1) Part 380, (2) the permit, and (3) statements made in the documents submitted in support of the permit application which have been incorporated into the permit. The inspection consisted of observations of facility operations, interviews with personnel, measurements, and a selective examination of representative records. The preliminary findings of the inspection were discussed with you at the close of the inspection.

Compliance with Part 380 and the conditions of your Radiation Control Permit is fundamental to assuring that exposures due to radioactive material discharges to the environment are maintained as low as reasonably achievable (ALARA) at TAM.

Within the scope of the inspection, operations at TAM were found to be in compliance with Part 380 and the conditions of Radiation Control Permit Number 135-3. This finding is based on the fact that TAM has conducted no radioactive material discharges under Radiation Control Permit 135-3.

Thank you for the courtesy extended to us during the inspection. Your cooperation is appreciated. If you have any questions regarding this matter, please call me at (518) 457-2225.

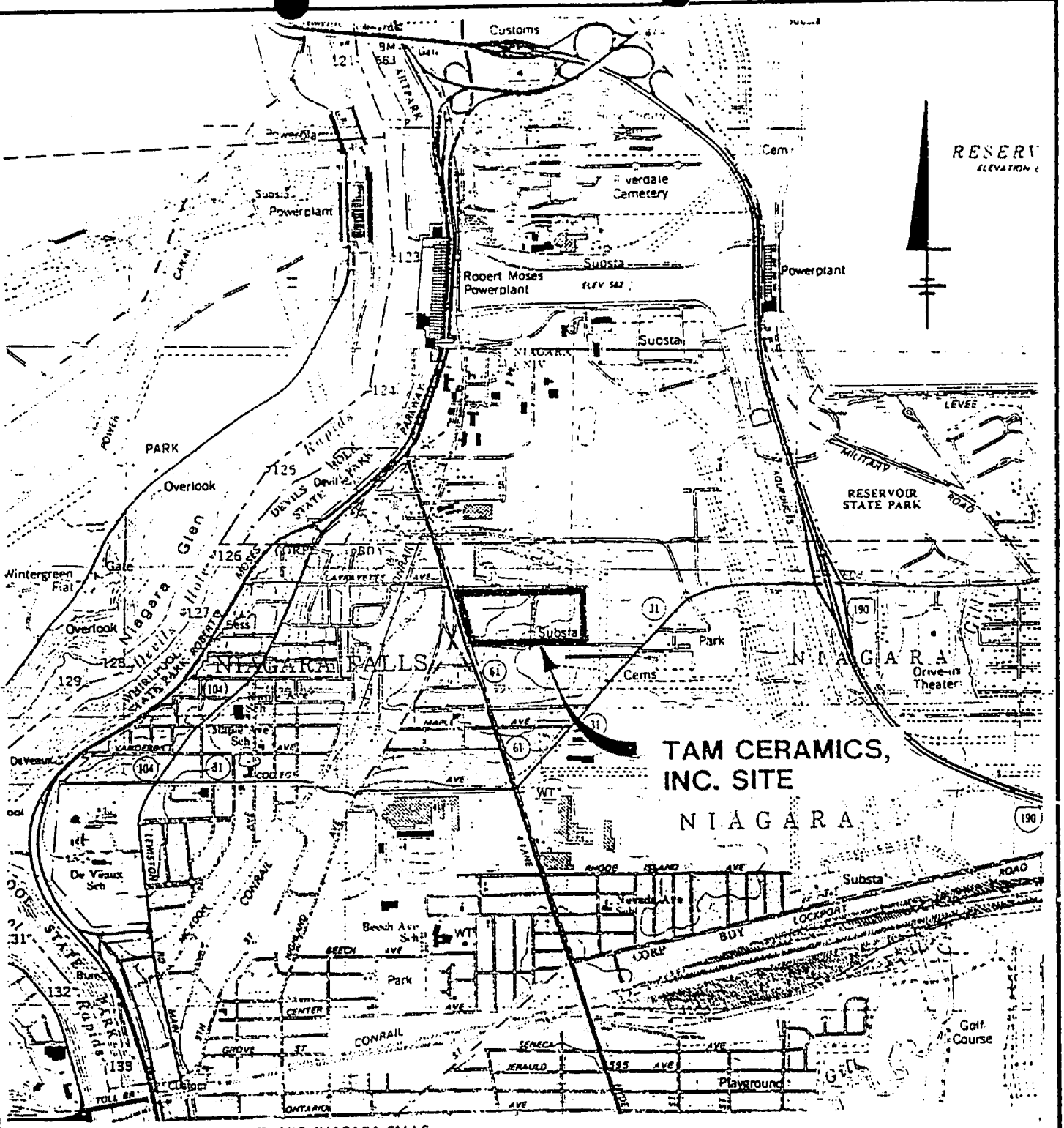
Sincerely,

Robert E. Rommel

Robert E. Rommel
Environmental Radiation Specialist
Bureau of Radiation
Division of Hazardous
Substances Regulation

RER

cc: Robert A. Rieger, President, TAM Ceramics, Inc.
Rita Aldrich, New York State Department of Labor
✓Hazardous Substances Engineer, Region 9
Division of Regulatory Affairs, Region 9
Air Pollution Control Engineer, Region 9



REFERENCE: LEWISTON, N.Y. - ONT. AND NIAGARA FALLS, N.Y. - ONT. 1980 QUADS.

2000' 0 2000'

APPROX SCALE: 1"= 2000'

QUADRANGLE LOCATION

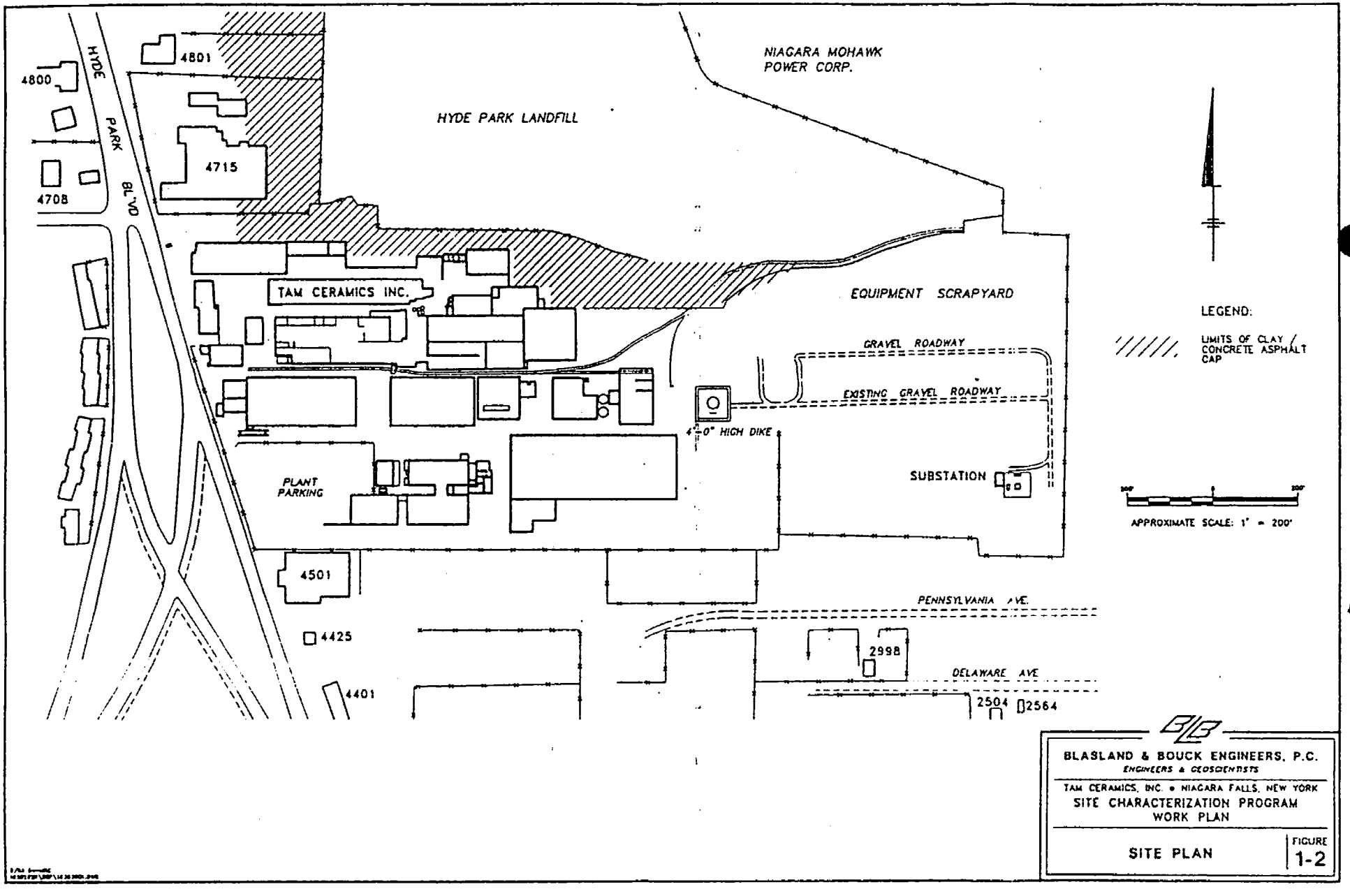
JAN. 1993 JVM
163.02.02

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

TAM CERAMICS, INC. • NIAGARA FALLS, NEW YORK
SITE CHARACTERIZATION PROGRAM
WORK PLAN

SITE LOCATION MAP

FIGURE
1-1

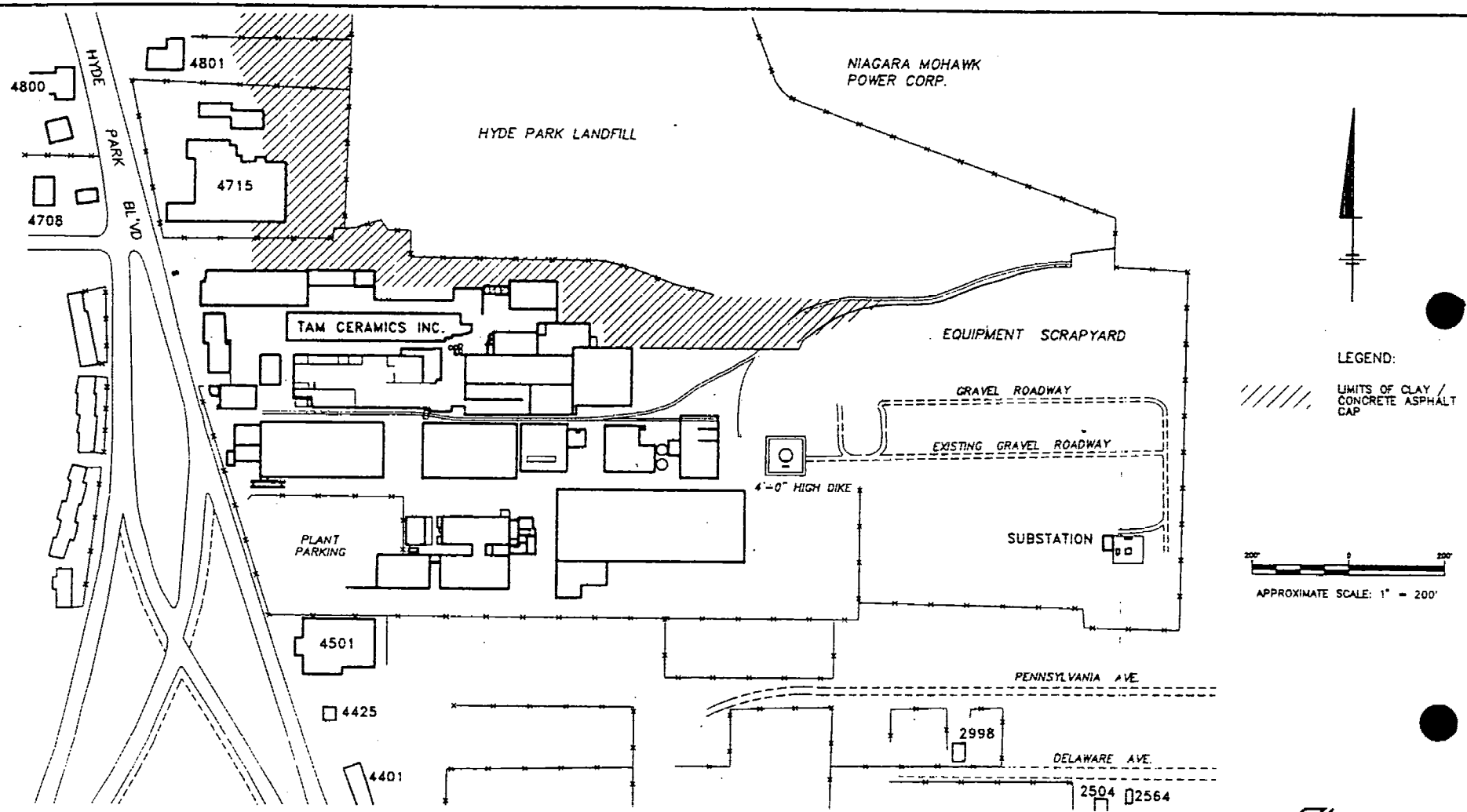


BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

TAM CERAMICS, INC. • NIAGARA FALLS, NEW YORK
SITE CHARACTERIZATION PROGRAM
WORK PLAN

SITE PLAN

FIGURE 1-2

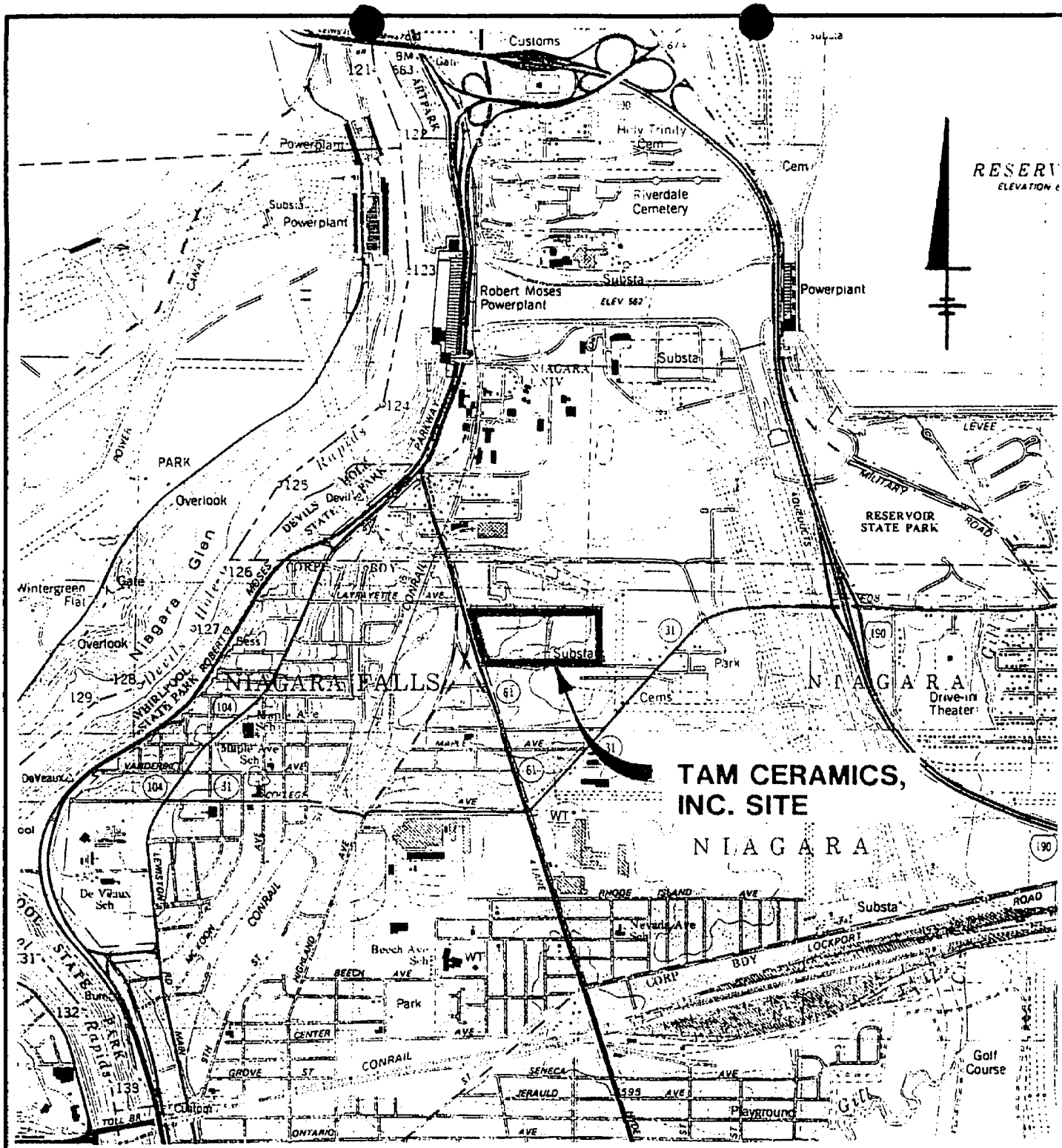


BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

TAM CERAMICS, INC. • NIAGARA FALLS, NEW YORK
SITE CHARACTERIZATION PROGRAM
WORK PLAN

SITE PLAN

FIGURE
1-2



REFERENCE: LEWISTON, N.Y. - ONT. AND NIAGARA FALLS, N.Y. - ONT. 1980 QUADS.

