TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
ANNUAL WASTE SUMMARY

SWR #: 69026

02\26\1999 3:14:02 PM

Texas Waste Code	Quantity	Unit of Measure	EPA Haz. Waste Num.	STC	Facility ID	Facility EPA ID	Record Status
10013111	36000.00	P		132	H2093		TRANS-02\26\1
10052961	328.00	P		134	32299	TXD000719518	TRANS-02\26\1
10063101	298.00	P		112	32299	TXD000719518	TRANS-02\26\1
10084091	290.00	P		141	50267	TXD056135388	TRANS-02\26\1
10094891	103.00	P		112	32299	TXD000719518	TRANS-02\26\1
10133021	3600.00	P		141	H2093		TRANS-02\26\1
10143191	1063.00	P		125	32299	TXD000719518	TRANS-02\26\1
4002109H	927.00	P	D002	134	32299	TXD000719518	TRANS-02\26\1
DSJ5105H	406.00	P	D007	132	50052	TXD069452340	TRANS-02\26\1

Month: 09 Year: 1998

Manifest	Receiver's Id	Receiver's EPA ID	Texas Waste Code	EPA Haz. Waste Num.	Quantity	Unit	STC	Date Shipped	Transporter's ID	Record Status
01440795	32299	TXD000719518	4002109H	D002	927	P	134	09/01/1998	41038	VALID-2/10/1999
01440795	32299	TXD000719518	10143191		771	P	125	09/01/1998	41038	VALID-2/10/1999
01440795	32299	TXD000719518	10143191		292	P	125	09/01/1998	41038	VALID-2/10/1999
01440795	32299	TXD000719518	10094891		103	P	112	09/01/1998	41038	VALID-2/10/1999
01488603	H2093		10133021		3600	P	141	09/21/1998	41981	VALID-2/10/1999

Month: 12 Year: 1998

Manifest	Receiver's Id	Receiver's EPA ID	Texas Waste Code	EPA Haz. Waste Num.	Quantity	Unit	STC	Date Shipped	Transporter's ID	Record Status
01851491	32299	TXD000719518	10063101		298	P	112	12/03/1998	41038	VALID-2/10/1999
01851491	32299	TXD000719518	10052961		328	P	134	12/03/1998	41038	VALID-2/10/1999

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TECHNICAL MEMORANDUM

SUMMER 2000 WASTE STREAM ANALYSIS
Camp Stanley Storage Activity
Boerne, Texas

SECTION 1 INTRODUCTION

Camp Stanley Storage Activity (CSSA) is located in northwest Bexar County, approximately 19 miles northwest of downtown San Antonio. The primary mission of CSSA is the receipt, storage, and issuance of ordnance materiel as well as quality assurance testing and maintenance of military weapons and ammunition. CSSA operates under U.S. Environmental Protection Agency generator number TX2210020739 and State of Texas solid waste registration number 69026 as a nonindustrial small quantity generator. The management, administration, and functional operation of CSSA must comply with AR 740-1 and other applicable regulation, in support of the DOD Military Assistance Program (MAP) mission and other missions as directed by military headquarters.

Operations conducted at CSSA generate both solid and hazardous wastes. In accordance with Title 30 of the Texas Administrative Code (TAC), Chapter 335, Subchapter R (Waste Classification), industrial and hazardous waste streams generated at a facility must be classified, coded, and reported to the Texas Resource and Natural Conservation Commission (TNRCC). While there is a standard procedure for waste coding and reporting requirements, waste classification may be performed using either analytical data or process knowledge. Analytical data, typically consisting of laboratory analysis, must be supported by documentation of the sampling procedure and the analytical testing. Process knowledge data must support the generator's reasoning about why the waste has been given a particular classification and properly explain why a particular test method was not performed. Whether process knowledge or analytical data is used, documentation to support proper classification of waste streams generated at CSSA must be maintained by the installation in accordance with state and federal regulations.

During April 2000, a site survey was performed by Parsons ES to analyze each waste stream generated at CSSA. As 30 TAC Chapter 335 does not apply to nonhazardous waste generated by nonindustrial facilities, only hazardous waste streams generated at CSSA were analyzed.

Parsons ES reviewed CSSA's waste streams and current Notice of Registration (NOR) in order to determine if additional supporting documentation for the waste stream classification is necessary to comply with state and federal regulations.

This document summarizes the results of the site visit, as well as recommendations for each waste stream. In cases where supporting documentation is not deemed adequate, the collection of additional analytical data is recommended. When laboratory analysis is recommended, the number of samples required and recommended sampling methods are provided. A summary of recommended laboratory analysis is provided in Section 4. Following laboratory analysis, further documentation will be provided to support the waste classification.

SECTION 2 DESCRIPTION OF CURRENT HAZARDOUS WASTE STREAMS

Several shops are in operation at CSSA in order to support the mission of the installation. For the most part, waste streams are specific to each shop. Therefore, the following descriptions of the hazardous waste streams are categorized by support shop. When necessary, a flow diagram is provided for the support shop in order to illustrate processes generating hazardous waste.

The table below provides the TNRCC waste code for each hazardous waste stream discussed in this document.

Table 2.1 CSSA Hazardous Waste Streams

TNRCC Waste Code	CSSA Process
Ordnance Maintenance Branch Waste Streams	
4002109H	Sodium Hydroxide from Bluing Operations
4003110H	Nickel Penetrate
4006319H	Test Firing
4007319H	Sand Blasting
4008319H	Shot Peening (Wheelabrator)
4009319H	Glass Bead Blasting
4010219H	Volatile Corrosion Inhibitor
4011609H	Solvent Recycling
4012489H	Lube Oil, Hand Cleaning, Oiling, and Miscellaneous Activities
Miscellaneous Waste Streams	
4005209H	Lead Paint Disposal
4013219H	Waste Gasoline From Portable Generators
4015211H	Solvent (Mineral Spirits)
4016319H	Waste Munition Prior to Detonation
4020319H	Spent Mercury Vapor Lamps
Recommended Inactive Hazardous Waste Streams	
4001103H	Bluing Operations or Batteries from Building 90 and Vehicle Maintenance
4017103H	Hydrochloric Acid from Weapons Bluing
4018209H	Lacquer/Thinner
4019219H	Fingerprint Removal

2.1 Ordnance Maintenance Branch

The primary mission of CSSA is the receipt, storage, and issuance of ordnance materiel as well as the quality assurance testing and maintenance of military weapons and ammunition. Thus, the largest generator of hazardous wastes on the installation is the Ordnance Maintenance Branch (OMB). This branch is responsible for small arms refurbishing and maintenance operations including degreasing and bluing. In addition to these activities, the branch operates a small indoor firing range and two storage buildings, which are used to store both new materials and nonhazardous waste products from the small arms refurbishing operations.

Upon arrival at the facility, small arms are unpacked and evaluated. Depending on the condition of the weapons, they are cleaned in solvent dip tanks, reworked, or sent to bluing operations. A process flow diagram of OMB operations is provided in Figure 2-1.

Wastes are generated as several stages of the OMB operations. Below are descriptions for each hazardous waste generated during OMB operations, along with the associated TNRCC waste code.

Figure 2-1 Weapons Maintenance Process Flow Chart

Weapons Maintenance Process: Sodium Hydroxide

TNRCC Waste Code: 4002109H

TNRCC Waste Description: Spent caustic

Waste Description: Small firearms refurbishment is typically a multistep process, one step being treatment with an aqueous nickel solution. The aqueous nickel penetrate solution includes sodium hydroxide. During refurbishment operations, waste sodium hydroxide is generated.

Current EPA Hazard Codes: D002 – Corrosive

Current Justification for Classification: Known substances used during processing. No reaction or changes in product characteristics during processing.

Laboratory Analysis: Although the corrosive nature of sodium hydroxide is clearly stated on the product MSDS, analytical testing was performed on this waste stream in order to confirm proper waste stream classification. Since many of the parts processed with sodium hydroxide are composed of steel, TCLP analysis for lead, chromium, and cadmium, metals often used in steel production, were also analyzed.

One grab sample of the process waste stream was collected from a waste container in December 2000 and analyzed for TCLP metals and pH. Extraction method SW1311 and analytical method SW6010B and SW9040B, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, were used to evaluate a representative sample of the waste stream.

For this waste stream, the analysis performed and associated results are presented below. Section 4 presents a summary of both recommended and performed laboratory analyses and Appendix B provides the laboratory analytical report.

Analytical Method	Analytes	Results	Hazardous Waste Criteria
SW9040B	pH	13.4	≤ 2 or ≥ 12.5
SW1311/SW6010B	TCLP Chromium	< 0.05 mg/L	5 mg/L
SW1311/SW6010B	TCLP Cadmium	< 0.05 mg/L	1 mg/L
SW1311/SW6010B	TCLP Lead	0.6 mg/L	5 mg/L

Recommended Action: Since analytical results indicate that concentrations for cadmium, chromium, and lead fall below TCLP leachate maximum concentrations, however pH exceeds characteristic criteria, this waste stream should retain its current classification.

Weapons Maintenance Process: Nickel Penetrate

TNRCC Waste Code: 4003110H

TNRCC Waste Description: Caustic Aqueous Waste

Waste Description: Small firearms refurbishment is typically a multistep process, one step being treatment with an aqueous nickel solution. The generation of waste nickel solution results from this processing step. The majority constituent from this step is nickel, which in the spent solution is highly corrosive. The spent aqueous solution is not degradable, but is water soluble.

Current EPA Hazard Codes: D002 – Corrosive

Current Justification for Classification: Known substances used during processing. No reaction or changes in product characteristics during processing. Corrosive nature of nickel penetrate is listed on product MSDS.

Recommended Laboratory Analysis: Nickel penetrate consists of several components, including sodium hydroxide, two forms of sodium nitrate, and nickel nitrate. While it is assumed that the spent solution is highly corrosive, analytical data may support an assumed pH.

The waste nickel penetrate should be analyzed for pH using analytical method SW9040. As waste nickel penetrate has a consistent chemical composition, it is assumed that one sample should be needed. One sample should be taken following a change out of the nickel penetrate solution. Analytical method SW9040, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, should be used to evaluate a representative sample of the waste stream.

The table below, as well as Section 4, presents a summary of recommended lab analyses.

Analytical Method	Analytes	Hazardous Waste Criteria
SW9040	pH	≤ 2 or ≥ 12.5

Weapons Maintenance Process: Test Firing

TNRCC Waste Code: 4006319H

TNRCC Stream Description: Other Waste Inorganic Solids

Waste Description: Small firearms are test fired after refurbishment into sand embankments. After prolonged test firing, the sand becomes pulverized and contains a large concentration of metal fragments, and is no longer effective. Therefore, replacement of the sand is necessary. However, the sand then becomes hazardous waste due to the spent ammunition, consisting primarily lead, in the waste stream.

Current EPA Hazard Codes: D008 – Toxicity for lead

Current Justification for Classification: Known substances used during test firing. No reaction or changes in product characteristics during processing.

Recommended Laboratory Analysis: No laboratory analysis is recommended for this waste stream. It is concluded from process knowledge of other sand embankments contaminated with lead shot that this waste stream is likely to exceed the regulatory standard of 5 mg/L for TCLP lead.

Weapons Maintenance Process: Sand Blasting

TNRCC Waste Code: 4007319H

TNRCC Waste Stream Description: Other Waste Inorganic Solids

Waste Description: Metal parts are sandblasted for surface preparation. After prolonged blasting the sand becomes pulverized and is no longer effective due to attrition of the silica particles upon impact. Therefore, replacement of the sand is necessary. However, the sand then becomes hazardous waste because it contains metal fragments of the metal parts.

