Appendix 13 RCRA Feasibility Assessment (RFA) Report - 2001

RCRA FACILITY ASSESSMENT
MERCURY WASTE SOLUTIONS, INC.

Union Grove, Wisconsin
EPA ID#: WIR000000356
FID#: 252195350

INTRODUCTION

As part of the Resource Conservation and Recovery Act (RCRA), the U.S. Environmental Protection Agency (EPA) or the state of Wisconsin Department of Natural Resources (WDNR) is required to conduct a RCRA Facility Assessment (RFA) at facilities requesting to obtain a RCRA operating permit. The goal of the RCRA Corrective Action process is to identify and correct any releases to the environment at facilities, which manage hazardous waste. An RFA is the first step in the overall corrective action process, and is intended to identify known or potential releases to the environment, and recommend whether additional investigations are necessary. Therefore, this RFA for Mercury Waste Solutions, Inc. (MWSI) examines the waste streams at the plant, identifies Solid Waste Management Units (SWMUs), documents releases which have occurred at the facility, identifies Areas of Concern (AOCs), evaluates all relevant data, and makes recommendations for future actions.

MWSI began operations at the Union Grove site in spring of 1994. On May 15, 2000, WDNR approved a Feasibility and Plan of Operation Report (FPOR) for hazardous waste container storage and tank treatment and storage at MWSI. Hazardous waste operating licenses were issued to MWSI on July 7, 2000, and August 31, 2000. The RFA should have been completed before the initial operating license was issued.

The RFA was prepared in accordance with the U.S. EPA RFA guidance and WDNR Waste Management Program Corrective Action guidance.

A sampling visit to the site was not conducted as part of this RFA. A limited number of soil samples have been collected at this facility to address releases from 2 fires, an explosion, a spill and continuing operations at the facility. On August 14, 2001, MWSI submitted a Hazardous Waste Facility Investigations Task 1 Report. Based upon this and additional information in WDNR's files on MWSI, WDNR has sufficient information available to reach a conclusion on whether MWSI will now be required to conduct the next phase of the Corrective Action process, the RCRA Facility Investigation (RFI).

FACILITY OVERVIEW

Location, Land Use, and Environmental Setting

Location

MWSI is located on an approximately 3-acre site, in the Town of Dover, Racine County, described a part of the NE 1/4 of Section 36, Township 3 North, Range 20 East. The mailing address is 21211 Durand Avenue, Union Grove, Wisconsin 53182. MWSI is on the south side of State Highway 11, approximately 1 1/4 miles west of U.S. Highway 45.

Surrounding Land Use

MWSI is located in a rural industrial park setting west of the Union Grove business district. The property is bounded by agricultural and undeveloped land to the south, industrial properties to the east and west, and Highway 11 and agricultural and undeveloped land to the north. The land to the south is now being developed as an industrial park. (Figure A) The facility is in an area zoned for manufacturing.

Surface Water

No surface water is located within a mile of the facility. The facility property contains no wetlands. The area has been determined to be outside of the 500-year flood plain. (Figure B) The closest domestic waster supply well is approximately 1/3 of a mile to the east. A public water supply well is located approximately 2/3 of a mile to the east.

Geology/Hydrogeology

The property is characterized by a relatively flat topography, sloping gently from south to north. The soil is described as a grained fill consisting of 12% sand, 44% silt and 44% clay. Surficial materials in the area are of the Oak Creek formation.

Facility Manufacturing Processes and Waste Management Operations

MWSI operates a facility for recycling/recovery of metallic mercury from various mercury-contaminated waste streams. Elemental mercury is retorted from the waste and purified for commercial distribution. MWSI began operating at the Union Grove facility in 1994.

The recovery of mercury takes place in one of 4 stationary mercury retort furnaces, a continuous-feed retort furnace, and in a fluorescent bulb crushing/separation unit. These units are regulated under a legitimate recovery or reclamation recycling exemption, s. NR 625.06, Wis. Adm. Code. The retort furnaces are also covered by an exemption from the federal Boiler Industrial Furnace regulations, 40CFR § 266 Subpart H. In order to operate these process units efficiently, and in an environmentally safe manner, MWSI needs to be able to store the mercury-contaminated

waste on-site. Since some of the mercury-contaminated waste is a hazardous waste, MWSI needed to obtain a hazardous waste storage operating license in order to store the mercury-contaminated hazardous waste on-site for longer than 24 hours or longer than the same day on which the waste was received.

On July 6, 2000, WDNR issued a hazardous waste container storage license to MWSI. The container storage license was for 560 fifty-five gallon containers of hazardous waste (a total of 30,800 gallons) in the *Proposed Drum Storage Area* in the arrangement listed in *Appendix 4, Figure 2*, of the FPOR, at a limit of 2 drums high. The container storage license also included a total storage of 136 55-gallon drum equivalents (a total of 7,480 gallons) in the *Oven Batch Storage Area* in the arrangement listed in *Appendix 4, Figure 3*, of the FPOR. This accounted for total container storage of 38,280 gallons, in the hazardous waste container storage license.

On August 30, 2000, WDNR revised the MWSI license to also include two 500-gallon treatment tanks (*Process Tank #1* and *#2*) and one 3,000-gallon storage tank (*Storage Tank #2*); and the *Roll-Off Container Storage Area* which allows for a total storage of one 20 cubic yard roll-off, or 20 one cubic yard boxes (a total of 6,600 gallons). MWSI uses the treatment tanks to make a mercury-contaminated wastewater more amenable for recycling, and the storage tank for storing the treated wastewater.

MWSI also receives special/universal wastes and solid wastes, which are contaminated with mercury. MWSI further refines the mercury that they recover. In another building at the MWSI facility, MWSI handles and processes PCB-contaminated wastes and ballasts.

Hazardous Waste Regulatory History

02/27/94	MWSI notifies WDNR of their intent to begin operations in Union Grove.
11/11/95	WDNR agrees with MWSI's interpretation that the lamp processing operation and the mercury retort furnace qualify for legitimate recovery and recycling exemption.
05/31/96	MWSI submitted a hazardous waste notification form identifying MWSI as a large quantity generator.
06/11/96	WDNR issued to MWSI a notice of noncompliance/return to compliance letter based on an April 23, 1996, site inspection and a June 5, 1996 submittal from MWSI.
06/27/96	WDNR acknowledged that MWSI has authority to operate a continuous feed and a batch retort furnace under a legitimate recovery and reclamation recycling exemption.
05/24/97	MWSI submitted a Part A application.
09/18/97	WDNR visited the MWSI site.
10/17/97	WDNR performed a large quantity generator inspection at MWSI.
09/22/98	MWSI resubmitted the feasibility and plan of operation report (FPOR) for container and tank storage at a level above the small storage limit.
04/03/98	WDNR issued to MWSI a conditional approval of a variance request for on-site storage of hazardous waste.

07/30/98	Blockage in the condenser tanks caused a loss of vacuum in a retort furnace forcing smoke out of an air intake valve on the furnace and excessive smoke exiting the building.
08/30/98	Plugging of the collection system again caused excessive smoke to be released out of the building.
10/14/98	Lithium batteries were placed into a retort furnace causing an explosion and release of contaminated mercury vapor.
10/29/98	WDNR staff along with an OSHA representative visited MWSI to take samples, but had to leave because of high mercury levels inside of the plant.
02/10/99	WDNR issued a Notice of Violation to MWSI, regarding MWSI's operations during the fall of 1998.
03/11/99	A spilled container was discovered in an off-site carrier truck located in the southeast loading dock at MWSI.
03/30/99	WDNR and US EPA performed an inspection at MWSI and observed several areas of violation and mercury and phosphor powder on the floor.
05/14/99	During an inspection, WDNR collected soil samples at MWSI.
05/25/99	WDNR issued to MWSI a variance extension determination, allowing continued storage until June 30, 2000.
07/28/99	WDNR issued a notice of violation to MWSI based on observations during the May 14, 1999, site inspection and several follow-up visits.
09/16/99	WDNR held an enforcement conference with MWSI regarding the July 28, 1999, notice of violation.
09/17/99	WDNR sent a letter to MWSI identifying MWSI as a possible responsible party, who may have discharged mercury to the environment, based on soil sample results obtained from an on-site investigation.
10/05/99	MWSI sent a letter responding to WDNR's letter identifying MWSI as a potential responsible party.
10/07/99	WDNR visited MWSI to observe potential sources and points of contamination.
10/13/99	WDNR collected soil samples at MWSI.
11/22/99	MWSI sent a letter showing test results from samples collected on August 17, 1999, by MWSI. MWSI also sent a letter, which included stack sampling and mercury dispersion modeling results.
01/24/00	MWSI sent a letter to WDNR containing sampling results from an off-site area west of the drainage ditch.
02/09/00	MWSI submitted a revised Part A application and a FPOR for a small container storage facility.
03/07/00	WDNR requests additional information and investigations for determining MWSI status as a responsible party.
03/15/00	WDNR issued to MWSI a notice of completeness, a preliminary determination to conditionally approve the FPOR, and a draft environmental analysis and decision on the need for an environmental impact statement.
04/17/00	MWSI sent a response to WDNR regarding the March 7, 2000, WDNR request for information.
05/15/00	WDNR issued a Feasibility and Plan of Operation Report Determination.

05/24/00	WDNR sent a letter to MWSI saying that MWSI was no longer identified as a potential responsible party.
05/24/00	WDNR approved the closure plan and activities that MWSI had performed in response to requirements in the Stipulation and Agreement.
06/06/00	The Racine County Circuit Court issued a Stipulation and Order of Judgment in regard to the case involving the State of Wisconsin and MWSI.
06/15/00	WDNR performed a large quantity generator and construction inspection at MWSI.
07/06/00	WDNR issued a hazardous waste operating license to MWSI for container storage.
07/26/00	U.S. EPA Region issued a federal RCRA permit to cover the federal portion of the MWSI hazardous waste license.
08/31/00	WDNR revised the MWSI hazardous waste operating license to include tank storage and treatment and additional container storage.
12/22/00	WDNR issued to MWSI a temporary authorization determination regarding inclusion of corrective action in their license.
06/01/01	WDNR issued a notice of violation to MWSI, based on a January 20, 2001, incident regarding the operation of a retort oven. An enforcement conference was held on June 20, 2001. WDNR sent a letter to MWSI summarizing the enforcement conference.
06/18/01	WDNR reissued the temporary authorization determination regarding inclusion of corrective action in their license.
08/02/01	MWSI submitted a Hazardous Waste Facility Investigations Task 1 Report.

This list is not a complete list of contacts between MWSI and WDNR.

Documented Releases

During past inspections of the facility, WDNR has had concerns about the operations at the facility. These concerns included; general maintenance, controlling dust and debris, maintaining cleanliness, keeping containers covered except for filling, controlling emissions during bulking and processing, security, organization of containers, levels of mercury inside the plant, workers safety at the plant, leaving overhead doors open, fugitive emissions, and powder exiting the lamp crusher.

Potential sources of air emissions at MWSI include four stationary mercury retort furnaces, a continuous-feed retort furnace, a bulb crusher, and fugitive emissions from material handling. Mercury is collected in condensers downstream of the mercury retort furnaces. The control equipment downstream from the condensers consists of a steel wool demister, a carbon bed adsorber, and a wet scrubber. The WDNR Air Management Program requested MWSI to perform a set of comprehensive stack tests in June of 2000. The mercury emissions from the stack test showed an emission rate that was less than 7% of the de minimus level in the hazardous air regulations. De minimus level is the level that triggers follow up action to identify whether the emissions need to be controlled or not. All of the pollutants other than VOC's were relatively low. The VOC emissions were above the emission level of 5.7 pounds/hour, indicating MWSI should have obtained a construction permit. The ovens will now have to meet

an emission limit for VOC's. WDNR Air Management has requested MWSI to submit a new permit application as a major source. The permit review will determine the need for additional control equipment.

In the front courtyard the ovens stack exits the building. On cold days the oven air emission discharge would settle on the ground in the courtyard. MWSI is aware of this and routinely has sampled and removed soil from the courtyard for retorting. MWSI has changed the stack so that it now vents vertically at 25 feet.

The WDNR is concerned that air emissions of mercury have impacted the site. Air emissions of mercury may also have settled on the roof and been deposited on the property through roof drains after precipitation events. To address mercury deposition on the roof and the ground, MWSI periodically removes soil beneath downspouts and then runs the soil through a retort furnace. MWSI explains that they take out a set amount of soil, takes confirmation samples, or documents their actions. MWSI doesn't necessarily test the soil.

In the late summer and early fall of 1998, three incidents (two fires and one explosion) occurred at MWSI as a result of the operation of the mercury-retort furnaces.

On the evening of July 30, 1998, blockage in the condenser tanks caused a loss of vacuum in one of the retort ovens. Pressure buildup in the retort oven forced smoke out of the exhaust stack and through an air intake valve on the door. MWSI personnel and the local fire department responded to a call about the excessive smoke coming out of the building. MWSI personnel hooked the exhaust up to another collection system.

Early in the morning of August 30, 1998, loss of vacuum in the retort furnace, because of plugging in the collection system, caused smoke to be released from the air intake valve. MWSI personnel and the local fire department responded to a call about the smoke coming out of the roof vents. MWSI engaged an emergency bypass to vent to an alternate collection system.

On October 14, 1998, MWSI placed lithium batteries into the retort furnace as part of a batch of mercury contaminated waste. Lithium batteries explode when exposed to excessive heat. The lithium batteries in the retort furnace exploded, which blew the door of the oven open and caused a release of mercury contaminated vapor into the work area of the facility and outside of the facility.

In response to those incidents, MWSI has revised, instituted and implemented standard operating procedures at the facility. Also, the WDNR requested and MWSI performed some soil sampling around the property. The WDNR sent out a potential responsible party letter to MWSI requesting MWSI to further investigate site contamination.

Other discharges that could occur are accidental spills within the buildings or in the loading dock areas. Any discharges that occur within the building or in the loading dock areas should be

contained on an impervious concrete surface. The loading dock areas are sloped to facilitate drainage and collection of spills and precipitation.

On March 11, 1999, MWSI reported an on-site spill by an off-site carrier. Some metallic mercury had spilled from the trailer onto the cement floor of the loading dock area. This spill may also have contaminated the paved driveway, the south storm drain area, the south drainage pipe, the west drainage ditch, and the west drainage culvert.

During a March 14, 1999, inspection of the facility, WDNR took soil samples at the facility. The results of the soil samples showed that the soils were impacted by mercury.

During a March 30, 1999, inspection of the facility, WDNR found mercury and phosphor powder on the floor of the facility.

SOLID WASTE MANAGEMENT UNITS (SWMUs)

List of SWMUs (Figure C)

- Mercury Retort Furnaces
- Lamp Crushing Unit
- Courtyard (between the East and West Buildings on the north end)
- Southeast Loading Dock
- Downspouts
- South Storm Drain Area
- South Drainage Pipe
- North Drainage Pipe
- West Drainage Ditch

Mercury Retort Furnaces

Location: The Mercury Retort Furnaces have always been located in the West Building.

Unit Description: MWSI has four stationary retort furnaces and one continuous feed furnace.

History of Use and Operation: MWSI started operating the continuous feed and the first stationary retort furnace sometime in late 1996 – early 1997. The fourth stationary retort furnace began operation in summer of 2001. MWSI has made refinements to the mercury retort units and their associated emission control equipment over the years.

Potential Migration Pathway/Release Controls: Emissions from the Mercury Retort Furnaces are vented through control equipment out a stack. There have been some breakdowns in the operation of the Mercury Retort Furnaces over the years, which have caused fugitive emissions of mercury.

History of Releases: As previously mentioned and discussed in the "*Documented Releases*" section of this report, breakdowns in the operation of the retort furnaces occurred on July 30, 1998; August 30, 1998; and October 14, 1998. These breakdowns resulted in uncontrolled mercury emissions. MWSI has performed emission stack testing in February 1998, June 2000, and November 2000, to determine the quantity and quality of air emissions from the facility. WDNR Air Management section has determined that for the mercury emissions, MWSI is not required to obtain a permit. WDNR Air Management section has determined that for the VOC emissions, MWSI is required to obtain a permit. Even though MWSI is not required to obtain a permit for their mercury emissions, MWSI takes measures to remediate mercury contamination in the soils around their property.

Conclusions/Remarks: The Mercury Retort Furnaces are a continuing source of mercury emissions, even if they are under the WDNR Air Management permit requirements for mercury.

Lamp Crushing Unit

Location: The Lamp Crushing Unit is presently located in the East Building. The original Lamp Crushing unit was located in the West Building.

Unit Description: The Lamp Crushing Unit receives bulbs on to a conveyor into the crushing unit. Mercury-contaminated dust, metal parts and glass are then separated.

History of Use and Operation: The Lamp Crushing Unit was originally located in the West Building. That unit was removed from the site for a period of time and then at a later date another Lamp Crushing Unit was brought on site. The new unit has always operated in the East Building.

Potential Migration Pathway/Release Controls: The Lamp Crushing Unit has been a source of mercury dust. The original unit in the East Building was located in an isolated sealed off room. The present unit is located along with other equipment in the East Building. MWSI has been reminded numerous times about dust emissions around the unit. MWSI recently added additional controls to the unit to prevent emissions of mercury dust. MWSI has previously been cited about keeping the overhead doors in the East Building closed. With the overhead doors open, the wind would blow the mercury dust around and outside of the building. Discharge of powder has occurred in the building and through a vent to the outside.

History of Releases: Releases have occurred over time because of the dust created by the operation of the unit, and the overhead doors having been kept open, which allowed the mercury contaminated dust to be released from the building. OSHA has observed problems with workers, who were working in the area around the unit.

Conclusions/Remarks: MWSI has taken actions to improve housekeeping activities and engineered new controls to prevent emissions. MWSI must remain vigilant in controlling emissions from the Lamp Crushing Unit.

Courtyard

Location: The Courtyard is between the East and West Buildings near the north end.

Unit Description: The Courtyard is an approximately 30 by 30 foot unpaved gravel area. The area is enclosed on 4 sides except for a 10-foot wide pathway on the north side. The west side is the 20-foot high West Building, the east side is the 20-foot high East Building, and to the south is a 15-foot high passageway between the East Building and West Buildings. The passageway was added around 1996. About 10 feet up on the wall of the West Building was a stack horizontally venting emissions from the West Building retort furnaces and the bulb crusher. Under certain conditions, the emissions from the stack would settle into the Courtyard.

History of Use and Operation: The stack from the West Building was initially used when the facility was just using bulb crushing. The facility has now expanded operations to include 4 retort furnaces and a continuous feed furnace, which has resulted in an increase in throughput. The stack was designed to vent emissions horizontally out over the courtyard. The stack has been redesigned and now vents upward at 25 feet. MWSI routinely removes and retorts the gravel from this area and replaces it with new gravel.

Types of Waste Managed: MWSI business is the recycling of mercury contaminated wastes.

Potential Migration Pathway/Release Controls: Even though MWSI has periodically cleaned out the soil and gravel in the Courtyard, contamination may remain in the area. Some of the Downspouts off the buildings exit into the Courtyard.

Even though air emissions appear to meet the mercury emission requirements of the WDNR Air Management Program, continued emissions over a long period of time can produce potentially significant levels. Because of high VOC emissions, WDNR Air Management has requested MWSI to submit a new permit application as a major source. The permit review will determine the need for additional control equipment.

History of Releases: MWSI operated the original system so that any emissions not captured by control devices would fall out into the courtyard. Knowing this, MWSI has periodically removed and treated gravel and soil from the Courtyard.

A sample taken by WDNR on October 29, 1998, showed a level of mercury of 7.9 MG/KG. A sample taken by WDNR on May 14, 1999, showed a level of mercury of 11.2 MG/KG. Samples taken by MWSI on October 13, 1999, showed a levels of mercury of 13.7 ppm and 1 ppm.

Conclusions/Remarks: MWSI should perform further soil investigation in the Courtyard and institute operations and practices, which will prevent further deposition of mercury into the Courtyard. MWSI should document any soil removal and take confirmation samples of the soils.

Southeast Loading Dock

Location: The Southeast Loading Dock is located on the south end of the east side of the West Building.

Unit Description: The Southeast Loading Dock is the main loading dock for moving mercury waste in and out of the facility.

History of Use and Operation: The Southeast Loading Dock was constructed in 1997. Precipitation collected in the sump in the South Loading Dock is pumped to the South Storm Drain Area.

Potential Migration Pathway/Release Controls: The sump in the Southeast Loading Dock collects precipitation from the Outside Southeast Storage Area. Precipitation collected in the sump would be discharged to the South Storm Drain (which previously discharged through the South Drainage Pipe to the West Drainage Ditch). In 1999, MWSI removed soil from around the South Storm Drain and landscaped the area around the drain to create a basin. The discharge pipe from the South Storm Drain to the West Drainage Ditch was plugged to prevent further discharge. There is no impermeable layer around the basin. Precipitation into the basin is expected to evaporate or soak into the soil.

History of Releases: In March 1999, a spill occurred in the Southeast Loading Dock. The release from the Southeast Loading Dock sump to the South Storm Drain Area could have migrated to the West Drainage Ditch. Continuing stack and fugitive emissions deposited on the Southeast Loading Dock and Southeast Outside Storage Area would have been transported by precipitation and collected into the Southeast Loading Dock sump.

Conclusions/Remarks: The Southeast Loading Dock sump remains a potential area for contaminant accumulation.

Downspouts

Location: Downspouts are located on both the east and west sides of East Building and the West Building.

Unit Description: Water that is collected on the roofs of the East and West Buildings is collected through the Downspouts and deposited onto the soils near the Downspout exits.

History of Use and Operation: MWSI removes the soil/gravel near the Downspout exits as part of routine scheduled maintenance (approximately 3 to 4 times per year). MWSI retorts the

contaminated soil/gravel that is collected. The Downspouts along the north end of the east side of the West Building are no longer connected to the North Drainage Pipe.

Types of Waste Managed: MWSI business is the recycling of mercury contaminated wastes.

Potential Migration Pathway/Release Controls: Emissions that settle on the roof would be transported by precipitation through the Downspouts and settle on the soil beneath the Downspout exits.

History of Releases: Below the Downspout on the north end of the west side of the West Building, a sample taken by MWSI on October 13, 1999, showed a level of mercury at 670 ppm and 100 ppm on a retest. A split sample taken by WDNR on October 13, 1999, showed a level of mercury at 34 ppm.

Conclusions/Remarks: The Downspouts act as transports for emissions that settle on the roof. When MWSI removes soil below the Downspouts, MWSI should document the action and take confirmation samples.

South Storm Drain Area

Location: The South Storm Drain Area is south of the West Building.

Unit Description: The South Storm Drain drains the Southeast Outside Storage Area and the Southeast Loading Dock. (Figure D)

History of Use and Operation: The Southeast Outside Storage Area was recently paved. The South Storm Drain drained through the South Drainage Pipe to the West Drainage Ditch and West Drainage Culvert. After the March 11, 1999, spill, and the subsequent sampling, MWSI blocked the connection from the South Storm Drain to the South Drainage Pipe, and created a permeable basin around the South Storm Drain.

Types of Waste Managed: MWSI business is the recycling of mercury contaminated wastes.

Potential Migration Pathway/Release Controls: Any emissions that settle in this area would be transported by precipitation through the South Storm Drain.

History of Releases: A soil sample near the South Storm Drain taken by MWSI on August 6, 1998, showed a level of mercury at 1.2 ppm. MWSI acknowledged a spill on March 11, 1999, by an off-site carrier in the area of the Southeast Loading Dock. An unknown quantity of metallic mercury had been released from a metric ton cylinder during transport. Some metallic mercury had spilled from the trailer onto the cement floor of the loading dock. MWSI and their contractors took actions to contain and clean up the spill. MWSI believed that some of the mercury from this spill was released and deposited through the South Storm Drain to the West Drainage Ditch. A sample taken near the South Drainage Pipe outfall in the West Drainage

Ditch, on May 14, 1999, by WDNR showed a level of mercury at 344 MG/KG. MWSI performed sampling around the area of the South Storm Drain on March 13, 1999, in response to the March 11, 1999, incident, after the remediation activities were completed. Sample results showed no detect or very small quantities of mercury. MWSI and WDNR took split samples on October 13, 1999. MWSI had a result of 0.098 ppm of mercury and the WDNR had a result of 1.2 ppm of mercury. (Figure E)

Conclusions/Remarks: The South Storm Drain Area would appear to continue to act as an area where emissions collected on the Southeast Outside Storage Area and the Southeast Loading Dock would be deposited. Plugging the connection between the South Storm Drain and the West Drainage Culvert prevents future releases from the South Storm Drain out of the South Storm Drain Area.

South Drainage Pipe

Location: The South Drainage Pipe exits along the west property boundary west of the gravel access road along the west side of the West Building, near the south end of the West Building. Of the two drainage pipes that discharge to the West Drainage Ditch, this is the south one.

Unit Description: The South Drainage Pipe empties precipitation from the Southeast Outside Storage Area and Southeast Loading Dock, through the South Storm Drain to the South Drainage Pipe and out to the West Drainage Ditch. The pipe runs underground to the northwest from the South Storm Drain under the West Building and the west access road to the West Drainage Ditch.

History of Use and Operation: The South Drainage Pipe was a conduit for contamination from the Southeast Outside Storage Area, the Southeast Loading Dock, and the South Storm Drain. The connection from the South Storm Drain to the West Drainage Ditch has been blocked. The South Drainage Pipe is no longer visible in the West Drainage Ditch because of fill placed in the West Drainage Ditch.

Types of Waste Managed: MWSI business is the recycling of mercury contaminated wastes.

Potential Migration Pathway/Release Controls: Emissions that settled in the Southeast Outside Storage Area, the Southeast Loading Dock, and the South Storm Drain would be transported by precipitation through the South Drainage Pipe. These emissions would settle or be transported further by the precipitation.

History of Releases: A sample taken near the South Drainage Pipe outfall in the West Drainage Ditch on May 14, 1999, by WDNR showed a level of mercury at 344 MG/KG. Samples taken following remediation efforts in the area near the end of the South Drainage Pipe on October 13, 1999, by MWSI, showed levels of mercury below 0.2 ppm.