2000' 0 2000'

APPROX SCALE: 1" = 2000'

QUADRANGLE LOCATION

JAN. 1993 JVM
163.02.02

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS

TAM CERAMICS, INC. • NIAGARA FALLS, NEW YORK
SITE CHARACTERIZATION PROGRAM
WORK PLAN

SITE LOCATION MAP

FIGURE 1-1

New York State Department of Environmental Conservation

MULTIMEDIA INSPECTION CHECKLIST

COVER SHEETS

Facility RCIS# _____ - _____ M2 Inspection Date 6/22/94 Type : RMMI or (CMMI) (circle one) Region 9

Inspector's Name M.J. HINTON, J. DIPONDO, C. Webster, J. STACK, M. McMURRAY, Jerry Schnabel, D. Leemhuis

Facility Name TAM CERAMICS INC. Type MANUFACTURING

Facility Generator Status LARGE

Facility Address 4511 HYDE PARK BLVD P.O. BOX 67
NIAGARA FALLS NY 14305-0067

Facility Location Town NIAGARA Village N/A

County NIAGARA City N/A

Facility Contact's Name Russell Seiger Title Manager of Health SAFETY AND ENVIRONMENTAL

Facility Contact's Telephone # (716) 278-9400

Facility Programs ID # ?

Facility Manager _____

Last Program Inspection Date 6/30/94 Program (circle 1) DOA, DOW, DSW, DHSR-HWCR, DHSR-P (DHSR-R), DHWR, DSM-BS, DF&W, DMN-M, DMN-G.

Inspector's Name N. Schnabel

Last Multimedia Inspection Date 6/22/94 Type : RMMI or (CMMI) (circle one)

Inspector's Name Same as Above

Notification to the facility for current inspection, Date -/-/- Person/s interviewed at the facility

Report Prepared By: Michael J. Hinton Date -/-/-

Report Approved By: _____ Date -/-/-

Number of additional pages for/ Site Plan -/ Facility Description -/ Part A -/ Part B -/ Comments -/ Others

New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION MODEL

ATTACHMENT 1

New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Facility RCIS# _____ M2 Inspection DATE 6/22/94 Type : RMMI or CMMI (circle one)

Inspector's Name ~~[illegible]~~ Jacqueline D. Pronio

Division of Air

Regulated activities	Permit Number	Operating Hours/Day	Operating Days/Week	Consent Order	Other Enforcement Actions
Incinerator	No				
Boiler	No				
Other Certified Sources	See Below				

There are 98 air permits regulating discharges from various processes ~~emissions~~ At this time the facility air emissions are currently regulated by 6NYCRR Part 212 General process exhaust. NOTES They will be required to obtain a Title V operating permit.

1. Please use extra sheets, if needed, to add more regulated activities and number extra sheets with alphabetical suffixes to the page number (1a, 1b, etc.)

2. CSG: Please attach extra sheets to compile Case Specific Guidance (CSG) regarding the concerns in each program at the facility.

New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Division of Water

Regulated activities	Permit Number	Number of Outfalls	Consent Order	Other Enforcement Actions
Surface Water	None			
Ground Water	None			
Municipal System	City of Niagara Falls			
Pretreatment	SIU # 28	2		
Industrial User				

NOTES

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New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Division of Solid Waste

Regulated activities	Closed	Inactive	Operating	Permit Number	Consent Order	Other Enforcement Actions
Municipal Landfill	~~N/A~~			N/A		
Industrial Landfill	~~N/A~~			N/A		
Ash Landfill				N/A		
C&D Landfill				N/A		
Incinerator				N/A		
Land Application				N/A		
Composting				N/A		
Liquid Storage				N/A		
Transfer Station				N/A		
Recycling				N/A		
Waste Tire Storage				N/A		
Medical Waste				N/A		
Waste Oil				N/A		

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Hazardous Substances Regulation (DHSR)
Hazardous Waste Compliance/Regulation (HWCR)

Regulated activities	Permit Number	Expiration Date	Operating	Consent Order	Other Enforcement Actions
Container Storage	N/A				
Tank Storage	N/A				
Tank Treatment	N/A				
Landfill	N/A				
Surface Impoundment	N/A				
Incinerator	N/A				
Boiler/Industrial Furnace	N/A				
Waste Pile	N/A				
Transporter	N/A				
Recycle	N/A				
Other	N/A				

TAM CERAMICS HAS NOT REQUESTED NOR DO THEY REQUIRE ANY PERMITS UNDER PART 373 FOR ANY OF THE ACTIVITIES LISTED ABOVE.

NOTES

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Hazardous Waste Reduction Plan

	EPA ID No.	Date of Last Biennial Update	Date of Annual Status Report	Consent Order	Other Enforcement Actions
HWRP	NYD0976[illegible]	N/A	June 1994	No	No

INITIAL HWRP SUBMITTED JUNE 1993 REVISED MARCH 1994
FIRST STATUS REPORT SUBMITTED JUNE 1994

NOTES

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 (Part A continued)

New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Hazardous Substances Regulation (DHSR)
Pesticides

Regulated activities	Restricted	Commercial Permit Number	Consent Order	Other Enforcement Actions
Sales	N/A			

Regulated activities	EPA Establishment Number	Consent Order	Other Enforcement Actions
Manufacture/ Repackage	N/A		

TAM CERAMICS DOES NOT SELL, MANUFACTURE OR REPACKAGE PESTICIDES.

TAM CERAMICS MAY USE PESTICIDES ON PLANT PROPERTY. THEY USE PERMITTED APPLICATORS FOR ~~ALL~~ ANY APPLICATION OF PESTICIDES.

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Hazardous Substances Regulation (DHSR)
Radiation

Regulated activities	Permit Number	EP/Outfall	Consent Orders	Other Enforcement Actions
Incinerator	N/A			
Air Emission	N/A			
Surface Water Discharge (WWTF)	N/A			
Sanitary Sewer Disposal (Municipal System)	N/A			
Indoor Storage Area	N/A			
Outside Storage Area	N/A			

~~The Facility has a License From the USEPA~~ Due to High Purity Zirconium (HPZ) process that was constructed but never operated. Zirconium contains small amounts of Uranium and Thorium. The HPZ process may concentrate the radioactive elements in excess of the source levels.
The NYSDEC Radiation Bureau performs inspections Every two years. The next scheduled inspection is planned for the FALL 1994.

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Spills Management
Bulk Storage

Regulated activities	Registration/ License Numbers	Consent Order	Other Enforcement Actions
Petroleum Tanks	9-040444	NO	NO
Chemical Tanks	#9-000123	NO	NO

NOTES

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New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Division of Fish and Wildlife

Regulated activities	Permit #	Effective Dates	Termination date	Consent Orders	Other Enforcement Actions
Stream /Lake/Pond Protection Article 15/6NYCRR Part 608	N/A				
Freshwater wetland	None				
401 Water Quality Certification	No				
Hydropower License	No				
Tidal Wetland	No				
Article 15/24 Permit	No				

Other Concerns	
Significant Habitat	
Endangered Species	

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST
PART A - Facility Data

Division of Hazardous Waste Remediation

Regulated activities	ID No.	NPL status	Site Class	PSA	IRM	RIFS	Remedial Construction	System Operating	Consent Order	Other Enforcement Actions
Listed /unlisted Site	932028	NO	2A	YES	YES	NO	NO	NO	YES	NO

3/94 - IRM CONDUCTED TO REMOVE EXPOSED BARIUM WASTE THAT FAILED EP TOX FOR BARIUM
FIELD WORK COMPLETED 3/94
FINAL IRM REPORT RECIEVED & APPROVED 6/94

5/94 PSA STARTED - SITE SURVEY, ELECTROMAGNETIC SURVEY, GROUNDWATER SAMPLING COMPLETED
ADDITIONAL MONITORING WELLS, TEST PITS
SOIL SAMPLING SCHEDULED FOR 9/94

IRM & PSA CONSENT ORDER INDEX #B9-0430-93-04
SIGNED 2/17/94

NOTES

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New York State Department of Environmental Conservation

MULTI-MEDIA INSPECTION CHECKLIST

PART A - Facility Data

Division of Mineral Resources (DOMR)
Oil and Gas

Regulated Activity Well:	API Number	Access	Operating	Consent Order	Other Enforcement Actions	Financial Security
Drilling	N/A					
Operating	N/A					
Shut-In	N/A					
Plugged	N/A					

NOTES

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Division of Mineral Resources
Minerals

Regulated activities	Permit Number/ DEC Approval	Number of Locations	Consent Order	Other Enforcement Actions
Mining activity	~~N/A~~ NO			
SPDES Permit	~~N/A~~ NO			
Air Permit	~~N/A~~ NO			
Blasting	~~N/A~~ NO			
Mining below Water Table	~~N/A~~ NO			
Stream Protection	~~N/A~~ NO			
Fresh Water Wetland	~~N/A~~ NO			

NOTES

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New York State Department of Environmental Conservation
MULTI-MEDIA INSPECTION CHECKLIST

PART B: OBSERVATIONS

Facility RCIS# _____ - ____ M2 Inspection DATE 6/22/99 Type : RMMI or CMMI (circle one)
Inspector's Name MICHAEL J. HINTON FACILITY MANAGER

(Check any unusual conditions noted, mark on the site plan with location and describe fully under comment section. Any unusual conditions not covered by the check list should also be noted on both the map and comment section.)

DATE OF INSPECTION: 6/22/99 TIME: 9:00 AM
WEATHER CONDITIONS: Clear Sunny
TEMPERATURE: 80° F

GENERAL OBSERVATIONS

Dust?	YES	Stressed Vegetation?	___
Odors?		Stressed, Dead, or dying Wildlife (animal,fish etc)?	
Spillage?	YES		___
Leachate?		Leaks?	___
Smoke?	___	Open Burning?	___
Poor Housekeeping?	YES	Monitoring Wells?	
Poor Maintenance?		Inadequate Radiation Signs, Symbol Level?	___
New Construction? (Excavation/Grading Demolition)	___	Inadequate Instruction Posted for Use of Radioactive Material?	___
Discolored Water?	___		
Discolored Soil?	___		

Provide Detailed Description For All Items Checked
(attach additional sheets if necessary)
Dust - Process Areas are Dusty Due to Nature of Materials Used and Manufacturing
Spillage - Process Areas inside buildings are coated with Powders which have Leaked from Equipment
Poor House-Keeping - Effort should be made to clean powders from process areas.

Contingency Plan
Does the Facility have a Contingency Plan? yes/no
If yes, Date of the last Drill __/__/__ ; Briefly Describe the Chain of Command.

PROGRAM CONCERNS
Are There Any Activities That Might Require a Permit Not Noted in Part A? yes/no

DOA
Is There Potential for Fugitive Emissions? yes/no (Dust Piles or Unpaved Roads)

DOW
Are there any areas throughout the treatment facility, or in the effluent, evidencing excessive foam? yes/no

Are there any obvious safety hazards throughout the treatment facility? yes/no
Is there any evidence of unauthorized bypassing throughout the treatment facility? yes/no
Does the Facility have SPDES permit? yes/no
Is storm water contained or retained? No
Is the pavement/flooring in and around the Facility cracked, thereby, allowing infiltration? No
Is material storage pile runoff (contaminated storm water) impacting ground or surface water? No

DHSR-HWCR
Is Hazardous or Toxic Waste Disposed on Site ? yes/no
Is Hazardous or Toxic Waste Treated on Site ? yes/no
Are All Storage Areas, Tanks and Containers Properly Marked? yes/no
Is There Secondary Containment for Tanks and Hazardous Waste Storage Areas? yes/no

DHSR- Pesticide
Does The Facility Apply Pesticides yes/no , lawn care yes/no , boiler Treatment yes/no building fumigation? yes/no Does The Facility Hire Pesticide Applicator(s)? yes/no
(Include Name(s) and Address(es) of Firm(s) or Name(s) and ID#(s) of Applicator(s) in Comments Section.)
Does The Facility use their own personnel to do the application? yes/no
If yes are those personnel certified? yes/no

DHSR- Radiation
Does the Facility Incinerate Any Radioactive Material? yes/no
(This item is applicable if there is an incinerator at the site)

DHSR- Hazardous Waste Reduction Plan
Does the Facility have a Hazardous Waste Reduction Program in Place ? yes/no
Has the Facility Installed Equipment, Modified Process/Operations, etc., as per the Waste Reduction Plan? yes/no

DSW
Is Disposal of Solid Waste Occurring at the Site ? yes/no

DHWR
Is hazardous waste investigative or remedial work under way as scheduled? yes/no
If yes, does the scope appear to be consistent with the approved work plan? yes/no
If no, explain in comments section.
Was any oversight being provided? yes/no
By DHWR staff or their consultant? yes/no Name(s) MICHAEL J. HINTON
By facility staff? yes/no Name(s) Russell Steiger
By facility consultant? yes/no Consultant Name BLASLAND, BOUCK & LEE

DSM-Bulk storage
Are There Any Unregistered Tanks? (if over 500 Gallons) yes/no
Are Tank Vent Pipes Visible? yes/no If yes how many? yes/no

DF&W

If there is a hydropower facility, are natural stream channels downstream of impoundment structure dewatered? yes/no N/A

Is there any new consturiction on site involving dredging, filling, excavating or other disruption in wetlands of water bodies ? yes/no

DMN-Minerals

Is mining activity occurring at the site? yes/no

If so, is there a permit visibly displayed at the site? yes/no

Is there excessive dust being generated at the site? yes/no

Is there processing of minerals occurring at the site, e.g. rock crushing? yes/no

Is there turbid water leaving the site? yes/no

DMM-Oil and Gas

Permit number/API number 31-___-____ N/A

Is the site identified by sign? yes/no N/A

Is the well producing? yes/no N/A

Is there erosion of the site or access road? yes/no

Are there any recent leaks or spills? yes/no

(brine burn, gas leaks, etc.)

Is there a fire hazard? yes/no

Is there a tank to contain brine production? yes/no

Comments:

- Dust, spillage and housekeeping are minor issues confined to the interior of buildings. No excessive waste outside buildings or leaving site.