Current EPA Hazard Codes: D006 - Toxicity for Cadmium

Current Justification for Classification: Known substances used during processing. No reaction or changes in product characteristics during processing. The sand contains metal fragments of metal parts, primarily cadmium.

Recommended Laboratory Analysis: Many of the parts requiring sand blasting are composed of steel. Since steel is a mixture of several heavy metals, and several variations of steel mixtures exist, the exact metal constituents present in the sand blasting waste stream are unknown. Therefore, TCLP analysis for chromium and cadmium, metals often used in steel production, should be analyzed.

A composite sample of the process waste stream shall be collected from a waste container prior to disposal. Only one sample is anticipated to be necessary, due to the fact that all TCLP metals may be analyzed using one sample container. Sample mixing will take place prior to shipment to the lab in order to gain a representative sample. As waste sand from blasting operations is not regularly disposed of, testing should take place immediately prior to disposal. Extraction method SW1311 and analytical method SW6010B, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, should be used to evaluate a representative sample of the waste stream.

Section 4 presents a summary of recommended lab analyses. For this waste stream, the recommended analyses are:

Analytical Method	Analytes	Hazardous Waste Criteria (mg/L)
SW1311/SW6010B	TCLP Cadmium	1
SW1311/SW6010B	TCLP Chromium	5

Weapons Maintenance Process: Shot Peening (Wheelabrator)

TNRCC Waste Code: 4008319H

TNRCC Waste Description: Other Waste Inorganic Solids

Waste Description: Metal parts are blasted with steel pellets for surface preparation. While the wheel abrader unit is self-contained, after prolonged blasting the steel shot becomes pulverized and is no longer effective due to attrition of the metal-metal contact during blasting. Therefore, replacement of steel shot is necessary. However, the steel shot then becomes hazardous waste due to the toxicity characteristic of steel components. The waste shot is an inorganic solid, thus it is not degradable nor is it water-soluble. Furthermore, in its spent form it is characteristically hazardous.

Current EPA Hazard Codes: D006 - Toxicity for Cadmium

Current Justification for Classification: Known substances used during processing. No reaction or changes in product characteristics during processing.

Laboratory Analysis: Although previously classified as hazardous due to the toxicity of cadmium in the waste stream, a product MSDS for steel shot suggests that iron is the main component of the steel shot, not cadmium. Analytical testing was used to confirm or update the classification of the waste stream.

One grab sample of the process waste stream was collected from a waste container in December 2000, prior to disposal and analyzed. Extraction method SW1311 and analytical method SW6010B, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, was used to evaluate a representative sample of the waste stream.

For this waste stream, the analysis performed and associated result is presented below. Section 4 presents a summary of both recommended and performed laboratory analyses and Appendix B provides the laboratory analytical report.

Analytical Method	Analytes	Results (mg/L)	Hazardous Waste Criteria (mg/L)
SW1311/SW6010B	TCLP Cadmium	< 0.05	1

Recommended Action: Since analytical results indicate that the concentration of cadmium in the waste stream falls below the TCLP leachate maximum concentration, this waste stream should be reclassified as inactive.

Weapons Maintenance Process: Glass Bead Blasting

TNRCC Waste Code: 4009319H

TNRCC Waste Description: Other Waste Inorganic Solids

Waste Description: Metal parts are blasted with glass beads for surface preparation. After prolonged blasting the glass becomes pulverized and is no longer effective. Therefore, replacement of the glass beads is necessary. However, the glass fragments then become hazardous waste because they contain fragments of the metal parts.

Current EPA Hazard Codes: D006 - Toxicity for Cadmium

Current Justification for Classification: Known substances used during processing. No reaction or changes in product characteristics during processing. Waste glass contains metal fragments of processed parts, primarily cadmium.

Laboratory Analysis: Many of the parts requiring sand blasting are composed of steel. Since steel is a mixture of several heavy metals, and several variations of steel mixtures exist, the exact metal constituents present in the sand blasting waste stream are unknown. Therefore, TCLP analysis for lead, chromium, and cadmium, metals often used in steel production, were analyzed.

One grab sample of the process waste stream was collected from a waste container in December 2000 and analyzed for TCLP metals. Extraction method SW1311 and analytical method SW6010B, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, were used to evaluate a representative sample of the waste stream.

For this waste stream, the analysis performed and associated results are presented below. Section 4 presents a summary of both recommended and performed laboratory analyses and Appendix B provides the laboratory analytical report.

Analytical Method	Analytes	Results (mg/L)	Hazardous Waste Criteria (mg/L)
SW1311/SW6010B	TCLP Chromium	< 0.05	5
SW1311/SW6010B	TCLP Cadmium	0.49	1
SW1311/SW6010B	TCLP Lead	0.5	5

Recommended Action: Since analytical results indicate that concentrations for cadmium, chromium, and lead fall below TCLP leachate maximum concentrations, this waste stream should be reclassified as inactive.

Weapons Maintenance Process: Volatile Corrosion Inhibitor

TNRCC Waste Code: 4010219H

TNRCC Stream Description: Other Organic Liquids

Waste Description: Refurbishment of small firearms results in generation of waste organic liquid. The spent organic liquid generated from this operation contains amine salts and a volatile organic that acts as a solvent/propellant for the corrosion inhibitors. The waste is characteristically hazardous.

Current EPA Hazard Codes: D001 – Ignitability

Current Justification for Classification: The flash point for the corrosion inhibitor is less than 140°F, as given on the product MSDS.

Laboratory Analysis: While the ignitability of the waste is known, waste liquids were analyzed for metals content. TCLP analysis for lead, chromium, and cadmium, metals often used in steel production, were be analyzed.

A composite sample of the process waste stream was collected from a waste container in December 2000 prior to disposal. Only one sample is was necessary, due to the fact that all TCLP metals may be analyzed using one sample container and the waste has a consistent chemical composition. A representative sample of the waste was obtained and analyzed using TCLP Test Method 1311 and analytical methods SW6010B and SW7131A, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.*

For this waste stream, the analysis performed and associated results are presented below. Section 4 presents a summary of both recommended and performed laboratory analyses and Appendix B provides the laboratory analytical report.

Analytical Method	Analytes	Results (mg/L)	Hazardous Waste Criteria (mg/L)
SW1311/SW7131A	TCLP Cadmium	0.11	1
SW1311/SW6010B	TCLP Chromium	< 5	5
SW1311/SW6010B	TCLP Lead	< 5	5

Recommended Action: Since analytical results indicate that concentrations for cadmium, chromium, and lead fall below TCLP leachate maximum concentrations, this waste stream should retain its current classification.

Weapons Maintenance Process: Solvent Recycling

TNRCC Waste Code: 4011609H

TNRCC Stream Description: Other Organic Sludges

Waste Description: Waste sludge is produced as a consequence of on-site recycling of spent solvents. Spent solvents are purified by distillation and heavy sludge remains after processing. The sludge is characteristically hazardous, due to ignitability. The primary constituents of the sludge are: dirt, grease, and steel particles along with a trace of lead and gunpowder (potassium nitrate, charcoal, and sulfur).

Current EPA Hazard Codes:

D001 – Ignitability
D007 – Toxicity for chromium
D008 – Toxicity for lead
D009 – Toxicity for mercury

Current Justification for Classification: Solvents, spent solvents, solvent mixtures, or solvent still bottoms are often hazardous. The waste sludge collected from solvent recycling is anticipated to have high concentrations of heavy metals. These metal deposits would have been collected during the repetitive usage of the solvent, and would be filtered out during solvent recycling. Also, solvent not recovered during recycling is anticipated to be more concentrated, thus have a higher ignitability than the solvent mixture used during parts maintenance.

Recommended Laboratory Analysis: Solvent is used throughout the OMB, mostly on steel munitions. Since steel is a mixture of several heavy metals, and several variations of steel mixtures exist, the exact metal constituents present in the waste solvent are unknown. Therefore, TCLP analysis for lead, chromium, and cadmium, metals often used in steel production, should be analyzed. Since previous NORs have classified the waste stream as hazardous due to toxicity of mercury, TCLP for mercury shall also be analyzed.

Composite samples of the process waste stream shall be collected from a waste container prior to disposal. TCLP extraction method 1311 shall be used for all analytes, although analytical method SW6010B shall be used for chromium, cadmium, and lead and 7470A for mercury. Two samples are anticipated to be necessary, one for the chromium, cadmium, and lead TCLP analysis and another for mercury TCLP analysis. Sample mixing will take place prior to shipment to the lab in order to gain a representative sample. A representative sample of the waste shall be obtained and analyzed using TCLP Test Method 1311, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. As described in SW-846, liquid wastes (i.e., those containing less than 0.5% dry solid material are defined as the TCLP extract, after filtration through a 0.6 or 0.8 μm glass fiber filter.

Section 4 presents a summary of recommended lab analyses. For this waste stream, the recommended analyses are:

Analytical Method	Analytes	Hazardous Waste Criteria (mg/L)
SW1311/SW6010B	TCLP Cadmium	1
SW1311/SW6010B	TCLP Chromium	5
SW1311/SW6010B	TCLP Lead	5
SW1311/SW7470A	Mercury	0.2

Weapons Maintenance Process: Lube Oil, Hand Cleaning, Oiling, Miscellaneous Activities

TNRCC Waste Code: 4012489H

TNRCC Stream Description: Petroleum Contaminated Solids

Waste Description: Waste petroleum solids are generated in the site maintenance shops. They consist primarily of solvent contaminated rags from routine weapons maintenance activities. Due to the presence of solvents, this waste is characteristically hazardous and also a listed hazardous waste.

Current EPA Hazard Codes:

F001 – Spent halogenated solvents
D039 - Tetrachloroethene content
D040 - Trichloroethene content

Current Justification for Classification: Known substances used during maintenance. No reaction or changes in product characteristics during processing.

Recommended Modifications to CSSA Hazardous Waste Stream Classification: In the past, solvents containing trichloroethene (TCE) and tetrachloroethene (PCE) were utilized in the OMB. In working with these solvents, workers used rags to clean weapons with the solvent, thus contaminating the rags. These rags were disposed of as a hazardous waste. While rags are still used during weapons maintenance processing, solvents containing TCE and PCE have been replaced. Therefore, it is recommended that EPA hazardous codes D039 and D040 be removed from the NOR.

Laboratory Analysis: Although the OMB is no longer using PCE or TCE, the F001 classification for the waste rags may still be applicable. In order to completely characterize this waste stream, a sample of the process waste stream was collected from a waste container in December 2000 prior to disposal. Test methods specified in ASTM Standards D-93-79, D-93-80 or D-3278-78, in compliance with 40 CFR §261.21, was used to evaluate a representative sample of the waste stream.

For this waste stream, the analysis performed and associated results are presented below. Section 4 presents a summary of both recommended and performed laboratory analyses and Appendix B provides the laboratory analytical report.

Analytical Method	Analytes	Results	Hazardous Waste Criteria
ASTM D4982-89	Ignitability	Positive	Flash point less than 140°F

Recommended Action: Laboratory analysis indicates that this waste stream tested positive for ignitability, therefore it should be reclassified as inactive with a new waste stream with EPA hazardous waste number D001 created. Although ASTM D4982-89 is not a listed method in 40 CFR §261.21, the waste stream should be classified according to the most conservative laboratory data.

2.2 Other Installation Activities

Other wastes are generated through the maintenance of the installation. Activities such as change out of fluorescent lights and operation of the base motor pool have associated hazardous waste streams. A description of each hazardous waste stream, along with the TNRCC waste code is listed below.