Conclusions/Remarks: The South Drainage Pipe acted as a transport for contamination from the Southeast Outside Storage Area, the Southeast Loading Dock, and the South Storm Drain into the West Drainage Ditch. Information is needed to verify how the connection through he South Drainage Pipe was blocked.

North Drainage Pipe

Location: The North Drainage Pipe exits along the west property boundary west of the gravel access road along the west side of the West Building, near the south end of the West Building. Of the two drainage pipes that discharge into the West Drainage Ditch, this is the north one.

Unit Description: The North Drainage Pipe empties precipitation from the Downspouts along the north end of the east side of the West Building. The drainage pipe runs to the southwest under the West Building and the access road along the west side of the West Building. Precipitation from the North Drainage Pipe exits into the West Drainage Ditch and then into the West Drainage Culvert.

History of Use and Operation: MWSI removes the soil/gravel below the buildings Downspouts as part of routine scheduled maintenance (approximately 3 to 4 times per year). MWSI retorts the contaminated soil/gravel that is collected. The Downspouts along the north end of the east side of the West Building are no longer connected to the North Drainage Pipe. Precipitation exits from the Downspouts onto the Courtyard and Southeast Outside Storage Area. The North Drainage Pipe is no longer visible in the West Drainage Ditch because of fill placed in the West Drainage Ditch.

Types of Waste Managed: MWSI business is the recycling of mercury contaminated wastes.

Potential Migration Pathway/Release Controls: Emissions that settle on the roof would be transported by precipitation through the North Drainage Pipe. These emissions would settle or be transported further by the precipitation.

History of Releases: A soil sample taken by WDNR at the end of the pipe on May 14, 1999, showed a level of mercury at 74.7 MG/KG. Samples taken following remediation efforts by MWSI on October 13, 1999, showed a levels of mercury below 0.2 ppm.

onclusions/Remarks: The pipe has acted as a transport for emissions that settle on the roof. ormation is needed to verify how the connection through the North Drainage Pipe was ted.

rainage Ditch

The West Drainage Ditch is located along the west side of the access road along the f the West Building.

Unit Description: The West Drainage Ditch had collected precipitation from the North and South Drainage Pipes.

History of Use and Operation: Both the North Drainage Pipe and the South Drainage Pipe, which empty into the West Drainage Ditch, are now blocked. This blockage should prevent future releases from the Courtyard, Southwest Outside Storage Area, Southeast Loading Dock, and the South Storm Drain into the West Drainage Ditch. The North Drainage Pipe and the South Drainage Pipe are no longer visible in the West Drainage Ditch because of fill placed in the West Drainage Ditch.

Potential Migration Pathway/Release Controls: The West Drainage Ditch no longer collects precipitation through the North Drainage Pipe and South Drainage Pipe. Previously collected emissions might have caused contamination of the ditch. Drainage off the west side of the West Building may still travel to and through the West Drainage Ditch. The West Drainage Ditch feeds into the West Drainage Culvert which continues to the west to another business property, broadens and then continues west (south of some homes), and eventually discharges to a wetland.

Types of Waste Managed: MWSI business is the recycling of mercury contaminated wastes.

History of Releases: The March 11, 1999, spill in loading dock and continuing operations (mercury deposition on the roof that has been transported by precipitation events) may have impacted the drainage ditch with mercury deposition.

On May 14, 1999, WDNR took a sample showing a level of mercury at 344 MG/KG. MWSI performed sampling on March 13 and 15, 1999 in and around the ditch following remediation. Sample results showed no detect or very small quantities of mercury. MWSI took samples on November 13, 1999, and January 13, 2000. Sample results showed levels of mercury below 0.2 ppm of mercury.

Conclusions/Remarks: The West Drainage Ditch would appear to continue to act as transport for emissions that settle on the west side of the MWSI property.

AREAS OF CONCERN (AOCs)

WDNR identifies 3 specific AOCs; the West Drainage Culvert, the Southeast Outside Storage Area, and the Northeast Loading Dock.

West Drainage Culvert

The West Drainage Culvert is located west of MWSI facility on the adjoining property. The West Drainage Culvert collects precipitation from the West Drainage Ditch. Both the North Drainage Pipe and the South Drainage Pipe, which empty into the West Drainage Ditch, are now

blocked. This blockage should prevent future releases from the Courtyard, Southwest Outside Storage Area, Southeast Loading Dock, and the South Storm Drain into the West Drainage Ditch. The West Drainage Culvert continues to the west (south of some homes), and eventually discharges to a wetland. The settling and transportation by precipitation of mercury emissions from continuing operations at MWSI may have impacted the West Drainage Culvert. On July 13, 1999, MWSI took a sample showing a level of mercury of less that 0.1 ppm. The West Drainage Culvert would appear to continue to act as transport for emissions that settle on west side of the MWSI property.

Southeast Outside Storage Area

The Southeast Outside Storage Area is an area bounded by the west wall of the West Building, the north wall of the East Building and fencing to the north and to the east. Overhead doors from the north side of the East Building and the west side of the West Building open to this area. The area has been used for lugger box storage, treated mercury waste storage, and various solid waste storage. This area was originally unpaved, but is now paved with asphalt. Releases from the operations in the buildings and potentially releases from material that has been stored or transported through the Southeast Outside Storage Area could have deposited contamination in this area. In the process of cleaning up the March 1999 spill in the Southeast Loading Dock mercury was deposited in this area. Material moving in and out of the buildings during normal operations might also cause contamination and cause contamination to be transported.

Northeast Loading Dock

The Northeast Loading Dock is located off the northern end of the east side of the East Building. The Northeast Loading Dock was the main loading dock for waste materials coming into and leaving MWSI, until a loading dock was built on the expanded portion of the West Building. MWSI continues to use the Northeast Loading Dock, even with the addition of the Southeast Loading Dock. The East Building houses the bulb-crushing unit. The retort furnaces are all in the West Building. Most of the traffic in and out of the Northeast Loading Dock would be bulbs. MWSI used to keep the overhead door at the Northeast Loading Dock open, which created an exit for mercury dust/particulate from the building. There have been no reported spills in the Northeast Loading Dock.

SUMMARY

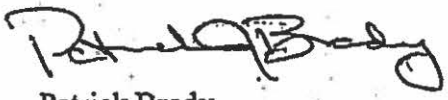
MWSI has had a history of documented releases at the Union Grove facility. MWSI has taken actions to prevent further contamination and to remediate contamination. However even with those actions, there are continuing releases of mercury from the facility that need additional controls to prevent deposition of mercury, and areas of potential contamination that need further investigation.

The operation of the facility should not have an environmentally significant impact, if the facility is properly managed. Mercury is considered a priority pollutant because of its potential effects on human health and the environment. The operation of the retort furnaces, bulb processing, and mercury refining have potential for air emissions if not properly operated. There is a possibility that spills from containers or tanks or from the transfer of materials could spill and adversely affect the environment.

RECOMMENDATIONS

Based upon the releases documented at this facility and ongoing concerns about the continued deposition of mercury contamination, WDNR recommends that MWSI be required to undertake RCRA Corrective Action.

Report Prepared by:



10/17/01

Patrick Brady
Waste Management Engineer
Southeast Region

Date

Attached Figures:

Figure A – Flood map from Appendix 26 of the MWSI FPOR
Figure B – Zoning map form Appendix 2 of the MWSI FPOR
Figure C – Site layout showing SWMUs and AOCs
Figure D – Site layout showing drainage from 1/22/00MWSI letter
Figure E – Sampling plan from 11/22/99 MWSI letter

PURSUANT TO SECTION 289.31, WISCONSIN STATUTES, NOTICE OF A PELIMINARY MODIFICATION DETERMINATION FOR MERCURY WASTE SOLUTIONS, INC., (MWSI) WAS SENT TO THE FOLLOWING:

AFFECTED MUNICIPALITIES AND LIBRARIES

County Clerk, Racine County
730 Wisconsin Avenue
Racine, WI 53403

Clerk, Town of Dover
4110 S. Beaumont Avenue
Kansasville, WI 53139

Senator Russ Feingold
Milwaukee Office
517 East Wisconsin Ave., Room 408
Milwaukee, WI 53202-4504

Paul Ryan, US Representative
First District
Racine Constituent Service Center
304 6th Street
Racine, WI 53403

Clerk, Village of Union Grove
1015 State Street
Union Grove, WI 53182

Clerk, Town of Yorkville
720 Main Street
Union Grove, WI 53182

Senator Herb Kohl
Milwaukee Office
310 West Wisconsin Avenue,
Suite 950
Milwaukee, WI 53203

Graham Public Library
1215 Main St.
Union Grove, WI 53182

INTERESTED PARTIES

Mr. Donald J. Wodek
MWSI
21211 Durand Avenue
Union Grove, WI 53182

State Historical Society of WI
Historical Preservation Division
Richard W. Dexter
816 State Street
Madison, WI 53707

Greenpeace USA
1436 U Street NW
Washington DC 20009

Citizens for a Better Environment
152 West Wisconsin Avenue
Milwaukee, WI 53203

Southeast Wisconsin
Regional Planning Commission
916 North East Avenue
Waukesha, WI 53186

Sierra Club/John Muir Chapter
222 S. Hamilton Street, Suite #1
Madison, WI 53703-3201

Patti W. Cronin, Executive Secretary
Waste Facility Siting Board
132 East Wilson Street
Madison, WI 53703

Denise Reape
U.S. EPA Region 5
DRE-9J
77 West Jackson
Chicago, IL 60604

U.S. Fish and Wildlife Service
4511 Helgesen Drive
Madison, WI 53718-6747

Phil Abert
DOD Permit Information Center
123 West Washington
Madison, WI 53707

Harriet Croke
U.S. EPA Region 5,DW-8J
77 West Jackson
Chicago, IL 60604

c: Bureau - WA/3 (D. Kollash)
Pete Flaherty - LS/5
SER Casefile

The following radio announcement is to be broadcast on the Racine station, WRJN, during morning and evening drive time on Friday, October 17, 2001.

RADIO ANNOUNCEMENT

The Wisconsin DNR intends to issue a modification determination to include requirements to institute Resource Conservation and Recovery Act Corrective Action in the hazardous waste operating license for Mercury Waste Solutions, Inc., 21211 Durand Avenue, Union Grove.

You have the opportunity to review the administrative record, provide written comments and request a public hearing.

Documents regarding the modification can be reviewed at the DNR offices located 9531 Rayne Road, Sturtevant, or at 101 South Webster Street, Madison, or the Graham Public Library at 1215 Main Street, Union Grove.

Written comments regarding the modification can be submitted to Patrick Brady, P.O. Box 12436, Milwaukee, 53212

Written comments must be submitted by December 3, 2001.

For more information contact Patrick Brady at 414/263-8594.

Appendix 14 RCRA Feasibility Investigation (RFI) Report - 2003

Hazardous Waste Facility Investigation

Task I

Prepared For:

Mercury Waste Solutions, Inc.
Administrative Offices
21211 Durand Avenue
Union Grove, Wisconsin 53182-9711

Original: August 2, 2001

Revised: June 21, 2002

Revised: November 12, 2003

JN: 69048.00

Liesch Companies

Hydrogeologists • Engineers • Environmental Scientists
Minneapolis, MN • Madison, WI • Scottsdale, AZ

Mercury Waste Solutions, Inc.
21211 Durand Avenue, Union Grove, Wisconsin 53182
Phone: 262-878-2599
Fax: 262-878-2699
www.mwsi.com

Hazardous Waste Facility Investigations

Task I

Mercury Waste Solutions, Inc.

21211 Durand Avenue
Union Grove, Wisconsin 53182

Original: August 2, 2001

Revised: June 21, 2002

Revised: November 12, 2003

Mercury Waste Solutions, Inc.
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Mercury Waste Solutions, Inc.
21211 Durand Avenue, Union Grove, Wisconsin 53182
Phone: 262-878-2599
Fax: 262-878-2699
www.mwsi.com

LIST OF APPENDICES

1.0 GENERAL SUBMITTAL REQUIREMENTS

This Hazardous Waste Facility Investigation will be implemented as herein described.

Signature: _____ Dated: 11-17-03

I, Brandon Nikolish, hereby certify that I am a registered Professional Engineer in the State of Wisconsin in accordance with ch. A-E4, Wis. Adm. Code and that this report has been prepared in accordance with the Rules of Professional Conduct in ch. A-E8, Wis. Adm. Code.

Printed Name of Registered Professional Engineer: Brandon Nikolish

Signature of Registered Professional Engineer: _____

BRANDON C. NIKOLISH E-33996 MADISON WI PROFESSIONAL ENGINEER WISCONSIN

Dated: 11/13/03 Registration No. 33996 State of Wisconsin

2.0 DESCRIPTION OF CURRENT CONDITIONS

Mercury Waste Solutions, Inc. (MWSI) is a metal recycler that processes various hazardous and universal wastes containing mercury. The wastes are processed utilizing a thermal retorting system. Metallic mercury is recovered and sold. MWSI also recycles fluorescent, incandescent lamps and lighting ballasts.

2.1 General Facility Information

Facility:	Mercury Waste Solutions, Inc. (MWSI) 21211 Durand Avenue Union Grove, Wisconsin 53182
Facility Contacts:	Joseph Carruth, Director of Environmental Affairs Union Grove Facility 262-878-2599 Patrick Baskfield, Facility General Manager Union Grove Facility 262-878-2599
Owner:	Mercury Waste Solutions, Inc. 302 North Riverfront Drive Mankato, Minnesota 56001
Type of Facility:	Metal recycler processing various wastes containing mercury Primary Standard Industrial Classification (SIC) Code: 4953 Refuse Systems Secondary Standard Industrial Classification (SIC) Code: 3341 Smelting/refining of non-ferrous metals
Facility Location:	NE ¼ of Section 36, Township 3 North, Range 20 East Town of Dover, Racine County, Wisconsin Total acreage: ~ 3.4 acres
Consultant:	Liesch Environmental Services, Inc. 6000 Gisholt Drive, Suite 203 Madison, Wisconsin 53713 Phone: 608-223-1532 Contact: Bob Juran

2.2 Land Use Information

The site is located on the south side of State Trunk Highway 11 (Durand Avenue) in the Town of Dover, Racine County, Wisconsin (see **Figure 1, Appendix A**).

The layout of the facility, along with the loading dock areas, processing room, supplies storage area, office area, and receiving areas are depicted in **Figures 2A and 2B, Appendix A**. Asphalt parking lots cover a significant portion of the facility grounds. The facility consists of three enclosed buildings each with a roof and brick/metal walls and concrete floors. The East and West Buildings are attached by an enclosed passageway with forklift and pedestrian traffic controlled by overhead doors on both the west and east ends.

The West Building was constructed in Stage 2 Construction (1994 – 8000 square feet) and Stage 3 Construction (1997 – 10,000 square feet) and has a total floor plan area of 18,000 square feet. 2,650-square feet comprise the offices and employee break/locker rooms. Additional footage is divided between a Continuous Flow Retort and Stationary Retort area (~5,600 square feet), a material preparation room (~1,150 square feet), a permitted hazardous waste storage area (~3,100 square feet), and a wastewater treatment area (~500 square feet). The remaining 4,800 square feet serve as universal waste storage, shipping, and receiving areas.

The East Building was completed in Stage 1 Construction (1940s) and has a floor plan area of approximately 7,200 square feet. The total area is divided among a lamp processing unit area (~1,500 square feet), a universal waste storage area (~4,000 square feet), a mercury purification room (~500 square feet), and a maintenance/machine shop (~1,000 square feet).

MWSI also occupies ~1,500 square feet of a building (South Building) located to the south of the main facility. The South Building was part of Stage 1 Construction (1940s) and is used entirely for lighting ballast recycling operations.

The MWSI administrative offices are located on the second floor of the M&W Shops at 21209 Durand Avenue. This building is located due east of the main facility.

The site is surrounded by agricultural land to the north, light industrial land to the south, and light industrial/residential land to the east and west. Adjacent site properties are depicted on **Figure 3, Appendix A**. Commercial development increases to the east along Durand Avenue toward Union Grove.

A letter from the Wisconsin Department of Natural Resources (WDNR) Bureau of Endangered Resources indicated the Natural Heritage Inventory data files contain no occurrence records of endangered, threatened or special concern species, natural communities, or State Natural Areas in proximity to the project location. A letter from the State Historical Society indicated that no

known archaeological sites or historic structures were noted in the vicinity of the site. These letters are included in **Appendix E**.

In March 1997, EcoSearch Environmental Resources, Inc. (EcoSearch) conducted a file evaluation of the site address to determine if there were any identifiable environmental concerns on or within a one-mile radius of the site. No registered underground storage tank sites (USTs) were located within 0.25 miles of the site and no leaking underground storage tank sites (LUSTs) were located within 0.5 miles of the site. However, three (3) solid waste facilities (SWFs) were located within 1 mile of the site, two (2) small quantity hazardous material generators were reported adjacent to the site, and one (1) large quantity generator, MWSI, was reported on the site.

The three SWFs listed by EcoSearch are all located north of Highway 11 with the closest being 0.44 miles from the site. The sites were listed as being owned by Southern Wisconsin Colony, South Wisconsin Center, and Meeter Brothers & Company. As reported by EcoSearch, previous site assessment work by others indicated no apparent releases from these sites and no notations of environmental problems.

The adjacent small quantity hazardous material generators were listed as M&W Shops (21209 Durand Avenue) and Klein Corp. (21209 Durand Avenue). Neither of the generators were anticipated to cause a recognized environmental condition on the site.

2.3 Regional Information

In general, materials in the area consist of the Oak Creek Formation (Varna-Elliot-Ashkum association) characterized by well-drained to poorly drained silty clay loam to clay soils which occur over gently undulating to rolling soils of glaciated uplands. The soil is described as thin loess deposits and glacial till consisting of 12% sand, 44% silt and 44% clay. The soils have a high available moisture capacity, low to medium surface runoff, and a moderately slow permeability.

Bedrock in the area is a Silurian age dolomite located about 180 feet below the ground surface (bgs) and includes the Cayugan, Niagaran, and Alexandrian series. Also present in the area is bedrock from the Ordovician system with shale and dolomitic shale consisting of oolitic iron oxides and shale.

The Branch Root and Des Plaines Rivers are located more than 1 mile to the north and southeast of MWSI, respectively. No other surface waters or other sensitive areas including wetlands, floodplains, springs, etc. were noted near Union Grove or on a topographical map of the Union Grove area.

The depth to the first groundwater aquifer, the Niagara aquifer, is approximately 80 feet bgs. There are no known aquifer recharge, discharge, or groundwater divides near the site.

The University of Wisconsin Geological and Natural History Survey State Well Database was reviewed to identify public and private wells within ½-mile of the facility. Well logs and a well location map are included in **Appendix D**. Due to the depth of the aquifer (>80 feet bgs) and low conductivity of overlying soils (silt and clay), the Niagara aquifer is minimally susceptible to contamination.

2.4 Site-Specific Information

2.4.1 Topography, Soils, and Groundwater

The site slopes gently upward from south to north and is characterized by relatively flat topography (see **Figure 4, Appendix A**). A surface water flow map is included as **Figure 5, Appendix A**. The elevation of the site is approximately 830 feet national geodetic vertical datum (NGVD).

Shallow surface soils from 0 to 2 feet bgs at the site have been classified by the Unified Soil Classification System as silt loam (ML-CL), silty clay (CH), and clay loam (CL). The uppermost bedrock at the site is a Silurian age dolomite located about 180 feet below the ground surface (bgs) and includes the Cayugan, Niagaran, and Alexandrian series.

Surface waters or other sensitive areas including wetlands, floodplains, springs, etc. were not noted near the site. The depth to groundwater at the site is estimated to be between 60 and 80 feet bgs with perched water occurring at depths between 40 and 60 feet bgs. There is one on-site groundwater supply well that supplies water for the office and break room areas. The 6-inch diameter well is cased down to 162 feet and is an open borehole to 200 feet. The well is located between the East and West buildings, 20 feet south and 5 feet east from the front of the West building. The well log is included in **Appendix D**. There have been no monitoring wells installed at the site; therefore, minimal site-specific information is known regarding groundwater flow directions, hydraulic conductivity, and gradients.

Surface (storm) water is drained from the site through a series of storm drains and natural infiltration. The southern storm drain transports water from the southern edge of the building to a ditch along the west side of the facility. The northern storm drain transports water from the northeast corner of the building to a shallow ditch northwest of the facility. Refer to *Section 2.4.3* below for a detailed description of storm water control and flow patterns.

Contrary to previous reports the southern storm drain has not been blocked. Blocking the drain was not feasible as water backed up during rain events. However, the outfall from the southern

storm drain at the west ditch was covered with rock and sod in October 1999. Excavation and grading activities are discussed in detail in *Section 2.7.1*. The west ditch now serves as a permeable basin and allows water to discharge from the southern storm drain into the backfilled ditch. Excess water that accumulates in the south loading dock during heavy rain events is visually inspected to detect visible signs of contamination prior to being discharged into the southern storm drain (see **Photographs, Appendix C**).

All downspouts including those within the courtyard area between the East and West Buildings are disconnected from underground storm water conveyance lines and discharge directly onto the ground below each downspout (see **Photographs, Appendix C**). The location of all downspouts and underground storm water lines are depicted on **Figure 5, Appendix A.**

2.4.2 On-Going Site Monitoring

Annual Soil Retorting and Sampling

MWSI removes, retorts and replaces the rock and soil below the downspouts on an annual basis. Removal procedures call for rock and soil to be removed down to approximately 1 to 2-feet using a backhoe or other appropriate tools and the excavation filled with new, clean rock. Excavated rock and soil are placed into facility retort boxes and into a retort oven to recover mercury. A summary of soil/rock retorting activities is provided in **Table 4, Appendix B.** Retorted rock and soil are transported to Superior Emerald Park Landfill for disposal. Soil retorting documentation and disposal manifests are provided in **Appendix J.**

MWSI collects soils samples at the downspouts and in the courtyard on an annual basis. Soil samples are collected from the top few inches of soil at the base of the excavation described above using a clean shovel or similar device and placed into laboratory-approved containers for analysis of mercury by a certified laboratory. Soil sample locations and analytical results associated with these efforts are indicated on **Figures 7A and 7B, Appendix A.** Laboratory results are summarized in **Table 1, Appendix B.** Mercury levels above 1 ppm have been encountered in the courtyard and near downspouts on the west side of the facility.

Roof Top Inspections and Cleaning

The only source for mercury deposition on the roof is from the retort emission stack. There are no operating roof vents or other units that could contribute to mercury deposition on the roof. The MWSI emission stack is approximately 41 feet from ground level (raised from 26 feet in the summer of 2003). MWSI has gone to great lengths to minimize mercury emissions from the exhaust stack and new improved carbon and frequent equipment maintenance have minimized mercury emissions. Additionally, it is not economically or technologically feasible to completely eliminate emissions.

MWSI changes out rooftop fabric filters associated with air handling equipment on a quarterly basis. During these change-outs, MWSI inspects the area surrounding the exhaust stack. This area is inspected for the deposition of particles and discoloration. Neither the deposition of particles nor any discoloration has been evident during the past several rooftop inspections. In the event significant deposition or discoloration is observed, the roof area near the emission stack and surrounding gutters would be cleaned using a power washer. Wash water would be collected and processed. This procedure has been successfully implemented in the past (refer to *Section 2.5.2*, Incident #1).

2.4.3 Site Storm Water

Overview of Site Drainage

All drainage from the MWSI site eventually flows to the Des Plains River. Most of the storm water flow from the MWSI site is directed via overland flow to the tile system that serves as the regional area drainage system. The tile system runs approximately southwest from MWSI site toward a trailer park located approximately one-third mile southwest of MWSI and then runs east by southeast through another tile system that eventually drains to the Des Plains River about one mile southeast of the MWSI site. A small portion of storm water from the MWSI site drains to the ditch system along Highway 11 that runs directly east from the site towards Union Grove. This flow drains to the Des Plains River about one mile east of the MWSI site.

Storm Water Engineering at MWSI

Storm water management infrastructure, other than grading to control overland flow, was first installed at MWSI in 1994 to accommodate Stage 2 Construction. Prior to 1994, all storm water drainage followed the contour of the land. Several engineered storm water pathways were installed when the 8,000 square foot Stage 2 Construction was completed in 1994. Additional storm water controls were installed when the 10,000 square foot Stage 3 Construction was completed in 1997. These systems are described below under the project in which they were completed and are illustrated in **Figures 2A and 5, Appendix A**. Supporting photographs are provided in **Appendix C**.

Stage 2 Construction

North Dock Drainage

System Description

The North Dock was in existence prior to 1994, but no drain was present. During Stage 2 Construction, a drain was installed at the down slope end of the concrete ramp on the North Dock. The drain (North Dock Drain) was designed to manage

precipitation that fell on the approximately 500 square foot concrete ramp. The drain is approximately 2 feet deep.

A crock was installed approximately 8 feet north of the drain just off the ramp to provide some capacity for settling solids. The North Crock is 8 feet deep. The North Crock and the North Dock Drain are connected by a 3-inch underground steel pipe.

Precipitation from the North Dock flows from the North Dock Drain to the North Crock and is discharged through a 6-inch underground corrugated plastic line that runs north to the property line and then west to the western boundary of the site. The line discharges to the ditch on the western side of the west MWSI driveway.

Current Status

This system exists and operates today in the same manner in which it was designed and installed in 1994.

Downspouts between the East and West Buildings

System Description

Two roof downspouts located between the East and West Buildings were connected to underground conveyance lines in 1994. Both of the downspouts are located immediately south of the current tunnel connecting the East and West Buildings. The metal underground line was installed to convey storm water from these downspouts and prevent ponding problems. The underground line runs straight south for approximately 70 feet and then west for approximately 120 feet to the western side of the MWSI site.

When Stage 3 Construction was completed in 1997, the western flowing portion of this line was abandoned. The south flowing portion of the underground line was extended south to the South Dock Drain. Shortly after, the Receiving Yard was paved the two downspouts were disconnected from the underground conveyance line and the storm water from these downspouts was allowed to flow onto the Receiving Yard.

Current Status

The line between the downspouts and the South Dock Drain still exists, but is no longer used since the downspouts were disconnected. The western flowing portion of this line was abandoned and likely destroyed during the Stage 3 Construction project in 1997. A portion of the line was uncovered in October 2003 on the western side of the Stage 3 Construction building.