- Facility uses permitted pesticide applicator to control Mosquitos. Applicator on subject to bid until no particular company routinely on site. Company sprays mosquitos only as needed. No pesticide applicator currently on plant.

Reaching Into Tomorrow ... Today!

CERTIFIED MAIL

June 28, 1994

New York State Dept. of Environmental
Conservation
Bureau of Western Hazardous Waste Programs
50 Wolf Road - Room 400
Albany, NY 12233-7251

ATTN: **Mr. Salvatore Carlomagno**

SUBJECT: **TAM Ceramics, Inc.**
Hazardous Waste Reduction Plan (HWRP) - Status Report
EPA ID Number NYD097649016

Dear Mr. Carlomagno:

Enclosed please find the modified HWRP that reflects the current status of hazardous waste minimization activities at TAM Ceramics as of July 1, 1994.

All new changes to the plan have been added in bold and underlined text.

If you have any questions, please do not hesitate to call me at (716) 278-9423.

Sincerely,

Russell H. Steiger
Manager of Health, Safety &
Environmental

Enclosure

cc: Mr. Frank Shattuck, P.E.
Regional Hazardous Substances Engineer
NYS Dept. of Environmental Conservation
Region 9 Headquarters
270 Michigan Avenue
Buffalo, NY 14203-2999

R. Rieger
D. Ott
D. Feathers
D. Stoelting

/lv:hazwaste

TAM Ceramics, Inc., 4511 Hyde Park Blvd. • P.O. Box 67 • Niagara Falls, New York • 14305-0067
716-278-9400 • FAX 716-285-3026 • TWX 710-524-1659

TAM
A COOKSON COMPANY

EPA ID Number NYD097649016

Hazardous Waste Reduction Plan

Original submittal - June 1993
Revised March, 1994
Revised June 1994

Introduction

In August 1990, the New York legislature passed a law requiring facilities that generate hazardous wastes to reduce, to the maximum extent possible, the volume and toxicity of hazardous wastes generated in quantities greater than five tons during the previous calendar year. The submission of reports documenting these efforts is scheduled on a graduated basis, with facilities generating large quantities in excess of 1000 tons per year reporting by July 1, 1991. TAM Ceramics generated greater than 50 tons of hazardous waste in 1992, requiring the hazardous waste reduction plan (HWRP) to be submitted to the NYDEC by July 1, 1993. The HWRP must be updated biennially, and annual status reports must be provided

The NYDEC hierarchy, in order of preferred waste reduction practices, is:

1. Hazardous waste generation is reduced or eliminated
2. Generated hazardous wastes are recovered, reused, or recycled
3. Hazardous wastes that cannot be recovered, reused, or recycled are subjected to detoxification, treatment, or destruction technologies
4. Land disposal is the least preferred method of hazardous waste management.

This hierarchy is to be used by hazardous waste generators to prepare the HWRP.

Organization of the TAM HWRP

This plan is organized to be consistent with the instructions in the January 1992 "Guidance Document" prepared by the NYDEC.

Hazardous Waste Reduction Policy & Employee training
Summarizes TAM Ceramics policy on hazardous waste reduction and how this policy is to be communicated to employees.

Hazardous Waste Generation Summary (Table 1)
This table lists the hazardous wastes generated at TAM Ceramics during 1992 that meet or exceed the five (5) ton reporting threshold. Low pH waste water, barium filter cake, and spent grease are the reported wastes (One page)

Figures
Figures 1 through 3 are the general flowcharts of the processes that generate the wastes. (Three pages)

Hazardous Waste Reduction- Options Matrix
Lists the TAM evaluation of each waste reduction option for each of the three wastes. (Two pages)

Hazardous Waste Reduction Program (Table 2)
Summarizes the selected options, the planned reduction projects, estimated waste reduction, payback, and goal dates for implementation. (Three pages)

Hazardous Waste Reduction Measures-hierarchy
Summarizes the chosen options in the NYDEC preferred hierarchical format. Also lists the planned method for charting waste reduction over time, and whether the waste reduction will result in a transfer of the waste into any other environmental media. (One page)

Hazardous Waste Reduction Measures-Capital and Operating Cost Summary
Lists the known capital and operating costs of the planned reduction projects, if any. (Three pages)

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994

Hazardous Waste Reduction Policy

Responsibility
The Manager of Health, Safety, & Environmental is responsible for the development, implementation, and follow-up on this policy and the hazardous waste reduction plan.

Policy
It is the policy of TAM Ceramics to minimize the volume and toxicity of hazardous waste generated at the facility by using the following criteria:

- In-plant practices will be used to avoid or eliminate the generation of hazardous waste.
- Where hazardous waste is generated, the wastes will be evaluated for recycling potential.
- If the wastes cannot be recycled , processes will be evaluated to minimize the volume and toxicity of the hazardous waste.

Commitment
TAM Ceramics is committed to implementing the feasible recommendations defined in the HWRP,as it recognizes many benefits, economic and environmental, of a successful waste miminmization program. This commitment comes directly from the company President and his three executive officers.

Implementation
This policy is communicated directly to TAM employees through a posting on the plant bulletin boards. Because TAM is a company that has implemented a Total Quality Management (TQM) program, reward and recognition is an integral part of the day to day operation. Employees are encouraged to make suggestions and are rewarded by various means in accordance with the TQM policy. The HSE Manager is responsible to review any recommendations or suggestions and advise the appropriate TQM committee on the merits and potential implementation strategies.

Short-term goals include a review of all hazardous waste generated at TAM Ceramics for reduction potential, using the above policy criteria.

The *long-term goal* is the elimination of hazardous waste generation at TAM Ceramics.

This policy will be communicated to employees during annual training. The policy statement will also be posted in a single sheet document, signed by the company President, at all employee bulletin boards. This posting document is attached to this plan.

Employee Training

The training program to meet the requirements of the Hazardous Waste Reduction Program will be incorporated into the Hazard Communication training conducted annually for all TAM Ceramics employees. The format of this training module will include:

- A review of the TAM Ceramics hazardous waste reduction policy
- The economic benefits of hazardous waste reduction realized to date, and potential for future efforts.
- A brief summary of the hazardous waste reduction law.

The module will have a duration of approximately 10 to 15 minutes and will be conducted annually.

TAM Ceramics

Reaching Into Tomorrow ... Today!

January 1, 1994

TO: **ALL EMPLOYEES**

HAZARDOUS WASTE REDUCTION POLICY

Many businesses in New York and the other states are finding waste management costs to be ever increasing. Several factors contribute in these increases:

- Insufficient disposal capacity
- Increasing costs of waste management disposal
- Current and future regulations

TAM Ceramics knows that reduction in hazardous waste generation reduces the cost burden of waste management, while at the same time minimizing the quantity of hazardous waste that is disposed of in the environment by landfill or incineration.

It is the policy of TAM Ceramics to minimize the volume and toxicity of hazardous waste generated at the facility by using the following criteria:

- In-plant practices will be used to avoid or eliminate the generation of hazardous waste

- When hazardous waste is generated, the waste will be evaluated for recycling potential

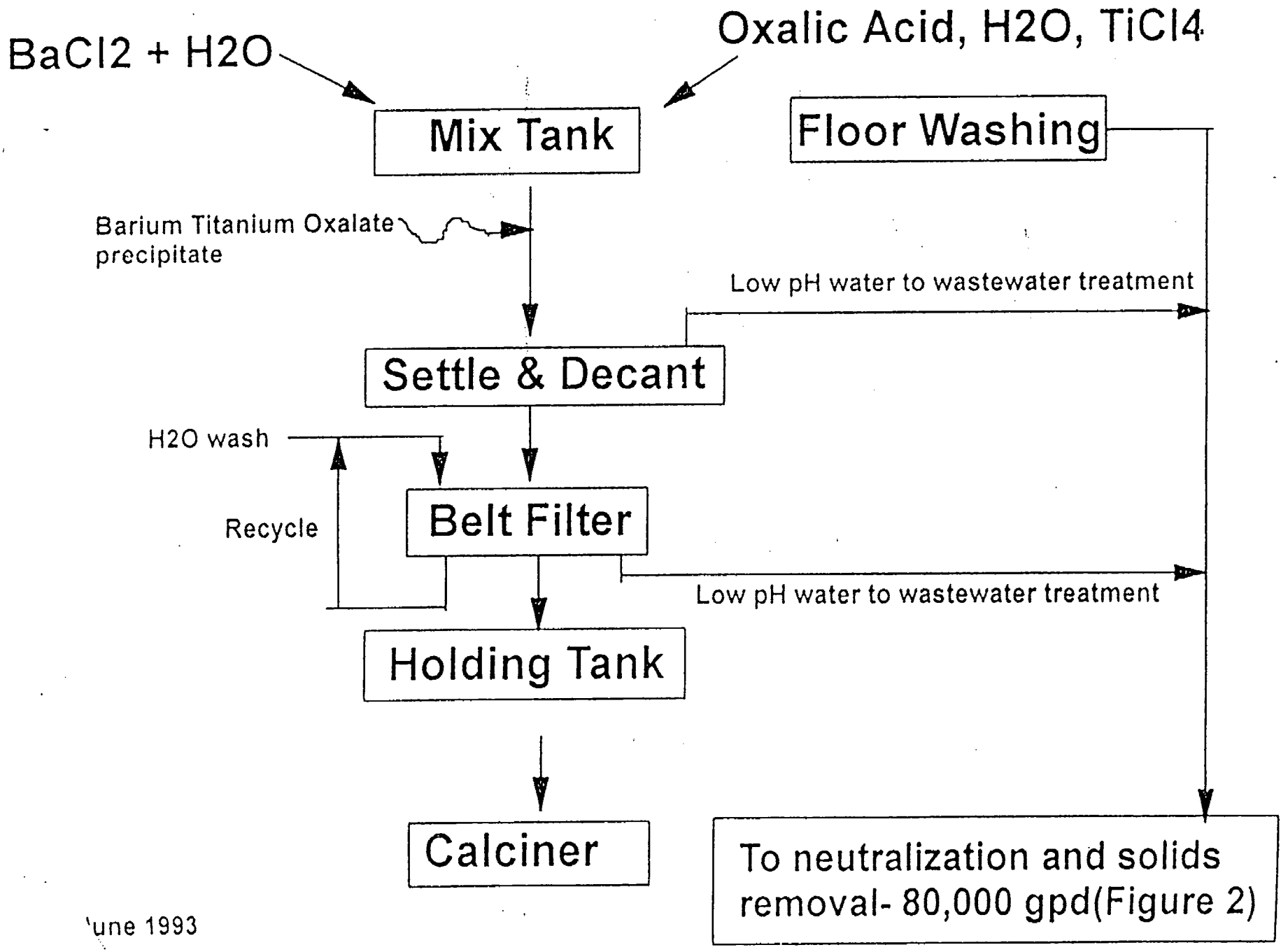
- If the wastes cannot be recycled, processes will be evaluated to minimize the volume and toxicity of the hazardous waste

Robert A. Rieger
President

/lv:180C

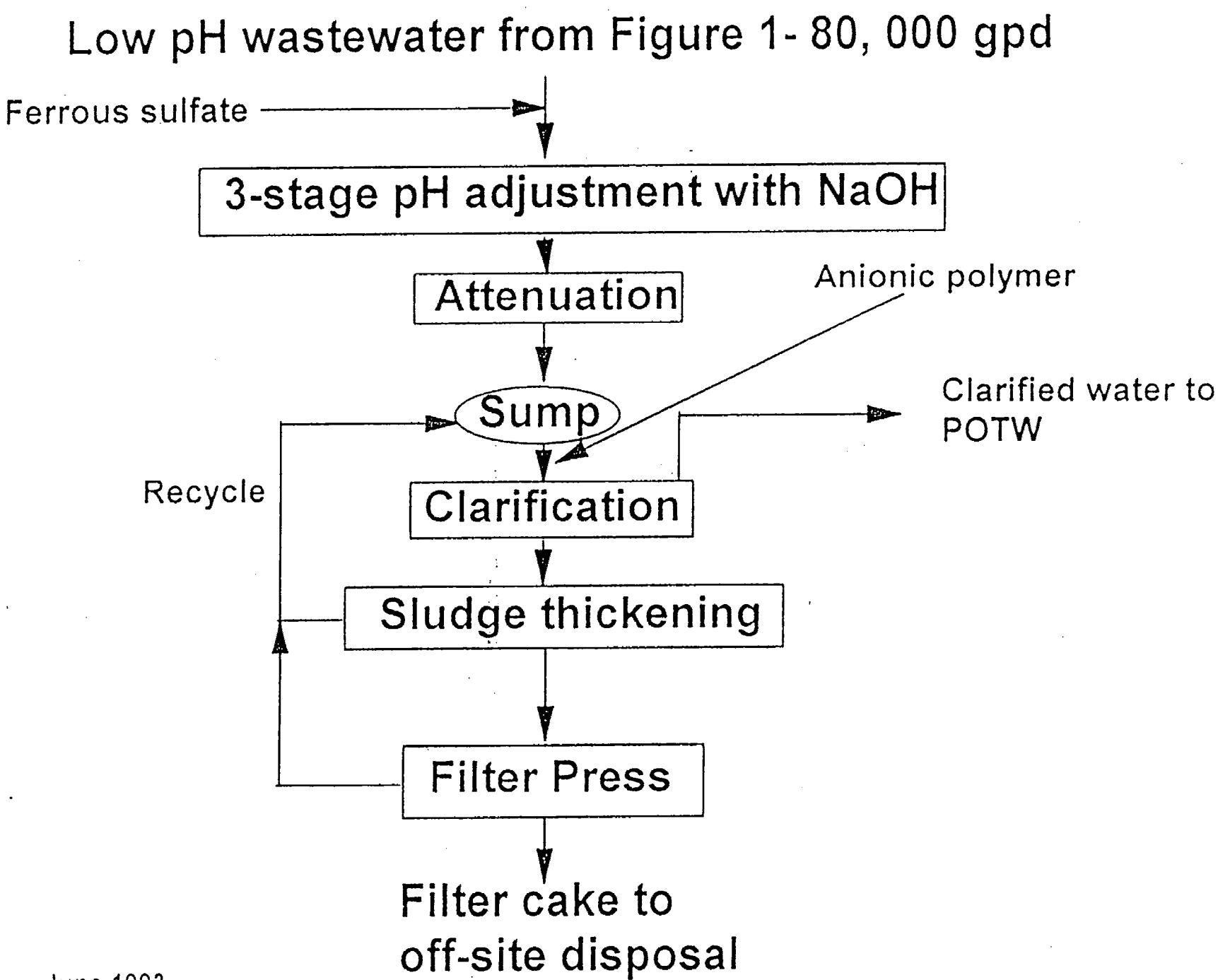
TAM Ceramics, Inc., 4511 Hyde Park Blvd. • P.O. Box 67 • Niagara Falls, New York 14305-0067
716-278-9400 • FAX 716-235-3026 • TWX 710-522-1659