Table 2.2 Miscellaneous Waste Streams

TNRCC Waste Code	CSSA Process
4005209H	Lead Paint Disposal
4013219H	Waste Gasoline From Portable Generators
4015211H	Solvent (Mineral Spirits)
4016319H	Waste Munition Prior to Detonation*
4020319H	Spent Mercury Vapor Lamps

* Waste generated from stored materials

Waste Stream Description: Lead Paint Disposal

TNRCC Waste Code: 4005209H

TNRCC Stream Description: Organic paint, ink, lacquer, or varnish

Waste Description: Although restrictions on lead-based paint usage were initiated in 1978, lead-based paints still exist in buildings and on equipment constructed or purchased before regulations were enacted. Therefore, maintenance activities on older pieces of equipment may generate a waste stream including lead-based paints. These activities are part of the general operation of the installation. Maintenance activities typically involve coatings (paint, ink, lacquer or varnish) removal and surface preparation to complete maintenance operations.

Current EPA Hazard Codes:

D001 - Ignitability
D008 - Toxicity for lead
F003 - Listed due to xylene content
F005 - Listed due to benzene content

Current Justification for Classification: The xylene, benzene, and lead content, as well as the substance ignitability, is described on product MSDSs. While MSDSs are not available for the exact products existing at CSSA, certain characteristics are common to most lead-based paints, and may be obtained from any MSDS for a lead-based paint. One has been included as documentation for this waste stream. It may be assumed that hazardous substances listed on this MSDS are present in the lead-based paints found at the installation.

Recommended for Laboratory Analysis: No laboratory analysis is recommended for characterization of this waste stream. A product MSDS, as described in the previous section, is sufficient justification for waste stream characterization.

Waste Stream Description: Waste Gasoline From Portable Generators

TNRCC Waste Code: 4013219H

TNRCC Stream Description: Other organic liquids

Waste Description: Gasoline must be drained from the base portable power generators when they need servicing. This gasoline is collected into drums and disposed of as a hazardous waste.

Current EPA Hazard Codes:

D001 - Ignitability

Current Justification for Classification: Ignitability characteristic of gasoline given on the product MSDS.

Recommended for Laboratory Analysis: No laboratory analysis is recommended for characterization of this waste stream. A product MSDS, as described in the previous section, is sufficient justification for waste stream characterization.

Waste Stream Description: Solvent (Mineral Spirits)

TNRCC Waste Code: 4015211H

TNRCC Stream Description: Paint thinner or petroleum distillates

Waste Description: Solvents containing mineral spirits are utilized throughout the weapons maintenance operations. Mineral spirits are a petroleum product and have a flash point over 140°F. This is not considered a characteristically hazardous waste. However, following usage of the solvent, it is contaminated with particulate from maintenance operations of metal objects.

Current EPA Hazard Codes:

D008 – Toxicity for lead

Current Justification for Classification: Known substances used during processing. No reaction or changes in product characteristics during processing.

Recommended for Laboratory Analysis. Recommended for Laboratory Analysis: Waste solvent from dip tanks should be analyzed for metals content. Therefore, TCLP analysis for lead, chromium, and cadmium, metals often used in steel production, should be analyzed.

A composite sample of the process waste stream shall be collected from a waste container prior to disposal. Only one sample is anticipated to be necessary, due to the fact that all TCLP metals may be analyzed using one sample container and the waste has a consistent chemical composition. Sample mixing will take place prior to shipment to the lab in order to gain a representative sample. A representative sample of the waste shall be obtained and analyzed using TCLP Test Method 1311 and analytical methods SW6010B, as described in EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.*

Section 4 presents a summary of recommended lab analyses. For this waste stream, the recommended analyses are:

Analytical Method	Analytes	Hazardous Waste Criteria (mg/L)
SW1311/SW6010B	TCLP Cadmium	1
SW1311/SW6010B	TCLP Chromium	5
SW1311/SW6010B	TCLP Lead	5

Waste Stream Description: Waste munition prior to detonation

TNRCC Waste Code: 4016319H

TNRCC Stream Description: Other waste inorganic solids

Waste Description: During the course of investigation activities at CSSA, unexploded ordnance (UXO) may be encountered. The amount and type of ordnance encountered varies widely.

Current EPA Hazard Codes:

D003 –Reactive

Current Justification for Classification: It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

Recommended for Laboratory Analysis: No laboratory analysis is recommended for this waste stream. The nature of the waste is by definition explosive, therefore reactive. This waste stream has already been adequately characterized as reactive.

Waste Stream Description: Spent mercury vapor lamps

TNRCC Waste Code: 4020319H

TNRCC Stream Description: Other waste inorganic solids

Current EPA Hazard Codes:

D009 – Toxicity for mercury

Waste Description: Mercury vapor lamps, a type of high intensity discharge light source, are used the installation. Due to the mercury vapor in these lamps, these lights become a hazardous waste upon disposal.

Current Justification for Classification: MSDS provides information pertaining to the mercury content.

Recommended for Laboratory Analysis: No laboratory analysis is recommended to characterize this waste stream. As stated under the previous section, the MSDS should be sufficient characterize the waste.

SECTION 3 INACTIVE HAZARDOUS WASTE STREAMS

Since submission of the last NOR to the TNRCC, several waste streams have become inactive. In order to keep waste records as an accurate reflection of installation activities, these waste streams should be classified as inactive. Following is a list of several hazardous waste streams that are no longer generated.

Table 3.1 Recommended Inactive Waste Streams

TNRCC Waste Code	CSSA Process
4001103H	Bluing Operations or Batteries from Building 90 and Vehicle Maintenance
4017103H	Hydrochloric Acid from Weapons Bluing
4018209H	Lacquer/Thinner
4019219H	Fingerprint Removal

Waste Stream Description: Bluing operations or batteries from Building 90, and vehicle maintenance

TNRCC Waste Code: 4001103H

TNRCC Stream Description: Spent acid with metals

Waste Description: Lead acid batteries are used in bluing operations as well as during motor pool maintenance. Used batteries containing spent acid are disposed of as hazardous waste.

Current EPA Hazard Codes:

D002 – Corrosive
D006 – Toxicity for cadmium
D007 – Toxicity for chromium
D008 – Toxicity for lead

Justification for Removal: Bluing operations are no longer associated with this waste code. OMB no longer uses hydrochloric acid, but sodium hydroxide in their processes (TNRCC Waste Code 4002109H). Lead acid batteries are still a waste generated on the installation, however, they are held at the Motor Pool before being recycled off-base by a contractor.

Waste Stream Description: Hydrochloric acid from weapons bluing

TNRCC Waste Code: 4017103H

TNRCC Stream Description: Spent acid with metals

Waste Description: Lead acid batteries are used by various pieces of equipment at Camp Stanley Storage Activity.

Current EPA Hazard Codes:

D002 - Corrosive
D006 – Toxicity for cadmium
D007 – Toxicity for chromium
D008 – Toxicity for lead

Justification for Removal: In previous waste stream descriptions, bluing operations had been erroneously associated with the use of lead acid batteries. Based on discussions with base personnel, it was learned that these waste streams were not related. Lead acid batteries are still used at Camp Stanley and are periodically disposed of when they no longer work effectively. However, instead of disposing of the batteries as hazardous waste, they are temporarily stored at the motor pool and are recycled by an off-base contractor.

Waste Stream Description: Lacquer/thinner

TNRCC Waste Code: 4018209H

TNRCC Stream Description: Organic paint, ink, lacquer, or varnish

Waste Description: A multi-purpose paint booth is maintained at the installation. Painting operations from this shop, as well as from weapons maintenance operations, generate waste paints, lacquers, and thinners.

Current EPA Hazard Codes:

D001 – Ignitability
D007 – Toxicity for chromium
D008 – Toxicity for lead
D009 – Toxicity for mercury

Justification for Removal: Painting operations have been transferred from CSSA. No painting operations take place at the installation. Therefore, additional disposal of this waste stream is not anticipated.

Waste Stream Description: Fingerprint removal

TNRCC Waste Code: 4019219H

TNRCC Stream Description: Other organic liquids

Waste Description: Small firearms refurbishment is typically a multi-step process. During this process, the arms are passed through a series of dip tanks, with one of the tanks containing a fingerprint removal solution. Following multiple uses, the fingerprint removal solution is replaced and the used solution is disposed as hazardous waste.

Current EPA Hazard Codes:

D001 – Ignitability

Justification for Removal: Fingerprint removal, a substance containing methyl amyl alcohol, is no longer used in the weapons maintenance processing.

SECTION 4 CONCLUSIONS

Review of hazardous waste streams at CSSA indicate that process knowledge and existing supporting documentation, such as MSDSs, and laboratory data are sufficient to meet both state and federal regulations for classification of CSSA waste streams in many cases. Laboratory analysis, collected in December 2000, was used in some cases to supplement existing data. A summary of the analyses performed are presented in Table 4.1. A more detailed summary of analytical results is presented in Appendix B.

Table 4.1 Laboratory Analysis Performed

Analytical Method	Analyte	Waste Stream	Description	Number of Samples
SW1311/SW6010B	TCLP Lead	4002109H	Sodium Hydroxide from Bluing Operations	1
	pH	4002109H	Sodium Hydroxide from Bluing Operations	1
SW1311/SW6010B	TCLP Cadmium	4008319H	Shot Peening (Wheelabrator)	1
SW1311/SW6010B	TCLP Chromium TCLP Cadmium	4009319H	Glass Bead Blasting	1
SW1311/SW6010B	TCLP Lead TCLP Chromium TCLP Cadmium	4010219H	Volatile Corrosion Inhibitor	1
Various ASTM Standards	Ignitability	4012489H	Lube Oil, Hand Cleaning, Oiling, and Miscellaneous Activities	1
Total				**6**

Review of analytical results indicates that the glass bead blasting and shot peening waste streams (4009319H and 4008319H) should be reclassified as nonhazardous and the current waste streams should become inactive. Current classification of the sodium hydroxide and volatile corrosion inhibitor waste streams (4002109H, 4010219H) was confirmed by the analytical results. No changes are necessary for these waste streams. Analytical data suggests that the lube oil, hand cleaning, oiling waste stream (4012489H) should become inactive, and a new waste stream with EPA hazardous waste number D001 should be created.

Further analytical data is suggested for four waste streams. A summary of the waste streams and analysis is listed below.

Table 4.2 Summary of Recommended Laboratory Analysis

Analytical Method	Analyte	Waste Stream	Description	Number of Samples
SW6010B	TCLP Chromium TCLP Cadmium	4007319H	Sand Blasting	1
	TCLP Lead TCLP Chromium TCLP Cadmium	4011609H	Solvent Recycling	1
SW1311/SW6010B	TCLP Lead TCLP Chromium TCLP Cadmium	4015211H	Solvent (Mineral Spirits)	1
SW9040	pH	4003110H	Nickel Penetrate	1
SW1311/SW7470A	TCLP Mercury	4011609H	Solvent Recycling	1
Total*				**5**

* Sample count does not include any QA/QC samples

It is recommended that representative samples are collected from the waste stream and laboratory analysis is performed in accordance with EPA Publication SW-846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* Following laboratory analysis, Parsons ES will review the results as well as the current NOR and determine what changes, if any, are needed. Should the classification of any hazardous waste stream be modified as a result of laboratory analysis or process knowledge, changes shall be submitted to the TNRCC.