Former Loading Dock

System Description

A loading dock was installed on the southwest corner of the West Building in 1994. The loading dock included a loading dock crock which was used to collect and remove storm water ponding in the area. The location of the former loading dock crock is somewhere under the south wall of the existing Retort Room. A 6-inch underground PVC pipe was used to convey storm water from the Former Loading Dock Crock to the west ditch where water flowed into a storm water retention pond on the adjacent Systematics site to the west.

Current Status

The loading dock crock was likely demolished during Stage 3 Construction in 1997. The underground line, however, exists on the western side of the West Building as was confirmed by excavation in October 2003.

Stage 3 Construction

South Dock Drainage

System Description

The Receiving Yard was paved in 1997 as part of the Stage 3 Construction project. The South Dock which includes the South Dock Drain and the South Crock were added at this time. Each of these units is described below.

The South Dock Drain receives precipitation from the approximately 1000-square foot concrete ramp at the South Dock. Precipitation from the South Dock Drain is conveyed through a 6-inch underground corrugated plastic line to the western side of the MWSI site.

The South Dock Drain is also connected to an underground line from the two downspouts described above. This underground line was operational for only a brief period of time in 1997 prior to completion of the Receiving Yard.

The South Crock is located just south of the South Dock and adjacent to the dock ramp. The South Crock is approximately four feet deep and was installed to manage precipitation from much of the Receiving Yard. Storm water flowing into the South Crock is conveyed through a 6-inch underground corrugated plastic line to the western side of the MWSI site.

The South Crock and the South Dock Drain are not directly connected. Storm

water received by both units, however, merges into the underground corrugated plastic line which conveys storm water to the western side of the MWSI. The two lines merge in the vicinity of the Southeast corner of the Stage 3 Construction Building. The outfall from the line is located in the ditch near the west property boundary. Water used to flow from the ditch into a storm water retention pond on the adjacent Systematics site to the west.

Current Status

Both the South Dock Drain and the South Crock still exist as described above. The South Dock Drain is normally covered. Storm water that accumulates in the South Dock is removed by pumping the water into the South Crock.

In response to a spill at the South Dock in March 1999 (Incident #4), MWSI excavated an area of soil on the western boundary of the site near the storm water outfall. During that excavation effort, the outfall from MWSI and the outfall to the pond on the adjacent Systematics property were buried. Burying of these outfalls may have, to some extent, mitigated the flow of storm water through the south underground drainage line. Gravel was used as backfill in the area excavated and it is thought to provide a flow path for storm water from this underground line.

South (Ballast) Building

System Description

The South Building Dock is located on the northeast corner of the South (Ballast) Building. The Ballast Building Dock drain is located at the bottom of the approximately 500 square foot concrete ramp. The drain was installed in 1997 as part of the Stage 3 Construction.

The Ballast Building Dock drain conveys storm water falling directly on the ramp through a 6-inch underground corrugated plastic line that runs southeast to an outfall on the adjacent property owned by Mr. Wally Haag. The underground line is approximately 300 feet long and discharges storm water to an outfall that also receives storm water from the adjacent Haag property.

Storm water discharged to the outfall is conveyed through ditches to a storm water retention pond located approximately 1000 feet south of the MWSI site. This pond discharges to the tile system that eventually drains to the Des Plains River.

Current Status

This system exists and operates today in the same manner in which it was designed and installed in 1994.

2.4.4 Facility History – Summary of Operations

The Property is owned by Durand Properties represented by Mr. Wally Haag and has been since 1983. M&W Shops, Grove Die Casting, and Klein Corporation (all metal fabrication shops) have all occupied portions of the Property since 1983. MWSI has occupied the western portion of the Property since 1995. **Figure 2B, Appendix A** highlights current process, treatment, storage and disposal areas at the MWSI facility. **Figure 6, Appendix A** highlights all known utilities near the MWSI facility.

The buildings on the Property were reportedly constructed in 1944 as a hemp product manufacturing facility. The buildings were concrete block structures with concrete floor slabs and wood arch roofs. Records indicate the buildings were used as a hemp manufacturing facility from 1944 until 1948. Their use until 1959 is not documented. In 1959 the Property was occupied by the Car Carrier Equipment Company to fabricate car carrier trailers. In 1973 the buildings were occupied by a machine shop and have been occupied by several metal working facilities since then.

Liesch reviewed the collection of Directories at the Wisconsin Historical Society. These directories list occupants of addresses from the 1800's through the 1990's and generally cover urban and suburban areas. The Property was not covered in these directories. Liesch also reviewed Sanborn Fire Insurance Atlases. Sanborn Atlases were prepared for various area communities for selected years starting in the late 1800s. These atlases show addresses, structures, and improvements, such as utilities and storage tanks, for the areas covered. No Sanborn coverage was available for the area of the Property.

MWSI and Mr. Wally Haag were interviewed concerning past uses of the Property. A fire was reported on the Property in 1992 that destroyed a building on the Property (see **Figure 2A, Appendix A**). The Dover Township clerk Ms. Mary Dunske and building inspector, Mr. Rex Hencke, were contacted to determine if any local environmental issues were apparent at the Property. Neither party was aware of any concerns.

2.4.5 Facility Product and Waste Types

MWSI processes mercury-containing solid wastes (contaminated soil, metal, debris, etc.), universal wastes (lamps, switches, thermometers, batteries, elemental Hg), and hazardous wastes (industrial wastes, corrosive solutions, compounds, etc.). MWSI also disassembles lighting ballast.

MWSI currently categorizes wastes received under 33 different RCRA waste codes that include both solid and liquid phase wastes that are stored in drums on site. The major categories of wastes received include fluorescent light tubes, metal switches, glass switches, contaminated soils, relays, thermocouples, ignition switches, mercury batteries, dental amalgams, telephone switches, mercuric oxide, PC boards, spill kits, rectifiers, thermometers, manometers, activated charcoal, and others.

2.4.6 Waste Treatment and Storage

CONFIDENTIAL INFORMATION

2.4.7 Waste Testing and Disposal

TCLP analysis is conducted on a composite sample of solid wastes generated in the retort ovens (retorted non-characteristic or non-listed wastes). TCLP results are typically 0.08 ppm or less and must meet 0.20 ppm. Material Safety Data Sheets (MSDSs) for manufactured materials stored and processed on-site are maintained in the MWSI file system. In addition, MWSI has immediate access to a large electronic library of MSDSs via the internet. MSDSs are frequently consulted when evaluating waste profile sheets for incoming materials.

Non-recyclable solid wastes (office waste, empty packages, plastic wrap, packing materials, etc.) are containerized and sent off site for disposal at a municipal landfill (Superior Emerald Park Landfill).

Recyclable solid wastes (glass from lamp processing, aluminum from lamp processing, cardboard from lamp processing and facility operations, scrap metal from ballast processing and retort operations, etc.) are segregated, bundled and transported off site to be recycled.

Hazardous wastes, retort residues with hazardous characteristics, or listed codes (other than D009, U151, D002, D001), are transported to licensed treatment and/or disposal facilities.

Low-level mercury wastewater generated from retort collection systems and floor washing is treated on site to reduce mercury levels to 2-10 ppm and transported to licensed treatment and/or disposal facilities.

A summary of final disposal and recycling facilities is included in **Appendix F**.

2.4.8 Approved Releases

MWSI emits a minor amount of mercury through one 41-foot retort emission stack as part of normal operating processes. (Note: the stack was raised from 26-feet in the summer of 2003.)

Approved releases from the exhaust stack are allowed by federal and state agencies and are low enough based on stack testing to not warrant an air operating permit (although MWSI has completed a permit). MWSI has confirmed low mercury stack emission levels through stack sampling and mercury dispersion modeling. MWSI performs routine inspections of the roof and has implemented annual procedures to remove, retort, and replace the rock/soil below the roof downspouts.

2.5 Solid Waste Management Units and Areas of Concern

MWSI has identified 18 Solid Waste Management Units (SWMUs) and 2 Areas of Concern (AOCs) at the Union Grove facility. The list of SWMUs provided below is based on a review of past and present operations at the facility. This list of units is different than the list developed by the WDNR in the RCRA Facility Assessment dated October 17, 2001.

For each unit listed below, information is presented in a format developed to provide pertinent information as requested by WDNR staff in the August 12, 2003, comment letter regarding the June 2002 Task I Report. The location of each unit described below is indicated on **Figure 8, Appendix A.**

2.5.1 Solid Waste Management Units

1. Stationary Mercury Retort Ovens
2. Continuous Flow Retort Oven
3. Lamp Crushing Operation
4. Lamp Glass-Roll-Off
5. Regulated Storage Area
6. Oven Batch Storage Area
7. Wastewater Treatment System
8. Generator / Universal Waste Storage Area
9. Outside Receiving Yard
10. Lighting Ballast Operations
11. South Loading Dock
12. South Underground Stormwater Line
13. South Outfall
14. North Loading Dock
15. North Underground Stormwater Line
16. North Outfall Pond
17. Courtyard /Downspouts
18. Former Loading Dock

SWMU 1 Stationary Mercury Retort Ovens (4)

a. Unit Description

The Stationary Mercury Retort Ovens are cylindrically shaped and are approximately 8 feet in diameter and 12 feet long. Waste is placed into the ovens on trays of various sizes and heated for an average period of about 36 hours. Temperatures in the ovens are ramped up slowly, peaking at between 800 and 1000 degrees Fahrenheit.

b. Unit Location

The Stationary Mercury Retort Ovens are located in the Retort Room near the north end of the West Building. See **Figure 8** for the location of this unit.

c. Regulatory Status

The Stationary Mercury Retort Ovens operate as recycling units under the Legitimate Recovery and Reclamation Exemption of Wisconsin. Adm. Code (NR 625.06).

d. Wastes Managed

The ovens recover mercury from various hazardous and non-hazardous wastes including glass, soil, sludge, regulators, etc.

e. History of Use and Operation

MWSI began operation of the first oven in May 1996. Two additional ovens (numbers 2 and 3) were installed by April and May 1998. The fourth oven was installed in December 2000.

f. Potential Migration Pathways / Release Controls

Heated vapors from the oven chambers are pulled off the ovens and cooled in a collection tank. The ovens are operated under a vacuum. Condensed mercury is recovered in a cooled collection tank. The air is then filtered through treated carbon and vented to the atmosphere through a common stack. The Retort Room in which the ovens are located is a sealed room. Entrance to the room can be made through one of three overhead doors or through several man doors. Doors to the room are kept closed during operation and only opened when needed.

g. History of Releases

As described in the *Section 2.5.2* titled Areas of Concern, several incidents have involved the Stationary Mercury Retort Ovens. Incidents #1, #2, #3, and #5 originated at these units (see AOC #1). A description of each of these incidents is provided in *Section 2.5.2*.

There have also been minor system failures that have resulted in mercury vapors being released to the Retort Room. The internal carbon filtration system is used to remove mercury vapors from this room when such events occur. As such, potential releases have been minimal.

SWMU 2 Continuous Flow Mercury Retort Oven

a. Unit Description

The Continuous Flow Mercury Retort Oven is approximately 25 feet long and 7 feet wide. The unit consists of a powder hopper, the retort oven, a mercury collection system, and two velocity-drop boxes.

b. Unit Location

The Continuous Flow Mercury Retort Oven is located inside on the north end of the West Building. The unit is located just outside the east wall of the Retort Room. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

The Continuous Flow Mercury Retort Oven operates as a recycling unit under the Legitimate Recovery and Reclamation Exemption of Wisconsin. Adm. Code (NR 625.06).

d. Wastes Managed

The Continuous Flow Mercury Retort Oven processes phosphor powder from crushed fluorescent lamps. The powder is vacuumed from 55-gallon drums into a hopper located on the front-end of the system. The powder is metered into the oven chamber through an air-lock onto the oven auger conveyor. On the conveyor, the powder is heated and the mercury is vaporized. The vapor is pulled through a condenser in which the mercury vapors are converted to liquid mercury. The powder then passes through another air-lock on the downstream end of the oven. The powder is pneumatically conveyed through two velocity drop boxes designed to remove the powder from the air stream. The air is then discharged through a carbon filter.

e. History of Use and Operation

MWSI began operation of the Continuous Flow Mercury Retort Oven in 1996.

f. Potential Migration Pathways / Release Controls

Heated vapors from the oven chamber are pulled off the ovens and cooled in a collection tank. The ovens are operated under a vacuum. Condensed mercury is recovered in a cooled collection tank. The air is then filtered through treated carbon and vented to the atmosphere through a stack shared with the Stationary Mercury Retort Ovens.

Velocity drop boxes are used to capture the powder after the powder has been processed through the oven.

g. History of Releases

The Continuous Flow Mercury Retort Oven processes phosphor powder which is a fine material. The powder does escape in small amounts to the interior of the building in the vicinity of the unit

when it is being vacuumed from the drums and when the powder is being collected at the base of the velocity drop boxes. Any spilled material is immediately recovered.

SWMU 3 Lamp Crushing Operation

a. Unit Description

The Lamp Crushing Operation consists of a conveyor assembly, a crusher, and a rotating trammel screen assembly. The unit is designed to crush and separate fluorescent lamps into the following components – aluminum endcaps, glass, and phosphor powder. After the initial crushing, the lamps enter a trammel screen for separation by size through a screening device that consists of annular cylindrical screens that retain material of a design size.

Endcaps are dropped into a Gaylord box; the phosphor powder is dropped into any one of four 55-gallon accumulation drums, and the lamp glass is conveyed through the east wall of the East Building to the Lamp Glass-Roll-Off (SWMU 4). Prior to processing, lamps are stored throughout the East Building in designated areas.

b. Unit Location

The Lamp Crushing Operation is housed inside the East Building. It was formerly housed in the West Building. See **Figure 8** for the current location of this unit.

c. Regulatory Status

The Lamp Crushing Operation operates as a recycling unit under the Legitimate Recovery and Reclamation Exemption of Wisconsin. Adm. Code (NR 625.06).

d. Wastes Managed

The Lamp Crushing Operation processes fluorescent lamps which are classified as Universal Wastes in the Wisconsin.

e. History of Use and Operation

MWSI began operation of the Lamp Crushing Operation in 1996. A unit was originally located in the West Building. Operation of a new unit in the East Building began in 1998.

f. Potential Migration Pathways / Release Controls

The Lamp Crushing Operation operates under a vacuum such that powder is substantially contained by the collection system. Air from the Lamp Crushing Operation is filtered through both HEPA and carbon filtration prior to being exhausted from the building.

g. History of Releases

The Lamp Crushing Operation creates dust in the immediate area of operation inside the East Building. The dust is cleaned up on a daily basis.

SWMU 4 Lamp Glass-Roll-Off

a. Unit Description

The Lamp Glass-Roll-Off is a 20 cubic yard steel roll-off container that receives crushed glass from the Lamp Crushing Operation (SWMU 3). The Lamp Glass-Roll-Off receives glass via a conveyor through the east wall of the East Building. The unit is covered by a tarp.

b. Unit Location

The Lamp Crushing Operation is located outside on the east wall of the East Building. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

The Lamp Glass-Roll-Off is regulated as a solid waste accumulation unit.

d. Wastes Managed

The Lamp Glass-Roll-Off is used for the accumulation of crushed glass from the Lamp Crushing Operation (SWMU 3). The glass is a solid waste which is shipped off-site for recycling.

e. History of Use and Operation

MWSI began operation of the Lamp Glass-Roll-Off in the East Building in 1998.

f. Potential Migration Pathways / Release Controls

Dust created by the conveyance of glass into the Lamp Glass-Roll is minimized through the use a tarp.

g. History of Releases

Some glass dust, on occasion, is observed adjacent to the Lamp Glass-Roll-Off. Observed material is immediately cleaned up.

SWMU 5 Regulated Storage Area

a. Unit Description

The Regulated Storage Area is used to store hazardous waste received from off-site customers. The unit consists of a 60 feet by 40 feet concrete pad that is sealed with an epoxy coating. The storage configuration for the room is approved through the facility RCRA Permit which establishes the storage footprint for drums in the unit. There are two man doors that provide access to this unit on the external walls of the West Building. Another man door is located on the internal wall and provides access to the Oven Batch Storage Area (SWMU 6).

Containment for the unit is provided by a small berm at the entrance of the Regulated Storage Area and a curb that runs the perimeter of the area. Total secondary containment for the unit is calculated to be in excess of 5,000 gallons.

b. Unit Location

The Regulated Storage Area is located in the southwest corner of the West Building. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

The Regulated Storage Area operates as a permitted container storage area under MWSI's RCRA Permit. Prior to receiving a RCRA Permit in 2000, the unit was operated under a variance by the WDNR.

d. Wastes Managed

The Regulated Storage Area is used to store a wide range of wastes including powder, sludge, liquids, and debris. All waste stored in this unit contain mercury at some level. The chemical nature of the stored waste is varied and includes acids, bases, and oxidizers.

e. History of Use and Operation

This unit was part of the 1997 Stage 3 Construction project and was put into use in 1998.

f. Potential Migration Pathways / Release Controls

Secondary containment for the Regulated Storage Area exceeds the capacity required by RCRA by a significant margin.

g. History of Releases

Some minor spillage has occurred at this unit. There have been no significant releases at this unit.

SWMU 6 Oven Batch Storage Area

a. Unit Description

The Oven Batch Storage Area comprises a small room used to stage retort trays prior to placing the material in the Stationary Mercury Retort Ovens (SWMU 1) for processing. The unit consists of a 25 feet by 25 feet concrete pad that is sealed with an epoxy coating. There is one man door that provides access to the Regulated Storage Area.

Containment for the unit is provided by a small berm at the entrance of the Oven Batch Storage Area and a 6-inch curb that runs the perimeter of the area. Total secondary containment for the unit is calculated to be in excess of 1250 gallons. Based on the 137 drum capacity of this unit, only 750 gallons of containment capacity is required.

b. Unit Location

The Oven Batch Storage Area is a small room located between the Retort Room and the Regulated Storage Area (SWMU 5) along the west wall of the West Building. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

The Oven Batch Storage Area operates as a permitted container storage area under MWSI's RCRA Permit. Prior to receiving a RCRA Permit in 2000, the unit was operated under a variance by the WDNR.

d. Wastes Managed

The Oven Batch Storage Area is used to store most of the same materials that are stored in the Regulated Storage Area (SWMU 5). Such materials include a wide range of wastes including powder, sludge, liquids, and debris. All waste stored in this unit contain mercury at some level. The chemical nature of the stored waste is varied and includes acids, bases, and oxidizers.

e. History of Use and Operation

This unit was installed as part of the 1997 Stage 3 Construction project and was put into service in 1998.

f. Potential Migration Pathways / Release Controls

Secondary containment for the Oven Batch Storage Area exceeds the capacity required by RCRA by a significant margin.

g. History of Releases

Some minor spillage has occurred at this unit. There have been no significant releases at this unit.

SWMU 7 Wastewater Treatment System

a. Unit Description

The Wastewater Treatment System is comprised of four above-ground polypropylene storage tanks. The four tanks are located in a 25 feet by 13 feet diked area. Two of the tanks have capacities of 3,000 gallons and two tanks have capacities of 500 gallons. The tanks are situated on steel platforms within the dike wall.

The two 500-gallon tanks serve as treatment tanks. The Wastewater Treatment System is designed to precipitate and filter the wastewater to reduce mercury concentrations. Precipitation is accomplished through the addition of sodium hydroxide. Filtration is provided through a series of filters that include micron bag filters, OMZ filtration, and carbon. When treatment is complete, wastewater is pumped into one of the two 3,000 gallon holding tanks and is eventually pumped into a tanker truck for off-site shipment. Refer to *Section 2.4.6* for additional information on the Wastewater Treatment System.

b. Unit Location

The Wastewater Treatment System is located on the east wall of the West Building just north and adjacent to the Universal / Generator Waste Storage Area (SWMU 8). See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

The Wastewater Treatment System operates as a permitted tank system under MWSI's RCRA Permit. The tank system was not operated prior to receiving a RCRA Permit in 2000.

d. Wastes Managed

The Wastewater Treatment System is used to process facility floor washwater and the aqueous fraction of condensate liquids derived from the Stationary Mercury Retort Ovens (SWMU 1). These wastes are hazardous wastes. After treatment, the waste is transported off-site to a TSD for further processing.

e. History of Use and Operation

This unit was constructed in September 1999 and put into service after the RCRA Permit was issued in July 2000.

f. Potential Migration Pathways / Release Controls

Containment for the Wastewater Treatment System is provided by a 3-foot high dike wall that surrounds the treatment system. The dike wall is 8-inches thick and is a poured concrete wall. Total containment provided is 7,000 gallons, well in excess of the 5,000 gallons required.

g. History of Releases

Some minor spillage has occurred at this unit. There have been no significant releases at this unit.

SWMU 8 Universal / Generator Waste Storage Area

a. Unit Description

The Universal / Generator Waste Storage Area is comprised of an approximately 80 feet by 20 feet concrete pad that is sealed with an epoxy coating. Drums and other types of containers of waste (e.g. pallets of batteries, Gaylord boxes of scrap electronics, etc.) are stored in this area. Hazardous wastes generated by MWSI can be stored for up to 90 days. Universal wastes received from off-site can be stored for up to one year.

b. Unit Location

The Universal / Generator Waste Storage Area is located between the Wastewater Treatment System (SWMU 7) and the Receiving Area along the east wall of the West Building. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

Wastes stored in the Universal / Generator Waste Storage Area are regulated by the applicable generator standards or universal waste standards of Wisconsin. Adm. Code.

d. Wastes Managed

The Universal / Generator Waste Storage Area is used to store a wide range of wastes. Examples of wastes generated by MWSI include retort liquids which represent the liquids drained from the Stationary Mercury Retort Ovens (SWMU 1), floor washwater, and the oily fraction of the condenser liquids. Examples of wastes stored as universal wastes include batteries, regulators, ignitrons, and mercury switches.

e. History of Use and Operation

This unit was installed as part of the 1997 Stage 3 Construction project and was put into service in 1998.

f. Potential Migration Pathways / Release Controls

There is no secondary containment provided for the drums at this unit. The concrete surface is coated with an epoxy sealant.

g. History of Releases

There have been no known releases at this unit.

SWMU 9 Outside Receiving Yard

a. Unit Description

The Outside Receiving Yard comprises an area of approximately 160 feet by 80 feet. The surface of the Outside Receiving Yard is both concrete pad and asphalt. The area is used for multiple purposes:

- Several roll-offs of outgoing process residuals are stored at this unit (e.g. process, ash, processed powder, scrap steel, etc.).
- Retort trays, after initial cooling and covering with plastic, are stored at this unit pending residual confirmation prior to dumping into a roll-off.
- The South Dock is located within the unit. The South Dock is used for receiving most of the wastes delivered to the MWSI facility.
- Trailers storing equipment, drums, and chemicals are located in this unit.

b. Unit Location

The Outside Receiving Yard is located between the South Building (SWMU 10) and the Maintenance Shop. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

Wastes stored in the Outside Receiving Yard are regulated by the applicable generator standards for materials that are hazardous wastes. Most of the materials stored at this unit are not hazardous wastes.

d. Wastes Managed

The Outside Receiving Yard is used to store a wide range of materials. The following outgoing residuals are stored in roll-offs or other containers within this unit.

Material	Container Size (roll-off)	Waste Class
Retorted Ash	20 yard	NHW
Phosphor Powder	20 yard	NHW
Low-level Mercury Debris	20 yard	HW
Potting Material	20 yard	HW
Scrap Steel	30 yard	NHW
Scrap Copper	6 yard	NHW
Lamp Endcaps	Gaylord boxes	NHW
Retorted Ash	Retort Trays	NHW

Retort Trays awaiting analytical results are also stored at this unit prior to dumping into the ash roll-off.

e. History of Use and Operation

This unit was installed as part of the 1997 Stage 3 Construction and was put into service in 1998.

f. Potential Migration Pathways / Release Controls

Containment is provided for at this unit by a paved surface. The concrete is severely cracked, has been patched substantially, and needs replacing. Most of the storm water from this unit and from the downspouts that run across this unit is directed to either the South Dock Drain or the South Dock Crock and is eventually discharged to the South Dock Outfall. (SWMU 10). Each of these units has some settling capacity for solids.

g. History of Releases

A spill occurred at this unit in 1999 at the South Dock Drain. This spill is described in Areas of Concern as Incident #4.

This UNIT represents an area where material handling operations present an opportunity for spilled or blown materials to enter the storm water drainage system. The ongoing transfer of materials from smaller containers into roll-offs at this unit causes some dusting and spillage on a regular basis. This material, if not cleaned up, is pushed by storm water into either the South Dock Drain or the South Dock Crock which both convey storm water into the South Underground Stormwater Line (SWMU 13).

SWMU 10 Lighting Ballast Operation

a. Unit Description

The Lighting Ballast Operation is housed in the South Building and consists of a receiving/loading dock, a container storage area, a freezer, and a ballast disassembly area. The building is approximately 100 feet by 60 feet. MWSI ballast operations are housed in the north half of the building.

The concrete pad in the building is sealed with an epoxy coating. Containers of lighting ballast are stored in a storage area in the southeast portion of the building occupied by MWSI. A large industrial freezer located in the central portion of the building is used to prepare ballast prior to disassembly by freezing the ballast so that the potting material is brittle. This makes for easier disassembly.

A large steel table serves as the disassembly surface in which frozen ballast are cut open and broken apart by hammers. Ballasts are separated into four components: steel casing, copper coils, potting material, and the capacitor.

b. Unit Location

The Lighting Ballast Operation is located in the north half of the South Building on the southeast corner of the parcel leased by MWSI. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

The Lighting Ballast Operation operates under an exemption issued by the WDNR in March 1999.

d. Wastes Managed

The Lighting Ballast Operation processes both PCB and non-PCB lighting ballast. PCBs that may be contained in some of the capacitors are the primary chemicals of concern.

e. History of Use and Operation

This unit began operations in 1999 shortly after the exemption was received.

f. Potential Migration Pathways / Release Controls

Secondary containment is not provided for the container storage area at this unit. The concrete surface is coated with an epoxy sealant.

g. History of Releases

There have been no known releases at this unit.