Figure 1- Low pH wastewater generation Flowchart



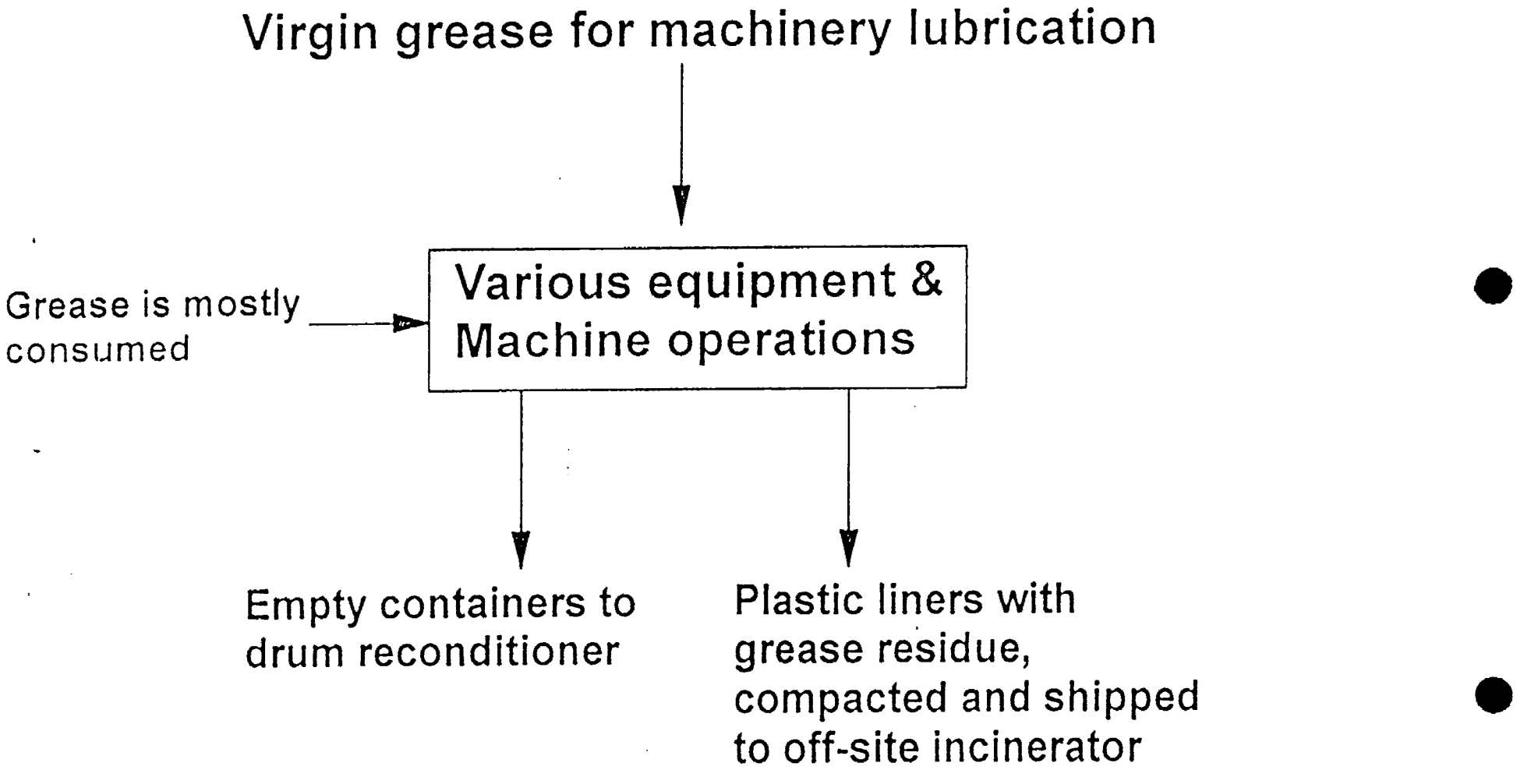
une 1993

Figure 2- Wastewater neutralization & solids removal- Generation Flowchart



une 1993

Figure 3- Spent Grease Generation Flowchart



NOTE: Previous to 1992, the empty drums required hazardous waste incineration due to the inability to remove the grease residue, resulting in higher waste volume and weight vs. current generation rates.

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994; Revision for Status Report June 1994

Hazardous Waste Generation Summary (Table 1)

				Quantity of Waste Generated (tons)				Indices (lb waste generated/lb product produced)			
Waste ID No.	Name of Waste	Source of Generation	Disposal Method	1990	1991	1992	1993	1990	1991	1992	1993
01	Low pH Wastewater	Chemical Reaction in production process- see Figure 1	On-site pH adjusment and clarification	44772 (est)	34440 (est)	42000 (est)	57960 (est)	7.58	7.7	7.6	7.6
02	Barium Filter Cake	Clarification of low pH wastewater (01 above)- see Figure 2	Off-site landfill	0 see note 4	194 system start-up Jan 91	280	**391**	N/A	0.51	0.62	**0.4**
03	Spent grease	machine operation and lubrication see Figure 3	Off-Site Incineration	2 see note 5	2.53	10.8	**19** (est)	N/A	see note 2	see note 2	see note 2

Notes

1. The waste streams identified above represent the non-acute hazardous waste generated in each calendar year in amounts greater than 5 tons.
2. An index is not provided for spent grease. Due to the number of machines that are lubricated and the various products and intermediates that are moved through the equipment, a meaningful index cannot be developed. The information most useful to measure the waste reduction efforts is the number of tons generated per year.
3. Actual flow data for the low-pH wastewater is not available and must be estimated.
4. Barium filter cake was not generated in 1990 because solids separation system was not on-line until Jan 1991.
5. Spent grease was not disposed of in 1990. This value is an estimate of generated spent grease.
6. No acute hazardous waste is generated at TAM Ceramics.
7. **Status report June 1994 shows revisions to Tables 1 and 2. Actual changes are bold face/underlined in the 1993 columns for waste qty and corresponding indice.**

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994 Revised June 1994

Hazardous Waste Reduction-Options Matrix Page 1

Waste Streams Evaluated

Option	01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
Waste Source	chemical reaction to form product	on-site neutralization and clarification of low-pH wastewater	Lubrication of machinery
Disposal Method	on-site neutralization and solids removal	off-site hazardous waste landfill	off-site hazardous waste incineration
Cost to manage waste (1992)-see note 1	$150,000	$140,000	$20,000
Substitution of non-toxic or less toxic inputs to the production process which result in a reduction in the volume or toxicity of waste	Not feasible- end products must meet rigid customer specifications. There are no known substitute raw materials that will result in a reduction in waste volume or toxicity.	1)-Ferrous sulfate added to process upstream to bind with any free barium ion(reduction in toxicity)-existing process 2)- a binder is under evaluation to be added to sludge prior to final filtering in an attempt to reduce the leachability of barium when subjected to the TCLP and reclassify waste as non-hazardous. (reduction in toxicity) 3)- The filter cake is in the form of hydrated titanates and sulfates. An evaluation will be made on the feasibility of reacting the sludge upstream, after pH adjustment, to form oxides in place of the hydrates. This will *potentially* reduce the volume of the filter cake.	Greases have been consolidated to one open gear type; without chlorinated solvent . This has been accomplished over the last 2 to 3 years with the goal of reducing waste disposal costs by reducing the waste volume and toxicity
Reformulation or redesign of end products to eliminate production inputs or production processes that result in the generation of waste	Not feasible- end products must meet rigid specifications provided by TAM customers	Not feasible-end products must meet rigid specifications provided by TAM customers	Not applicable or feasible-

Option	Waste Streams Evaluated		
	01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
Modification or redesign of production processes, technologies or equipment which result in a reduction in the volume or toxicity of the waste	1)- a catch pan under the belt filter will recycle wastewater and reduce solids.. Estimated installation date October 1993 2)- Mechanical floor cleaner is used more frequently vs. hosing down floor (reduction in volume)	Funds have been requested for 1993 to install a gas dryer for the filter cake to drive off excess water, reducing disposal costs (reduction in volume) Estmated annual savings $66,000	Maintenance is evaluating nylon gears on certain equipment that may eliminate or reduce the use of grease (reduction in volume)
Changes in materials usage, handling and storage practices, including improved inventory control, preventive maintenance, spill and leak prevention and waste segregation, which will reduce the volume and toxicity of the waste.	see above	upstream practices in managing wastestream 01(low pH wastewater), will reduce the quantity of solids generated representing this waste, barium filter cake.	1)- plastic liners are now placed in all grease containers by the supplier, per TAM request, to eliminate the need to dispose of empty drum as waste (due to inability to remove *all* grease residue). Wastestream is currently composed of plastic liners with grease residue, vs empty drums with grease residue (reduction in volume) 2)- bulk reusable containers are being evaluated to minimize costs by bulk discount with supplier and reduce residue generation (less smaller containers, less liners, less residue to dispose of) Reduction in volume
The use of closed-loop reclamation, reuse or recycling processes or technologies which directly recycle such wastes back into the production process.	belt filter rinsewater is recycled back as feed to belt filter-already existing (reduction in volume)	not feasible	Not applicable or feasible

Option	Waste Streams Evaluated 01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
The use of on-site or off-site recycling technologies or processes that reduce the amount of waste that must be treated or disposed of	not feasible- wastewater contains reaction products, by-products,and contaminants. These can not be recycled back to the feed end of the process as the materials are unusable.	not feasible- there are too many unseparable contaminants to make barium recovery economically feasible.	Not feasible due to small quantity of waste generated. The waste is not a good candidate for recycling due to contamination and debris, including plastic liners.

Note 1: The costs to manage the wastes include transportation, disposal, hazardous waste tax, quarterly fees, and annual regulatory fees.

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994;Revision for status report June 1994

Hazardous Waste Reduction Program (Table 2)

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
01	Low pH Wastewater	Filtrate from belt filter	Install drip pan to reduce volume of solids and water **Drip pan installed Nov 1993**	45 **42 tons per year have been reduced per Dept**	payback (based on solids removal)	0.04 yrs **0.04**	10/93	Goal is to save product and reduce waste solids- reported est reduction in tons is for avoidance od solids to downstream wastewater treatment
01	Low pH Wastewater	floor washings	Use mechanical floor cleaner vs excess rinsing with water hose	620 **Floor cleaner used more often**	N/A	N/A	6/93	avoids water purchase and sewer, but saves only 150, 000 gal/year **Difficult to quantify impact**

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993 Revised June 1994

Hazardous Waste Reduction Program (Table 2)- Page 2

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	Barium Filter Cake	Slurry before final filter press	add binder to slurry to fixate barium and declassify waste to non-hazardous-reduction in toxicity	no reduction in tons - (reduction in toxicity)	N/A	N/A	1/94	no cost estimate available Suitable binder has not been found
02	Barium Filter Cake	Slurry before clarification	Evaluate substitution of hydrate with oxide to reduce waste volume	100	N/A	N/A	6/94	no cost estimate available- preliminary only No significant headway on this project
02	Barium Filter Cake	Filter cake	install sludge dryer to reduce waste volume	150	payback	2 yrs	12/93	Funds for dryer approved; to be installed by 12/94
02	Barium Filter Cake	Filter cake	Find suitable reclamation outfit for beneficial use of sludge vs landfill disposal.	0	unknown	N/A	12/94	Samples have been sent for evaluation. Possible use of sludge is raw material in structural glass or abrasives

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
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June, 1993 Revised June 1994

Hazardous Waste Reduction Program (Table 2)- Page 3

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	Barium Filter Cake	Filter cake	Reduce toxicity of sludge to levels below hazardous waste characteristic criteria	0	N/A	N/A	12/94	Evaluating process chemistry upstream to bind maximum amount of free barium prior to treatment; to result in a sludge that passes the TCLP procedure
03	Spent grease	Spent grease	consolidate grease types and purchase grease that does not contain chlorinated solvents, to reduce toxicity	4	N/A	N/A	6/93	This project has been underway for 2 years No capital investment needed COMPLETE

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
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Hazardous Waste Reduction Program (Table 2)- Page 4

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
03	**Spent grease**	Spent grease	Purchase grease in containers with plastic liners to reduce disposal costs by minimizing volume; the container does not need to be disposed with the grease residue, only the liner.	3	N/A	N/A	6/93	This project has been underway for 2 years No capital investment needed COMPLETE
03	**Spent grease**	Spent grease	Evaluate nylon gears on selected equipment to reduce the volume of grease.	N/A	N/A	N/A	6/94	no cost estimate available- preliminary only NO RESULTS YET

Hazardous Waste Reduction Plan
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EPA ID Number NYD097649016
June, 1993
Revised March, 1994 Revised June 1994

Hazardous Waste Reduction measures-

Hierarchy- based on options matrix
(Technically feasible and economically practicable)
Placing greatest emphasis on source reduction

01-Low pH Wastewater

Source Reduction actions

1)- Install a catch pan under the belt filter to recycle wastewater and reduce solids volume. NOTE: reduction in solids produces the favorable economics, vs water volume reduction.
2)- Use mechanical floor cleaner more frequently vs. hosing down floor NOTE: Minimal economic benefit
3)-belt filter rinsewater is recycled back as feed to belt filter- (already existing)
Method for charting waste reduction over time: Installation of flow meter at point prior to first stage of neutralization. Planned to be installed by Jan 1994.
Transfer into any other environmental media? none

02-Barium Filter Cake

Source reduction actions

1)-upstream practices in managing wastestream 01(low pH wastewater), will reduce the quantity of solids generated representing this waste, barium filter cake. Installing the catch pan under the belt filter will reduce solids (product) that ultimately are removed to create this wastestream.

Toxicity reduction actions

1)- a binder is under evaluation to be added to sludge prior to final filtering in an attempt to reduce the leachability of barium when subjected to the TCLP and reclassify waste as non-hazardous.
2)-Ferrous sulfate added to process upstream to bind with any free barium ion(-existing process)

Volume reduction actions

1)-Funds have been requested for 1993 to install a gas dryer for the filter cake to drive off excess water, reducing disposal costs (reduction in volume) Estimated annual savings $66,000
2)- The filter cake is in the form of hydrated titanates and sulfates. An evaluation will be made on the feasibility of reacting the sludge upstream, after pH adjustment, to form oxides in place of the hydrates. This will *potentially* reduce the volume of the filter cake.
Method for charting waste reduction over time: Data from hazardous waste manifests, indices.
Transfer into any other environmental media? none

Hazardous Waste Reduction measures- Page 2

Hierarchy- based on options matrix

03-Spent Grease

Source reduction actions

1)-Greases have been consolidated to one open gear type; without chlorinated solvent . This has been accomplished over the last 2 to 3 years with the goal of reducing waste disposal costs by reducing the waste volume and toxicity

2)-Maintenance is evaluating nylon gears on certain equipment that may eliminate or reduce the use of grease (reduction in volume)

Volume reduction actions

1)- plastic liners are now placed in all grease containers by the supplier, per TAM request, to eliminate the need to dispose of empty drum as waste (due to inability to remove *all* grease residue). Wastestream is currently composed of plastic liners with grease residue, vs empty drums with grease residue (reduction in volume)

2)- bulk reusable containers are being evaluated to minimize costs by bulk discount with supplier and reduce residue generation (less smaller containers, less liners, less residue to dispose of)

Method for charting waste reduction over time Data from hazardous waste manifests, indices.