APPENDIX A

MATERIAL SAFETY DATA SHEETS

APPENDIX A

MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List)
NICKEL PENTRATE

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

EMERGENCY DIRECTORY ASSISTANCE (313) 644-5626

Manufacturer's Name
Heatbath Corporation

Address (Number, Street, City, State, and ZIP Code)
107 Front Street
Indian Orchard, MA 01151

Telephone Number for Information
413-543-3381

Date Prepared
DECEMBER 8, 1986

Signature of Preparer (optional)
THOMAS A. NADEAU

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity)	CAS #	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
SODIUM HYDROXIDE	1310-73-2	2.0 mg/m³	2.0 mg/m³		<100
SODIUM NITRATE	7631-99-4	NOT ESTABLISHED	NOT ESTABLISHED		< 20
SODIUM NITRITE	7632-00-0	NOT ESTABLISHED	NOT ESTABLISHED		<10
NICKEL NITRATE	13138-45-9	0.1 mg(Ni)/m³	0.1 mg(Ni)/m³		<.01

IMPORTANT SAFETY INFORMATION
FORWARD TO APPROPRIATE DEPARTMENT

Section III — Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H_2O = 1)	2.14
Vapor Pressure (mm Hg.)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A

Solubility in Water
COMPLETE.

Appearance and Odor
ODORLESS, LIGHT GREEN POWDER.

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
NONE	NOT FLAMMABLE	N/A	N/A

Extinguishing Media
WATER.

Special Fire Fighting Procedures
WEAR PROTECTIVE CLOTHING WITH RESPIRATORY APPARATUS.

Unusual Fire and Explosion Hazards
STRONG OXIDIZER - MAY INCREASE THE FLAMMABILITY OF COMBUSTIBLES. MAY REACT WITH SOME METALS WITH RELEASE OF HYDROGEN (FLAMMABLE GAS).

N/A - NOT APPLICABLE

Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
NP			OVERHEATING IN EXCESS OF 1000°F
	Stable	X	

Incompatibility (*Materials to Avoid*)
STRONG ACIDS, ORGANICS, CYANIDES, COMBUSTIBLES, METALS SUCH AS ALUMINUM, TIN, ZINC ETC.

Hazardous Decomposition or Byproducts
STEAM, HYDROGEN, OXIDES OF NITROGEN.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	N/A

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	NO	YES

Health Hazards (*Acute and Chronic*)
MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY BE IRRITATING TO EYES, SKIN AND MUCOUS MEMBRANES. CORROSIVE MATERIAL - MAY CAUSE SEVERE EYE, SKIN AND TISSUE BURNS.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
NONE	N/A	N/A	N/A

Signs and Symptoms of Exposure
EYE, SKIN AND THROAT IRRITATION. EYE, SKIN AND TISSUE BURNS. IF INGESTED MAY CAUSE BURN TO THE MOUTH AND ESOPHAGUS.

Medical Conditions
Generally Aggravated by Exposure NOT KNOWN.

Emergency and First Aid Procedures
SKIN-WASH WITH PLENTY OF WATER. REMOVE CONTAMINATED CLOTHING. SEE A PHYSICIAN IF SEVERE.
EYES-FLUSH WITH PLENTY OF WATER, AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.
STION-IF CONSCIOUS, GIVE PLENTY OF WATER OR FRUIT JUICE. DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken In Case Material Is Released or Spilled
ABSORB SOLUTION INTO SOLID TYPE ABSORBENT, i.e. "SPEEDI-DRY". SWEEP UP POWDER. DISPOSE WITH ALKALINE WASTES. WASH AREA WITH WATER.

Waste Disposal Method
NEUTRALIZE WITH DILUTE ACID. USE ADEQUATE VENTILATION. (CONTAINS NITRATES) DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

Precautions to Be Taken In Handling and Storing
AVOID CONTACT WITH EYES, SKIN OR CLOTHING. AVOID BREATHING DUST. STORE IN A COOL, DRY PLACE AWAY FROM INCOMPATIBLES.

Other Precautions
CONTAINERS OF THIS PRODUCT MAY BE HAZARDOUS WHEN EMPTY. TREAT ANY RESIDUE BEFORE DISCARDI
WHEN MIXING WITH WATER, ADD SLOWLY WITH CONSTANT STIRRING.

Section VIII — Control Measures

Respiratory Protection (*Specify Type*)
USE NIOSH/MSHA APPROVED RESPIRATOR IF DUST, MISTS OR VAPORS ARE EXCESSIVE.

Ventilation	Local Exhaust	Special
	100 CFM	NONE
	Mechanical (*General*)	Other
	MAINTAIN BELOW PEL, TLV	NONE

Protective Gloves	Eye Protection
RUBBER	FACE SHIELD OR SAFETY GOGGLES

Other Protective Clothing or Equipment
RUBBER APRON, BOOTS, FULL COVER WORK CLOTHES.

Work/Hygienic Practices
WASH THOROUGHLY AFTER HANDLING. LAUNDER CLOTHES.

USGPO: 1986-491-529/45775

Formula for Nickel Pentrate

Sodium Hydroxide	83.000 lbs.
Sodium Nitrate	11.000 lbs.
Sodium Nitrite	6.000 lbs.
Sodium Thiocyanate	0.200 oz.
Sodium Sulfide	0.033 oz.
Strontium Carbonate	0.025 oz.
Nickel Nitrate	0.025 oz.
Heliogen Green GWS-ND	0.025 oz.
	100 lbs. 3.08 oz.

Nickel Pentrate Concentration is
6 lbs./gal. of Water

(Tank holds about 175 gal of liquid @ 6#/gal=
1050 # of Pentrate

MATERIAL SAFETY DATA SHEET
SAFETY-KLEEN CORP.
777 Big Timber Rd.
Elgin, IL 60123

safety-kleen.com

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted. If any item is not applicable, or information is available, the space must be marked to indicate
Safety-Kleen 140 Solvent	

Section I Part #6616

Manufacturer's Name: Safety-Kleen Corp.	Emergency Telephone Number: 312/697-8460
Address (Number, Street, City, State, and ZIP Code): 777 Big Timber Road	Telephone Number for Information: 312/697-8460
Elgin, Illinois 60123	Date Prepared: September 12, 1986, Revised 5/26/87
	Signature of Preparer (optional):

Section II—Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))		OSHA PEL	ACGIH TLV	Other Limits Recommended	% (opt
Mineral Spirits C.A.S. Reg. No. 8032-32-4		500 ppm	100 ppm	-	99.
Dye	proprietary	Unknown	Unknown	-	0.0
Anti-Static Agent	mixture	Unknown	Unknown	100 est.	1 p

Section III—Physical/Chemical Characteristics

Boiling Point	360-400°F	Specific Gravity (H_2O = 1)	0.770 0.811
Vapor Pressure (mm Hg.) @ 68°F	0.5	Melting Point	N/A
Vapor Density (AIR = 1)	5.48	Evaporation Rate (Toluene = 1)	0.02

Solubility in Water
Negligible.

Appearance and Odor
Clear green liquid with characteristic hydrocarbon odor.

Section IV—Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
140°F TCC		1.0	7.0

Extinguishing Media
CO_2, foam, dry chemical, water (mist only)

Special Fire Fighting Procedures
None.

Unusual Fire and Explosion Hazards
None.

1C

Section V—Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	Heat, sparks, flame and fire.

Incompatibility (Materials to Avoid)
Strong oxidizing agents.

Hazardous Decomposition or Byproducts
Normally none; however, incomplete burning may yield carbon monoxide.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI—Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	yes	yes	yes

Health Hazards (Acute and Chronic)
Skin - Can cause drying of skin. Eyes - Severe irritant. Inhalation - Excessive inhalation causes headache, dizziness and nausea. Ingestion - Harmful or fatal if swallowed.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	No	No	No

Not a known or suspected carcinogen.

Signs and Symptoms of Exposure
Drying of skin, eye irritation, headache, dizziness, nausea.

Medical Conditions Generally Aggravated by Exposure Unknown.

Emergency and First Aid Procedures
Skin - Wash with soap and water. Eyes - Irrigate with water. Inhalation - Remove to f air source and call a physician. Ingestion - DO NOT INDUCE VOMITING. Call a physician

Section VII—Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled
Catch and collect for recovery as soon as possible. Avoid exposure to sparks, fire, flame, hot surfaces.

Waste Disposal Method
Dispose of in accordance with company, local, state and federal regulations.

Precautions to Be Taken in Handling and Storing
Combustible. Keep away from heat, sparks, flame. Use with adequate ventilation. Avoid and repeated contact with skin: If clothes are inadvertently saturated with solvent - DO NOT SMOKE - Keep away from ignition sources. Keep out of reach of children.

Section VIII—Control Measures

Respiratory Protection (Specify Type)
Self-contained breathing apparatus for concentrations above TLV limits.

Ventilation	Local Exhaust	Special
	Normal room ventilation.	None.
	Mechanical (General)	Other
	None.	None.

Protective Gloves	Eye Protection
In case of prolonged use, wear rubber gloves.	Yes - Eyeglasses, safety glasses.

Other Protective Clothing or Equipment
N/A

Work/Hygienic Practices
Do not smoke while using this solvent.

VCI —

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R138

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: THE CROMWELL PAPER COMPANY	EMERGENCY TELEPHONE NO.: (312) 523-0337
ADDRESS (Number, Street, City, State, and ZIP Code): 4801 S. WHIPPLE ST. CHICAGO, ILLINOIS 60632	
CHEMICAL NAME AND SYNONYMS:	TRADE NAME AND SYNONYMS: TERRO PAK B VCI SOLUTION
CHEMICAL FAMILY: ORGANIC SALTS OF AMINE, PARAFFINIC OIL	FORMULA:

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
AMINE SALTS	5.38	N.D
ISOPROPYL ALCOHOL	4.61	400
NO INGREDIENT IS A KNOWN CARCINOGEN AS DEFINED BY 29 CFR 1910.120C		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N.D.	SPECIFIC GRAVITY (H_2O=1)	N.D.
VAPOR PRESSURE (mm Hg.)	N.D.	PERCENT, VOLATILE BY VOLUME (%)	15.0%
VAPOR DENSITY (AIR=1)	N.D.	EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	5.5%		

APPEARANCE AND ODOR: OIL BASE VCI - AMINE ODOR

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	100° F.	FLAMMABLE LIMITS	Lel	Uel

EXTINGUISHING MEDIA

SPECIAL FIRE FIGHTING PROCEDURES: FOAM, WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL

UNUSUAL FIRE AND EXPLOSION HAZARDS: EMITS TOXIC GASES WHEN BURNING

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

MAY IRRITATE SKIN AND EYES. INHALATION OF VAPORS MAY IRRITATE UPPER RESPIRATORY TRACT

EMERGENCY AND FIRST AID PROCEDURES

FLUSH WITH LARGE QUANTITIES OF WATER.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

EPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

ABSORB OR SCRAPE UP

WASTE DISPOSAL METHOD

IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*

VENTILATION	LOCAL EXHAUST		SPECIAL
	MECHANICAL *(General)*	ACCEPTABLE	OTHER

PROTECTIVE GLOVES	RUBBER	EYE PROTECTION	CHEMICAL GOGGLES

OTHER PROTECTIVE EQUIPMENT

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

STORE IN COOL DRY AREA - LOW FLASH POINT MATERIAL.

OTHER PRECAUTIONS

GPO 934-190

Form OSHA-20
Rev. May 72

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: A-140
PRODUCT: 140 Flash Solvent

SAN ANTONIO, TX.