SWMU 11 South Loading Dock

a. Unit Description

The South Loading Dock comprises an area of approximately 50 feet by 20 feet. The unit is concrete pad and serves as a loading and unloading dock for incoming and outgoing wastes. The South Loading Dock is sloped to the building and has a drain at the lower end adjacent to the building.

b. Unit Location

The South Loading Dock is located at the southwest corner of the West Building. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

All wastes processed at the MWSI facility are handled at the South Loading Dock.

e. History of Use and Operation

This unit was installed as part of the 1997 Stage 3 Construction and was put into service in 1998.

f. Potential Migration Pathways / Release Controls

The concrete pad is in very good condition but does have a few cracks. A drain at the base of this unit (South Dock Drain) does have some solids settling capacity. This unit conveys storm water to the South Underground Stormwater Line (SWMU 12).

g. History of Releases

Incident #4, described in *Section 2.5.2* in AOC #2, occurred at this unit 1999.

Precipitation falling on this unit is likely to transport dust and particles from Outside Receiving Yard (SWMU 9) operations into the South Underground Stormwater Line (SWMU 12).

SWMU 12 South Underground Stormwater Line

a. Unit Description

The South Underground Stormwater Line is a six-inch corrugated plastic line that runs underground from the South Loading Dock (SWMU 11) to the South Outfall (SWMU 13).

b. Unit Location

The South Underground Stormwater Line runs from east to west along the south end of the West Building and then runs northwest toward the South Outfall, which is located near the western property boundary. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

All wastes processed at the MWSI facility can be handled at the South Loading Dock (SWMU 11) at the eastern end of this unit and thus are subject for concern at this unit.

e. History of Use and Operation

This unit was installed as part of the 1997 Stage 3 Construction.

f. Potential Migration Pathways / Release Controls

The South Underground Stormwater Line is a solid plastic line that conveys stormwater to the South Outfall (SWMU 13).

g. History of Releases

Incident #4, described in *Section 2.5.2* in AOC #1, occurred at the South Dock in 1999.

Precipitation falling on the South Dock (SWMU 11) may transport dust and particles from Outside Receiving Yard (SWMU 9) operations into this unit.

SWMU 13 South Outfall

a. Unit Description

The South Outfall is the buried end of the South Underground Stormwater Line (SWMU 12).

b. Unit Location

The South Outfall is located near the western property line approximately one foot below grade. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

All wastes processed at the MWSI facility can be handled at the South Loading Dock (SWMU 11) at the eastern end of this unit and thus are subject for concern at this unit.

e. History of Use and Operation

This unit was installed as part of the 1997 Stage 3 Construction. It formerly discharged storm water to the ditch in the vicinity of this unit. The ditch was filled in during excavation work associated with a 1999 spill.

f. Potential Migration Pathways / Release Controls

The South Outfall discharges into the soil. There is some solids settling capacity at the South Dock Crock and at the South Dock Drain.

g. History of Releases

Incident #4, described in *Section 2.5.2* in AOC #1, occurred at the South Dock in 1999.

Precipitation falling on the South Dock (SWMU 11) may transport dust and particles from Outside Receiving Yard (SWMU 9) operations through the South Underground Stormwater Line (SWMU 12) to this unit.

SWMU 14 North Loading Dock

a. Unit Description

The North Loading Dock comprises an area of approximately 50 feet by 10 feet. The unit is a concrete pad and serves as a unloading dock for fluorescent lamps. The North Loading Dock is sloped to the building and has a drain at the lower end adjacent to the building.

b. Unit Location

The North Loading Dock is located on the northeast corner of the East Building. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

Only fluorescent lamps are received at this unit.

e. History of Use and Operation

This unit was originally installed in 1947 as part of the original East Building. The concrete ramp was extended as part of the Stage 2 Construction in 1994.

f. Potential Migration Pathways / Release Controls

The concrete pad is in very good condition but does have a few cracks. A drain at the base of this unit does have some solids settling capacity. This unit conveys storm water to the North Underground Stormwater Line (SWMU 15).

g. History of Releases

Precipitation falling on this unit may transport dust and particles into the North Underground Stormwater Line (SWMU 15).

SWMU 15 South Underground Stormwater Line

a. Unit Description

The North Underground Stormwater Line is a six-inch corrugated plastic line that runs underground from the North Dock (SWMU 14) to the North Outfall (SWMU 16). The line actually originates at the North Crock which is tied to the North Loading Dock drain.

b. Unit Location

The North Underground Stormwater Line runs north to the property line and then runs straight west to the culvert under the western MWSI driveway. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

Only fluorescent lamps are received at the North Loading Dock (SWMU 14).

e. History of Use and Operation

This unit was installed as part of the 1994 Stage 2 Construction.

f. Potential Migration Pathways / Release Controls

The North Underground Stormwater Line is a solid plastic line that conveys storm water to the North Outfall (SWMU 16).

g. History of Releases

Precipitation falling on the North Loading Dock (SWMU 14) may transport dust and particles into this unit.

SWMU 16 North Outfall

a. Unit Description

The North Outfall is the westerly flowing ditch at the end of the end of the North Underground Stormwater Line (SWMU 15).

b. Unit Location

The North Outfall is located near the western property line immediately west of the MWSI western driveway. See **Figure 8, Appendix A** for the location of this unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

Only fluorescent lamps are received at the North Loading Dock (SWMU 14), which drains through the North Underground Stormwater Line (SWMU 15) to this unit.

e. History of Use and Operation

This unit was installed as part of the 1994 Stage 2 Construction.

f. Potential Migration Pathways / Release Controls

The North Outfall is a culvert under the western MWSI driveway. There is some solids settling capacity at the North Dock Drain and at the North Crock.

g. History of Releases

Precipitation falling on the North Loading Dock (SWMU 14) may transport dust and particles through the North Underground Stormwater Line (SWMU 12) to this unit.

SWMU 17 Courtyard/Downspouts

a. Unit Description

The Courtyard / Downspouts have been combined as one SWMU since the source and management activities associated these units are essentially the same. The Downspouts discharge precipitation from the roof onto the ground. The Courtyard is an area in which 6 downspouts discharge.

Past soil sampling efforts have identified elevated levels of mercury in the soil at the Downspouts and in the Courtyard. The Downspouts and the Courtyard have been covered with gravel since approximately 1999. Gravel was added at this unit to facilitate the annual testing and removal to mitigate the accumulation of mercury levels in area. The downspouts are covered with an area of gravel approximately 2 feet by 2 feet and 2 feet deep. The Courtyard is an area measuring approximately 40 feet by 20 feet. On an annual basis, the gravel from these areas has been excavated, retorted, and disposed off-site with new clean gravel installed in place of the removed material. Annual testing of the underlying soils has been conducted to monitor the mercury levels in the soil.

b. Unit Location

Downspouts are located along the periphery of the East and West Buildings. The Courtyard is an area in which 6 downspouts discharge located between the East and West Buildings. See **Figure 8, Appendix A** for location of unit.

c. Regulatory Status

This unit is not regulated.

d. Wastes Managed

No wastes are managed at this unit. The Downspouts and the Courtyard have received storm water from the roof since 1994. In addition, both the main stack and the vent from the Continuous Flow Mercury Retort Oven (SWMU 2) are located in or above the Courtyard.

e. History of Use and Operation

The downspouts were installed on both the East and West Buildings as part of the 1994 Stage 2 Construction. The Courtyard was formed at this time as well.

f. Potential Migration Pathways / Release Controls

It is postulated that the source of the mercury levels in the soil in both the Courtyard and at the Downspouts was from mercury condensing on the facility roof. The Retort Room was vented up until 2000. This unit has no release controls other than the impermeable nature of the underlying soils.

g. History of Releases

Incidents #1, 2, 3 and 5 occurred in the Retort Room. Since the Retort Rom was vented prior to 2000, it is possible that Incidents #1, 2, and 3 contributed to the mercury levels in the soil at this unit. It is also possible that the day-to-day venting of the Retort Room also served as a source of mercury.

Soil sampling efforts in past years have shown a clear decline in the soil mercury concentrations for this unit. It is suspected that the removal of vents from the Retort Room has contributed to this decline.

SWMU 18 Former Loading Dock

a. Unit Description

The Former Loading Dock comprised an area of approximately 50 feet by 10 feet and was constructed in much the same manner as the two present docks at the MWSI facility. The unit was constructed of concrete and served as the main dock for MWSI from 1995 through 1997. The Former Loading Dock was sloped to the building and had a drain at the lower end adjacent to the building.

b. Unit Location

The Former Loading Dock was located on the southwest corner of the West Building (pre Stage 3 construction). See **Figure 8, Appendix A** for location of unit.

c. Regulatory Status

This unit was not regulated.

d. Wastes Managed

All wastes processed at the MWSI facility were handled at the Former Loading Dock

e. History of Use and Operation

This unit was constructed in 1994 as part of the Stage 2 Construction.

f. Potential Migration Pathways / Release Controls

This unit was not observed and thus comments on integrity can be provided. The drain located at this unit conveyed storm water to the culvert on western property line.

g. History of Releases

There are no known releases from this unit.

2.5.2 Areas of Concern

Based on past process operations and documented releases and/or spills, MWSI has identified two Areas of Concern (AOCs) at the MWSI facility, which encompass five separate incidents. The first AOC includes the retort room; specifically the Stationary Mercury Retort Ovens (SWMU 1). Four incidents (#1, #2, #3, and #5) have been documented in this AOC.

The second AOC is the South Loading Dock (SWMU 11) where all waste materials are loaded and unloaded. One incident (#4) has occurred in this AOC. Incidents and AOCs are discussed below:

Incident #1 in AOC #1

a. Unit Description

Refer to the August 3, 1998, letter from MWSI to WDNR for more information (**Appendix G**).

On Thursday evening, July 30, 1998, MWSI received a call stating there appeared to be excessive smoke coming out of the exhaust stack at the facility. MWSI responded immediately to the plant and assessed the situation. MWSI had emergency and personnel protective equipment necessary to respond to an emergency situation on-site. As such, the Kansasville Fire Department and MWSI agreed that MWSI staff should enter the facility and assess the situation.

Upon entering the facility, MWSI staff confirmed a partially blocked vacuum on retort oven #3 due to a partially plugged condenser tank. This condition caused an increase in pressure in the oven and forced smoke out of the exhaust stack and out through an air intake valve on the retort oven. Mercury readings were taken with a Jerome Mercury Vapor Analyzer around the facility during the malfunction and no readings of concern were obtained. Exhaust stack smoke passed through carbon filters/canisters prior to discharge from the facility.

The County Haz Mat Team from Racine arrived and asked MWSI what happened and what it was doing to address the situation. By that time MSWI staff had hooked up a hose to divert exhaust and pressure from retort oven #3 to another collection system and cooled the oven from approximately 1300 degrees to less than 640 degrees using liquid nitrogen. Both the Haz Mat team and the Fire Department were satisfied with the how the situation was handled and turned the facility back over to MWSI for normal operations when the oven temperature dropped to 500 degrees a short time later.

MWSI staff took mercury readings outside of the facility the following morning. Again, no mercury readings of concern were observed. MWSI took readings inside the facility and found mercury level readings necessitated the use of personal protective equipment (PPE). MWSI personnel in PPE inspected the retort oven #3 and confirmed that no damage had been done to

any equipment. Mr. Tim Kennedy from the WDNR visited the site on Friday morning, July 31, 1998.

b. Facility Clean-Up

All clean-up operations were conducted by MWSI staff. All employees wore respirators during clean-up operations on Friday, Saturday and Sunday. Power washers were used to clean up the dusty residue that was released through the valve on the door of retort oven #3. All water generated from clean-up operations, including roof-top cleaning, was recovered and retorted in one of MWSI's retort ovens. All MWSI staff needing to perform work in the processing area wore respirators until August 2, 1998.

c. Analysis of Potential Release

MWSI personnel used a Jerome Mercury Vapor Analyzer to monitor ambient air conditions surrounding the facility. Readings ranged from 0.022 to 0.027 mg/m^3, well below regulatory standards. On Tuesday, August 4th, Mr. Tom Anderson of the Wisconsin Dept. of Health & Family Services conducted soil and wipe samples on the properties neighboring the facility. Duplicate samples were analyzed by an independent environmental consulting firm. Laboratory samples were extremely low and did not exceed regulatory levels (see **Table 1, Appendix B** and **Appendix H**).

The degree and extent of impacts were limited to the interior of the MWSI facility, which was thoroughly cleaned by MWSI staff. Potential migration pathways include indirect transportation of mercury outside of the facility via ventilation systems, equipment, employee clothing, solutions/water used for cleaning, etc. However, there is no indication that the environment was impacted through any of these contaminant migration pathways.

d. Investigation of Cause

As indicated above, a partially plugged condenser tank blocked the vacuum on retort oven #3 and led to an increase in oven pressures and the eventual release of excessive smoke.

e. Operational & Procedural Improvements

In response to this incident, MWSI moved to a three shift, 24-hour work day. The intent was to have operating equipment monitored by personnel at all times, thereby greatly reducing response times to potential equipment malfunctions. Existing retort ovens were fitted with an emergency bypass valve that will, in the event of a similar sudden increase in oven pressure, automatically redirect air flow to an alternate collection system.

It was the general opinion of MWSI and Mr. Jeff Bratz, Chief of the Kansasville Fire Department, that emergency response procedures implemented during this incident were effective and complete.

Incident #2 in AOC #1

a. Unit Description

Refer to the Sept. 24, 1998, letter from MWSI to WDNR for more information (**Appendix G**).

On Sunday morning, August 30, 1998, a call was placed to the Kansasville Fire Department indicating that visible smoke was coming out of roof vents at MWSI. The Kansasville Fire Department and MWSI personnel responded to the call to find a small quantity of smoke exiting through the carbon-filtered vents in the roof. MWSI staff entered the facility in SCBA equipment to assess the situation. There was minimal smoke within the facility and Jerome meter readings were less than 0.250 mg/m^3. MWSI staff engaged the emergency bypass to an alternate collection system and the smoke exiting the building immediately ceased as facility air was again drawn through the oven.

b. Facility Clean-Up

At no time was there an actual or potential release of mercury nor was control of the facility removed from MWSI personnel. Clean-up activities were not required.

c. Analysis of Potential Release

As indicated above, there was minimal smoke within the facility and Jerome meter readings were less than 0.250 mg/m^3. In addition, smoke released from the roof vents first passed through carbon filters.

d. Investigation of Cause

During the evening of Thursday, August 27th, several false alarms were sent by the computer monitoring system to MWSI personnel indicating loss of air flow through the collection systems. On Friday, August 28th, the system programmer was called to correct this problem. The monitoring system was taken off-line while the programmer evaluated the system. A defective heat element was also replaced and tested by increasing the oven up to 750 degrees during this time. Two boxes of batteries and a box of personal protective equipment (PPE) were in the oven during the test. Although MWSI monitored the oven as it cooled, MWSI later determined from observations of smoke and materials in the oven that the PPE had begun to smolder after the oven was shut down. Because the collection system was still off-line, smoke was gradually released from the air intake valve into the facility and through the carbon filters and roof vents.

e. Operational & Procedural Improvements

Computer monitoring and emergency response systems were being inspected during this incident and were off-line. When manually activated, the emergency bypass collection system functioned properly. Additionally, the facility remained under MWSI control and no disruption of operations occurred.

When on-line, the computer monitoring and emergency response systems would have prevented and/or notified MWSI personnel directly of this incident. In the future, additional precautions will be taken when simultaneously inspecting and testing monitoring and response systems.

Incident #3 in AOC #1

a. Unit Description

Refer to the October 28, 1998, letter report from Environmental Monitoring and Technologies, Inc. (EMT) to MWSI and the December 14, 1998, letter from MWSI to WDNR for more information (**Appendix G**).

On Wednesday morning, October 14, 1998, MWSI personnel heard a thunder-like noise emanating from the stationary retort oven area of the facility. One stationary retort oven had been forced open due to a sudden build-up of pressure within the oven. There were no employees in the retort oven area at the time of the incident. MWSI personnel used portable fire suppression equipment on the material within the oven to reduce oven temperature. The Kansasville Fire Department was contacted for assistance per procedures outlined in the facility's Emergency Response and Contingency Plan. The Fire Department placed foam in the oven to further suppress and prevent additional hazards.

MWSI personnel used a Jerome Mercury Vapor Analyzer to monitor ambient air conditions surrounding the facility. Mercury levels were well below levels that would pose any immediate danger to human health or the environment. On Thursday morning the Fire Department investigation team entered the facility in SCBA gear to inspect the physical condition of the facility. Control of the facility was returned to MWSI shortly after noon on Thursday.

MWSI then acted to 1) determine and address facility clean-up, 2) analyze any actual and potential off-site releases, 3) investigate the cause of the reaction, and 4) document all operational and procedural improvements made to prevent the recurrence of such an incident.

b. Facility Clean-Up

MWSI retained the services of North Shore Environmental Construction, Inc. (North Shore) to conduct the facility clean-up. North Shore utilized a 6% sodium thiosulfate solution in water to reduce the mercury vapor concentrations inside the facility to levels at which air purifying respiratory protection could be used by MWSI personnel in completing the cleaning.

c. Analysis of Potential Release

In order to determine the extent of potential mercury vapor release as a result of this incident, MWSI retained the services of Liesch Environmental Services, Inc. (Liesch) to conduct soil and air sampling around the facility. During the incident, winds were generally from the north. For that reason, one soil sample was taken due north of the facility and four others were taken to the

south of, and at varying distances from, the facility. The maximum mercury level found in the soil was 0.96 mg/kg (ppm). This level is only slightly above background levels established at upgradient monitoring points and below regulatory levels. Air monitoring was conducted by Environmental Monitoring & Technologies, Inc. (EMT) for a 5-day period following the incident. Monitoring stations were set up at seven locations surrounding the facility; four immediately adjacent to the facility and three closer to the site perimeter.

Review of the data by Liesch indicated that the mercury emissions from the facility following the incident caused a detectable increase in ambient mercury concentrations, but not to a level that exceeded Wisconsin's NR 445 or NR 446 acceptable limits of 1 $\mu g/m^3$.

The degree and extent of impacts were limited to the interior of the MWSI facility as demonstrated by the EMT ambient mercury concentration test program. In addition, the interior of the MWSI facility was thoroughly cleaned by North Shore Environmental Construction. Potential migration pathways include indirect transportation of mercury outside of the facility via ventilation systems, equipment, employee clothing, solutions/water used for cleaning, etc. However, there is no indication that the environment was impacted through any of these contaminant migration pathways.

d. Investigation of Cause

A thorough review of shipping, inventory, and process documentation, led MWSI to conclude that a quantity of lithium batteries were inadvertently included in a stationary retort oven run. Lithium batteries were not manifested as they are non-regulated universal waste. Lithium batteries, when exposed to elevated temperatures, can be highly reactive leaving lithium, sulfur, and sulfate residue and liberating oxygen. In order to validate that conclusion, MWSI collected and analyzed residual materials from the involved run for lithium reaction residues. Analysis confirmed the occurrence of lithium reaction residuals.

e. Operational & Procedural Improvements

MWSI has developed and implemented a number of operational and procedural improvements, with particular attention to materials inspection, sorting, and handling. These documents have been reviewed by, and are on file with, the WDNR. MWSI independently continues to seek more protective and efficient means of handling/processing hazardous materials. Materials being placed within retort boxes will be given additional scrutiny to ensure that no incompatible materials are loaded.

Incident #4 in AOC #2

a. Unit Description

Refer to the July 27, 1999, letter from MWSI to Philips Services Corporation and the October 5, 1999, letter from MWSI to WDNR for more information (**Appendix G**).

On March 11, 1999, a mercury spill occurred at the facility from a truck operated by Allwaste Transportation & Remediation, Inc. that contained hazardous waste from Burlington Environmental, Inc. (Burlington). It was eventually determined that over 250 pounds of mercury were unaccounted for between the original shipping weight and the final weight of the faulty mercury container.

b. Facility Clean-Up

MWSI personnel constructed berms of absorbent material around the spill to prevent further migration and notified appropriate agencies. Superior Environmental Services, Inc. was retained by Burlington to recover spilled mercury and decontaminate the loading dock and truck trailer.

c. Analysis of Potential Release

Mercury impacts were documented in the back half of the tractor trailer where the spill originated, near the south loading dock area at MWSI, on the paved driveway leading up to the loading dock, in the loading dock drain, and in the west ditch that receives drainage from the loading dock. The loading dock and surrounding areas were thoroughly cleaned by Superior Special Services and impacted soil and water were collected by MWSI and retorted. As evidenced by elevated mercury concentrations, the primary migration pathway was the storm water drain and piping leading from the loading dock area. Other potential migration pathways include indirect transportation of mercury outside of the facility via ventilation systems, equipment, employee clothing, solutions/water used for cleaning, etc.

Laboratory results from a May 14, 1999, soil sampling event indicated elevated mercury levels near a drainage ditch to the west of the facility. It was concluded by MWSI that mercury from the March spill had unknowingly entered a ground drain and dock drain and migrated to the drainage ditch. MWSI cleaned both drains, removed and retorted gravel around the drains, and removed and retorted all of the soils in the drainage area that were impacted. Approximately 24 cubic yards of gravel and soil were removed, retorted and replaced with new drainage rock and soil. **MWSI has received a 'no further action' letter from the WDNR in regard to this release.**

d. Operational & Procedural Improvements

To eliminate future recurrences, MWSI places a cover over the drain in the loading dock area during deliveries. The loading dock area would provide containment in the event of a mercury spill. The connection between the south storm drain and the storm drain's outfall at the west ditch remains although the outfall is now covered with rock. Water that accumulates in the south loading dock is first inspected before being discharged into the south storm drain.

Incident #5 in AOC #1

a. Unit Description

Refer to the August 30, 2001, letter from WDNR to MWSI for a summary of this incident **(Appendix G)**.

On January 20, 2001, an over pressurization release occurred from an oven that had inadvertently been loaded with silver oxide powder from Rayovac. A call was placed to Racine County Emergency Management who notified the WDNR of the release.

MWSI responded immediately to the release and assessed the situation. MWSI had emergency and personnel protective equipment necessary to respond to the situation. MWSI took readings with a Jerome Mercury Vapor Analyzer and found mercury level readings necessitated the use of personal protective equipment (PPE). MWSI staff entered the facility in PPE and SCBA equipment to assess the situation. There was minimal smoke within the facility. MWSI personnel in PPE inspected the retort oven and confirmed that no damage had been done to any equipment.

Mercury readings were taken with the Jerome Analyzer around the facility and no readings of concern were obtained. Exhaust stack smoke had passed through carbon filters/canisters prior to being discharged from the facility.

b. Facility Clean-Up

All clean-up operations were conducted by MWSI staff. Power washers and sodium thiosulfate were used to clean up the dusty residue that was released within the retort room. All water generated from clean-up operations was recovered and retorted in one of the MWSI retort ovens. All MWSI staff needing to perform work in the processing area wore respirators.

c. Analysis of Potential Release

MWSI personnel used a Jerome Analyzer to monitor ambient air conditions surrounding the facility. Readings were well below regulatory standards.

The degree and extent of impacts were limited to the interior of the MWSI facility, which was thoroughly cleaned by MWSI staff. Potential migration pathways include indirect transportation of mercury outside of the facility via ventilation systems, equipment, employee clothing, solutions/water used for cleaning, etc. However, there is no indication that the environment was impacted through any of these contaminant migration pathways.

d. Investigation of Cause

As indicated above, the inclusion of silver oxide powder, unlisted on the manifest from Rayovac, led to an increase in oven pressures and the eventual release of excessive smoke.

e. Operational & Procedural Improvements

In response to this incident, MWSI revisited manifest and material inspection procedures and notified Rayovac of the manifest discrepancy and subsequent release.

It is the general opinion of MWSI that emergency response procedures implemented during this incident were effective and complete.

2.6 Nature and Extent of Potential Contamination

Materials of concern that could contaminate soil, surface water, groundwater, and/or air include:

1) Materials to be recycled (fluorescent lamps, mercury switches, batteries, etc.);
2) Process and treatment system by-products (VOCs, carbon monoxide, heavy metals, lighting ballasts, solid wastes, hazardous wastes, etc.);
3) Recycled mercury;
4) Incidental releases associated with trucks and automobiles (oil and grease, diesel fuel, gasoline, hydraulic oils, transmission fluids, brake fluids, and engine coolants);
5) Storm water contact with exposed (uncovered) materials stored outside;
6) Electrical transformers and HVAC support equipment located outside the building; and
7) Two 100-gal petroleum storage tanks located outside of the facility. A 100-gal diesel AST is located on the west side of the building and is associated with a back-up power generator. The other AST is a portable 100-gal diesel tank.

There are no reported environmental conditions associated with the transformers, HVAC equipment, ASTs, or incidental releases associated with trucks and automobiles in parking areas.

Potential migration pathways for contamination at the site include utility corridors, native permeable lenses within low permeability materials, and the single potable well. Utility corridors, specifically storm drains, have served as conduits for contamination in the past (refer to Incident #4). However, MWSI has taken precautionary measures to prevent releases from occurring, reaching, and traveling through utility corridors.

While surface contamination has been documented at the site, shallow soils are comprised of silt and clay that inhibits migration. In addition, the contaminant of concern, mercury, is not highly mobile.

There is no evidence that the on-site potable well, used exclusively for washing (drinking water coolers are provided by MWSI), has been impacted by mercury or serves as a conduit for groundwater contamination. However, MWSI sampled the well for mercury contamination and the results are discussed below.

2.6.1 Potential Soil Contamination

Soil contamination can occur directly through material spills or indirectly from rooftop emissions. MWSI has implemented policies and procedures to minimize material spills and reduce rooftop emissions. To characterize potential soil contamination, approximately 120 soil samples have been collected and analyzed for mercury since August 1998. See **Table 1, Appendix B** for a summary of results.

2.6.2 Potential Air Contamination

Emission stack testing was performed in February 1998, June 2000, and November 2000 to determine the quantity and quality of discharge air from the facility. Existing process filters and carbon adsorbers remove air-borne contaminants (particulate matter, VOCs, mercury, etc.) during the mercury recovery process while a packed tower scrubber removes most of the remaining contaminants from the exhaust air.