Transfer into any other environmental media? none

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
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Revised March, 1994 Revised June 1994

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary

01-Low pH Wastewater

Capital Cost Summary **Estimated cost in 1993 US Dollars**

Cost item	Install catch pan under belt filter	Use mechanical floor cleaner more frequently vs hosing with water
TOTAL CAPITAL INVESTMENT	20,000	0

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Install catch pan under belt filter	Use mechanical floor cleaner more frequently vs hosing with water
Decrease in disposal cost	$2700 solids disposal $500,000 product recovery	(500 gal/day x 300 day/year=150,000gal/year @1800 to buy and sewer, = $270
Decrease(or increase) in utility cost	NA	200
Decrease(or increase) in O&M labor costs	NA	(1500)
Decrease(or increase) in O&M supplies	NA	(500)
Net Operating Cost Savings	502,700	(1600)

Payback(capital cost/net operating cost savings), years	0.04	NA

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary- Page 2

02-Barium Filter Cake

Estimated cost in 1993 US Dollars

Cost item	Evaluate oxide substitution of hydrate to reduce volume	Evaluate binder to reclassify waste as non-hazardous by binding all free barium	Install dryer to reduce sludge volume
Purchased equipment	unknown	unknown	92,000
Materials			0
Utility connections			8,500
Additional equipment.			11,500
Site preparation			0
Installation			11,000
Engineering			12,000
Startup			0
Training			0
Permitting			0
Fixed capital			135,000
Working capital			0
TOTAL CAPITAL INVESTMENT	unknown	unknown	135,000

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Evaluate oxide substitution of hydrate to reduce volume	Evaluate binder to reclassify waste as non-hazardous by binding all free barium	Install dryer to reduce sludge volume
Decrease in disposal cost	unknown	unknown	62,000
Decrease(or increase) in utility cost			4,600 (natural gas)
Net Operating Cost Savings			66,000

Payback(capital cost/net operating cost savings), years	NA	NA	2

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary- Page 3

03-Spent Grease

Estimated cost in 1993 US Dollars

Cost item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease.	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Purchased equipment	NA	unknown	NA	unknown
Fixed capital				
Working capital				
TOTAL CAPITAL INVESTMENT	NA-no capital investment	unknown	NA-no capital investmentNA	NA-no capital investment

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Decrease in disposal cost	1000	unknown	3000	unknown
Net Operating Cost Savings				
Payback(capital cost/net operating cost savings), years	NA-no capital investment	NA-too preliminary	NA-no capital investmentNA	NA-no capital investment

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary- Page 3

03-Spent Grease

Estimated cost in 1993 US Dollars

Cost item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease.	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Purchased equipment	NA	unknown	NA	unknown
Fixed capital				
Working capital				
TOTAL CAPITAL INVESTMENT	NA-no capital investment	unknown	NA-no capital investmentNA	NA-no capital investment

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Decrease in disposal cost	1000	unknown	3000	unknown
Net Operating Cost Savings				
Payback(capital cost/net operating cost savings), years	NA-no capital investment	NA-too preliminary	NA-no capital investmentNA	NA-no capital investment

TAM

Reaching Into Tomorrow ... Today!

FS

CERTIFIED MAIL

March 9, 1994

New York State Dept. of Environmental
Conservation
Bureau of Western Hazardous Waste Programs
50 Wolf Road - Room 400
Albany, NY 12233-7251

ATTN: Mr. Salvatore Carlomagno

SUBJECT: **TAM Ceramics, Inc.**
Modification to Hazardous Waste Reduction Plan (HWRP)
EPA ID Number NYD097649016

Dear Mr. Carlomagno:

Enclosed please find the modified HWRP per the request made in your letter of February 3rd. The Plan was modified to address each of the six comments made by the Department as follows:

COMMENT 1
Identify amounts and types of any acute hazardous waste generated by waste steam. If no acute hazardous waste is generated, then a statement must be included in the HWRP stating this fact.

RESPONSE TO COMMENT 1
There are no acute hazardous wastes generated at TAM Ceramics. This statement has been added to the HWRP as note 6 to Table 1.

COMMENT 2
In the Hazardous Waste Generation Summary (Table 1) it shows that 3461 tons (estimated) of low pH wastewater was generated in 1992; however in the Hazardous Waste Report for the same waste, it shows that ten million gallons or 42,000 tons was generated in 1992. Which is correct? Please clarify.

TAM Ceramics, Inc., 4511 Hyde Park Blvd. • P.O. Box 67 • Niagara Falls, New York • 14305-0067
716-278-9400 • FAX 716-285-3026 • TWX 710-524-1659

RESPONSE TO COMMENT 2

The values on the original submission for low pH wastewater generation were incorrectly entered into the table. Table 1 has been revised with the correct data.

COMMENT 3

In the Hazardous Waste Reduction - Options Matrix it shows the cost to manage each waste system. What items (i.e. fees, disposal cost, etc.) are included in this cost?

RESPONSE TO COMMENT 3

A note has been added to the bottom of the Table describing the factors included in the cost to manage the waste.

COMMENT 4

Include a statement of method (1) used to accomplish top-level management support (e.g., Reward & Recognition Program, waste minimization in suggestion program, etc.).

RESPONSE TO COMMENT 4

The statement is included in the *Implementation* section of the Hazardous Waste Reduction Policy.

COMMENT 5

Include the name of the office or department responsible for implementing the hazardous waste reduction plan.

RESPONSE TO COMMENT 5

This has been added under the *Responsibility* section of the Hazardous Waste Reduction Policy.

COMMENT 6

Include a statement of facility's commitment to implement recommendations resulting from waste minimization assessments.

RESPONSE TO COMMENT 6

This statement has been added under the *Commitment* Section of the Hazardous Work Reduction Policy.

The annual status report will be delivered to the DEC by July 1 of this year.

Please call me at 716-278-9423 if you have any questions or require additional information.

Sincerely,

Russell H. Steiger
Manager of Health, Safety &
Environmental

Enclosure

cc: Mr. Frank Shattuck, P.E.
Regional Hazardous Substances Engineer
NYS Dept. of Environmental Conservation
Region 9 Headquarters
270 Michigan Avenue
Buffalo, NY 14203-2999

RRieger

/lv:hazwaste

TAM
A COOKSON COMPANY

EPA ID Number NYD097649016

Hazardous Waste Reduction Plan

Original submittal - June 1993
Revised March, 1994

Introduction

In August 1990, the New York legislature passed a law requiring facilities that generate hazardous wastes to reduce, to the maximum extent possible, the volume and toxicity of hazardous wastes generated in quantities greater than five tons during the previous calendar year. The submission of reports documenting these efforts is scheduled on a graduated basis, with facilities generating large quantities in excess of 1000 tons per year reporting by July 1, 1991. TAM Ceramics generated greater than 50 tons of hazardous waste in 1992, requiring the hazardous waste reduction plan (HWRP) to be submitted to the NYDEC by July 1, 1993. The HWRP must be updated biennially, and annual status reports must be provided

The NYDEC hierarchy, in order of preferred waste reduction practices, is:

1. Hazardous waste generation is reduced or eliminated
2. Generated hazardous wastes are recovered, reused, or recycled
3. Hazardous wastes that cannot be recovered, reused, or recycled are subjected to detoxification, treatment, or destruction technologies
4. Land disposal is the least preferred method of hazardous waste management.

This hierarchy is to be used by hazardous waste generators to prepare the HWRP.

Organization of the TAM HWRP

This plan is organized to be consistent with the instructions in the January 1992 "Guidance Document" prepared by the NYDEC.

Hazardous Waste Reduction Policy & Employee training
Summarizes TAM Ceramics policy on hazardous waste reduction and how this policy is to be communicated to employees.

Hazardous Waste Generation Summary (Table 1)
This table lists the hazardous wastes generated at TAM Ceramics during 1992 that meet or exceed the five (5) ton reporting threshold. Low pH waste water, barium filter cake, and spent grease are the reported wastes (One page)

Figures
Figures 1 through 3 are the general flowcharts of the processes that generate the wastes. (Three pages)

Hazardous Waste Reduction- Options Matrix
Lists the TAM evaluation of each waste reduction option for each of the three wastes. (Two pages)

Hazardous Waste Reduction Program (Table 2)
Summarizes the selected options, the planned reduction projects, estimated waste reduction, payback, and goal dates for implementation. (Three pages)

Hazardous Waste Reduction Measures-hierarchy
Summarizes the chosen options in the NYDEC preferred hierarchical format. Also lists the planned method for charting waste reduction over time, and whether the waste reduction will result in a transfer of the waste into any other environmental media. (One page)

Hazardous Waste Reduction Measures-Capital and Operating Cost Summary
Lists the known capital and operating costs of the planned reduction projects, if any. (Three pages)

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994

Hazardous Waste Reduction Policy

Responsibility
The Manager of Health, Safety, & Environmental is responsible for the development, implementation, and follow-up on this policy and the hazardous waste reduction plan.

Policy
It is the policy of TAM Ceramics to minimize the volume and toxicity of hazardous waste generated at the facility by using the following criteria:

- In-plant practices will be used to avoid or eliminate the generation of hazardous waste.
- Where hazardous waste is generated, the wastes will be evaluated for recycling potential.
- If the wastes cannot be recycled , processes will be evaluated to minimize the volume and toxicity of the hazardous waste.

Commitment
TAM Ceramics is committed to implementing the feasible recommendations defined in the HWRP,as it recognizes many benefits, economic and environmental, of a successful waste miminmization program. This commitment comes directly from the company President and his three executive officers.

Implementation
This policy is communicated directly to TAM employees through a posting on the plant bulletin boards. Because TAM is a company that has implemented a Total Quality Management (TQM) program, reward and recognition is an integral part of the day to day operation. Employees are encouraged to make suggestions and are rewarded by various means in accordance with the TQM policy. The HSE Manager is responsible to review any recommendations or suggestions and advise the appropriate TQM committee on the merits and potential implementation strategies.

Short-term goals include a review of all hazardous waste generated at TAM Ceramics for reduction potential, using the above policy criteria.

The *long-term goal* is the elimination of hazardous waste generation at TAM Ceramics.

This policy will be communicated to employees during annual training. The policy statement will also be posted in a single sheet document, signed by the company President, at all employee bulletin boards. This posting document is attached to this plan.

Employee Training

The training program to meet the requirements of the Hazardous Waste Reduction Program will be incorporated into the Hazard Communication training conducted annually for all TAM Ceramics employees. The format of this training module will include:

- A review of the TAM Ceramics hazardous waste reduction policy
- The economic benefits of hazardous waste reduction realized to date, and potential for future efforts.
- A brief summary of the hazardous waste reduction law.

The module will have a duration of approximately 10 to 15 minutes and will be conducted annually.

TAM

Reaching Into Tomorrow ... Today!

January 1, 1994

TO: **ALL EMPLOYEES**

HAZARDOUS WASTE REDUCTION POLICY

Many businesses in New York and the other states are finding waste management costs to be ever increasing. Several factors contribute in these increases:

- Insufficient disposal capacity
- Increasing costs of waste management disposal
- Current and future regulations

TAM Ceramics knows that reduction in hazardous waste generation reduces the cost burden of waste management, while at the same time minimizing the quantity of hazardous waste that is disposed of in the environment by landfill or incineration.

It is the policy of TAM Ceramics to minimize the volume and toxicity of hazardous waste generated at the facility by using the following criteria:

- In-plant practices will be used to avoid or eliminate the generation of hazardous waste

- When hazardous waste is generated, the waste will be evaluated for recycling potential

- If the wastes cannot be recycled, processes will be evaluated to minimize the volume and toxicity of the hazardous waste

Robert A. Rieger
President

/lv:180C

TAM Ceramics, Inc., 4511 Hyde Park Blvd. • P.O. Box 67 • Niagara Falls, New York • 14305-0067
716-278-9400 • FAX 716-285-3026 • TWX 710-524-1659

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994

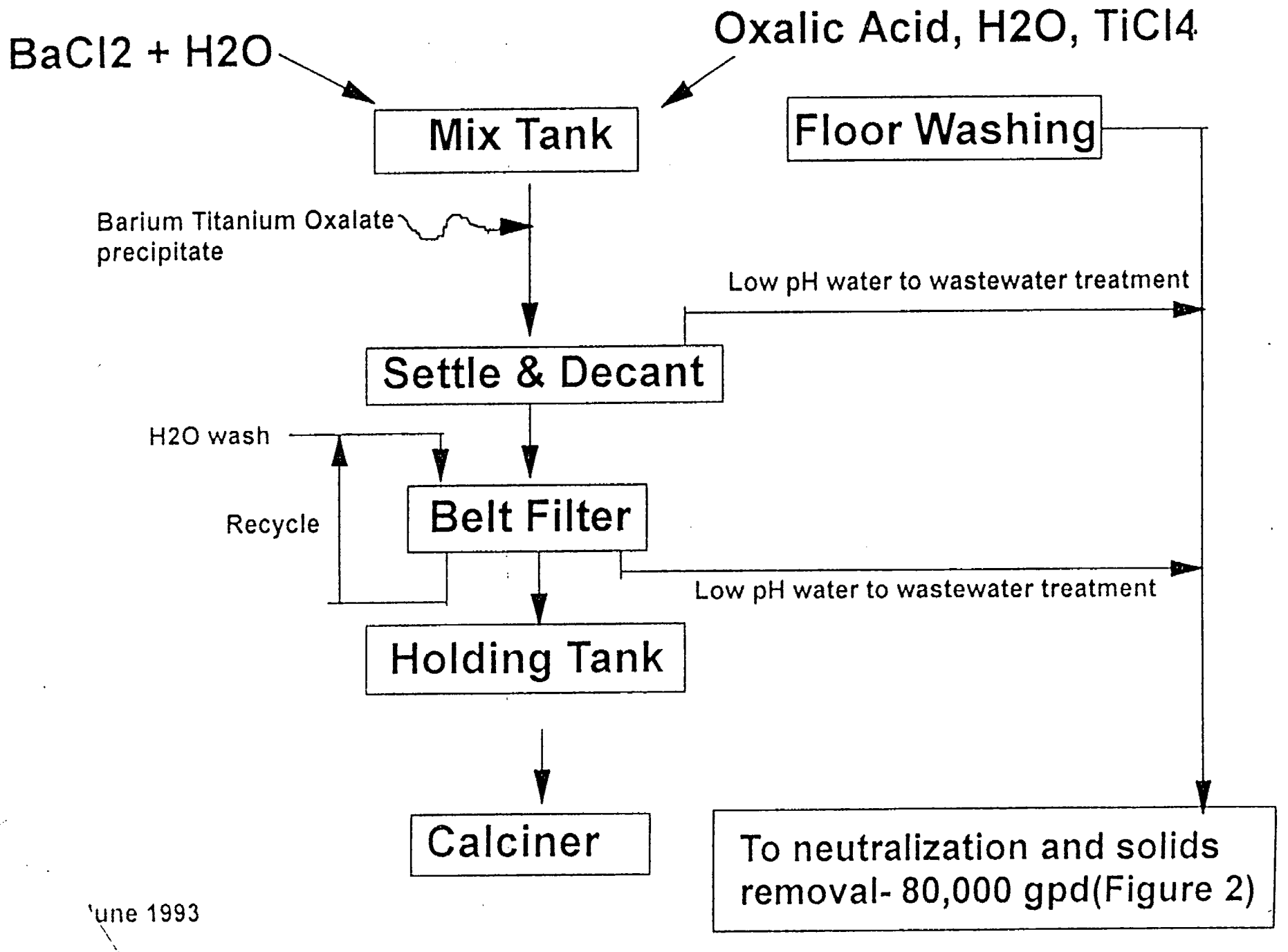
Hazardous Waste Generation Summary (Table 1)

				Quantity of Waste Generated (tons)				Indices (lb waste generated/lb product produced)			
Waste ID No.	Name of Waste	Source of Generation	Disposal Method	1990	1991	1992	1993	1990	1991	1992	1993
01	Low pH Wastewater	Chemical Reaction in production process- see Figure 1	On-site pH adjusment and clarification	44772 (est)	34440 (est)	42000 (est)	57960 (est)	7.58	7.7	7.6	7.6
02	Barium Filter Cake	Clarification of low pH wastewater (01 above)- see Figure 2	Off-site landfill	0 see note 4	194 system start-up Jan 91	280	300 (est)	N/A	0.51	0.62	0.6
03	Spent grease	machine operation and lubrication see Figure 3	Off-Site Incineration	2 see note 5	2.53	10.8	4 (est)	N/A	see note 2	see note 2	see note 2