MSDS DATE: September 22, 1988

24 HOUR EMERGENCY PHONE: 1-800-424-9300 CHEMTREC

1. PRODUCT IDENTIFICATION

0 HEALTH 2 FLAMMABILITY 0 REACTIVITY (blank) INSTABILITY
Based on "Standard System for Identification of the Fire Hazards Materials, NFPA No. 704, 1985 Edition"

CHEMICAL NAME: Petroleum Solvent
SYNONYMS/COMMON NAMES: Mineral spirits type II, stoddard solvent type II, ASTM D-235 type II, white spirits
CHEMICAL FORMULA: Mixture of hydrocarbons
DOT PROPER SHIPPING NAME: Naphtha, Petroleum
DOT I.D. NUMBER: UN1255
DOT HAZARD CLASS: Combustible liquid

2. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	APPROXIMATE CONCENTRATION
CAS No. 64741-92-0 Solvent refined Heavy naphtha containing less than 8% aromatics, less 0.1% Benzene (CAS 71-43-2)	100%

HAZARD DATA PEL = 500 PPM
TLV = 100 PPM
STEL = 200 PPM

These products are not listed as being carcinogen by IARC, NTP, OSHA ACGIH.
CAS NUMBER 8052-41-3 as stoddard solvent

3. PHYSICAL DATA

BOILING POINT @ 760 mm Hg:	365-412°F
EVAPORATION RATE (BuAc=1):	0.08
VAPOR PRESSURE:	Approx 4mm Hg @ 25°C
BULK DENSITY AT 20°C:	NA
SPECIFIC GRAVITY (H_2O=1):	Approx 0.77
SOLUBILITY IN H_2O % BY WT:	Negligible
APPEARANCE AND ODOR:	Clear with typical hydrocarbon odor, water white
pH:	NA
VAPOR DENSITY (Air=1):	Approx 5
MELTING POINT:	NA
% VOLATILES BY VOL.:	100

Physical data may vary slightly to meet specifications.

CAS = Chemical Abstract Service Number
PEL = OSHA Permissible Exposure Limit
TLV = TLV, ACGIH Threshold Limit Value, Current
N/A = No relevant information found or not available
NA = Not Applicable
STEL = ACGIH short term exposure limit

MSDS NUMBER: A-140
PRODUCT NAME: 140 Flash Solvent

4. FIRE AND EXPLOSION DATA

FLASH POINT: 140°F (TCC) (min)
FLAMMABLE LIMITS IN AIR, % BY VOLUME UPPER: 6 LOWER: C
EXTINGUISHING MEDIA: Foam, dry chemical, carbon dioxide. Water may ineffective unless used under favorable conditions by trained fi: fighters. Water can be used to cool and protect materials and ne: disperse vapors, flush spills away from exposures.
SPECIAL FIRE FIGHTING PROCEDURES: Minimize breathing gases, vapo: fumes or decomposition products. Use air-supplied breathing apparat: (SCBA) in enclosed or confined areas or as otherwise needed. Stop sour: of fuel.
UNUSUAL FIRE AND EXPLOSION HAZARD: N/A
AUTOIGNITION TEMPERATURE: 450-500°F

5. HEALTH HAZARD INFORMATION

HEALTH HAZARD DATA: The major effect of exposure to this product i
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Conditions whic have the same symptoms or effects as stated below.
MEDICAL LIMITATIONS: Restrict contact by persons with acne, skin sen sitity or skin disease for exposure could aggravate these conditions

ROUTES OF EXPOSURE

INHALATION: Irritation of the upper respiratory tract possibly followe: by depression, dizziness, headache, incoordination, anesthesia, coma an: respiratory arrest.
SKIN CONTACT: Defatting may occur with continued or prolonged con- tact. Irritation and burning sensation may occur on exposure t: liquid. Skin "chapping" and photosensitivity may develop after repeata: contact, progressing to dermatitis.
SKIN ABSORPTION: Not significant.
EYE CONTACT: Severe burning sensation with temporary irritation an: swelling of lids. 470 ppm/15min (irritation effect)
INGESTION: Irritation of mucous membranes of throat, esophagus an: stomach which may result in vomiting; depression may occur if absorbed.

EFFECTS OF OVEREXPOSURE

ACUTE: Central nervous system depression with extreme exposure; effects may include anesthesia, coma, respiratory arrest, and irregular heart rate. Oxygen deprivation is possible if working in a confined area.
CHRONIC: No known major cumulative or latent effects have been reported.

EMERGENCY AND FIRST AID PROCEDURES

EYES: Flush eyes with large amounts of water for 15 minutes holding lids apart to ensure flushing the entire eye. Seek medical attention.
SKIN: Wash with soap and water. Remove contaminated clothes and foot- wear. Seek medical attention if symptoms result.
INHALATION: Remove to fresh air; restore breathing if needed; admi- nister oxygen; seek medical help.
INGESTION: Do not induce vomiting. If vomiting occurs keep airway clear. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

NOTES TO PHYSICIAN: Gastric lavage only if large quantity has been ingested. Guard against aspiration into lungs which may result in chemical pneumonitis. Irregular heart beat may occur; use of adrenalin is not advisable. Treat symptomatically.

MSDS NUMBER: A-140
PRODUCT NAME: 140 Flash Solvent

6. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, material is stable.
INCOMPATIBILITY: Strong oxidants such as liquid chlorine, concentra oxygen, sodium hypochlorite or calcium hypochlorite. HAZARD
DECOMPOSITION PRODUCTS: Fumes, smoke, carbon monoxide, aldehydes other decomposition products.
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is known to polymerize.

7. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: Eliminate sources of ignition. Confine area cleanup personnel. Ventilate confined areas. Use explosion pr equipment. Minimize breathing vapors and skin contact. Absorb and confine liquid with sand, earth or other suitable material. Keep pr duct out of sewers and watercourses. Advise authorities if product entered or may enter sewers, watercourses or extensive land area
DISPOSAL: Continue to observe precautions for volatile, combusti vapors from absorbed material. Disposal of waste materials are reg lated and action to handle or dispose of spilled or released materia must meet all applicable local, state, and federal rules and regul tions. If any questions exist, the appropriate agencies should contacted. Waste product and contaminated material will be consider a hazardous waste if the flash point is less than 140°F requir disposal at an approved hazardous waste facility.
STORAGE: Protect against physical damage. Outside or detached store is preferred. Store in cool, well-ventilated area away from sources ignition and oxidizing agents. To prevent fire or explosion risk f static accumulation and discharge, ground product transfer system accordance with the National Fire Protection Association for petrole products.

8. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: Work in ventilated areas. Special ve tilation is not required under normal use.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection not required under normal use. U NOISH/MSHA approved organic vapor respirators following manufacture recommendations where spray, mist, or vapors may cause suggested TLV be exceeded. SCBA is required if concentration exceeds the capacity the organic vapor canister.
EYES: Face shield and goggles or chemical goggles should be worn whe mist or spray may be generated.
GLOVES: Impervious gloves.
OTHER CLOTHING AND EQUIPMENT: Standard work clothing. Clothes footwear that cannot be decontaminated should be discarded. Shower a eye wash facilities should be accessible.

MONITORING EXPOSURE

BIOLOGICAL: No applicable procedure; breath analysis for hydrocarbo has been suggested.
PERSONAL/AREA: Charcoal absorption followed by gas chromatograph Direct reading indicating tubes for organics are available to evalua short term exposure.

THIS MSDS IS EQUIVALENT TO US DOL OSHA'S NON-MANDATORY FORM

This Material Safety Data Sheet was prepared in accordance with 29 C 1910.1200. All information, recommendations, and suggestions appeari herein concerning our product are based upon tests and data believed be reliable, however, it is the user's responsibility to determine t safety, toxicity and suitability for his own use of the produ described herein. Since the actual use by others is beyond our contr no guarantee expressed or implied is made by Howell Hydrocarbons In as to the effects of such use, the results to be obtained or the safe and toxicity of the product nor does Howell Hydrocarbons Inc.. assu any liability arising our of use by others of the product referred herein. Nor is the information herein to be construed as absolute complete since additional information my be necessary or desirable wh particular or exceptional conditions or circumstances exist or becau of applicable laws or government regulations.

REVISED DATE: JANUARY 24, 1991

DOD Hazardous Materials Information System
DoD 6050.5-L
AS OF July 1998

FSC: 5350
NIIN: 001071284
Manufacturer's CAGE: 1CZ43
Part No. Indicator: A
Part Number/Trade Name: METGRAIN

General Information

Item Name: STEEL GRIT
Company's Name: CHESAPEAKE SPECIALTY PRODUCTS
Company's Street: 5055 NORTH POINT BOULEBVARD
Company's P. O. Box:
Company's City: BALTIMORE
Company's State: MD
Company's Country: US
Company's Zip Code: 21219
Company's Emerg Ph #: 301-694-5105
Company's Info Ph #: 301-694-5105
Distributor/Vendor # 1:
Distributor/Vendor # 1 Cage:
Distributor/Vendor # 2:
Distributor/Vendor # 2 Cage:
Distributor/Vendor # 3:
Distributor/Vendor # 3 Cage:
Distributor/Vendor # 4:
Distributor/Vendor # 4 Cage:
Safety Data Action Code:
Safety Focal Point: G
Record No. For Safety Entry: 001
Tot Safety Entries This Stk#: 001
Status: SE
Date MSDS Prepared: 01APR91
Safety Data Review Date: 19JUN97
Supply Item Manager: CX
MSDS Preparer's Name:
Preparer's Company:
Preparer's St Or P. O. Box:
Preparer's City:
Preparer's State:
Preparer's Zip Code:
Other MSDS Number:
MSDS Serial Number: CDXQB
Specification Number: NK
Spec Type, Grade, Class: NK
Hazard Characteristic Code: NK
Unit Of Issue: BG
Unit Of Issue Container Qty: 50 LB BG
Type Of Container: NK
Net Unit Weight: NK

Report for NIIN: 001071284

NRC/State License Number: NK
Net Explosive Weight: NK
Net Propellant Weight-Ammo: NK
Coast Guard Ammunition Code: NK

Ingredients/Identity Information

Proprietary: NO
Ingredient: IRON
Ingredient Sequence Number: 01
Percent: 98.3
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: NO7400000
CAS Number: 1309-37-1
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Proprietary: NO
Ingredient: TRACE ELEMENTS
Ingredient Sequence Number: 02
Percent: <1.7
Ingredient Action Code:
Ingredient Focal Point: G
NIOSH (RTECS) Number: 1003044TE
CAS Number:
OSHA PEL: NOT ESTABLISHED
ACGIH TLV: NOT ESTABLISHED
Other Recommended Limit: NONE RECOMMENDED

Physical/Chemical Characteristics

Appearance And Odor: METALLIC GRAY GRANULES, ODORLESS
Boiling Point: NA
Melting Point: 2600F,1427C
Vapor Pressure (MM Hg/70 F): NA
Vapor Density (Air=1): NA
Specific Gravity: NK
Decomposition Temperature: NA
Evaporation Rate And Ref: NA
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: NA
Viscosity: NK
pH: NA
Radioactivity: NK
Form (Radioactive Matl):
Magnetism (Milligauss): N/P
Corrosion Rate (IPY): NK
Autoignition Temperature: NA

Report for NIIN: 001071284

Fire and Explosion Hazard Data

Flash Point: NA
Flash Point Method: N/P
Lower Explosive Limit: NA
Upper Explosive Limit: NA
Extinguishing Media: GRAPHITE, DOLOMITE, SALT OR SAND
Special Fire Fighting Proc: MINIMIZE DUSTING.
Unusual Fire And Expl Hazrds: NA

Reactivity Data

Stability: YES
Cond To Avoid (Stability): NK
Materials To Avoid: MINERAL ACIDS
Hazardous Decomp Products: NONE EXPECTED
Hazardous Poly Occur: NO
Conditions To Avoid (Poly): NK