Calculations of the Maximum Theoretical Emissions, Potential Emissions, and actual emissions for VOCs, particulate matter, mercury, carbon monoxide, and formaldehyde emissions were developed based on stack test results. Stack test summaries were submitted to the WDNR in the November 2000 Operation Permit Application and LACT Analysis.

Only the maximum theoretical emission of carbon monoxide (CO) and maximum theoretical emission of VOCs were high enough to be considered for inclusion within the operation permit application. VOC emissions only triggered the need for permitting based on the use of the June 2000 test data. This data is not considered to be representative of normal operating ranges as VOC concentrations measured at the time exceeded upper-end calibration range specifications for the EPA methodology. MWSI included in the permit application VOC emissions at a level that may, for short times, at some point in the future approach an emission rate of 5.7 lb/hr.

Mercury emissions never exceeded the NR 445 threshold values (called out in the construction permit exemption criteria) or the 1$\mu g/m^3$ ambient 30-day average concentration for NR 446 compliance (as verified by Liesch's April 1999 modeling study). The June 2000 test did not have any emissions that exceeded the NR 407 inclusion levels for mercury. However, for documentation purposes mercury was included in the permit application.

In addition, using conservative stack parameters and technical modeling procedures, a MWSI emission modeling study predicted the concentration of mercury would not exceed 0.0786 µg/cubic meter. This concentration is less than 8% of the 1.0 µg/cubic meter NR 446 30-day average limitation. The study factored the available emission rates occurring at the time of the 1998 test (with one of the retort ovens operating) upward to represent three ovens in operation,

then factored this estimated emission rate for three furnaces upward by a factor of two to account for typical operational variability. The estimate of the potential-to-emit mercury from the retort oven of 0.00438 lb/hr was used throughout the modeling analysis.

Other emissions, such as particulate matter and formaldehyde were emitted at significantly lower emission rates than the permit application inclusion levels and were not listed as being significant in the permit application.

Based on stack test data and emission calculations, potential VOC emissions were estimated to be 21.2 ton/yr. These results indicate that potential emissions should not exceed 25 ton/yr (emission limit for ozone non-attainment areas). No special permit limitations are needed to restrict operations to meet this emission rate. These emissions identify the source as being a true minor source under federal Title V (Part 70) operation permit rules and Wisconsin's NR 407 rules. Based on test results and relevant regulations, other existing sources at MWSI are exempt from additional control requirements. As noted above, a minor source permit operation application was submitted to the WDNR in November of 2000.

MWSI provided a LACT analysis to the WDNR containing an evaluation of potential add-on controls. The analysis showed that the current use of a packed tower scrubber and other VOC recovery practices meet the LACT. Cost estimates for this control technique are somewhat higher than that typically used to define acceptable LACT installations. Based on cost estimates this control approach is not necessarily required.

In the spring of 2002, the WDNR completed a 30-day ambient air monitoring program at MWSI. A portable laboratory was located immediately northwest from MWSI and continuously analyzed and recorded ambient concentrations of mercury in the air. Our summary of the ambient air monitoring results showed the 30-day concentration was a mere 4.7% of the current limit in NR 446 ($1\mu g/m^3$) and the 24-hr concentration was 14.2% of the NR 445 current value (if it is applicable). Ambient air concentrations of mercury at MWSI are not significant.

The amount of mercury has been minimized through improved technologies, through the use of carbon, and through approved maintenance of equipment (wet scrubber, etc.).

2.6.3 Potential Surface Waters/Groundwater Contamination

Chemical spills and storm water contact with on-site materials may impact surface waters and groundwater. MWSI has designed and implemented structures and procedures, such as enclosed storage areas with secondary containment and a Storm Water Pollution Prevention Plan (SWPPP), to prevent contact between process materials and surface water / groundwater.

As part of the MWSI SWPPP to minimize potential surface water / groundwater contamination, storm water is visibly inspected on a quarterly basis and samples have been collected and analyzed. See **Table 2, Appendix B** for a summary of results.

The MWSI groundwater well was sampled in April 2003 for total mercury. The sample was taken inside the MWSI plant facility from a facet. The faucet was allowed to run for approximately one hour prior to collecting the sample. The sample was collected in a plastic container and submitted for analysis. The result from the analysis was 1 part per billion total mercury. The analytical laboratory report can be found in **Appendix H.**

MWSI contacted WDNR staff regarding the need for further analysis under WDNR administrative code. In discussing the well with WDNR staff, it was determined that the MWSI well is classified as a potable well even though the water is not used for drinking water. However, in further discussing the status of the well with WDNR staff, it was determined that the well did not need to be analyzed since the well is not used by the minimum of employees requiring analysis. A copy of the e-mail correspondence with WDNR staff regarding the status of the well and the need for analysis is included in **Appendix E.**

2.7 Summary of Remedial Actions Taken

2.7.1 Soil Remediation

Soil samples collected from various locations at the facility have contained detectable levels of mercury. It is believed that wind and rain events transfer residual mercury surrounding rooftop vents to surface soils. The most notable areas are between the East and West Buildings (courtyard), along the west side of the building near the downspouts, near the southern storm drain, and within the west ditch. Contaminated soil has been excavated from these areas, regularly from the courtyard and beneath downspouts, (see **Figure 9, Appendix A**) and treated in MWSI retort ovens to remove and recover mercury. Soil was subsequently sent out for disposal as a non-hazardous special waste to the Superior Emerald Park Landfill. Refer to **Table 4, Appendix B** for a summary of remedial activities and **Appendix J** for retorting documentation and disposal manifests.

Annual soil removal and retorting activities include:

1) excavating 1-2 feet of rock and soil in the courtyard and beneath downspouts,
2) collecting and analyzing soil samples at the base of select excavations (in the courtyard, samples are taken under the emission stack, under the vent for the continuous flow oven, and in the middle of courtyard),
3) retorting soil for mercury recovery with subsequent off-site disposal, and
4) replacing excavated soil with clean material.

Soil removal and retorting activities completed in May and June 1999 and associated with the March 1999 Spill (Incident #4) included:

1) excavating approximately 24 cubic yards (36 tons) of soil from an area up to 5 feet wide, 150 feet long, and 1 to 2 feet deep,
2) retorting soil for mercury recovery with subsequent off-site disposal, and
3) replacing excavated soil with clean material,
4) burying the south outfall and culvert that leads to the retention pond on the Systematics property under approximately 2 to 3 feet of gravel and soil, and
5) establishing grass over the outfall area.

The outfall and culvert were covered with gravel and soil to slow storm water velocity and minimize the spread of contamination.

It is the intention of MWSI to periodically sample and analyze soil samples and, if necessary, remove and treat contaminated surface soils. MWSI has isolated the known areas of mercury deposition and has had a program in place since 1998 to remove, retort and replace the rock and soil from areas of mercury deposition.

2.7.2 Air Emissions

As indicated above, MWSI is exempt from additional treatment of exhaust stack emissions. The facility intends to continue to use carbon canisters and a wet scrubber. MWSI is also reviewing different scrubber solutions to help optimize VOC collection. The facility is making ongoing efforts to maintain waste stream plastic contents within an acceptable range to help prevent VOC emissions.

2.7.3 Surface Waters/Groundwater

There are no reported surface waters on or near the site and there are no reported facility-related environmental impacts to groundwater beneath the site. Mercury deposits from air emissions may impact surface water during storm events. However, mercury is not highly mobile and generally settles into the soil matrix before traveling more than a few feet. As such, removing and retorting soil is the most effective method for recovering mercury.

On-site storm water treatment consisting of a detention basin will likely be incorporated into the redesign of the facility receiving yard. There is no evidence that groundwater below the site has been impacted by facility processes or requires remediation.

2.8 Data Evaluation and Recommendations

MWSI operates and maintains a mercury recycling facility that focuses on increasing worker safety and minimizing impacts to the environment. Deficiencies in past operational procedures have been corrected and environmental damage remediated. MWSI will maintain an ongoing effort to eliminate threats to worker safety and minimize impacts to the environment.

As part of this ongoing effort, MWSI has developed a Malfunction Prevention and Abatement Plan (dated January 1999). The Plan was created and implemented to increase worker safety and eliminate or reduce impacts to the environment in the event of a process malfunction.

MWSI has developed a Contingency Plan that details response actions for various incidents, including spills and other releases. In addition, the facility Stormwater Pollution Prevention Plan outlines methods for preventing and responding to spills.

MWSI has also developed and implemented a Feasibility Report and Plan of Operations (dated April 2000) that has been submitted and accepted by the WDNR. The Plan covers materials approved for recycling, waste description and storage procedures, waste analysis and inspection, recycling procedures and processes, secondary containment and safety procedures, and other facility-related topics.

MWSI plans to develop and implement an Investigation Work Plan and a Site Maintenance Plan by January 23, 2004. The Investigation Work Plan will consider:

- Advancement of soil borings to determine subsurface soil conditions and depth to groundwater. Groundwater monitoring well locations may be proposed to determine groundwater flow direction at the site and whether there are impacts to groundwater.
- Definition of the vertical extent of impacts.
- Collection of samples from beneath the downspouts, the west drainage ditch (at ground surface, at the base of the ditch prior to placement of backfill, and at the elevation of the current pipe outfall within the ditch), southern storm drain, the courtyard, west drainage culvert, the southeast loading dock (at a minimum include the sumps and drains), the outside storage area, and the northeast loading dock.
- In addition samples should be collected from the northern and western property boundaries. Include any other areas that are part of the storm water runoff pathway or other areas where mercury was detected in the past.
- A sample numbering scheme which includes the sample date and location.
- Sample collection and analysis methodologies including proposed sample depth, which should generally be within the top 3 inches if aerial deposition or overland flow is the expected source.
- Proposed sample locations marked on a site map.

The Site Maintenance Plan will include:

- A proposed residual cleanup level for mercury, above which remedial action will be implemented.
- A schedule for reporting
- A description of how soil excavation, retorting, and disposal will occur.
- A sampling plan for the collection of confirmation samples from excavated areas and backfill procedures, which includes a description of backfill material to be used.
- Plans to document areas excavated and site figures to depict these areas.

2.8.1 Soils

Testing for potential soil contamination, a total of 58 Geoprobes were advanced across the site in October 1999 and September 2000. Soil samples were collected from approximately 1 foot bgs from target locations near points of interest (near downspouts for example) and on a grid pattern to ensure uniform site coverage. All samples were containerized and preserved as necessary and submitted to a licensed laboratory for mercury analysis. In December 2001, 13 shallow soil samples were collected from known hot spots using a shovel and submitted for laboratory analysis of mercury. Additional soil samples were collected in December 2002 and October 2003. In total, nearly 120 soil samples have been collected and analyzed for mercury. **Table 1, Appendix B** contains the laboratory results from all recent site investigations. Soil sample locations and laboratory results are depicted on **Figures 7A and 7B, Appendix A.**

Mercury levels above 1 ppm have been encountered in shallow soils in the courtyard and near downspouts on the west side of the facility. There may continue to be low levels of mercury found below the exhaust stack on the roof and below the downspouts. The mercury is a result of mercury stack emissions which are in compliance with WDNR air emission regulations. The only contamination of soil adjacent to the MWSI facility was a result of the mercury spill (Incident #4) and MWSI was not a responsible party in that incident. Soils contaminated by this third party release have been investigated and remediated as verified by the May 24, 2000, letter from the WDNR to MWSI issuing site closure (see **Appendix G**). MWSI has taken all known precautions to prevent another occurrence of this type.

MWSI will continue to monitor mercury levels in site soils and will remove and retort additional soils as necessary. Additional information on soil sampling, monitoring and retorting activities will be provided in the Investigation Work Plan and Site Maintenance Plan.

2.8.2 Air

Based upon review of available data, MWSI air emissions do not appear to be in violation of rules established under the requirements of the NR 400 series. Existing process filters and

carbon adsorbers remove air-borne contaminants (particulate matter, VOCs, mercury, etc.) during the mercury recovery process while a packed tower scrubber removes most of the remaining contaminants from the exhaust air. MWSI is in the process of replacing the existing wet scrubber with a more efficient model and will submit permit modifications/applications to the WDNR as required.

2.8.3 Surface Waters/Groundwater

MWSI has developed and implemented operational policies and procedures that significantly reduce the potential for surface water and groundwater impacts from facility releases. Furthermore, MWSI is in the process of redesigning the receiving yard to provide better control and treatment of storm water.

MWSI sampled and analyzed the on-site well potable well for mercury. The result was 1 part per billion total mercury. Although the well was constructed as a potable well, well water is used for non-consumptive uses such as hand washing. Water coolers are provided for drinking water.

MWSI sampled storm water for mercury, RCRA metals, and VOCs in April of 2003 as part of the facility SWPPP (see **Appendix I**). Laboratory results are included in **Appendix G** with the Annual Facility Site Compliance Inspection Report and summarized in **Table 2, Appendix B**. Regulatory advisory levels for drinking water/groundwater are included in the summary table although these standards do not directly apply to storm water. While laboratory tests identified contaminants at levels exceeding enforcement standards for groundwater, these levels in storm water do not pose an immediate threat to human health or the environment. MWSI will continue monitoring and sampling storm water as required by the SWPPP and intends to redesign the facility receiving area to further reduce storm water contaminant levels.

3.0 PRELIMINARY EVALUATION OF CORRECTIVE MEASURES

The corrective measures developed and implemented by MWSI reduce environmental impacts from facility activities. Corrective measures included:

- Developed and implemented a Malfunction Prevention and Abatement Plan.
- Developed and implemented a Feasibility Report and Plan of Operations.
- Developed and implemented a Storm Water Pollution Prevention Plan.
- Developed and implemented safe loading/unloading procedures and maintains clean up materials on site.
- Developed and implemented a Facility Contingency Plan.

- Use of a packed tower scrubber and a review of scrubber solutions to help optimize VOC collection.
- Maintain waste stream plastic contents within an acceptable range to help prevent VOC emissions.
- Complete and submit an Operation Permit Application and LACT Analysis.
- Developed and implemented a system to treat wastewater generated during the mercury recovery process.
- Investigated and remediated soils impacted in the courtyard, below downspouts, and by third party releases.
- Periodically sample and analyze soil samples and, if necessary, remove and treat impacted surface soils.

4.0 FACILITY INVESTIGATION WORK PLAN

As indicated above, an Investigation Work Plan will be completed for the MWSI facility by January 23, 2004.

5.0 SITE MAINTENANCE PLAN

As indicated above, a Facility Site Maintenance Plan will be completed for the MWSI facility by January 23, 2004.

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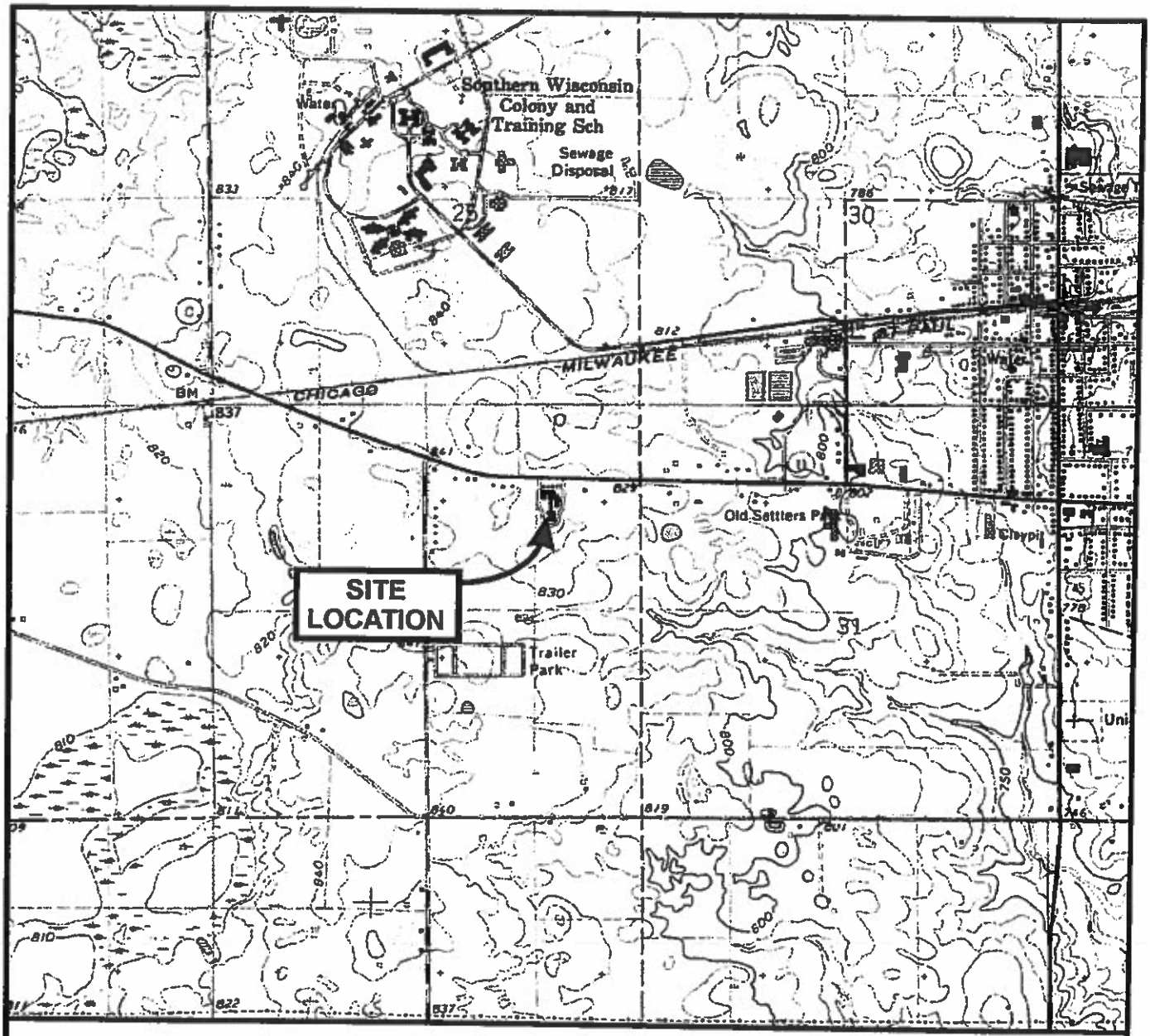
Appendix A

Figures



1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 ½ 0 1 KILOMETER

N

SCALE 1 : 24 000
CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

WISCONSIN

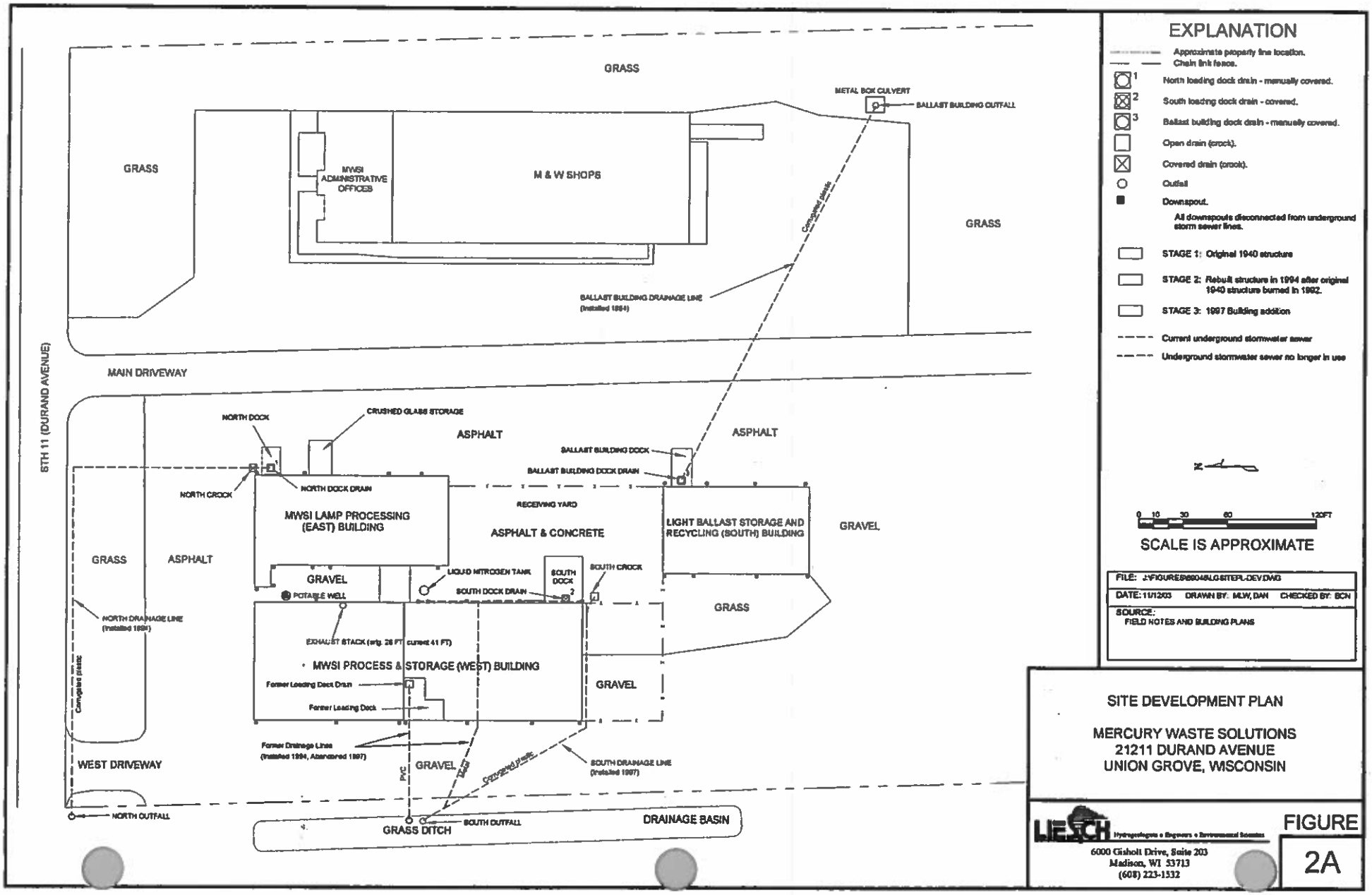
QUADRANGLE LOCATION

FILE/PATH:	J:\FIGURES\69048\SITE_LOC.CDR
DATE: 03/26/02	
PREPARED: MLW	APPROVED: BCN
SOURCE:	USGS QUADRANGLE - 7.5 MINUTE SERIES, UNION GROVE, WI, 1971.

LIESCH ENVIRONMENTAL SERVICES, INC.
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

SITE LOCATION
MERCURY WASTE SOLUTIONS, INC.
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

FIGURE
1



EXPLANATION

- Approximate property line location.
- Chain link fence.
- 1 North loading dock drain - manually covered.
- 2 South loading dock drain - covered.
- 3 Ballast building dock drain - manually covered.
- Open drain (crock).
- Covered drain (crock).
- Outfall
- Downspout.

All downspouts disconnected from underground storm sewer lines.