Notes

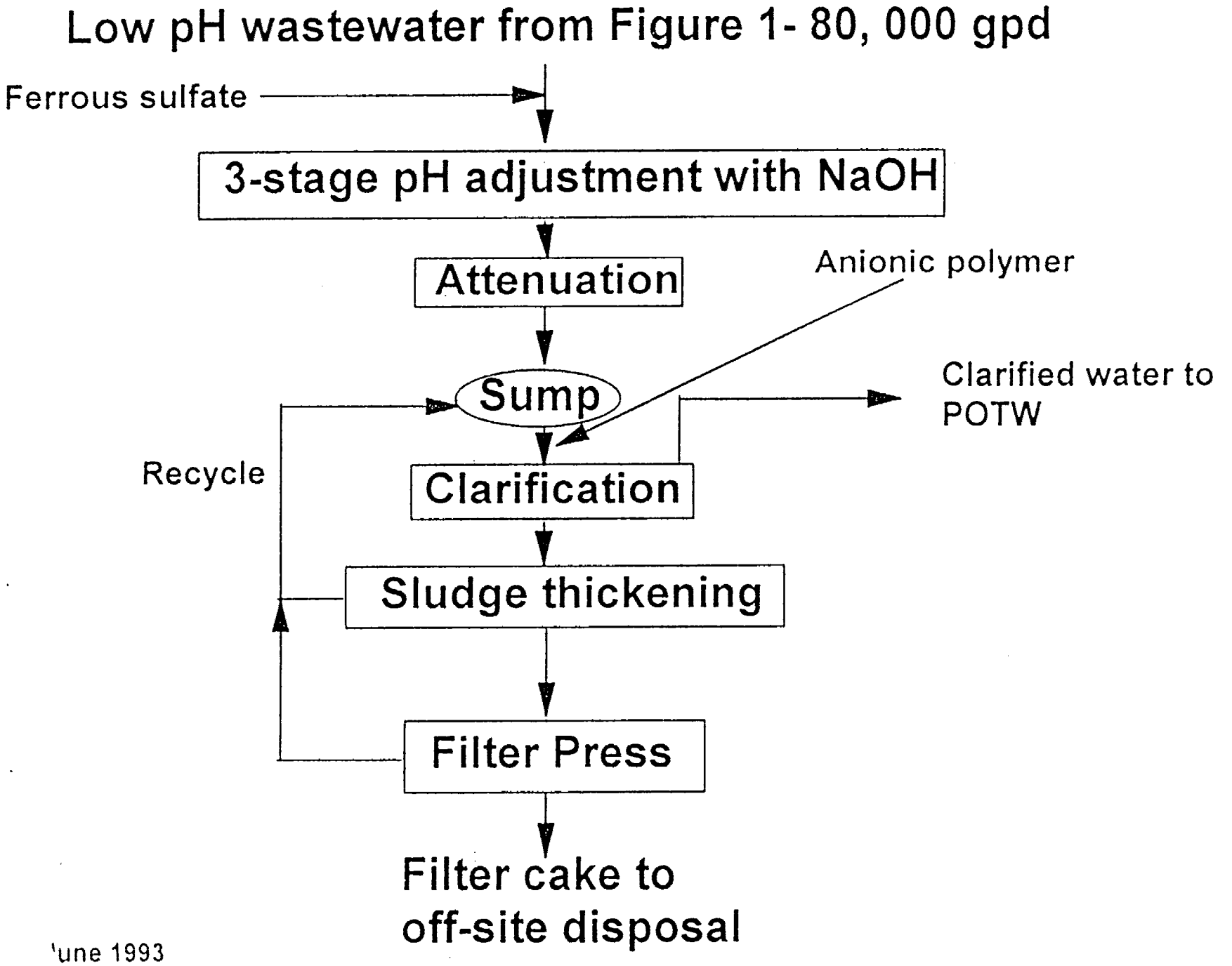
1. The waste streams identified above represent the non-acute hazardous waste generated in each calendar year in amounts greater than 5 tons.
2. An index is not provided for spent grease. Due to the number of machines that are lubricated and the various products and intermediates that are moved through the equipment, a meaningful index cannot be developed. The information most useful to measure the waste reduction efforts is the number of tons generated per year.
3. Actual flow data for the low-pH wastewater is not available and must be estimated.
4. Barium filter cake was not generated in 1990 because solids separation system was not on-line until Jan 1991.
5. Spent grease was not disposed of in 1990. This value is an estimate of generated spent grease.
6. No acute hazardous waste is generated at TAM Ceramics.

Figure 1- Low pH wastewater generation Flowchart



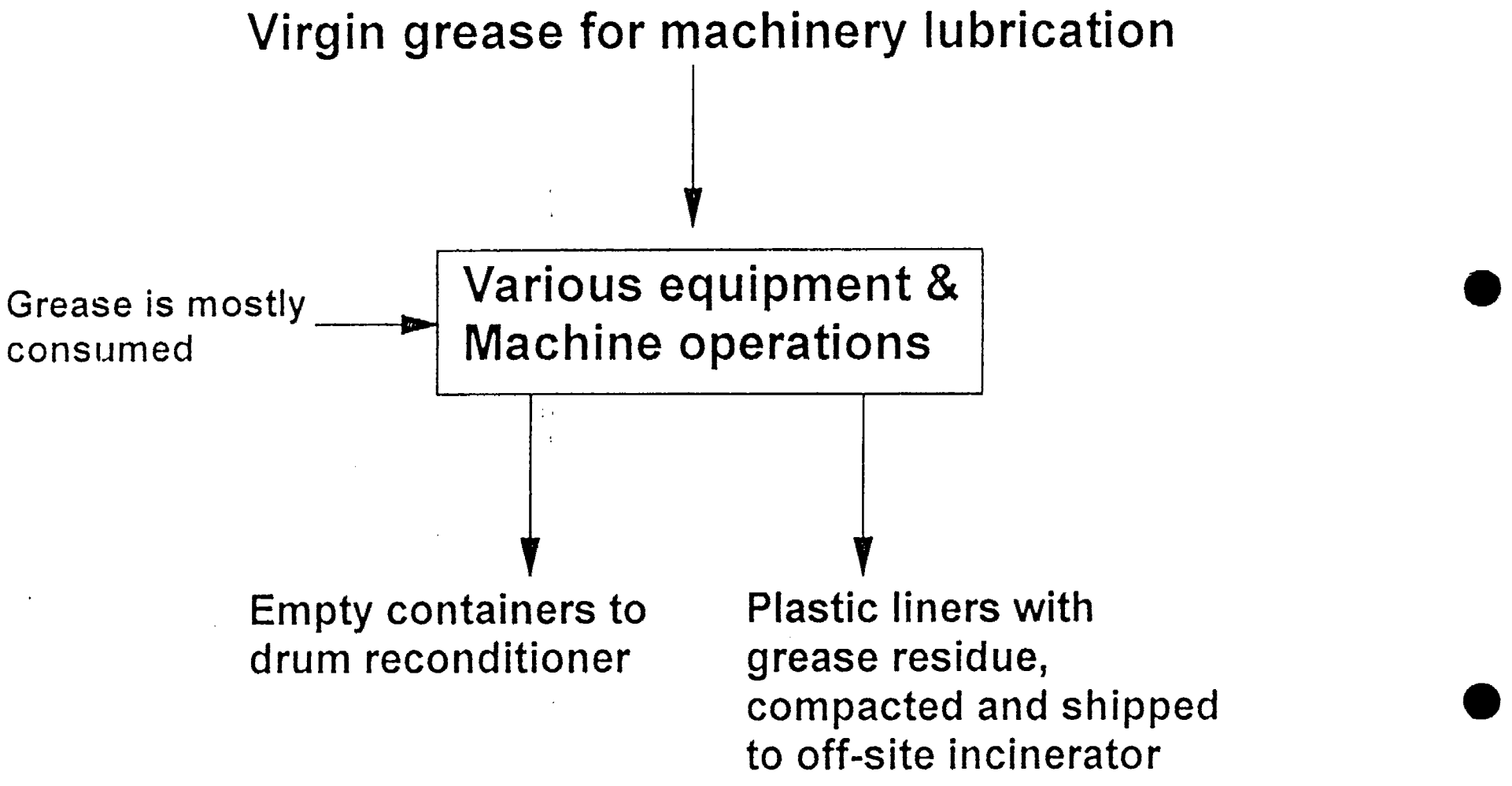
une 1993

Figure 2- Wastewater neutralization & solids removal- Generation Flowchart



une 1993

Figure 3- Spent Grease Generation Flowchart



NOTE: Previous to 1992, the empty drums required hazardous waste incineration due to the inability to remove the grease residue, resulting in higher waste volume and weight vs. current generation rates.

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994

Hazardous Waste Reduction-Options Matrix Page 1

Option	Waste Streams Evaluated		
	01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
Waste Source	chemical reaction to form product	on-site neutralization and clarification of low-pH wastewater	Lubrication of machinery
Disposal Method	on-site neutralization and solids removal	off-site hazardous waste landfill	off-site hazardous waste incineration
Cost to manage waste (1992)-see note 1	$150,000	$140,000	$20,000
Substitution of non-toxic or less toxic inputs to the production process which result in a reduction in the volume or toxicity of waste	Not feasible- end products must meet rigid customer specifications. There are no known substitute raw materials that will result in a reduction in waste volume or toxicity.	1)-Ferrous sulfate added to process upstream to bind with any free barium ion(reduction in toxicity)-existing process 2)- a binder is under evaluation to be added to sludge prior to final filtering in an attempt to reduce the leachability of barium when subjected to the TCLP and reclassify waste as non-hazardous. (reduction in toxicity) 3)- The filter cake is in the form of hydrated titanates and sulfates. An evaluation will be made on the feasibility of reacting the sludge upstream, after pH adjustment, to form oxides in place of the hydrates. This will *potentially* reduce the volume of the filter cake.	Greases have been consolidated to one open gear type; without chlorinated solvent . This has been accomplished over the last 2 to 3 years with the goal of reducing waste disposal costs by reducing the waste volume and toxicity
Reformulation or redesign of end products to eliminate production inputs or production processes that result in the generation of waste	Not feasible- end products must meet rigid specifications provided by TAM customers	Not feasible-end products must meet rigid specifications provided by TAM customers	Not applicable or feasible-

Option	Waste Streams Evaluated 01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
Modification or redesign of production processes, technologies or equipment which result in a reduction in the volume or toxicity of the waste	1)- a catch pan under the belt filter will recycle wastewater and reduce solids.. Estimated installation date October 1993 2)- Mechanical floor cleaner is used more frequently vs. hosing down floor (reduction in volume)	Funds have been requested for 1993 to install a gas dryer for the filter cake to drive off excess water, reducing disposal costs (reduction in volume) Estmated annual savings $66,000	Maintenance is evaluating nylon gears on certain equipment that may eliminate or reduce the use of grease (reduction in volume)
Changes in materials usage, handling and storage practices, including improved inventory control, preventive maintenance, spill and leak prevention and waste segregation, which will reduce the volume and toxicity of the waste.	see above	upstream practices in managing wastestream 01(low pH wastewater), will reduce the quantity of solids generated representing this waste, barium filter cake.	1)- plastic liners are now placed in all grease containers by the supplier, per TAM request, to eliminate the need to dispose of empty drum as waste (due to inability to remove *all* grease residue). Wastestream is currently composed of plastic liners with grease residue, vs empty drums with grease residue (reduction in volume) 2)- bulk reusable containers are being evaluated to minimize costs by bulk discount with supplier and reduce residue generation (less smaller containers, less liners, less residue to dispose of) Reduction in volume
The use of closed-loop reclamation, reuse or recycling processes or technologies which directly recycle such wastes back into the production process.	belt filter rinsewater is recycled back as feed to belt filter- already existing (reduction in volume)	not feasible	Not applicable or feasible

Option	Waste Streams Evaluated		
	01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
The use of on-site or off-site recycling technologies or processes that reduce the amount of waste that must be treated or disposed of	not feasible- wastewater contains reaction products, by-products,and contaminants. These can not be recycled back to the feed end of the process as the materials are unusable.	not feasible- there are too many unseparable contaminants to make barium recovery economically feasible.	Not feasible due to small quantity of waste generated. The waste is not a good candidate for recycling due to contamination and debris, including plastic liners.

Note 1: The costs to manage the wastes include transportation, disposal, hazardous waste tax, quarterly fees, and annual regulatory fees.

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
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Revised March, 1994

Hazardous Waste Reduction Program (Table 2)

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
01	Low pH Wastewater	Filtrate from belt filter	Install drip pan to reduce volume of solids and water	45	payback (based on solids removal)	0.04 yrs	10/93	Goal is to save product and reduce waste solids- reported est reduction in tons is for avoidance od solids to downstream wastewater treatment
01	Low pH Wastewater	floor washings	Use mechanical floor cleaner vs excess rinsing with water hose	620	N/A	N/A	6/93	avoids water purchase and sewer, but saves only 150, 000 gal/year

Hazardous Waste Reduction Plan
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Hazardous Waste Reduction Program (Table 2)- Page 2

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	Barium Filter Cake	Slurry before final filter press	add binder to slurry to fixate barium and declassify waste to non-hazardous-reduction in toxicity	no reduction in tons - (reduction in toxicity)	N/A	N/A	1/94	no cost estimate available
02	Barium Filter Cake	Slurry before clarification	Evaluate substitution of hydrate with oxide to reduce waste volume	100	N/A	N/A	6/94	no cost estimate available- preliminary only
02	Barium Filter Cake	Filter cake	install sludge dryer to reduce waste volume	150	payback	2 yrs	12/93	appropriation request submitted 5/93
03	Spent grease	Spent grease	consolidate grease types and purchase grease that does not contain chlorinated solvents, to reduce toxicity	4	N/A	N/A	6/93	This project has been underway for 2 years No capital investment needed

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Hazardous Waste Reduction Program (Table 2)- Page 3

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
03	Spent grease	Spent grease	Purchase grease in containers with plastic liners to reduce disposal costs by minimizing volume; the container does not need to be disposed with the grease residue, only the liner.	3	N/A	N/A	6/93	This project has been underway for 2 years No capital investment needed
03	Spent grease	Spent grease	Evaluate nylon gears on selected equipment to reduce the volume of grease.	N/A	N/A	N/A	6/94	no cost estimate available-preliminary only

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993
Revised March, 1994

Hazardous Waste Reduction measures-

Hierarchy- based on options matrix
(Technically feasible and economically practicable)
Placing greatest emphasis on source reduction

01-Low pH Wastewater

Source Reduction actions

1)- Install a catch pan under the belt filter to recycle wastewater and reduce solids volume. NOTE: reduction in solids produces the favorable economics, vs water volume reduction.
2)- Use mechanical floor cleaner more frequently vs. hosing down floor NOTE: Minimal economic benefit
3)-belt filter rinsewater is recycled back as feed to belt filter- (already existing)
Method for charting waste reduction over time: Installation of flow meter at point prior to first stage of neutralization. Planned to be installed by Jan 1994.
Transfer into any other environmental media? none

02-Barium Filter Cake

Source reduction actions

1)-upstream practices in managing wastestream 01(low pH wastewater), will reduce the quantity of solids generated representing this waste, barium filter cake. Installing the catch pan under the belt filter will reduce solids (product) that ultimately are removed to create this wastestream.

Toxicity reduction actions

1)- a binder is under evaluation to be added to sludge prior to final filtering in an attempt to reduce the leachability of barium when subjected to the TCLP and reclassify waste as non-hazardous.
2)-Ferrous sulfate added to process upstream to bind with any free barium ion(-existing process)

Volume reduction actions

1)-Funds have been requested for 1993 to install a gas dryer for the filter cake to drive off excess water, reducing disposal costs (reduction in volume) Estimated annual savings $66,000
2)- The filter cake is in the form of hydrated titanates and sulfates. An evaluation will be made on the feasibility of reacting the sludge upstream, after pH adjustment, to form oxides in place of the hydrates. This will *potentially* reduce the volume of the filter cake.
Method for charting waste reduction over time: Data from hazardous waste manifests, indices.
Transfer into any other environmental media? none

Hazardous Waste Reduction measures- Page 2

Hierarchy- based on options matrix

03-Spent Grease

Source reduction actions

1)-Greases have been consolidated to one open gear type; without chlorinated solvent . This has been accomplished over the last 2 to 3 years with the goal of reducing waste disposal costs by reducing the waste volume and toxicity

2)-Maintenance is evaluating nylon gears on certain equipment that may eliminate or reduce the use of grease (reduction in volume)

Volume reduction actions

1)- plastic liners are now placed in all grease containers by the supplier, per TAM request, to eliminate the need to dispose of empty drum as waste (due to inability to remove *all* grease residue). Wastestream is currently composed of plastic liners with grease residue, vs empty drums with grease residue (reduction in volume)

2)- bulk reusable containers are being evaluated to minimize costs by bulk discount with supplier and reduce residue generation (less smaller containe less liners, less residue to dispose of)

Method for charting waste reduction over time Data from hazardous waste manifests, indices.