Health Hazard Data

LD50-LC50 Mixture: NK
Route Of Entry - Inhalation: NO
Route Of Entry - Skin: NO
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: NOT CONSIDERED TO BE A HAZARDOUS CHEMICAL
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NK
Signs/Symptoms Of Overexp: NK
Med Cond Aggravated By Exp: NA
Emergency/First Aid Proc: NK

Precautions for Safe Handling and Use

Steps If Matl Released/Spill: SWEEP OR VACUUM INTO APPROPRIATE CONTAINER.
Neutralizing Agent: NK
Waste Disposal Method: LANDFILL OR OTHER METHODS WHICH ARE IN ACCORDANCE W/LOCAL/STATE/FEDERAL REGULATIONS. MATERIAL MAY BE RECOVERED FOR FUTURE USE.
Precautions-Handling/Storing: OXIDIZING MATERIAL MAY DEPLETE OXYGEN IN CONFINED AREAS. CHECK OXYGEN IN ENCLOSURE. VENTILATE UNTIL OXYGEN LEVEL REACHES >19.5.
Other Precautions: NK

Control Measures

Respiratory Protection: USE NIOSH APPROVED RESPIRATOR FOR DUSTS.
Ventilation: SUFFICIENT TO MAINTAIN DUSTS BELOW APPLICABLE EXPOSURE LIMITS.
Protective Gloves: YES

Report for NIIN: 001071284

Eye Protection: SAFETY GLASSES OR GOGGLES
Other Protective Equipment: LONG SLEEVE/LEG CLOTHING.
Work Hygienic Practices: AVOID CREATING LARGE AMOUNTS OF DUST.
Suppl. Safety & Health Data: NK

APPENDIX B

LABORATORY ANALYTICAL REPORT

SEVERN TRENT SERVICES

STL Corpus Christi

ANALYTICAL REPORT

JOB NUMBER: 204684

Prepared For:

Camp Stanley Storage Activity
25800 Ralph Fair Road
Boerne, TX 78015-4800

Attention: Brian Murphy

Date: 12/28/2000

Signature

Name: Chip Meador

Title: Laboratory Director

12/28/00
Date

Severn Trent Laboratories
1733 N. Padre Island Drive
Corpus Christi, TX 78408

PHONE: 361/289-2673
FAX..: 361/289-2471

SAMPLE INFORMATION

Date: 12/28/2000

Job Number.: 204684
Customer...: Camp Stanley Storage Activity
Attn.....: Brian Murphy

Project Number.....: 98000082
Customer Project ID....:
Project Description....: PROJECT-AWK

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
204684-1	SODIUM HYDROXIDE (4002109H)	Sludge	12/11/2000	09:00	12/14/2000	11:00
204684-2	BLASTING BEADS (4009319H)	Solid	12/13/2000	11:00	12/14/2000	11:00
204684-3	VOLATILE CORROSION INHIBITOR	Liquid	12/13/2000	11:15	12/14/2000	11:00
204684-4	SHOT PEENING (4008319H)	Solid	12/13/2000	11:05	12/14/2000	11:00
204684-5	RAGS (4012489H)	Solid	12/13/2000	11:20	12/14/2000	11:00

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SEVERN TRENT SERVICES

STL Corpus Christi

LABORATORY TEST RESULTS

Job Number: 204684

Date: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity

PROJECT:

ATTN: Brian Murphy

Customer Sample ID: RAGS (4012489H)
Date Sampled.....: 12/13/2000
Time Sampled.....: 11:20
Sample Matrix.....: Solid

Laboratory Sample ID: 204684-5
Date Received.....: 12/14/2000
Time Received.....: 11:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
ASTM D4982-89	Flammability Potential Screening	Pos		Pos/Neg	12/15/00	den

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LABORATORY TEST RESULTS

Job Number: 204684

Date: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity PROJECT: ATTN: Brian Murphy

Customer Sample ID: VOLATILE CORROSION INHIBITOR
Date Sampled.....: 12/13/2000
Time Sampled.....: 11:15
Sample Matrix.....: Liquid

Laboratory Sample ID: 204684-3
Date Received.....: 12/14/2000
Time Received.....: 11:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 7131A	Cadmium (Cd), TCLP Org. Filt.	0.11	0.06	mg/L	12/20/00	dnw
SW-846 3051	Acid Digestion, Oil, Solids and Wastes, TCLP	Complete			12/19/00	edr
SW-846 3051 GF	Acid Digestion, Oil, Solids and Wastes, TCLP	Complete			12/20/00	edr
SW-846 6010B	TCLP Metals Analysis (ICAP)					
	Chromium (Cr), TCLP Org. Filt.	<5	5	mg/L	12/19/00	jem
	Lead (Pb), TCLP Org. Filt.	<5	5	mg/L	12/19/00	jem
SW-846 1311	TCLP Physical Characterization					
	% Solids	<0.5	0.5	%	12/16/00	dnw
	% Liquid	100	0.5	%	12/16/00	dnw
	% Aqueous - Extract	<0.5	0.5	%	12/16/00	dnw
	% Non-aqueous - Extract	100	0.5	%	12/16/00	dnw
SW-846 1311	Toxic Characteristic Leaching Procedure					
	Glass Jar Extraction	Complete			12/18/00	dnw
	Metals Analysis	Complete			12/18/00	dnw

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LABORATORY TEST RESULTS

Job Number: 204684

Date: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity PROJECT: ATTN: Brian Murphy

Customer Sample ID: BLASTING BEADS (4009319H)
Date Sampled.....: 12/13/2000
Time Sampled.....: 11:00
Sample Matrix.....: Solid

Laboratory Sample ID: 204684-2
Date Received.....: 12/14/2000
Time Received.....: 11:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 3015	Acid Digestion, Total Metals, TCLP	Complete			12/19/00	edr
SW-846 6010B	TCLP Metals Analysis (ICAP)					
	Cadmium (Cd)	0.49	0.05	mg/L	12/19/00	jem
	Chromium (Cr)	<0.05	0.05	mg/L	12/19/00	jem
	Lead (Pb)	0.50	0.05	mg/L	12/19/00	jem
SW-846 1311	TCLP Physical Characterization					
	% Solids	100	0.5	%	12/17/00	dnw
	% Liquid	<0.5	0.5	%	12/17/00	dnw
	% Aqueous - Extract	100	0.5	%	12/17/00	dnw
	% Non-aqueous - Extract	<0.5	0.5	%	12/17/00	dnw
SW-846 1311	Toxic Characteristic Leaching Procedure					
	Glass Jar Extraction	Complete			12/18/00	dnw
	Metals Analysis	Complete			12/18/00	dn

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LABORATORY TEST RESULTS

Job Number: 204684

Date: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity

PROJECT:

ATTN: Brian Murphy

Customer Sample ID: SHOT PEENING (4008319H)
Date Sampled.....: 12/13/2000
Time Sampled.....: 11:05
Sample Matrix.....: Solid

Laboratory Sample ID: 204684-4
Date Received.....: 12/14/2000
Time Received.....: 11:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 3015	Acid Digestion, Total Metals, TCLP	Complete			12/19/00	edr
SW-846 6010B	TCLP Metals Analysis (ICAP)					
	Cadmium (Cd)	<0.05	0.05	mg/L	12/19/00	jem
SW-846 1311	TCLP Physical Characterization					
	% Solids	100	0.5	%	12/16/00	dnw
	% Liquid	<0.5	0.5	%	12/16/00	dnw
	% Aqueous - Extract	100	0.5	%	12/16/00	dnw
	% Non-aqueous - Extract	<0.5	0.5	%	12/16/00	dnw
SW-846 1311	Toxic Characteristic Leaching Procedure					
	Glass Jar Extraction	Complete			12/18/00	dnw
	Metals Analysis	Complete			12/18/00	dnw

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LABORATORY TEST RESULTS

Job Number: 204684

Date: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity

PROJECT:

ATTN: Brian Murphy

Customer Sample ID: SODIUM HYDROXIDE (4002109H)
Date Sampled.....: 12/11/2000
Time Sampled.....: 09:00
Sample Matrix.....: Sludge

Laboratory Sample ID: 204684-1
Date Received.....: 12/14/2000
Time Received.....: 11:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	REPORTING LIMIT	UNITS	DATE	TECH
SW-846 9040B	Corrosivity (pH-Liquids)	13.4	0.1	pH Units	12/18/00	alr
SW-846 3015	Acid Digestion, Total Metals, TCLP	Complete			12/19/00	edr
SW-846 6010B	TCLP Metals Analysis (ICAP)					
	Cadmium (Cd)	<0.05	0.05	mg/L	12/19/00	jem
	Chromium (Cr)	<0.05	0.05	mg/L	12/19/00	jem
	Lead (Pb)	0.60	0.05	mg/L	12/19/00	jem
SW-846 1311	TCLP Physical Characterization					
	% Solids	63.5	0.5	%	12/18/00	dnw
	% Liquid	36.5	0.5	%	12/18/00	dnw
	% Aqueous - Extract	100	0.5	%	12/18/00	dnw
	% Non-aqueous - Extract	<0.5	0.5	%	12/18/00	dnw
SW-846 1311	Toxic Characteristic Leaching Procedure					
	Glass Jar Extraction	Complete			12/18/00	dnw
	Metals Analysis	Complete			12/18/00	dnw

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STL Corpus Christi

QUALITY CONTROL RESULTS

Job Number.: 204684 Report Date.: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity PROJECT: PROJECT-AWK ATTN: Brian Murphy

Test Method.....: SW-846 9040B Batch.....: 52985 Analyst...: alr
Method Description.: Corrosivity (pH-Liquids) Units.....: pH Units Test Code.: CORLIQ
Parameter.....: Corrosivity (pH-Liquids)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
LCS		C00424B	7.01		7.00		100.1	%	99.3-100.7	12/18/2000	1430
MD	204684-1		13.46			13.45	0.1	R	20	12/18/2000	1438
MD	204718-8		9.86			9.87	0.1	R	20	12/18/2000	1451
LCS		C00424B	6.98		7.00		99.7	%	99.3-100.7	12/18/2000	1455

Test Method.....: ASTM D4982-89 Batch.....: 52895 Analyst...: den
Method Description.: Flammability Potential Screening Units.....: Pos/Neg Test Code.: FLAMP
Parameter.....: Flammability Potential Screening

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
MD	204631-2		Neg			Neg				12/15/2000	1033