- STAGE 1: Original 1940 structure
- STAGE 2: Rebuilt structure in 1994 after original 1940 structure burned in 1992.
- STAGE 3: 1997 Building addition
- Current underground stormwater sewer
- Underground stormwater sewer no longer in use

N

0 10 30 60 120FT

SCALE IS APPROXIMATE

FILE: J:\FIGURES\86046\LGSITEPLDEV.DWG

DATE: 11/12/03 DRAWN BY: MLW, DAN CHECKED BY: BCN

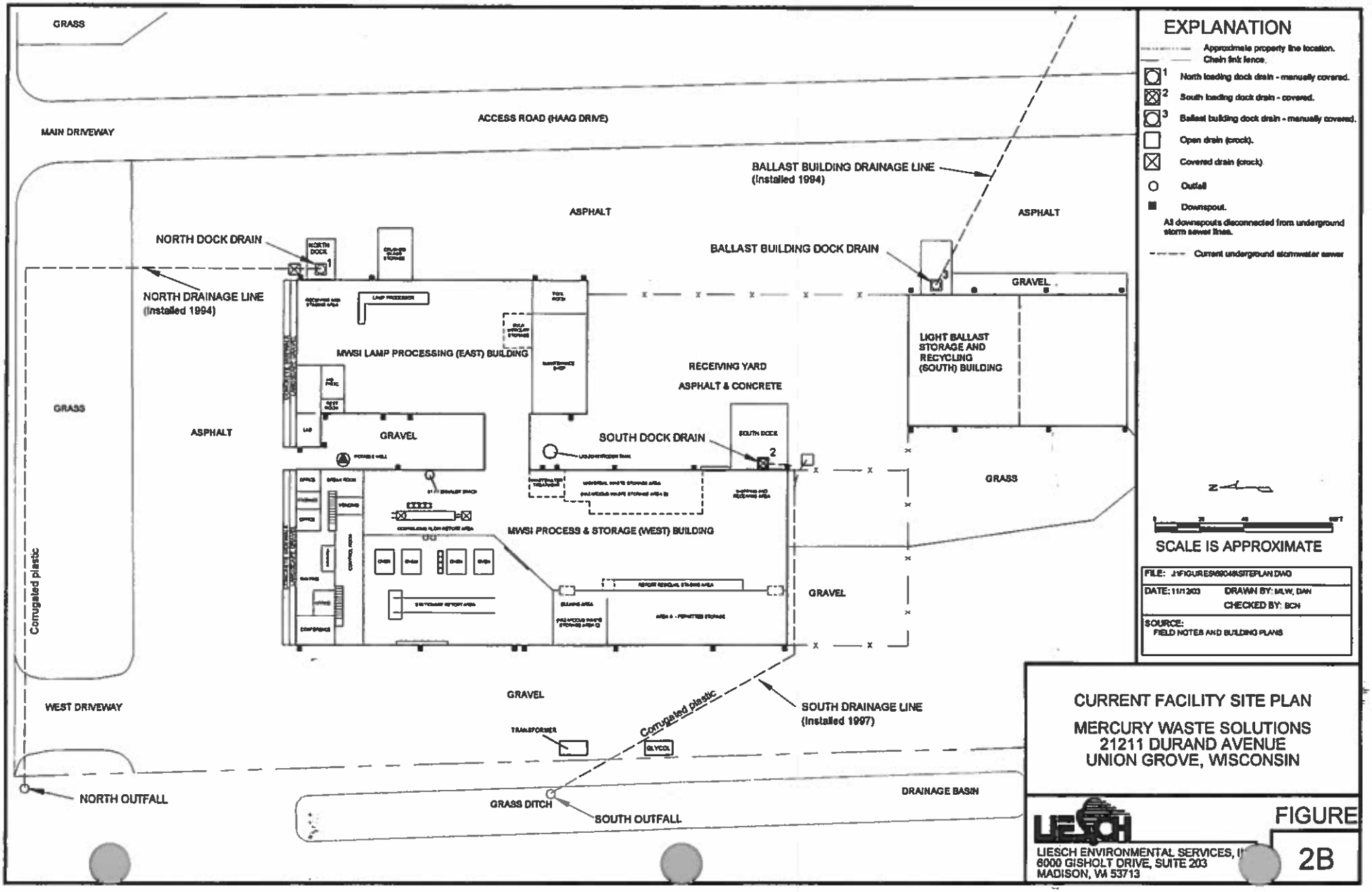
SOURCE: FIELD NOTES AND BUILDING PLANS

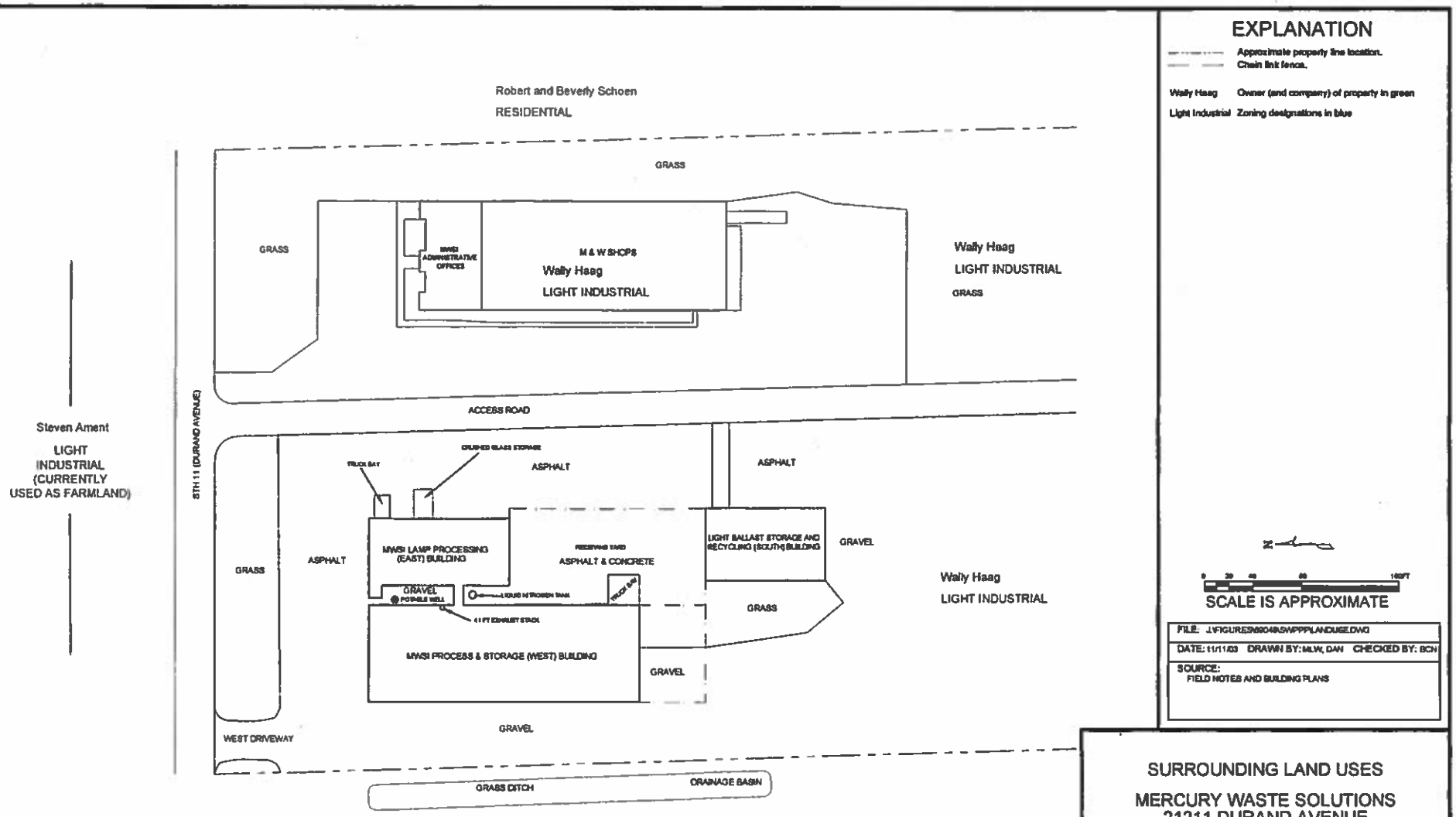
SITE DEVELOPMENT PLAN

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH Hydrogeologists • Engineers • Environmental Scientists
6000 Gisholt Drive, Suite 203
Madison, WI 53713
(608) 223-1532

FIGURE 2A


GRASS
ACCESS ROAD (HAAG DRIVE)
MAIN DRIVEWAY
BALLAST BUILDING DRAINAGE LINE
(Installed 1994)
ASPHALT
ASPHALT
NORTH DOCK DRAIN
BALLAST BUILDING DOCK DRAIN
NORTH DRAINAGE LINE
(Installed 1994)
GRAVEL
LIGHT BALLAST
STORAGE AND
RECYCLING
(SOUTH) BUILDING
MWSI LAMP PROCESSING (EAST) BUILDING
RECEIVING YARD
ASPHALT & CONCRETE
GRASS
ASPHALT
GRAVEL
SOUTH DOCK DRAIN
GRASS
MWSI PROCESS & STORAGE (WEST) BUILDING
GRAVEL
Corrugated plastic
GRAVEL
SOUTH DRAINAGE LINE
(Installed 1997)
WEST DRIVEWAY
TRANSFORMER
GLYCOL
Corrugated plastic
NORTH OUTFALL
GRASS DITCH
SOUTH OUTFALL
DRAINAGE BASIN
EXPLANATION
Approximate property line location.
Chain link fence.
North loading dock drain - manually covered.
South loading dock drain - covered.
Ballast building dock drain - manually covered.
Open drain (crock).
Covered drain (crock).
Outfall
Downspout.
All downspouts disconnected from underground storm sewer lines.
Current underground stormwater sewer
SCALE IS APPROXIMATE
FILE: J:\FIGURES\69048\SITEPLAN.DWG
DATE: 11/1/03
DRAWN BY: MLW, DAN
CHECKED BY: BCN
SOURCE:
FIELD NOTES AND BUILDING PLANS
CURRENT FACILITY SITE PLAN
MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN
LIESCH ENVIRONMENTAL SERVICES, I
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713
FIGURE
2B



EXPLANATION

Approximate property line location.
Chain link fence.

Wally Haag — Owner (and company) of property in green

Light Industrial — Zoning designations in blue

N

0 20 40 80 160FT

SCALE IS APPROXIMATE

FILE: J:\FIGURES\66048\SWPPPLANDUSE.DWG

DATE: 11/11/03 DRAWN BY: MLW, DAN CHECKED BY: BCN

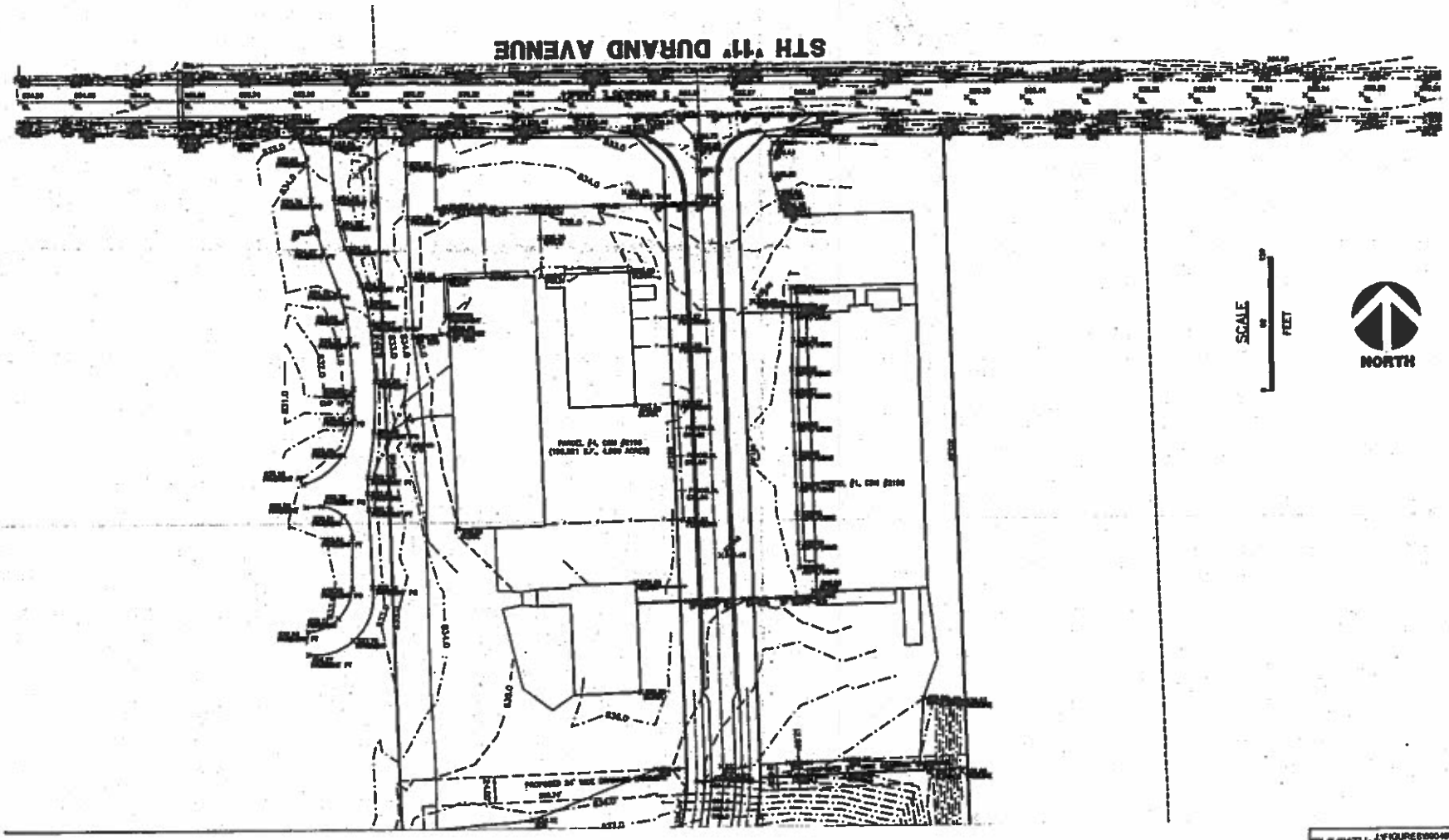
SOURCE:
FIELD NOTES AND BUILDING PLANS

SURROUNDING LAND USES

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH ENVIRONMENTAL SERVICES, I
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

FIGURE 3



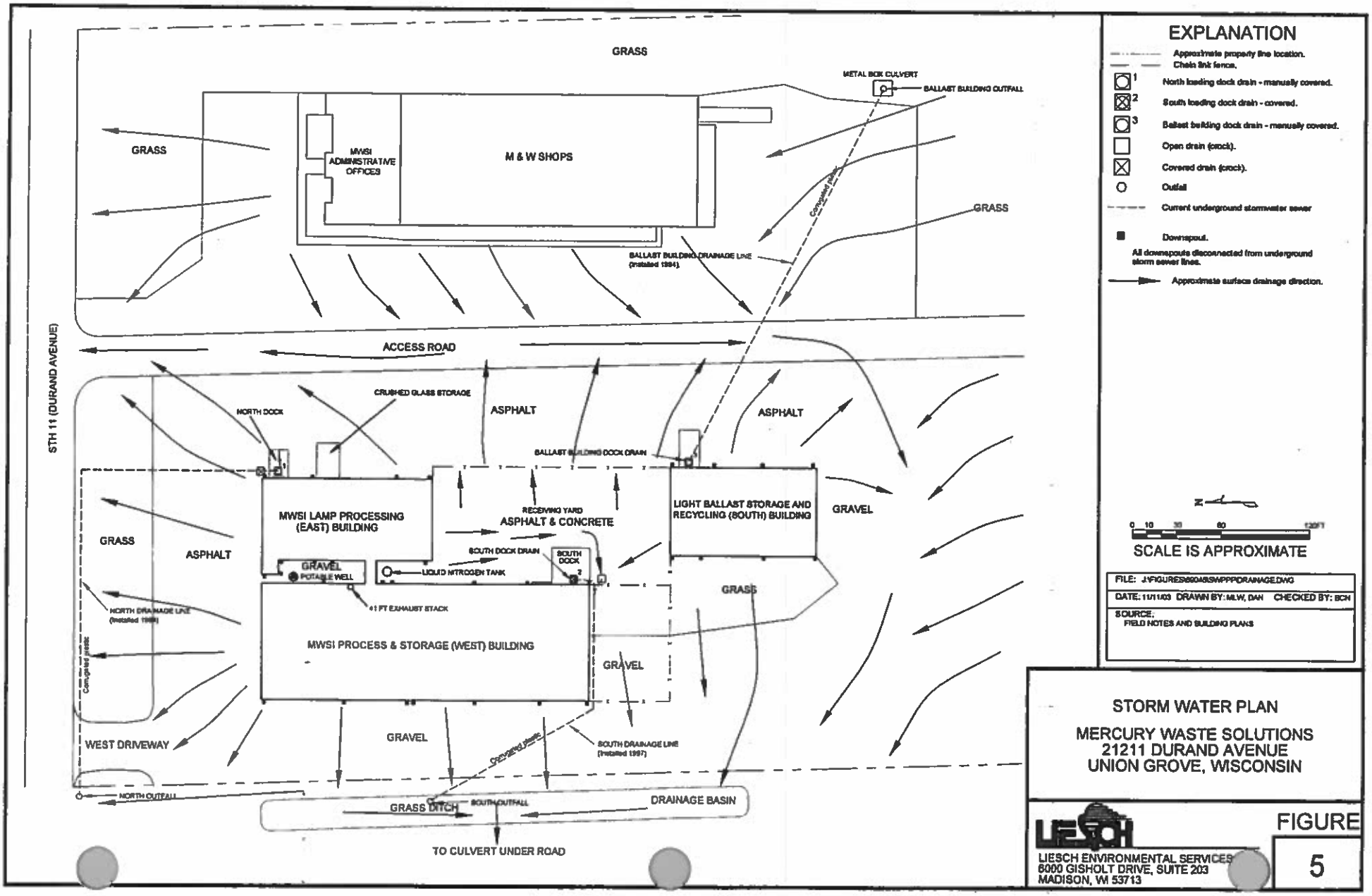
FILE/PATH: J:\FIGURES\0604MSWPP\SITETOPO.CDR
DATE: 06/06/02
PREPARED: MLW APPROVED: BCN
SOURCE: AMERICAN SURVEY CO. SURVEY MAP

LIESCH Hydrogeologists • Engineers • Environmental Scientists
Gisholt Drive, Suite 203
Madison, WI 53713
(608) 223-1532

SITE TOPOGRAPHIC MAP

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

FIGURE
4



EXPLANATION

- Approximate property line location.
- Chain link fence.
- 1 North loading dock drain - manually covered.
- 2 South loading dock drain - covered.
- 3 Ballast building dock drain - manually covered.
- Open drain (crock).
- Covered drain (crock).
- Outfall
- Current underground stormwater sewer
- Downspout.

All downspouts disconnected from underground storm sewer lines.

- Approximate surface drainage direction.

N

0 10 30 60 120FT

SCALE IS APPROXIMATE

FILE: J:\FIGURES\5604\SWPPP\DRAINAGE.DWG

DATE: 11/1/03 DRAWN BY: MLW, DAH CHECKED BY: BCH

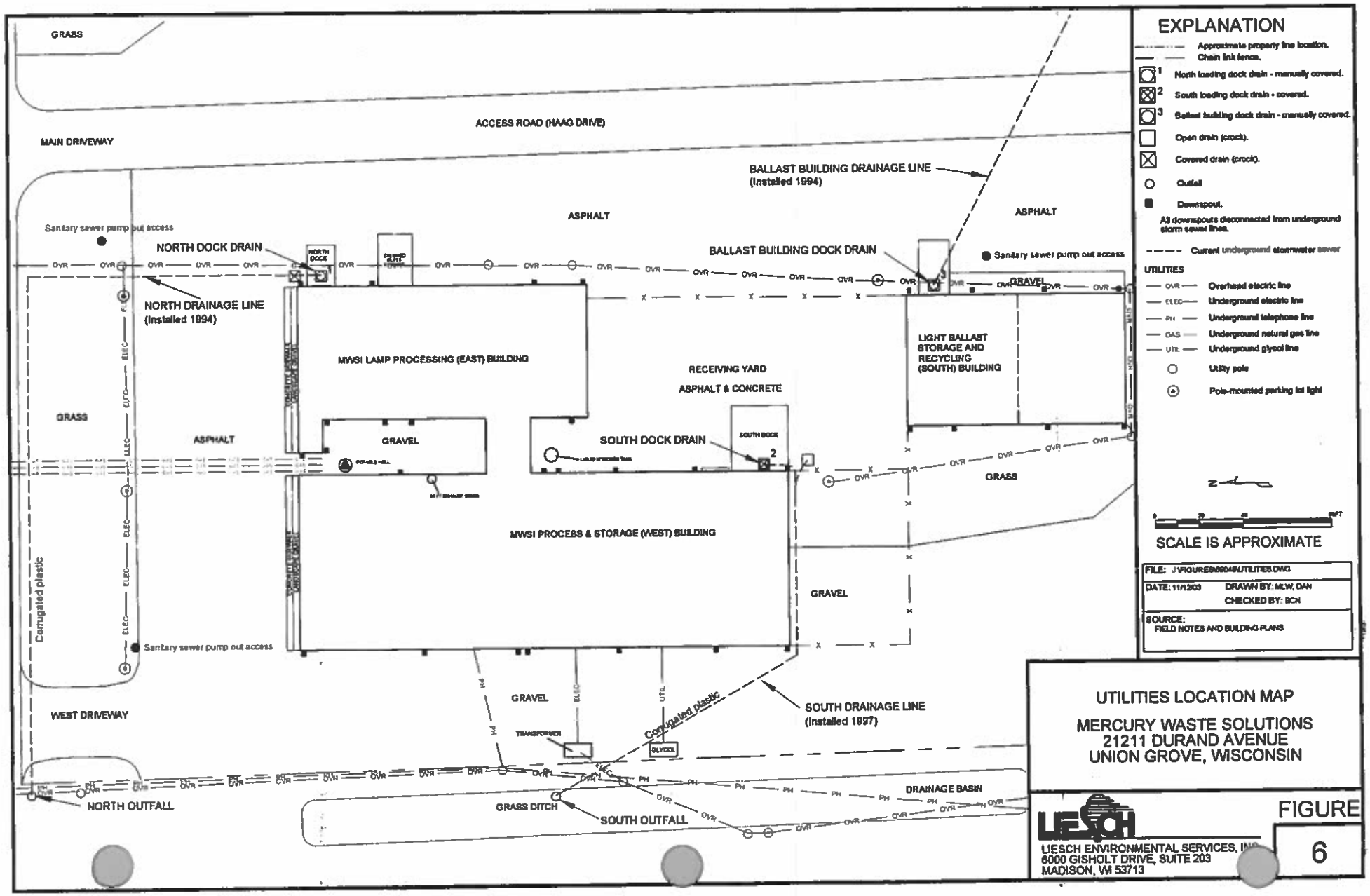
SOURCE: FIELD NOTES AND BUILDING PLANS

STORM WATER PLAN

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH ENVIRONMENTAL SERVICES
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

FIGURE 5

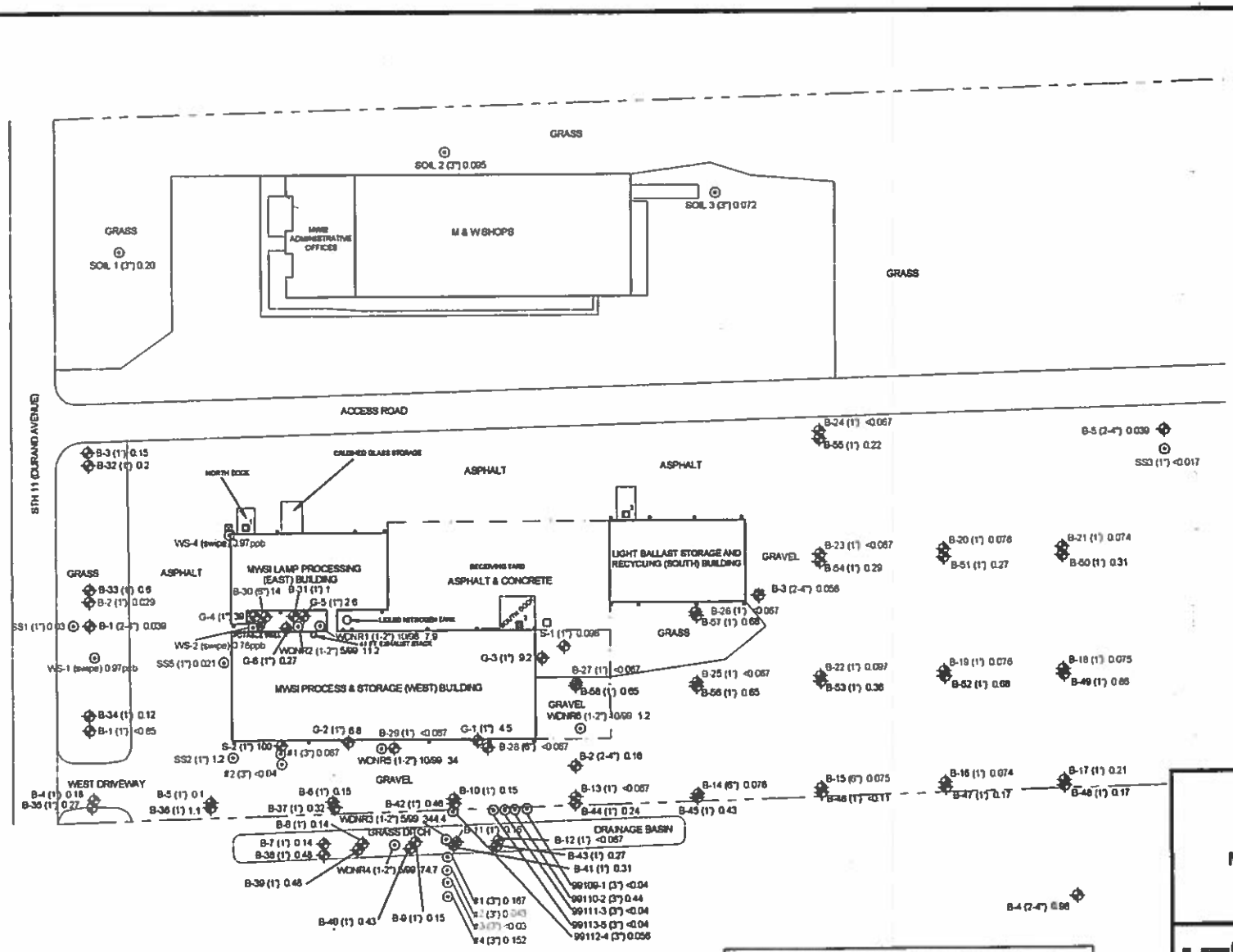


UTILITIES LOCATION MAP

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH ENVIRONMENTAL SERVICES, INC.
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

FIGURE 6



EXPLANATION

- SS1 (1") <0.017 / WS-1 (swipe) 0.97ppb — Soil sample (SS) or swipe (WS) location with identifier, sample depth (for SS), and mercury result for SS in parts per million (ppm) or for WS in parts per billion (ppb). Collected August 6, 1998.
- B-3 (2-4") <0.11 — Soil boring location with identifier, sample depth and mercury result in parts per million (ppm). Collected October 1998.
- 99109-1 (3") 0.20 — Soil sample location with identifier, sample depth and mercury result in parts per million (ppm). Collected July 13, 1999.
- B-3 (2-4") <0.11 — Soil boring location with identifier, sample depth and mercury result in parts per million (ppm). Collected October 1999.
- #1 (3") 0.20 — Soil sample location with identifier, sample depth and mercury result in parts per million (ppm) Collected November 3, 1999.
- #1 (3") 0.20 — Soil sample location with identifier, sample depth and mercury result in parts per million (ppm) Collected November 12, 1999.
- SOIL 1 (3") 0.20 — Soil sample location with identifier, sample depth and mercury result in parts per million (ppm). Collected November 24, 1999.
- #2 (3") 0.33 — Soil sample location with identifier, sample depth and mercury result in parts per million (ppm). Collected January 13, 2000.
- G-1 (2-4") <0.11 / B-57 (1") 0.68 — Soil boring location with identifier, sample depth and mercury result in parts per million (ppm). Collected September 2000.
- WDNR1 (1") 5.69 / 7.9 — Soil sample location with identifier, sample depth, date, and mercury result in parts per million (ppm). Collected by WDNR on October 29, 1998, May 14, 1999, or October 13, 1999.
- B-30 (1') 14 — Results in red are above 1 ppm
- Approximate property line location.
- Chain link fence.
- 1 — North loading dock drain - manually covered.
- 2 — South loading dock drain - covered.
- 3 — Ballast building dock drain - manually covered.
- Open drain (croc).
- Covered drain (croc).
- Downspout.

All downspouts disconnected from underground storm sewer lines.