Transfer into any other environmental media? none

Hazardous Waste Reduction Plan
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Revised March, 1994

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary

01-Low pH Wastewater

Capital Cost Summary Estimated cost in 1993 US Dollars

Cost Item	Install catch pan under belt filter	Use mechanical floor cleaner more frequently vs hosing with water
TOTAL CAPITAL INVESTMENT	20,000	0

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue Item	Install catch pan under belt filter	Use mechanical floor cleaner more frequently vs hosing with water
Decrease in disposal cost	$2700 solids disposal $500,000 product recovery	(500 gal/day x 300 day/year=150,000gal/year @1800 to buy and sewer, = $270
Decrease(or increase) in utility cost	NA	200
Decrease(or increase) in O&M labor costs	NA	(1500)
Decrease(or increase) in O&M supplies	NA	(500)
Net Operating Cost Savings	502,700	(1600)

Payback(capital cost/net operating cost savings), years	0.04	NA

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary- Page 2

02-Barium Filter Cake

Estimated cost in 1993 US Dollars

Cost Item	Evaluate oxide substitution of hydrate to reduce volume	Evaluate binder to reclassify waste as non-hazardous by binding all free barium	Install dryer to reduce sludge volume
Purchased equipment	unknown	unknown	92,000
Materials			0
Utility connections			8,500
Additional equipment			11,500
Site preparation			0
Installation			11,000
Engineering			12,000
Startup			0
Training			0
Permitting			0
Fixed capital			135,000
Working capital			0
TOTAL CAPITAL INVESTMENT	unknown	unknown	135,000

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue Item	Evaluate oxide substitution of hydrate to reduce volume	Evaluate binder to reclassify waste as non-hazardous by binding all free barium	Install dryer to reduce sludge volume
Decrease in disposal cost	unknown	unknown	62,000
Decrease(or increase) in utility cost			4,600 (natural gas)
Net Operating Cost Savings			66,000

Payback(capital cost/net operating cost savings), years	NA	NA	2

Hazardous Waste Reduction measures-
(Technically feasible and economically practicable)
Capital and operating cost summary- Page 3

03-Spent Grease

Estimated cost in 1993 US Dollars

Cost Item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease.	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Purchased equipment	NA	unknown	NA	unknown
Fixed capital				
Working capital				
TOTAL CAPITAL INVESTMENT	NA-no capital investment	unknown	NA-no capital investmentNA	NA-no capital investment

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Decrease in disposal cost	1000	unknown	3000	unknown
Net Operating Cost Savings				
Payback(capital cost/net operating cost savings), years	NA-no capital investment	NA-too preliminary	NA-no capital investmentNA	NA-no capital investment

TAM
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EPA ID Number NYD097649016

Hazardous Waste Reduction Plan

Original submittal - June 1993

Introduction

In August 1990, the New York legislature passed a law requiring facilities that generate hazardous wastes to reduce, to the maximum extent possible, the volume and toxicity of hazardous wastes generated in quantities greater than five tons during the previous calendar year. The submission of reports documenting these efforts is scheduled on a graduated basis, with facilities generating large quantities in excess of 1000 tons per year reporting by July 1, 1991. TAM Ceramics generated greater than 50 tons of hazardous waste in 1992, requiring the hazardous waste reduction plan (HWRP) to be submitted to the NYDEC by July 1, 1993. The HWRP must be updated biennially, and annual status reports must be provided.

The NYDEC hierarchy, in order of preferred waste reduction practices, is:

1. Hazardous waste generation is reduced or eliminated.
2. Generated hazardous wastes are recovered, reused, or recycled.
3. Hazardous wastes that cannot be recovered, reused, or recycled are subjected to detoxification, treatment, or destruction technologies.
4. Land disposal is the least preferred method of hazardous waste management.

This hierarchy is to be used by hazardous waste generators to prepare the HWRP.

Organization of the TAM HWRP

This plan is organized to be consistent with the instructions in the January 1992 "Guidance Document" prepared by the NYDEC.

Hazardous Waste Reduction Policy & Employee training
Summarizes TAM Ceramics policy on hazardous waste reduction and how this policy is to be communicated to employees.

Hazardous Waste Generation Summary (Table 1)
This table lists the hazardous wastes generated at TAM Ceramics during 1992 that meet or exceed the five (5) ton reporting threshold. Low pH waste water, barium filter cake, and spent grease are the reported wastes (One page)

Figures
Figures 1 through 3 are the general flowcharts of the processes that generate the wastes. (Three pages)

Hazardous Waste Reduction- Options Matrix
Lists the TAM evaluation of each waste reduction option for each of the three wastes. (Two pages)

Hazardous Waste Reduction Program (Table 2)
Summarizes the selected options, the planned reduction projects, estimated waste reduction, payback, and goal dates for implementation. (Three pages)

Hazardous Waste Reduction Measures-hierarchy
Summarizes the chosen options in the NYDEC preferred hierarchical format. Also lists the planned method for charting waste reduction over time, and whether the waste reduction will result in a transfer of the waste into any other environmental media. (One page)

Hazardous Waste Reduction Measures-Capital and Operating Cost Summary
Lists the known capital and operating costs of the planned reduction projects, if any. (Three pages)

Hazardous Waste Reduction Plan
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Hazardous Waste Reduction Policy

It is the policy of TAM Ceramics to minimize the volume and toxicity of hazardous waste generated at the facility by using the following criteria:

- In-plant practices will be used to avoid or eliminate the generation of hazardous waste.
- Where hazardous waste is generated, the wastes will be evaluated for recycling potential.
- If the wastes cannot be recycled , processes will be evaluated to minimize the volume and toxicity of the hazardous waste.

Short-term goals include a review of all hazardous waste generated at TAM Ceramics for reduction potential, using the above policy criteria.

The *long-term goal* is the elimination of hazardous waste generation at TAM Ceramics.

This policy will be communicated to employees during annual training. The policy statement will also be posted in a single sheet document, signed by the company President, at all employee bulletin boards.

Employee Training

The training program to meet the requirements of the Hazardous Waste Reduction Program will be incorporated into the Hazard Communication training conducted annually for all TAM Ceramics employees. The format of this training module will include:

- A review of the TAM Ceramics hazardous waste reduction policy
- The economic benefits of hazardous waste reduction realized to date, and potential for future efforts.
- A brief summary of the hazardous waste reduction law.

The module will have a duration of approximately 10 to 15 minutes and will be conducted annually.

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Hazardous Waste Generation Summary (Table 1)

				Quantity of Waste Generated (tons)				Indices (lb waste generated/lb product produced)			
Waste ID No.	Name of Waste	Source of Generation	Disposal Method	1990	1991	1992	1993	1990	1991	1992	1993
01	Low pH Wastewater	Chemical Reaction in production process- see Figure 1	On-site pH adjusment and clarification	4170 (est)	2919 (est)	3461 (est)	4796 (est)	7.58	7.7	7.6	7.6
02	Barium Filter Cake	Clarification of low pH wastewater (01 above)- see Figure 2	Off-site landfill	0 see note 4	194 system start-up Jan 91	280	300 (est)	N/A	0.51	0.62	0.6
03	Spent grease	machine operation and lubrication see Figure 3	Off-Site Incineration	2 see note 5	2.53	10.8	4 (est)	N/A	see note 2	see note 2	see note 2

Notes

1. The waste streams identified above represent the non-acute hazardous waste generated in each calendar year in amounts greater than 5 tons.
2. An index is not provided for spent grease. Due to the number of machines that are lubricated and the various products and intermediates that are moved through the equipment, a meaningful index cannot be developed. The information most useful to measure the waste reduction efforts is the number of tons generated per year.
3. Actual flow data for the low-pH wastewater is not available and must be estimated.
4. Barium filter cake was not generated in 1990 because solids separation system was not on-line until Jan 1991.
5. Spent grease was not disposed of in 1990. This value is an estimate of generated spent grease.

Figure 1- Low pH wastewater generation Flowchart

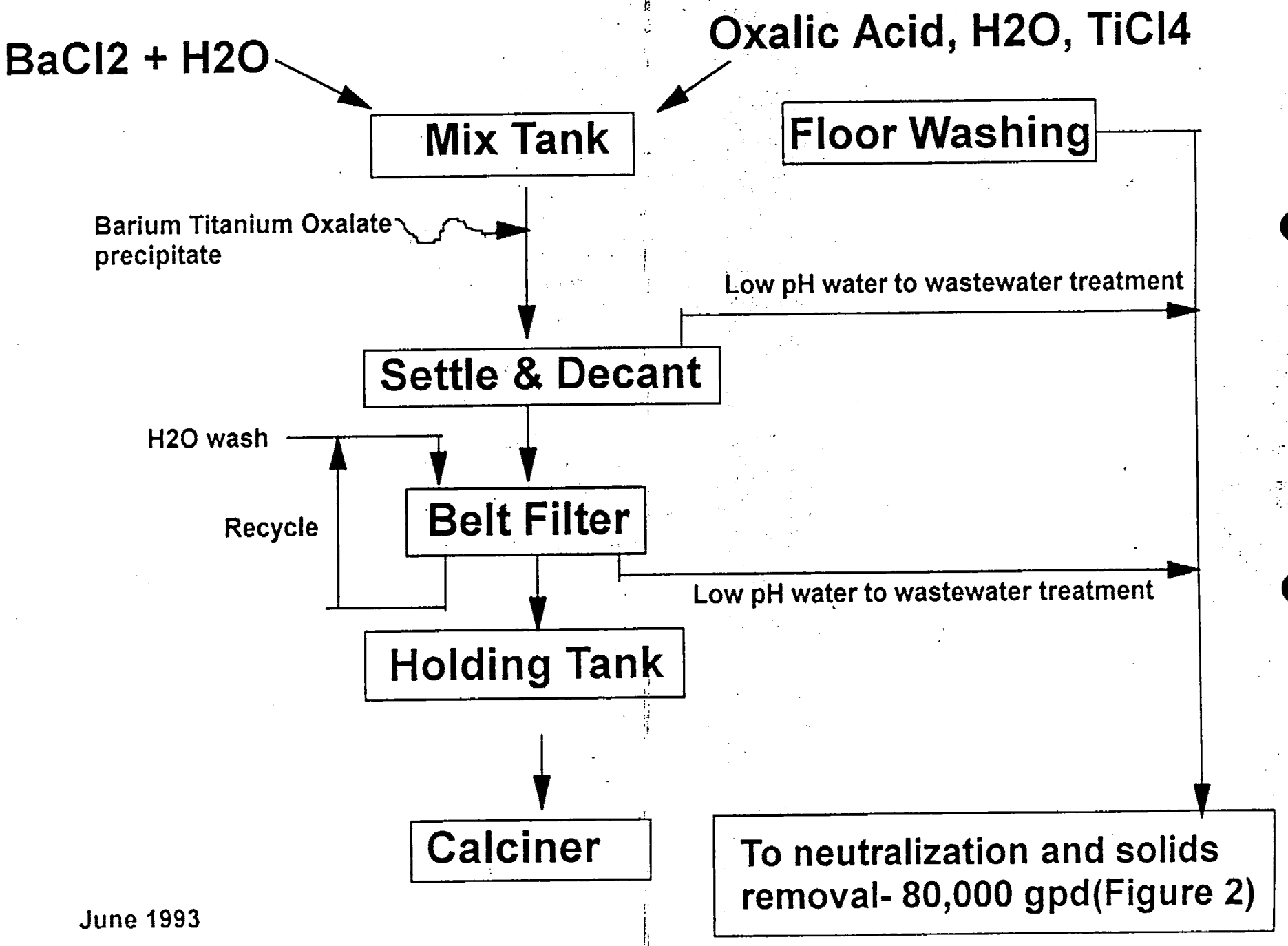

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Figure 2- Wastewater neutralization & solids removal- Generation Flowchart