Test Method.....: SW-846 6010B Batch.....: 53028 Analyst...: jem
Method Description.: TCLP Metals Analysis (ICAP) Units.....: mg/L Test Code.: CD
Parameter.....: Cadmium (Cd)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
RS		M0301	1.95711846		2.00		97.9	%	90-110	12/19/2000	1810
ICV		M0303	0.99959266		1.00		100.0	%	90-110	12/19/2000	1819
ICV		M0292	0.98139935		1.00		98.1	%	90-110	12/19/2000	1829
ICB			0.00003766							12/19/2000	1839
CCV		M0307	1.00416504		1.00		100.4	%	90-110	12/19/2000	1851
CCB			-0.0000325							12/19/2000	1900
MB		3015	-0.0001207							12/19/2000	1904
LCS		M310	0.46970978		0.500		93.9	%	78-109	12/19/2000	1907
MS	204584-8	M310	0.44832789		0.500	0.00167669	89.3	%	79-110	12/19/2000	1923
MSD	204584-8	M310	0.44572636	0.44832789	0.500	0.00167669	88.8	%	79-110	12/19/2000	1929
							0.6	R	20		
PDS	204584-8	M310B	0.90309527		1.00	0.00167669	90.1	%	75-125	12/19/2000	1935
PSD	204584-8	M310B	0.93314852	0.90309527	1.00	0.00167669	93.1	%	75-125	12/19/2000	1941
							3.3	R	20		
CCV		M0307	0.99519807		1.00		99.5	%	90-110	12/19/2000	1953
CCB			-0.0000296							12/19/2000	2000
MS	204713-11	M310	0.42859310		0.500	-0.0009884	85.9	%	79-110	12/19/2000	2026
MSD	204713-11	M310	0.43475809	0.42859310	0.500	-0.0009884	87.1	%	79-110	12/19/2000	2030
							1.4	R	20		
MB		3050	0.00025307							12/19/2000	2039
LCS		M310	0.47885177		0.500		95.8	%	78-109	12/19/2000	2043
CCV		M0307	0.96916816		1.00		96.9	%	90-110	12/19/2000	2047
CCB			0.00017772							12/19/2000	2054
MS	204717-3	M310	0.45882730		0.500	0.00044968	91.7	%	73-108	12/19/2000	2106
MSD	204717-3	M310	0.44238904	0.45882730	0.500	0.00044968	88.4	%	73-108	12/19/2000	2110
							3.6	R	20		
PDS	204717-3	M310B	0.87488476		1.00	0.00044968	87.4	%	75-125	12/19/2000	2114
PSD	204717-3	M310B	0.90005221	0.87488476	1.00	0.00044968	90.0	%	75-125	12/19/2000	2118
							2.8	R	20		
		M0307	0.96212708		1.00		96.2	%	90-110	12/19/2000	2138
			0.00018388							12/19/2000	2146
MB		3051	-0.0001740							12/19/2000	[illegible]7

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 204684 | Report Date.: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity | PROJECT: PROJECT-AWK | ATTN: Brian Murphy

Test Method.....: SW-846 6010B | Batch.....: 53028 | Analyst...: jem
Method Description.: TCLP Metals Analysis (ICAP) | Units.....: mg/L | Test Code.: CD
Parameter.....: Cadmium (Cd)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
LCS		M310	0.50389326		0.500		100.8	%	78-109	12/19/2000	2201
MS	204684-3	M310	0.51510401		0.500	0.00116622	102.8	%	67-99	12/19/2000	2209
MSD	204684-3	M310	0.51217648	0.51510401	0.500	0.00116622	102.2	%	67-99	12/19/2000	2213
							0.6	R	20		
CCV		M0307	0.96683738		1.00		96.7	%	90-110	12/19/2000	2226
CCB			0.00008680							12/19/2000	2234

Test Method.....: SW-846 7131A | Batch.....: 53076 | Analyst...: dnw
Method Description.: TCLP Cadmium (GFAA) | Units.....: mg/L | Test Code.: CD
Parameter.....: Cadmium (Cd)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
ICV		M122000CD	0.00540		0.00500		108.0	%	90-110	12/20/2000	1225
ICB			0.00006							12/20/2000	1236
MB			-0.00008							12/20/2000	1246
		M82001	0.02643		0.0400		66.1	%	66-124	12/20/2000	1257
CCV		M122000CD	0.00524		0.00500		104.8	%	80-120	12/20/2000	[illegible]
CCB			0.00003							12/20/2000	[illegible]
MS	204684-3	M82001	0.02376		0.0400	0.00109	56.7	%	55-129	12/20/2000	1339
MSD	204684-3	M82001	0.02430	0.02376	0.0400	0.00109	58.0	%	55-129	12/20/2000	1349
							2.2	R	20		
CCV		M122000CD	0.00542		0.00500		108.4	%	80-120	12/20/2000	1400
CCB			0.00003							12/20/2000	1410

Test Method.....: SW-846 6010B | Batch.....: 53028 | Analyst...: jem
Method Description.: TCLP Metals Analysis (ICAP) | Units.....: mg/L | Test Code.: CR
Parameter.....: Chromium (Cr)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
RS		M0301	1.96126184		2.00		98.1	%	90-110	12/19/2000	1810
ICV		M0303	1.00559973		1.00		100.6	%	90-110	12/19/2000	1819
ICV		M0292	0.99511207		1.00		99.5	%	90-110	12/19/2000	1829
ICB			0.00001442							12/19/2000	1839
CCV		M0307	1.00193510		1.00		100.2	%	90-110	12/19/2000	1851
CCB			0.00019362							12/19/2000	1900
MB		3015	0.00024114							12/19/2000	1904
LCS		M310	0.47928527		0.500		95.9	%	83-111	12/19/2000	1907
MS	204584-8	M310	0.46624216		0.500	0.00232070	92.8	%	77-112	12/19/2000	1923
MSD	204584-8	M310	0.46417401	0.46624216	0.500	0.00232070	92.4	%	77-112	12/19/2000	1929
							0.4	R	20		
PDS	204584-8	M310B	0.94240913		1.00	0.00232070	94.0	%	75-125	12/19/2000	1935
PSD	204584-8	M310B	0.97128443	0.94240913	1.00	0.00232070	96.9	%	75-125	12/19/2000	1941
							3.0	R	20		
CCV		M0307	0.99883788		1.00		99.9	%	90-110	12/19/2000	1953
CCB			0.00006816							12/19/2000	2000
MS	204713-11	M310	0.56042955		0.500	0.10137990	91.8	%	77-112	12/19/2000	2026
[illegible]	204713-11	M310	0.54790530	0.56042955	0.500	0.10137990	89.3	%	77-112	12/19/2000	2030
							2.3	R	20		
MB		3050	0.00553443							12/19/2000	[illegible]9

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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STL Corpus Christi

QUALITY CONTROL RESULTS

Job Number.: 204684 | Report Date.: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity | PROJECT: PROJECT-AWK | ATTN: Brian Murphy

Test Method.....: SW-846 6010B | Batch.....: 53028 | Analyst...: jem
Method Description.: TCLP Metals Analysis (ICAP) | Units.....: mg/L | Test Code.: CR
Parameter.....: Chromium (Cr)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
LCS		M310	0.50640459		0.500		101.3	%	83-111	12/19/2000	2043
CCV		M0307	1.00046912		1.00		100.0	%	90-110	12/19/2000	2047
CCB			0.00060199							12/19/2000	2054
MS	204717-3	M310	0.52740508		0.500	0.04743087	96.0	%	80-111	12/19/2000	2106
MSD	204717-3	M310	0.51853361	0.52740508	0.500	0.04743087	94.2	%	80-111	12/19/2000	2110
							1.7	R	20		
PDS	204717-3	M310B	0.97260777		1.00	0.04743087	92.5	%	75-125	12/19/2000	2114
PSD	204717-3	M310B	1.00153093	0.97260777	1.00	0.04743087	95.4	%	75-125	12/19/2000	2118
							2.9	R	20		
CCV		M0307	0.99728389		1.00		99.7	%	90-110	12/19/2000	2138
CCB			0.00016771							12/19/2000	2146
MB		3051	0.00100641							12/19/2000	2157
LCS		M310	0.53820398		0.500		107.6	%	83-111	12/19/2000	2201
MS	204684-3	M310	0.54990156		0.500	0.00190081	109.6	%	69-103	12/19/2000	2209
MSD	204684-3	M310	0.54585922	0.54990156	0.500	0.00190081	108.8	%	69-103	12/19/2000	2213
							0.7	R	20		
[illegible]		M0307	0.98982191		1.00		99.0	%	90-110	12/19/2000	2226
			0.00006912							12/19/2000	2234

Test Method.....: SW-846 6010B | Batch.....: 53028 | Analyst...: jem
Method Description.: TCLP Metals Analysis (ICAP) | Units.....: mg/L | Test Code.: PB
Parameter.....: Lead (Pb)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
RS		M0301	1.97697562		2.00		98.8	%	90-110	12/19/2000	1810
ICV		M0303	1.02519668		1.00		102.5	%	90-110	12/19/2000	1819
ICV		M0292	1.00604772		1.00		100.6	%	90-110	12/19/2000	1829
ICB			0.00107756							12/19/2000	1839
CCV		M0307	1.00526296		1.00		100.5	%	90-110	12/19/2000	1851
CCB			0.00034073							12/19/2000	1900
MB		3015	-0.0000379							12/19/2000	1904
LCS		M310	0.47478881		0.500		95.0	%	78-113	12/19/2000	1907
MS	204584-8	M310	0.45377893		0.500	0.00102700	90.6	%	76-111	12/19/2000	1923
MSD	204584-8	M310	0.45277047	0.45377893	0.500	0.00102700	90.3	%	76-111	12/19/2000	1929
							0.2	R	20		
PDS	204584-8	M310B	0.91511543		1.00	0.00102700	91.4	%	75-125	12/19/2000	1935
PSD	204584-8	M310B	0.94752725	0.91511543	1.00	0.00102700	94.7	%	75-125	12/19/2000	1941
							3.5	R	20		
CCV		M0307	1.00264594		1.00		100.3	%	90-110	12/19/2000	1953
CCB			-0.0012662							12/19/2000	2000
MS	204713-11	M310	0.45426555		0.500	0.02758570	85.3	%	76-111	12/19/2000	2026
MSD	204713-11	M310	0.46417144	0.45426555	0.500	0.02758570	87.3	%	76-111	12/19/2000	2030
							2.2	R	20		
MB		3050	0.00234727							12/19/2000	2039
LCS		M310	0.49199735		0.500		98.4	%	78-113	12/19/2000	2043
CCV		M0307	0.99425323		1.00		99.4	%	90-110	12/19/2000	2047
CCB			0.00057012							12/19/2000	2054
MS	204717-3	M310	0.48849334		0.500	0.01828187	94.0	%	69-111	12/19/2000	2106
	204717-3	M310	0.47853973	0.48849334	0.500	0.01828187	92.1	%	69-111	12/19/2000	2110
							2.1	R	20		
PDS	204717-3	M310B	0.93075531		1.00	0.01828187	91.2	%	75-125	12/19/200[illegible]	14

* %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY CONTROL RESULTS

Job Number.: 204684 Report Date.: 12/28/2000

CUSTOMER: Camp Stanley Storage Activity PROJECT: PROJECT-AWK ATTN: Brian Murphy

Test Method.....: SW-846 6010B Batch.....: 53028 Analyst...: jem
Method Description.: TCLP Metals Analysis (ICAP) Units.....: mg/L Test Code.: PB
Parameter.....: Lead (Pb)

QC	Lab ID	Reagent	QC Result	QC Result	True Value	Orig. Value	Calc. Result	*	Limits	Date	Time
PSD	204717-3	M310B	0.95080157	0.93075531	1.00	0.01828187	93.3	%	75-125	12/19/2000	2118
							2.1	R	20		
CCV		M0307	0.99128506		1.00		99.1	%	90-110	12/19/2000	2138
CCB			-0.0002727							12/19/2000	2146
MB		3051	0.00140182							12/19/2000	2157
LCS		M310	0.52092758		0.500		104.2	%	78-113	12/19/2000	2201
MS	204684-3	M310	0.54173010		0.500	0.00872489	106.6	%	46-115	12/19/2000	2209
MSD	204684-3	M310	0.53682107	0.54173010	0.500	0.00872489	105.6	%	46-115	12/19/2000	2213
							0.9	R	20		
CCV		M0307	0.99028472		1.00		99.0	%	90-110	12/19/2000	2226
CCB			-0.0008256							12/19/2000	2234

 * %=% REC, R=RPD, A=ABS Diff., D=% Diff.