0 25 50 75 150FT

SCALE IS APPROXIMATE

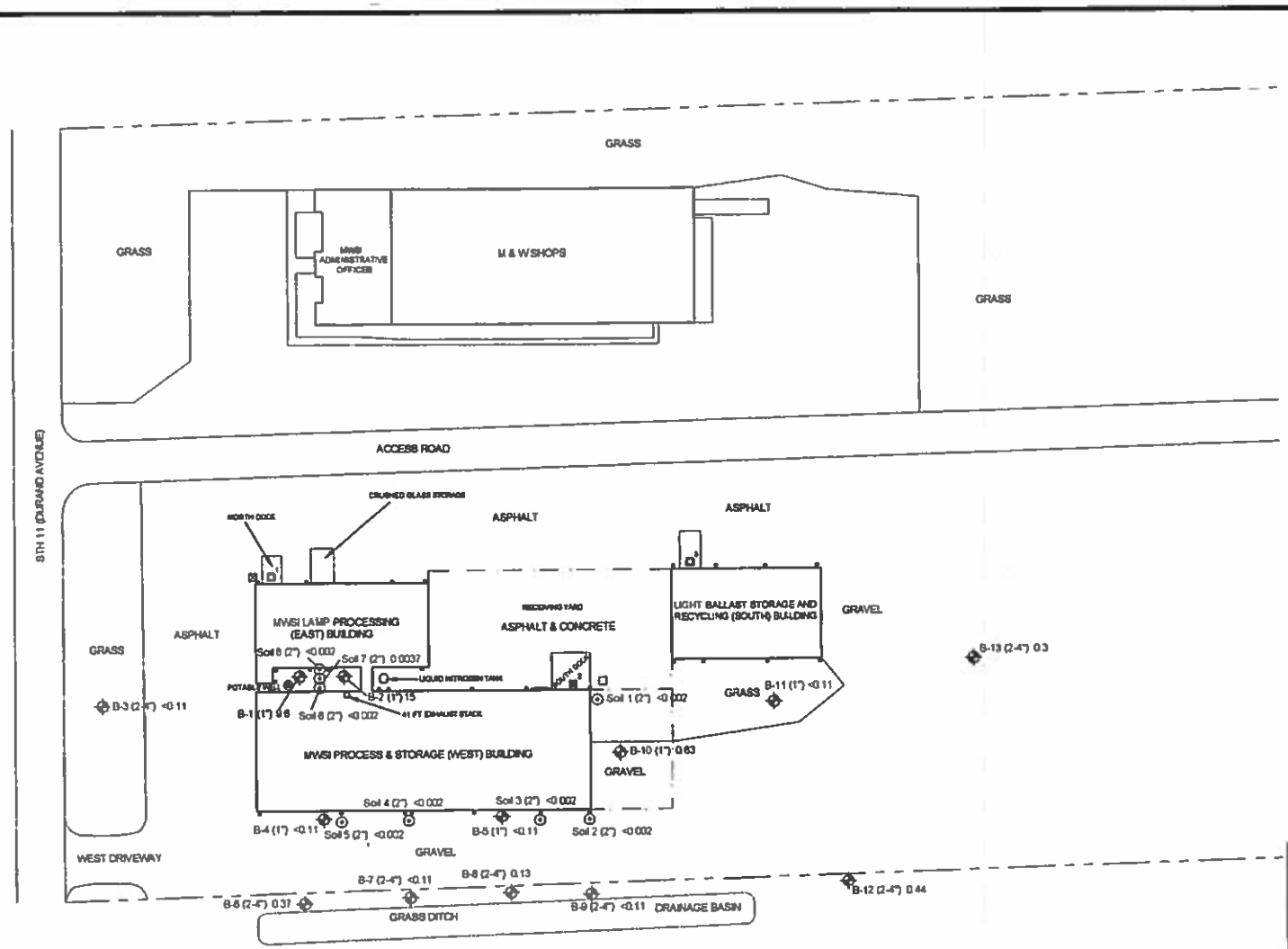
FILE: J:\FIGURES\99049\BORING\BSOILSAMPLES-pre2001.DWG
DATE: 11/12/2003 DRAWN BY: MLW, DAN CHECKED BY: BCN
SOURCE: FIELD NOTES AND BUILDING PLANS

SOIL SAMPLE LOCATION MAP (1998-2000)

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH ENVIRONMENTAL SERVICES
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

FIGURE 7A



EXPLANATION

- Approximate property line location.
- Chain link fence.
- B-3 (2-4") <0.11 — Soil boring location with identifier, sample depth and mercury result in parts per million (ppm). Collected December 2001.
- Soil 6 (2") <0.002 — Soil sample location with identifier, sample depth and mercury result in parts per million (ppm). Collected December 2002.
- B-30 (1') 14 — Results in red are above NR 746 Site Specific Levels.
- 1 — North loading dock drain - manually covered.
- 2 — South loading dock drain - covered.
- 3 — Ballast building dock drain - manually covered.
- Open drain (crock).
- Covered drain (crock).
- Downspout. All downspouts disconnected from underground storm sewer lines.

N

0 25 50 75 150FT

SCALE IS APPROXIMATE

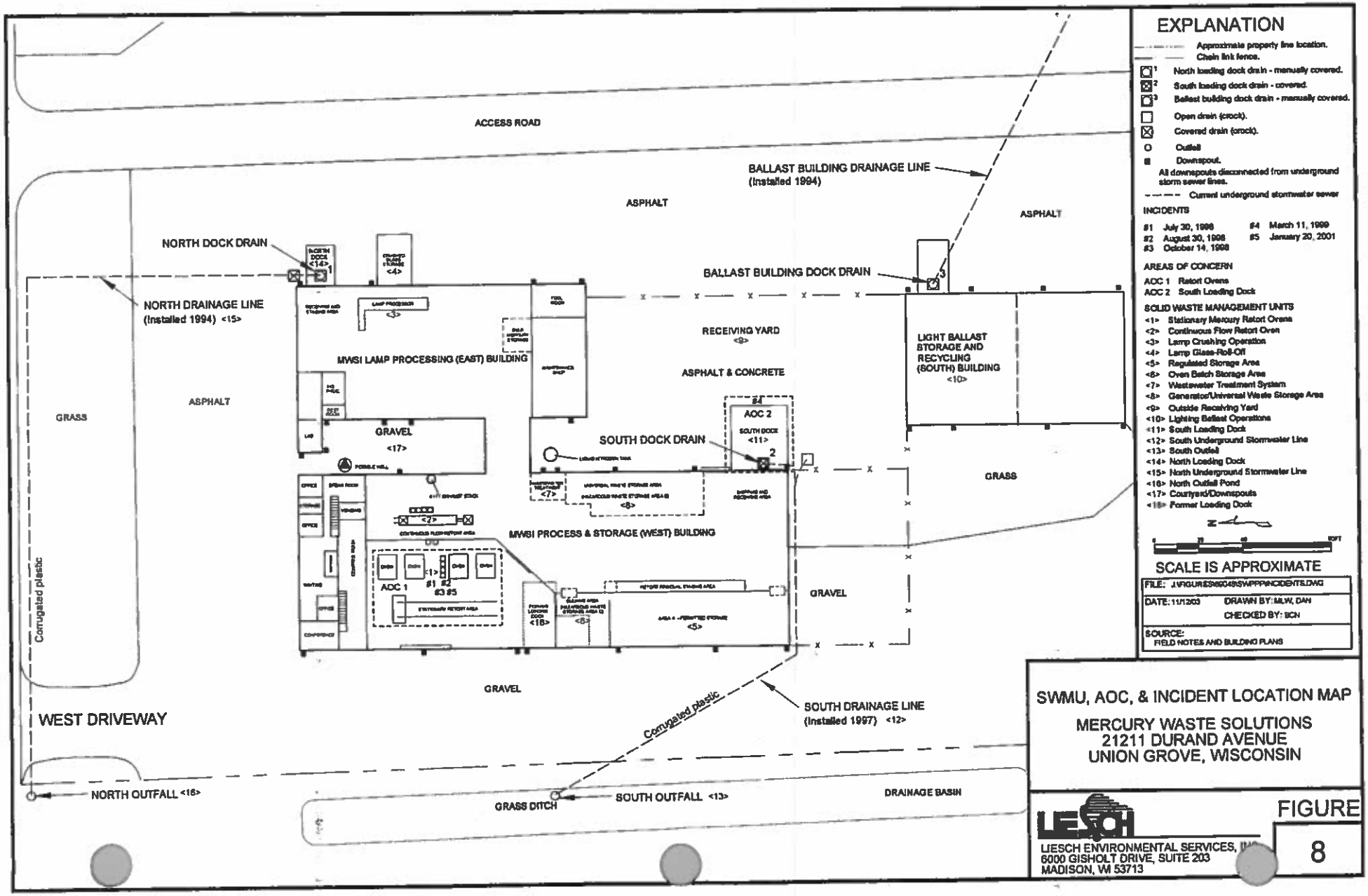
FILE: J:\FIGURES\60046\BORING S\SOIL SAMPLES-2001on.DWG
DATE: 11/11/2003 DRAWN BY: MLW, DAN CHECKED BY: BCN
SOURCE: FIELD NOTES AND BUILDING PLANS

SOIL SAMPLE LOCATION MAP (2001-2003)

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH ENVIRONMENTAL SERVICES, INC.
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

FIGURE 7B



EXPLANATION

- Approximate property line location.
- Chain link fence.
- North loading dock drain - manually covered.
- South loading dock drain - covered.
- Ballast building dock drain - manually covered.
- Open drain (crock).
- Covered drain (crock).
- Outfall
- Downspout.

All downspouts disconnected from underground storm sewer lines.

- Current underground stormwater sewer

INCIDENTS

#1 July 30, 1998
#2 August 30, 1998
#3 October 14, 1998
#4 March 11, 1999
#5 January 20, 2001

AREAS OF CONCERN

AOC 1 Retort Ovens
AOC 2 South Loading Dock

SOLID WASTE MANAGEMENT UNITS

<1> Stationary Mercury Retort Ovens
<2> Continuous Flow Retort Oven
<3> Lamp Crushing Operation
<4> Lamp Glass-Roll-Off
<5> Regulated Storage Area
<6> Oven Batch Storage Area
<7> Wastewater Treatment System
<8> Generator/Universal Waste Storage Area
<9> Outside Receiving Yard
<10> Lighting Ballast Operations
<11> South Loading Dock
<12> South Underground Stormwater Line
<13> South Outfall
<14> North Loading Dock
<15> North Underground Stormwater Line
<16> North Outfall Pond
<17> Courtyard/Downspouts
<18> Former Loading Dock

SCALE IS APPROXIMATE

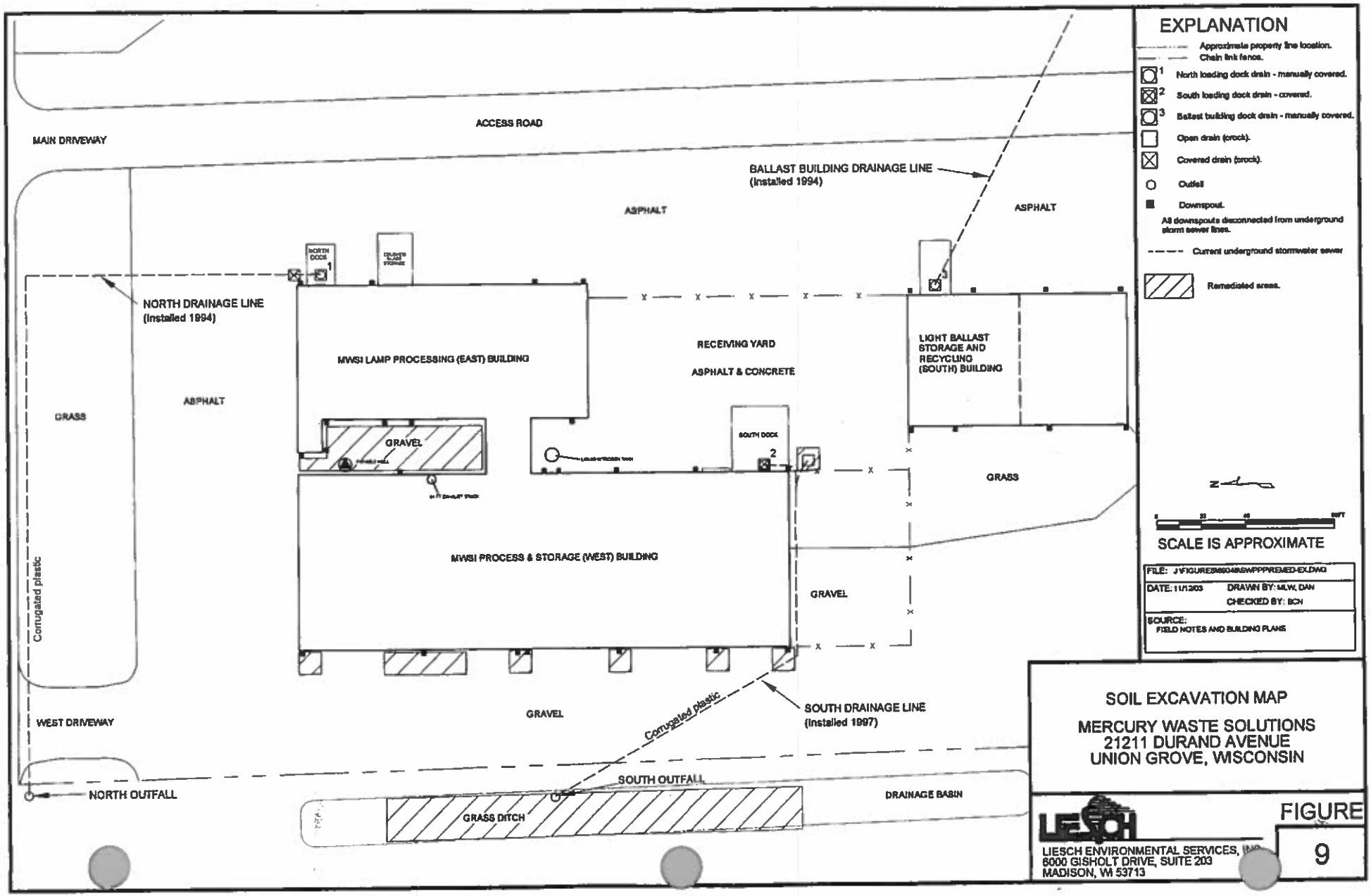
FILE: J:\FIGURES\60048\SWPPP\INCIDENTS.DWG
DATE: 11/12/03 DRAWN BY: MLW, DAN
CHECKED BY: BCN
SOURCE: FIELD NOTES AND BUILDING PLANS

SWMU, AOC, & INCIDENT LOCATION MAP

MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN

LIESCH ENVIRONMENTAL SERVICES, INC.
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713

FIGURE
8


ACCESS ROAD
MAIN DRIVEWAY
BALLAST BUILDING DRAINAGE LINE
(Installed 1994)
ASPHALT
ASPHALT
NORTH DRAINAGE LINE
(Installed 1994)
MWSI LAMP PROCESSING (EAST) BUILDING
RECEIVING YARD
ASPHALT & CONCRETE
LIGHT BALLAST
STORAGE AND
RECYCLING
(SOUTH) BUILDING
GRASS
ASPHALT
GRAVEL
SOUTH DOCK
GRASS
MWSI PROCESS & STORAGE (WEST) BUILDING
GRAVEL
Corrugated plastic
GRAVEL
SOUTH DRAINAGE LINE
(Installed 1997)
WEST DRIVEWAY
Corrugated plastic
SOUTH OUTFALL
NORTH OUTFALL
GRASS DITCH
DRAINAGE BASIN
EXPLANATION
Approximate property line location.
Chain link fence.
North loading dock drain - manually covered.
South loading dock drain - covered.
Ballast building dock drain - manually covered.
Open drain (crock).
Covered drain (crock).
Outfall
Downspout.
All downspouts disconnected from underground storm sewer lines.
Current underground stormwater sewer
Remediated areas.
SCALE IS APPROXIMATE
FILE: J:\FIGURES\8604\MSWPPP\REMED-EX.DWG
DATE: 11/1/2013
DRAWN BY: MLW, DAN
CHECKED BY: BCN
SOURCE:
FIELD NOTES AND BUILDING PLANS
SOIL EXCAVATION MAP
MERCURY WASTE SOLUTIONS
21211 DURAND AVENUE
UNION GROVE, WISCONSIN
LIESCH ENVIRONMENTAL SERVICES, INC.
6000 GISHOLT DRIVE, SUITE 203
MADISON, WI 53713
FIGURE
9

Appendix 15 WDNR Signoff of Corrective Action

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Waukesha Service Center
141 NW Barstow St
Waukesha, Wisconsin 53188
Telephone 262-574-2100
FAX 262-574-2117
TTY Access via relay - 711

June 18, 2009

Mercury Waste Solutions, LLC
Joseph Carruth
21211 Durand Ave.
Union Grove, WI 53182-9711

FID # 252195350

SUBJECT: Case Closure
Mercury Waste Solutions, LLC, 21211 Durand Ave., Union Grove, WI
WDNR BRRTS Activity #: 02-52-305231

Dear Mr. Carruth:

On June 8, 2009, the Department of Natural Resources (Department) reviewed your request for closure of the case described above. The Department reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases.

Based on the correspondence and data provided, it appears that your case meets the closure requirements in ch. NR 726, Wisconsin Administrative Code. The Department considers this case closed and no further investigation or remediation is required at this time.

Please be aware that this case may be reopened pursuant to s. NR 726.09, Wisconsin Administrative Code, if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety or welfare, or the environment.

GIS Registry

The conditions of case closure set out below in this letter require that this site be listed on the Remediation and Redevelopment Program's GIS Registry. The specific reasons are summarized below:

- Residual soil contamination exists that must be properly managed should it be excavated or removed

This letter and information that was submitted with your closure request application will be included on the GIS Registry. To review the sites on the GIS Registry web page, visit the RR Sites Map page at: http://dnr.wi.gov/org/aw/rr/gis/index.htm. If the property is listed on the GIS Registry because of remaining contamination and you intend to construct or reconstruct a well, you will need prior Department approval in accordance with s. NR 812.09(4)(w), Wis. Adm. Code. To obtain approval, Form 3300-254 needs to be completed and submitted to the DNR Drinking and Groundwater program's regional water supply specialist. This form can be obtained on-line http://dnr.wi.gov/org/water/dwg/3300254.pdf or at the web address listed above for the GIS Registry.

Residual soil contamination remains as indicated in the information submitted to the Department of Natural Resources. If soil is excavated in the future, then pursuant to ch. NR 718 or, if applicable, ch. 289, Stats., and chs. 500 to 536, the property owner at the time of excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present the property owner at the time of excavation will need to determine whether the material is considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable standards and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result special precautions may need to be taken to prevent a direct contact health threat to humans.

The Department appreciates your efforts to restore the environment at this site. If you have any questions regarding this closure decision or anything outlined in this letter, please contact Mark Drews at 262-574-2146.

Sincerely,

Mark Drews

Mark Drews, P.G.
Hydrogeologist
Bureau for Remediation & Redevelopment

cc: Margie Voss, 16701 58th Road, Union Grove, WI 53182
SER File

Appendix 16 Container Storage Area Drawings and Secondary Containment Calculations

16-1

SCS Report

December 23, 2020
File No. 25220201.00

MEMORANDUM

TO: WM Waste, Inc.

FROM: Jared Omernik, P.E.

SUBJECT: Storage Area Secondary Containment Calculations
WM Waste, Inc. Facility
21211 Durand Avenue, Union Grove, Wisconsin

SCS Engineers (SCS) visited the WM Waste, Inc. facility in Union Grove, Wisconsin, on December 1, 2020, to measure the storage area containment dimensions. SCS measured the storage area dimensions with a tape measure and a laser distance measure, and measured sloped areas with a laser level.

A Professional Engineer certification for the secondary containment calculations is included on the next page. The secondary containment calculations are included in **Attachment A**, and drawings are included in **Attachment B**.

JMO/AJR_lmh/SCC

I:\25220201.00\Deliverables\201223_WM Mercury Union Grove_Containment Calcs Memo.docx

CERTIFICATION

I, Jared M. Omernik, hereby certify that I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct. This certification covers the calculation of secondary containment capacities for the WM Waste, Inc. facility in Union Grove, Wisconsin.

Jared M. Omernik, PE
Printed Name of Registered Professional Engineer

Signature of Registered Professional Engineer

43424-6	**WI**	12/23/2020
Registration Number	State	Date

Attachment A

Secondary Containment Calculations

SCS ENGINEERS

Job No. 25220201.00	Job: WM Mercury Containment	By: JMO	Date: 12/18/2020
Client: WM	Subject: Containment Calcs	Chk'd: MH	Date: 12/18/2020

Purpose: To calculate containment volumes of licensed storage areas at the WM Mercury facility in Union Grove, WI.

References: Attachment A - Figures 1 and 2.
Attachment B - Secondary Containment Drawings with SCS markups.
Attachment C - Original secondary containment calculations.

Background/Approach:

1. SCS Engineers measured the storage areas on December 1, 2020.
2. Storage area dimensions were measured using a tape measure and a laser distance measure, and slopes were measured with a laser level.
3. Pallet displacement (number of pallets and gal/pallet) for storage areas S-1 and S-2 were copied from the previous containment calculations and result in conservative displacement volumes relative to actual site conditions on 12/1/2020.

Calculations:

Storage Area S-1:

Storage Area Dimensions =	59.75	ft. by	41.67	ft. by	3.5	in =	5,432	gallons
Ramp #1 Displacement = .5 x	10.0	ft. by	5.17	ft. by	3.5	in =	(56)	gallons
Ramp #2 Displacement = .5 x	4.67	ft. by	4.58	ft. by	4.0	in =	(27)	gallons
Pallets displacement =	66	pallets	13.6	gal/pallet		=	(898)	gallons
Available Secondary Containment =							**4,452**	**gallons**

Storage Area S-2:

Storage Area Dimensions =	24.0	ft. by	24.92	ft. by	5.0	in =	1864	gallons
Ramp #1 Displacement = .5 x	10.0	ft. by	5.0	ft. by	5.0	in =	(78)	gallons
Ramp #2 Displacement = .5 x	4.58	ft. by	3.92	ft. by	5.0	in =	(28)	gallons
Pallets displacement =	17	pallets	13.6	gal/pallet		=	(231)	gallons
Available Secondary Containment =							**1,527**	**gallons**

Storage Area S-3:

Trench Dimensions =	51.92	ft. by	10.0	in. by	11.0	in =	297	gallons
Available Secondary Containment =							**297**	**gallons**

Storage Area S-4:

Trench Dimensions =	52.0	ft. by	10.0	in. by	11.0	in =	297	gallons
Available Secondary Containment =							**297**	**gallons**

Storage Area S-5:

Trench Leg #1 Dimensions =	28.3	ft. by	10.0	in. by	11.0	in =	162	gallons
Trench Leg #2 Dimensions =	6.3	ft. by	10.0	in. by	11.0	in =	36	gallons
Available Secondary Containment =							**198**	**gallons**

SCS ENGINEERS

Job No. 25220201.00	Job: WM Mercury Containment	By: JMO	Date: 12/18/2020
Client: WM	Subject: Containment Calcs	Chk'd: MH	Date: 12/18/2020

Storage Area S-6:

Sump Dimensions = 40.92 ft. by 6.92 ft. by 11.0 [1] in = 1942 [2] gallons

Available Secondary Containment = 1942 [2] gallons

[1] Depth based on several spot checks within the container.

[2] Sump capacities listed on the vendor drawings include 1243, 1252, and 1292 gallons.