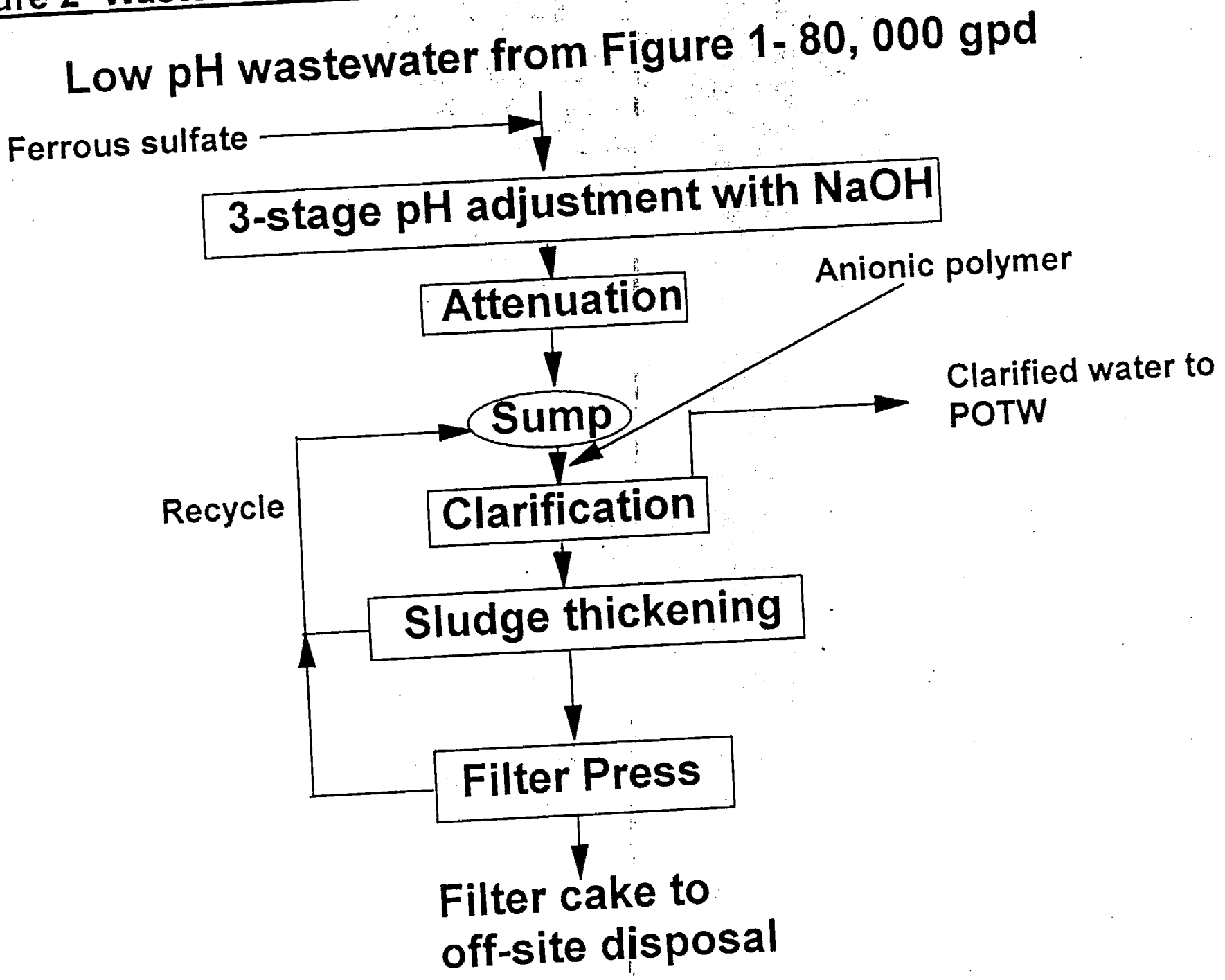

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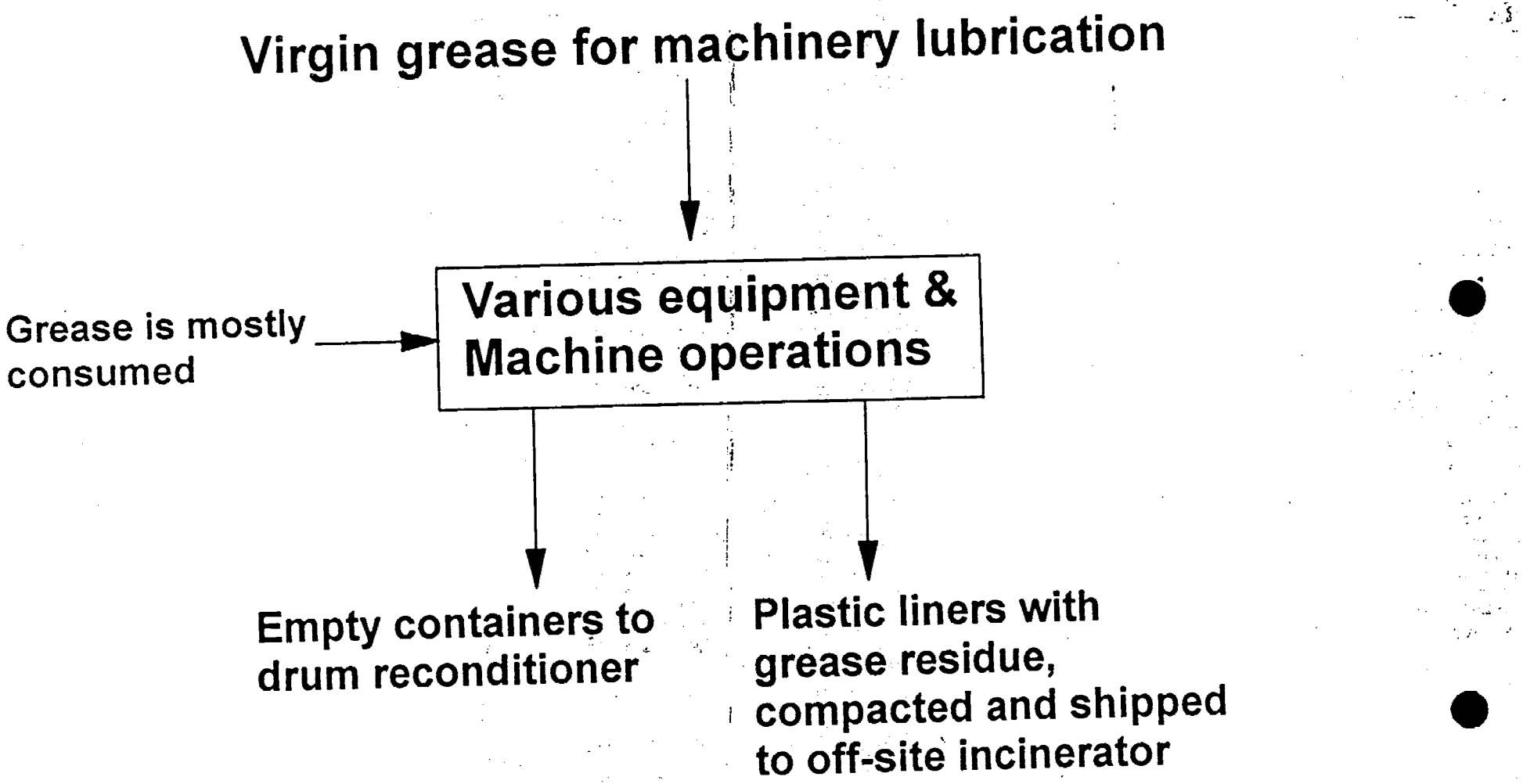
Figure 3- Spent Grease Generation Flowchart



NOTE: Previous to 1992, the empty drums required hazardous waste incineration due to the inability to remove the grease residue, resulting in higher waste volume and weight vs. current generation rates.

Hazardous Waste Reduction Plan
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Hazardous Waste Reduction-Options Matrix Page 1

Option	Waste Streams Evaluated		
	01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
Waste Source	chemical reaction to form product	on-site neutralization and clarification of low-pH wastewater	Lubrication of machinery
Disposal Method	on-site neutralization and solids removal	off-site hazardous waste landfill	off-site hazardous waste incineration
Cost to manage waste (1992)	$150,000	$140,000	$20,000
Substitution of non-toxic or less toxic inputs to the production process which result in a reduction in the volume or toxicity of waste	Not feasible- end products must meet rigid customer specifications. There are no known substitute raw materials that will result in a reduction in waste volume or toxicity.	1)-Ferrous sulfate added to process upstream to bind with any free barium ion(reduction in toxicity)-existing process 2)- a binder is under evaluation to be added to sludge prior to final filtering in an attempt to reduce the leachability of barium when subjected to the TCLP and reclassify waste as non-hazardous. (reduction in toxicity) 3)- The filter cake is in the form of hydrated titanates and sulfates. An evaluation will be made on the feasibility of reacting the sludge upstream, after pH adjustment, to form oxides in place of the hydrates. This will *potentially* reduce the volume of the filter cake.	Greases have been consolidated to one open gear type; without chlorinated solvent . This has been accomplished over the last 2 to 3 years with the goal of reducing waste disposal costs by reducing the waste volume and toxicity
Reformulation or redesign of end products to eliminate production inputs or production processes that result in the generation of waste	Not feasible- end products must meet rigid specifications provided by TAM customers	Not feasible-end products must meet rigid specifications provided by TAM customers	Not applicable or feasible-

Hazardous Waste Reduction-Options Matrix

Option	Waste Streams Evaluated		
	01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
Modification or redesign of production processes, technologies or equipment which result in a reduction in the volume or toxicity of the waste	1)- a catch pan under the belt filter will recycle wastewater and reduce solids.. Estimated installation date October 1993 2)- Mechanical floor cleaner is used more frequently vs. hosing down floor (reduction in volume)	Funds have been requested for 1993 to install a gas dryer for the filter cake to drive off excess water, reducing disposal costs (reduction in volume) Estmated annual savings $66,000	Maintenance is evaluating nylon gears on certain equipment that may eliminate or reduce the use of grease (reduction in volume)
Changes in materials usage, handling and storage practices, including improved inventory control, preventive maintenance, spill and leak prevention and waste segregation, which will reduce the volume and toxicity of the waste.	see above	upstream practices in managing wastestream 01(low pH wastewater), will reduce the quantity of solids generated representing this waste, barium filter cake.	1)- plastic liners are now placed in all grease containers by the supplier, per TAM request, to eliminate the need to dispose of empty drum as waste (due to inability to remove *all* grease residue). Wastestream is currently composed of plastic liners with grease residue, vs empty drums with grease residue (reduction in volume) 2)- bulk reusable containers are being evaluated to minimize costs by bulk discount with supplier and reduce residue generation (less smaller containers, less liners, less residue to dispose of) Reduction in volume
The use of closed-loop reclamation, reuse or recycling processes or technologies which directly recycle such wastes back into the production process.	belt filter rinsewater is recycled back as feed to belt filter- already existing (reduction in volume)	not feasible	Not applicable or feasible

Option	Waste Streams Evaluated 01-Low pH Wastewater	02-Barium Filter Cake	03-Spent Grease
The use of on-site or off-site recycling technologies or processes that reduce the amount of waste that must be treated or disposed of	not feasible- wastewater contains reaction products, by-products,and contaminants. These can not be recycled back to the feed end of the process as the materials are unusable.	not feasible- there are too many unseparable contaminants to make barium recovery economically feasible.	Not feasible due to small quantity of waste generated. The waste is not a good candidate for recycling due to contamination and debris, including plastic liners.

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Hazardous Waste Reduction Program (Table 2)

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
01	Low pH Wastewater	Filtrate from belt filter	Install drip pan to reduce volume of solids and water	45	payback (based on solids removal)	0.04 yrs	10/93	Goal is to save product and reduce waste solids- reported est reduction in tons is for avoidance od solids to downstream wastewater treatment
01	Low pH Wastewater	floor washings	Use mechanical floor cleaner vs excess rinsing with water hose	620	N/A	N/A	6/93	avoids water purchase and sewer, but saves only 150, 000 gal/year
02	Barium Filter Cake	Slurry before final filter press	add binder to slurry to fixate barium and declassify waste to non-hazardous-reduction in toxicity	no reduction in tons - (reduction in toxicity)	N/A	N/A	1/94	no cost estimate available

Hazardous Waste Reduction Plan
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Hazardous Waste Reduction Program (Table 2)- Page 2

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
02	Barium Filter Cake	Slurry before clarification	Evaluate substitution of hydrate with oxide to reduce waste volume	100	N/A	N/A	6/94	no cost estimate available- preliminary only
02	Barium Filter Cake	Filter cake	install sludge dryer to reduce waste volume	150	payback	2 yrs	12/93	appropriation request submitted 5/93
03	Spent grease	Spent grease	consolidate grease types and purchase grease that does not contain chlorinated solvents, to reduce toxicity	4	N/A	N/A	6/93	This project has been underway for 2 years No capital investment needed
03	Spent grease	Spent grease	Purchase grease in containers with plastic liners to reduce disposal costs by minimizing volume; the container does not need to be disposed with the grease residue, only the liner.	3	N/A	N/A	6/93	This project has been underway for 2 years No capital investment needed

Hazardous Waste Reduction Plan
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Hazardous Waste Reduction Program (Table 2)- Page 3

Waste ID No.	Name of Waste	Waste Stream Affected	Reduction Plans/Projects	Estimated Waste Reduction (tons)	Method used to Calculate ROI	ROI (est)	Goal date	Remarks
03	Spent grease	Spent grease	Evaluate nylon gears on selected equipment to reduce the volume of grease.	N/A	N/A	N/A	6/94	no cost estimate available- preliminary only

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
EPA ID Number NYD097649016
June, 1993

Hazardous Waste Reduction measures-

Hierarchy- based on options matrix
(Technically feasible and economically practicable)
Placing greatest emphasis on source reduction

01-Low pH Wastewater

Source Reduction actions

1)- Install a catch pan under the belt filter to recycle wastewater and reduce solids volume. NOTE: reduction in solids produces the favorable economics, vs water volume reduction.
2)- Use mechanical floor cleaner more frequently vs. hosing down floor NOTE: Minimal economic benefit
3)-belt filter rinsewater is recycled back as feed to belt filter- (already existing)
Method for charting waste reduction over time: Installation of flow meter at point prior to first stage of neutralization. Planned to be installed by Jan 1994.
Transfer into any other environmental media? none

02-Barium Filter Cake

Source reduction actions

1)-upstream practices in managing wastestream 01(low pH wastewater), will reduce the quantity of solids generated representing this waste, barium filter cake. Installing the catch pan under the belt filter will reduce solids (product) that ultimately are removed to create this wastestream.

Toxicity reduction actions

1)- a binder is under evaluation to be added to sludge prior to final filtering in an attempt to reduce the leachability of barium when subjected to the TCLP and reclassify waste as non-hazardous.
2)-Ferrous sulfate added to process upstream to bind with any free barium ion(-existing process)

Volume reduction actions

1)-Funds have been requested for 1993 to install a gas dryer for the filter cake to drive off excess water, reducing disposal costs (reduction in volume) Estimated annual savings $66,000
2)- The filter cake is in the form of hydrated titanates and sulfates. An evaluation will be made on the feasibility of reacting the sludge upstream, after pH adjustment, to form oxides in place of the hydrates. This will *potentially* reduce the volume of the filter cake.
Method for charting waste reduction over time: Data from hazardous waste manifests, indices.
Transfer into any other environmental media? none

03-Spent Grease

Source reduction actions

1)-Greases have been consolidated to one open gear type; without chlorinated solvent . This has been accomplished over the last 2 to 3 years with the goal of reducing waste disposal costs by reducing the waste volume and toxicity

Hazardous Waste Reduction measures- Page 2

Hierarchy- based on options matrix

2)-Maintenance is evaluating nylon gears on certain equipment that may eliminate or reduce the use of grease (reduction in volume)

Volume reduction actions

1)- plastic liners are now placed in all grease containers by the supplier, per TAM request, to eliminate the need to dispose of empty drum as waste (due to inability to remove *all* grease residue). Wastestream is currently composed of plastic liners with grease residue, vs empty drums with grease residue (reduction in volume)

2)- bulk reusable containers are being evaluated to minimize costs by bulk discount with supplier and reduce residue generation (less smaller containers, less liners, less residue to dispose of)

Method for charting waste reduction over time Data from hazardous waste manifests, indices.

Transfer into any other environmental media? none

Hazardous Waste Reduction Plan
TAM Ceramics, Inc.
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Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary

01-Low pH Wastewater

Capital Cost Summary **Estimated cost in 1993 US Dollars**

Cost Item	Install catch pan under belt filter	Use mechanical floor cleaner more frequently vs hosing with water
TOTAL CAPITAL INVESTMENT	20,000	0

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Install catch pan under belt filter	Use mechanical floor cleaner more frequently vs hosing with water
Decrease in disposal cost	$2700 solids disposal $500,000 product recovery	(500 gal/day x 300 day/year=150,000gal/year @1800 to buy and sewer, = $270
Decrease(or increase) in utility cost	NA	200
Decrease(or increase) in O&M labor costs	NA	(1500)
Decrease(or increase) in O&M supplies	NA	(500)
Net Operating Cost Savings	502,700	(1600)

Payback(capital cost/net operating cost savings), years	0.04	NA

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary- Page 2

02-Barium Filter Cake

Estimated cost in 1993 US Dollars

Cost Item	Evaluate oxide substitution of hydrate to reduce volume	Evaluate binder to reclassify waste as non-hazardous by binding all free barium	Install dryer to reduce sludge volume
Purchased equipment	unknown	unknown	92,000
Materials			0
Utility connections			8,500
Additional equipment.			11,500
Site preparation			0
Installation			11,000
Engineering			12,000
Startup			0
Training			0
Permitting			0
Fixed capital			135,000
Working capital			0
TOTAL CAPITAL INVESTMENT	unknown	unknown	135,000

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue item	Evaluate oxide substitution of hydrate to reduce volume	Evaluate binder to reclassify waste as non-hazardous by binding all free barium	Install dryer to reduce sludge volume
Decrease in disposal cost	unknown	unknown	62,000
Decrease(or increase) in utility cost			4,600 (natural gas)
Net Operating Cost Savings			66,000

Payback(capital cost/net operating cost savings), years	NA	NA	2

Hazardous Waste Reduction measures- (Technically feasible and economically practicable) Capital and operating cost summary- Page 3

03-Spent Grease

Estimated cost in 1993 US Dollars

Cost Item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease.	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Purchased equipment	NA	unknown	NA	unknown
Fixed capital				
Working capital				
TOTAL CAPITAL INVESTMENT	NA-no capital investment	unknown	NA-no capital investment	NA-no capital investment

Incremental operating cost and revenue summary (annualized)

Operating cost/Revenue Item	Consolidate greases needed; *without* chlorinated solvent	Evaluate nylon gears to minimize quantity of grease	Supplier provides plastic liners in all grease drums.	Evaluate re-usable bulk containers vs drums to lower material cost and reduce waste volume
Decrease in disposal cost	1000	unknown	3000	unknown
Net Operating Cost Savings				
Payback(capital cost/net operating cost savings), years	NA-no capital investment	NA-too preliminary	NA-no capital investment	NA-no capital investment