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/28/2000

(1) EPA 600/4-79-020, Methods for Chemical Analysis of Water and Wastes, March 1983
(2) EPA SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III
(3) Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992
(4) Methods of Organic Chemical Analysis of Municipal and Industrial Wastewater, Federal Register, Vol. 49, No. 209, October 1984 and 40 CFR Part 136 amendments
(5) EPA 600/2-78-054, Field and Laboratory Methods Applicable to Overburdens and Minesoils
(6) Methods of Soil Analysis, American Society of Agronomy, Agronomy No. 9, 1965
(7) ASTM, Section 11 Water and Environmental Technology, Volume 11.01 Water (1), 1991
(8) American Society for Testing and Materials, Petroleum Products, Lubricants, and Fossil Fuels, Section 5, Volumes 05.01 - 05.05
(9) Hach Handbook of Water Analysis, 1979

Comments:
Data in the QC report may differ from final results due to digestion and/or dilution of sample into analytical ranges. The "Time Analyzed" may not be the actual time of analysis. The "Date Analyzed" is the actual date of analysis. Sludge samples are reported on a wet weight basis (i.e., not corrected for percent moisture) unless otherwise indicated.

Quality Control acceptance criteria are based either on limits specified in the referenced method or on actual laboratory performance.

All data is reported on sample "as received" unless noted.

Sample IDs with a "-00" at the end indicate a blank spike or blank spike duplicate associated with the numbered sample.

SAMPLE RESULT IDENTIFICATION

ND = Not detected at a value greater than the reporting limit
TNTC = Too numerous to count

BLANK QC SAMPLE IDENTIFICATION

MB Method Blank
ICB Initial Calibration Blank
CCB Continuing Calibration Blank

SPIKE QC SAMPLE IDENTIFICATION

MS Method (Matrix) Spike
MSD Method (Matrix) Spike Duplicate
PDS Post Digestion/Distillation Spike
SB Spiked Blank
SBD Spiked Blank Duplicate

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QUALITY ASSURANCE METHODS

REFERENCES AND NOTES

Report Date: 12/28/2000

REFERENCE STANDARD QC SAMPLE IDENTIFICATION

LCS	Laboratory Control Standard
RS	Reference Standard
ICV	Initial Calibration Verification Standard
CCV	Continuing Calibration Verification Standard
ISA/ISB	ICP Interference Check Sample
DSC	Distilled Standard Check

DUPLICATE QC SAMPLE IDENTIFICATION

MD	Method (Matrix) Duplicate
ED	Extraction Duplicate
DD	Digestion Duplicate
PDD	Post Digestion Duplicate

Analyses performed by a subcontract laboratory are indicated on the analytical and/or quality control reports under "technician" using the following codes:

SUBCONTRACT LABORATORIES

Severn Trent Laboratories:

Los Angeles, CA	*la	Houston, TX	*he
Aurora, CO	*au	North Canton, OH	*nc
Tampa, FL	*ta	Valparaiso, IN	*vp
Sacramento, CA	*sa		

Other:

Client provided data	*cp	Core Laboratories	*hp
Peak Analytical, Inc.	*pk	Jordan Laboratories	*jl
Enviro-Test Labs	*et		

EXPLANATION OF DATA FLAGS

B - This flag is used to indicate that an analyte is present in the method blank as well as in the sample. It indicates that the client should consider this when evaluating the results.

D - This flag indicates that surrogates were diluted out of calibration range and cannot be quantified.

E - Indicates that a sample result is an estimate because the concentration exceeded the calibration range of the instrument.

I - Used to indicate matrix interference.

J - Indicates that a value is an estimate. It is used when a compound is determined to be present based on the mass spectral data, but at a concentration less than the quantitation limit of the method. This flag is also used when estimating the concentration of a tentatively identified compound.

X - Indicates that a surrogate recovery is outside the specified quality control limits.

Y - Used to identify a spike or spike duplicate recovery and spike duplicate is outside the specified quality control limits.

* - Indicates a relative percent difference for a duplicate analysis is outside the specified quality control limits.

^ - Used to indicate that a standard is outside specified quality control limits.

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No. 000059

SEVERN TRENT LABORATORIES

Committed To Your Success

CHAIN OF CUSTODY RECORD

CUSTOMER INFORMATION	PROJECT INFORMATION
COMPANY: Camp Stanley	PROJECT NAME/NUMBER:
SEND REPORT TO: Brian Murphy	BILLING INFORMATION
ADDRESS: CDR CSSA	BILL TO:
25800 Ralph Fair Rd	ADDRESS:
Boerne TX 78015-4800	
PHONE: 210/698-5208	PHONE:
FAX: 210/295-7386	FAX: PO NO.:

LAB JOB NO. 2041684

SAMPLE NO.	SAMPLE DESCRIPTION	SAMPLE DATE	SAMPLE TIME	SAMPLE MATRIX	CONTAINER	PRESERV.	NUMBER OF CONTAINERS	TCLP Pb, Cr, Cd	PH	TCLP Cd	IGNITABILITY					REMARKS/PRECAUTIONS
1	Sodium Hydroxide (4002109H)	12/11/00	09:00	Sludge		NA		X	X							
2	BLASTING BEADS (4009319H)	12/13/00	11:00	Solid				X								
3	Volatile Corrosion Inhibitor	12/13/00	11:15	Liquid				X								(4010219H)
4	Shot Peening (4008319H)	12/13/00	11:05	Solid						X						
5	RAGS (4012489H)	12/13/00	11:20	cloth							X					
																Please provide MDL and PQL data for analytes.

SAMPLER:

SHIPMENT METHOD: FedEx

AIRBILL NO.: 825031233348

REQUIRED TURNAROUND* ☐ SAME DAY ☐ 24 HOURS ☐ 48 HOURS ☐ 72 HOURS ☐ 5 DAYS ☐ 10 DAYS ☐ ROUTINE ☐ OTHER

1. RELINQUISHED BY:	DATE	2. RELINQUISHED BY:	DATE	3. RELINQUISHED BY:	DATE
SIGNATURE: [signature]	12/13/00	SIGNATURE: [signature]	12-13-00	SIGNATURE:	
PRINTED NAME/COMPANY: LINDY MARGOT / STL	TIME: 14:45	PRINTED NAME/COMPANY: LINDY MARGOT / STL	TIME: 14:45	PRINTED NAME/COMPANY:	TIME
1. RECEIVED BY:	DATE	2. RECEIVED BY:	DATE	3. RECEIVED BY:	DATE
SIGNATURE: [signature]	12-13-00	SIGNATURE: Amelia Kennedy	12/14/00	SIGNATURE:	
PRINTED NAME/COMPANY:	TIME: 14:45	PRINTED NAME/COMPANY: STL	TIME: 11:00	PRINTED NAME/COMPANY:	TIME

* RUSH TURNAROUND MAY REQUIRE SURCHARGE

ckl

Job Sample Receipt Checklist Report
12/14/2000

V2

Job Number.....: 204684 Location.: 57203 Customer Job ID.....: Job Check List Date.: 12/14/2000
Project Number.: 99999995 Project Description.: Walk in Projects Project Manager.....: rem
Customer.....: Camp Stanley Storage Activity Contact.: Brian Murphy

Questions ?	(Y/N)	Comments
How did samples arrive?.....		FEDEX
Chain-of-Custody Present?.....	Y	
Custody seal on shipping container?.....	N	
...If "yes", custody seal intact?.....		
Custody seals on sample containers?.....	N	
...If "yes", custody seal intact?.....		
Samples chilled?.....	Y	
Temperature blank in cooler?.....	N	
Temperature of cooler acceptable? (4 deg C +/- 2).		RECEIVED ON ICE
Samples received intact (good condition)?.....	Y	
Volatile samples acceptable? (no headspace).....	Y	
Correct containers used?.....	Y	
Adequate sample volume provided?.....	Y	
Samples preserved correctly?.....	Y	
Samples received within holding-time?.....	Y	
Agreement between COC and sample labels?.....	Y	
Additional.....		
Comments.....		
Sample Custodian Signature.....		

12-14-00 DJ
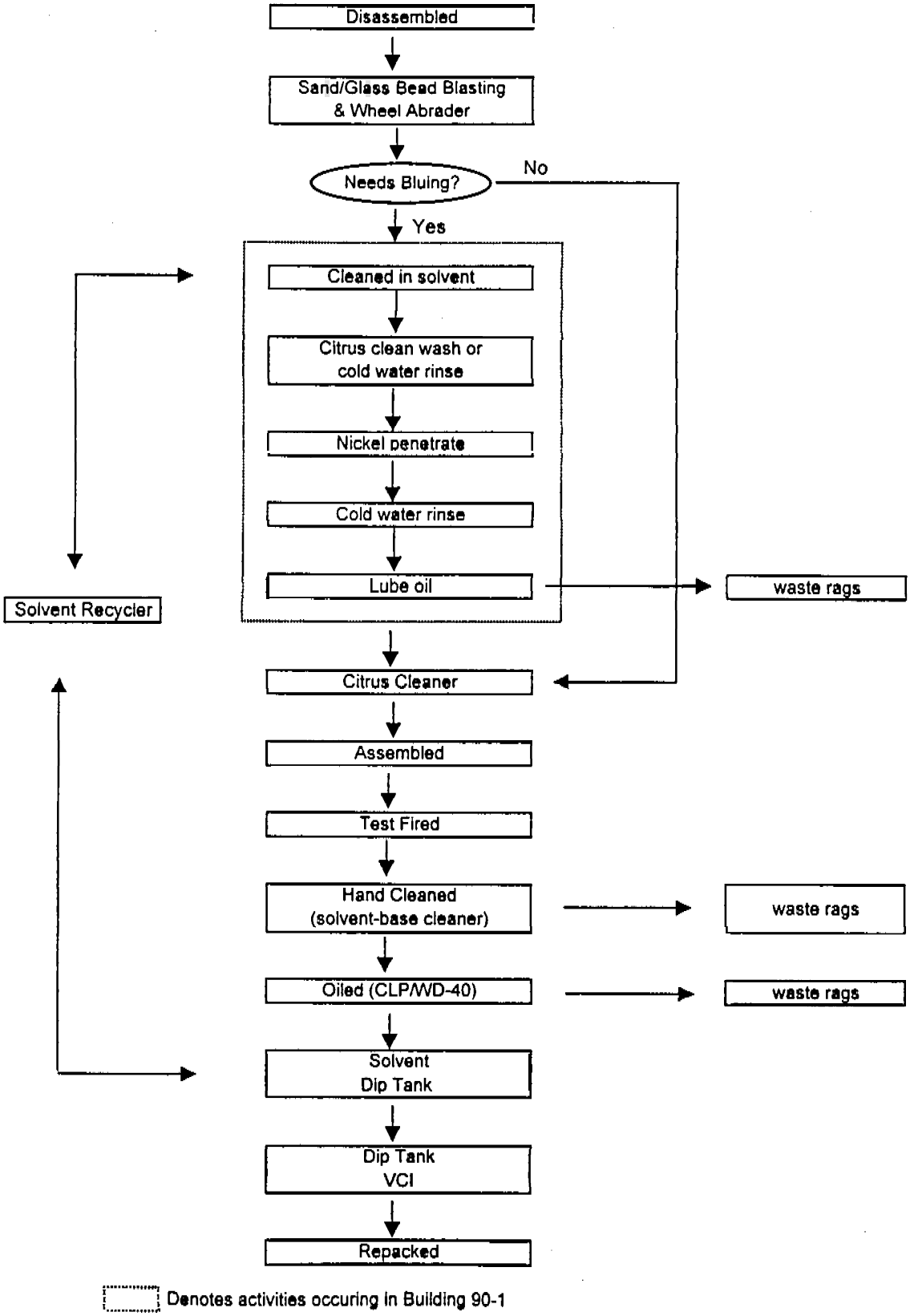
Figure 2-1
Weapons Maintenance Process Flow Chart