Storage Area S-7: N/A (no secondary containment)

Storage Area S-8:

Storage Area

Ramp Area Dimensions =	3.22	s.f. by	49.50	ft.		=	1192	gallons
Trench Dimensions =	38.5	ft. by	10.0	in. by	11.0	in =	220	gallons
12-inch Area Above Trench =	45.33	ft. by	12.0	in. by	2.8	in =	79	gallons
Area Behind Trench =	0.58	sf by	45.33	ft.		=	196	gallons

Displacement

Pyramid @ E. of ramp = 1/3 x	27.5	ft. by	5.0	ft. by	2.8	in =	(80)	gallons
Wedge @ W. man door = .5 x	6.75	ft. by	8.58	ft. by	2.8	in =	(51)	gallons
Rolloff wheel displacement =	3	rolloffs x	2	wheels x	2	gal =	(12)	gallons

(3 rolloffs, displacement from 2 wheels per rolloff, assume 2 gal each)

Available Secondary Containment = 1545 gallons

Storage Area S-9 through S-11: N/A (future dry storage areas/no secondary containment)

Storage Areas S-12

Storage Area

Ramp Area Dimensions = .5 x	23.08	ft. by	33.75	ft. by	15.8	in =	3836	gallons
Trench Dimensions =	26.0	ft. by	9.0	in. by	8.0	in =	97	gallons
11-inch Area Above Trench =	33.75	ft. by	11.0	in. by	15.8	in =	305	gallons
Area Behind Trench =	1.29	sf by	33.75	ft.		=	326	gallons

Displacement

Rolloff runner displacement =	5.52	s.f. wedge area by			1.375	in =	(28)	gallons
(3 rolloffs, 2 per rolloff)									
Rolloff box displacement =	2.55	s.f. wedge area by			7.33	ft =	(56)	gallons
(3 rolloffs)									
Rolloff wheel displacement =	3	rolloffs x	2	wheels x	2	gal =	(12)	gallons

(3 rolloffs, displacement from 2 wheels per rolloff, assume 2 gal each)

Available Secondary Containment = 4467 gallons

SCS ENGINEERS

Job No. 25220201.00	Job: WM Mercury Containment	By: JMO	Date: 12/18/2020
Client: WM	Subject: Containment Calcs	Chk'd: MH	Date: 12/18/2020

Storage Areas S-13

Storage Area

Ramp Area Dimensions = .5 x	23.08	ft. by	33.92	ft. by	15.8	in =	3855	gallons
Trench Dimensions =	26.0	ft. by	9.0	in. by	8.0	in =	97	gallons
11-inch Area Above Trench =	33.92	ft. by	11.0	in. by	15.8	in =	306	gallons
Area Behind Trench =	1.29	sf by	33.92	ft.		=	327	gallons

Displacement

Rolloff runner displacement =	5.52	s.f. wedge area by			1.375	in =	(28)	gallons
(3 rolloffs, 2 per rolloff)								
Rolloff box displacement =	2.55	s.f. wedge area by			7.33	ft =	(56)	gallons
(3 rolloffs)								
Rolloff wheel displacement =	3	rolloffs x	2	wheels x	2	gal =	(12)	gallons
(3 rolloffs, displacement from 2 wheels per rolloff, assume 2 gal each)								

Available Secondary Containment = 4490 gallons

Storage Area S-14:

Storage Area

Ramp Area Dimensions = .5 x	23.08	ft. by	24.0	ft. by	15.8	in =	2728	gallons
Trench Dimensions =	20.0	ft. by	9.0	in. by	8.0	in =	75	gallons
11-inch Area Above Trench =	24.0	ft. by	11.0	in. by	15.8	in =	217	gallons
Area Behind Trench =	1.29	sf by	23.08	ft.		=	223	gallons

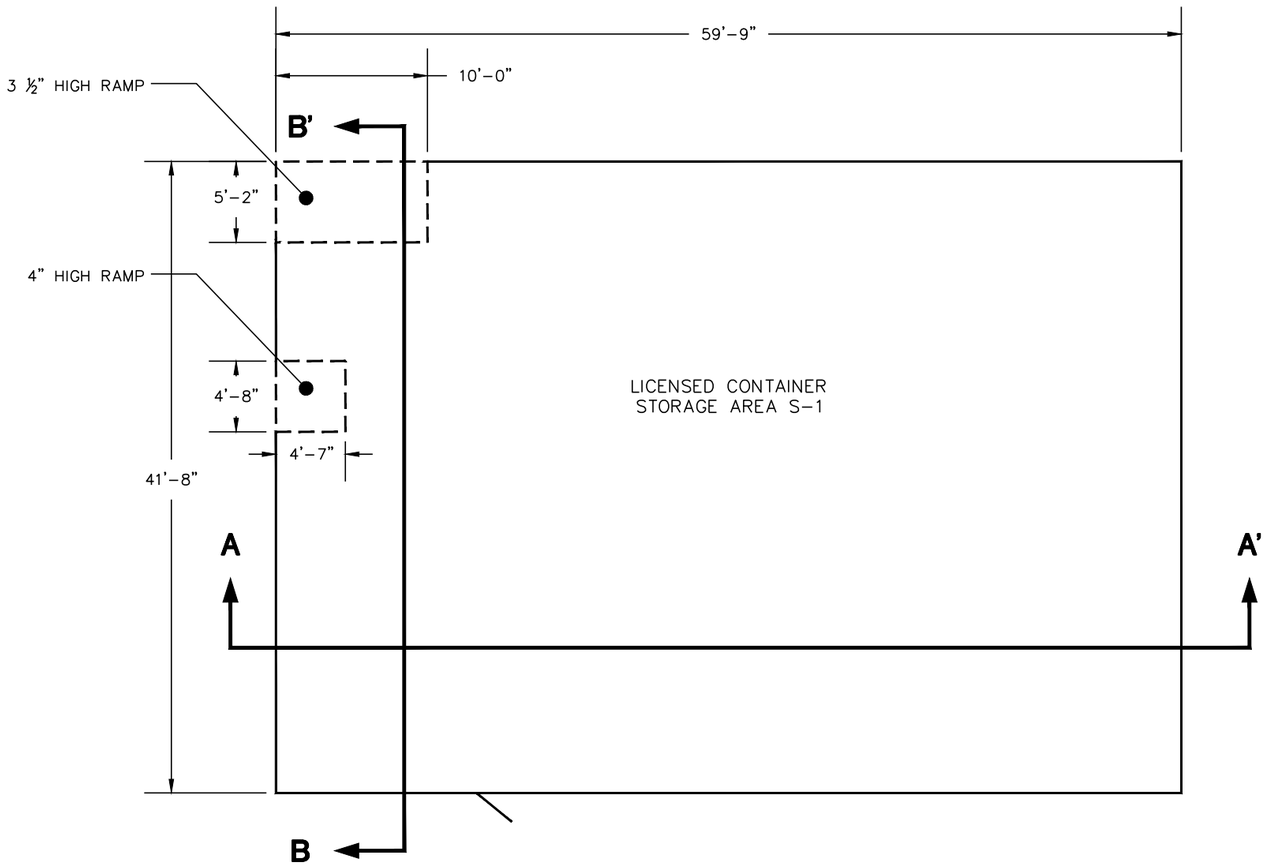
Displacement

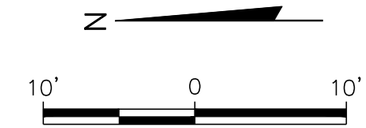
Rolloff runner displacement =	5.52	s.f. wedge area by			1.375	in =	(28)	gallons
(3 rolloffs, 2 per rolloff)								
Rolloff box displacement =	2.55	s.f. wedge area by			7.33	ft =	(56)	gallons
(3 rolloffs)								
Rolloff wheel displacement =	3	rolloffs x	2	wheels x	2	gal =	(12)	gallons
(3 rolloffs, displacement from 2 wheels per rolloff, assume 2 gal each)								

Available Secondary Containment = 3146 gallons

Attachment B

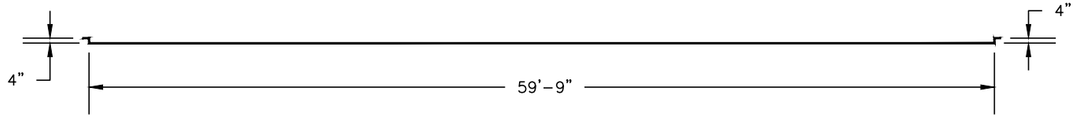
Drawings



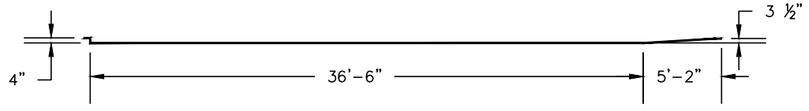


LEGEND

RAMP



SECTION A-A'



SECTION B-B'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

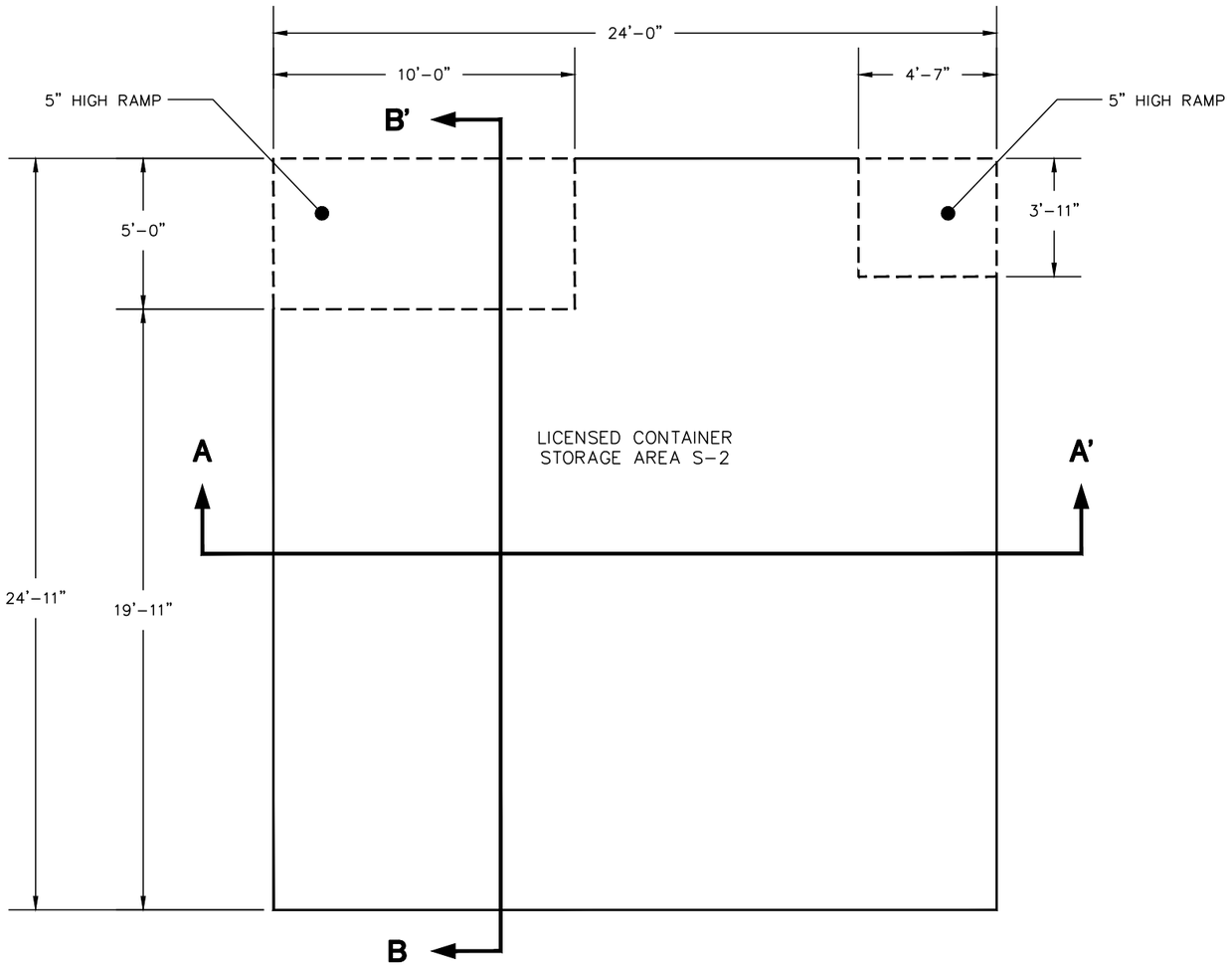
CLIENT: WM WASTE, INC.

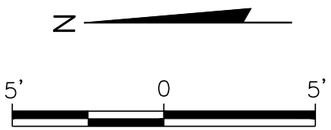
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-1

FIGURE
S-1

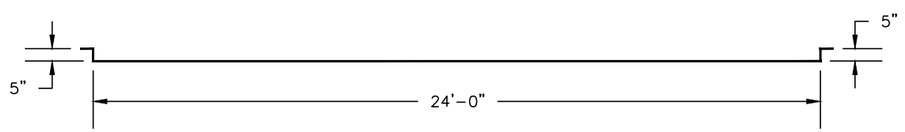
I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:34:42 AM



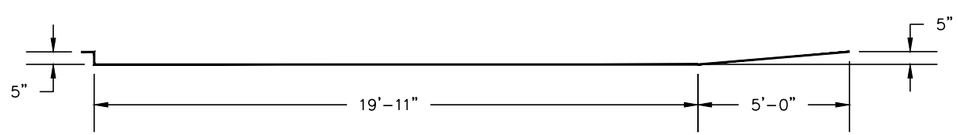


LEGEND

RAMP



SECTION A-A'



SECTION B-B'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

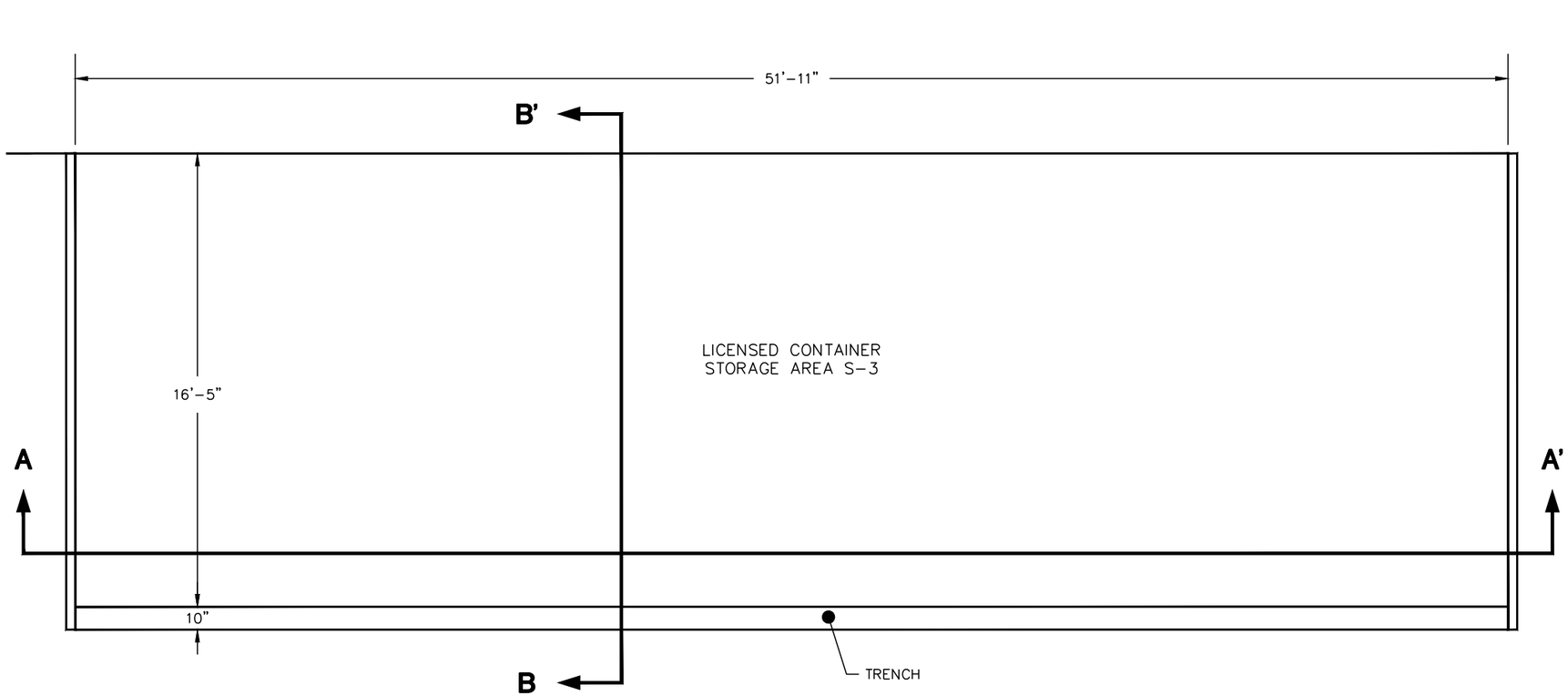
CLIENT: WM WASTE, INC.

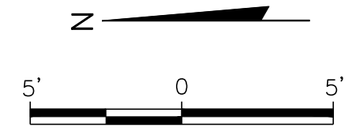
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-2

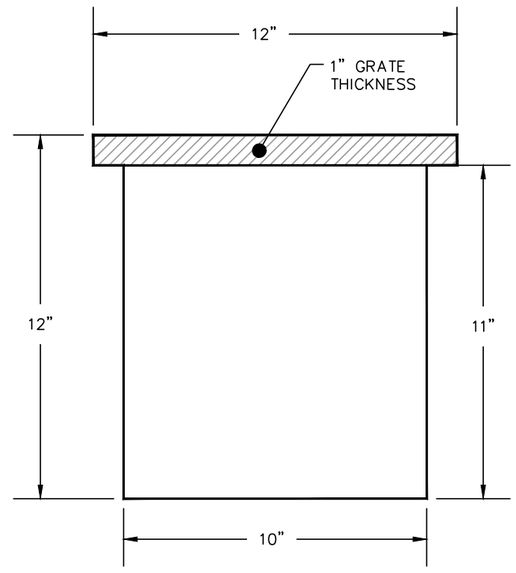
FIGURE
S-2

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:34:47 AM

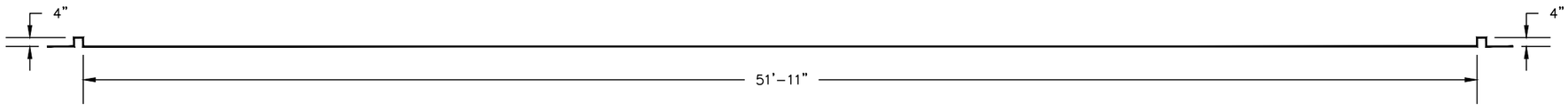




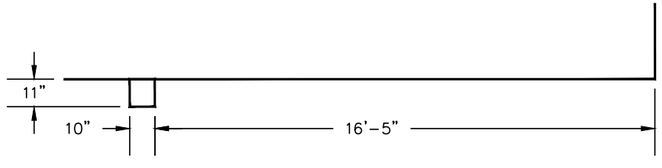
SCALE: 1" = 5'



TRENCH DETAIL



SECTION A-A'



SECTION B-B'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718–6751
PHONE: (608) 224–2830

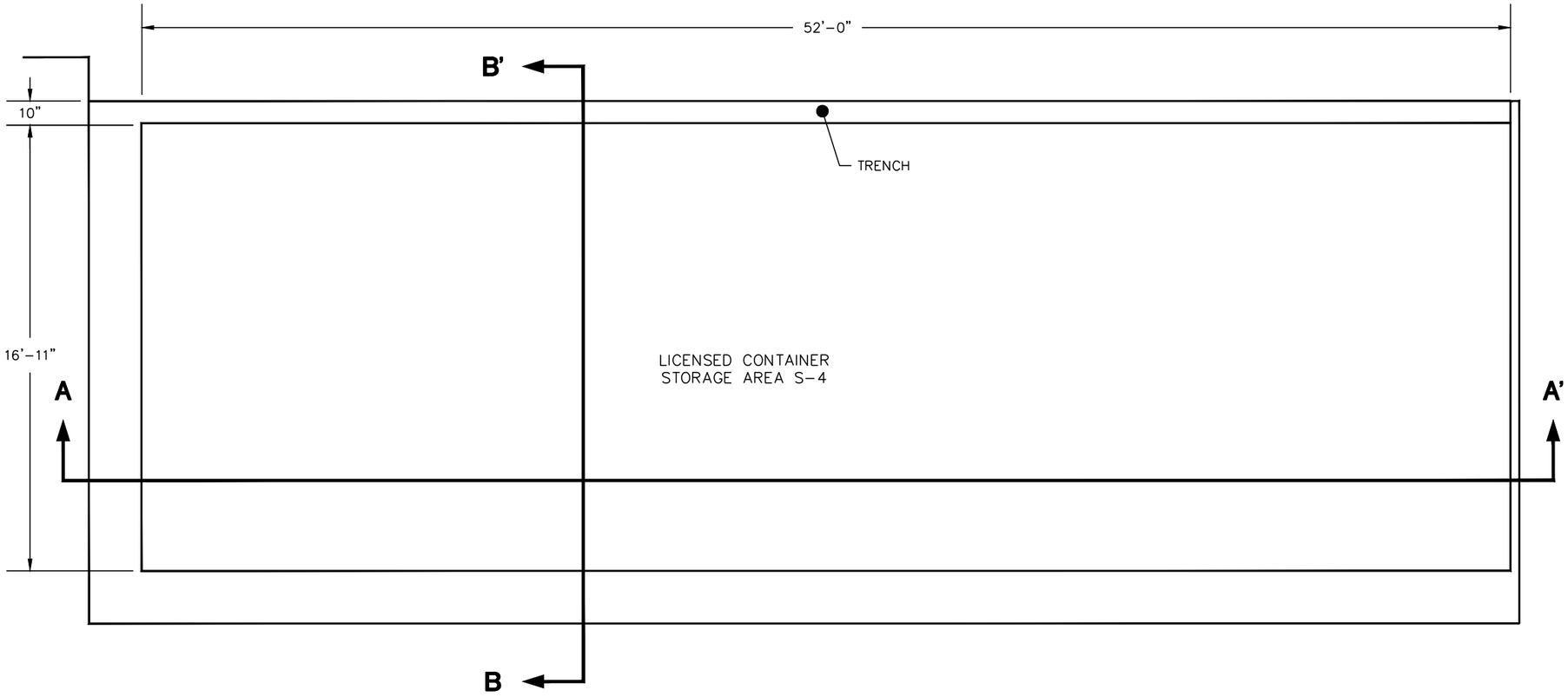
CLIENT: WM WASTE, INC.

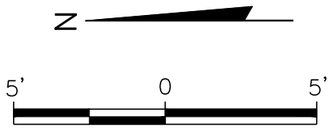
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S–3

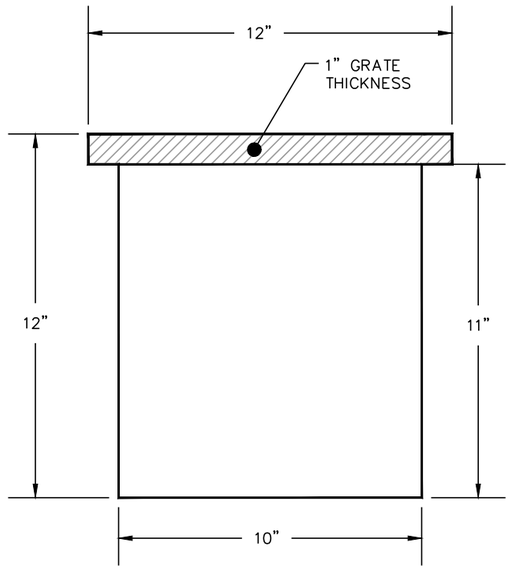
FIGURE
S–3

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:34:52 AM

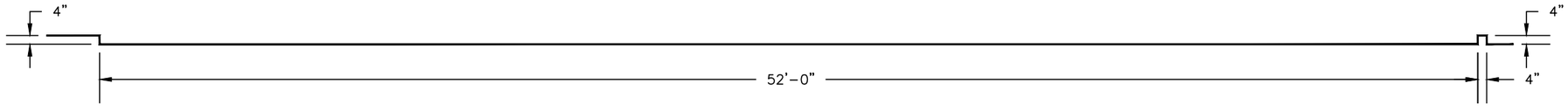




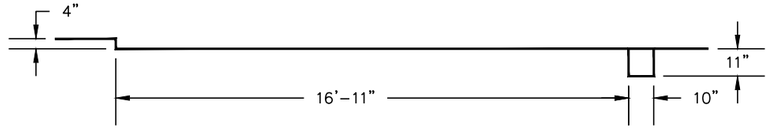
SCALE: 1" = 5'



TRENCH DETAIL



SECTION A-A'



SECTION B-B'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

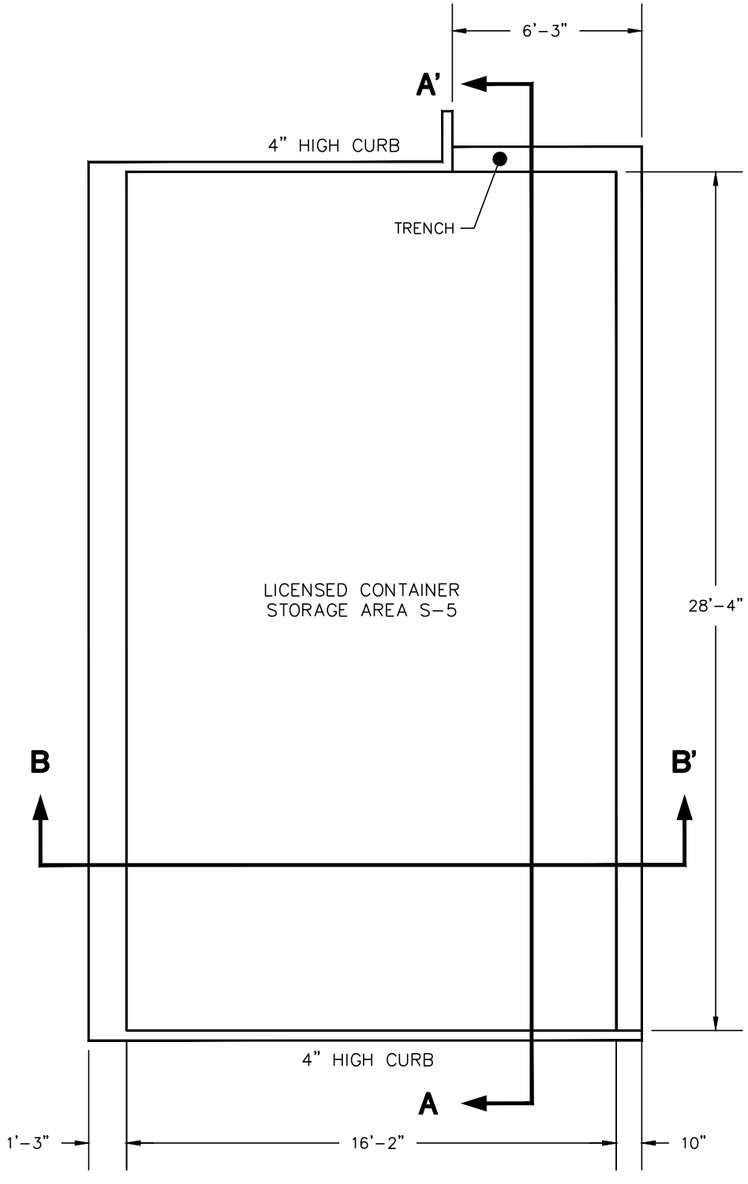
CLIENT: WM WASTE, INC.

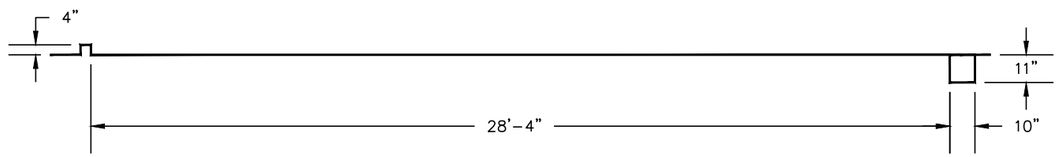
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-4

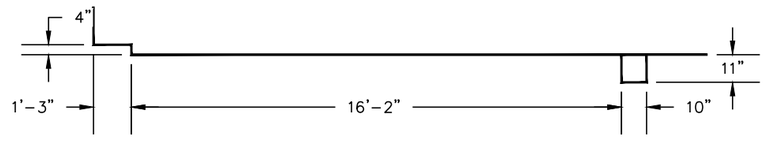
FIGURE
S-4

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:34:57 AM

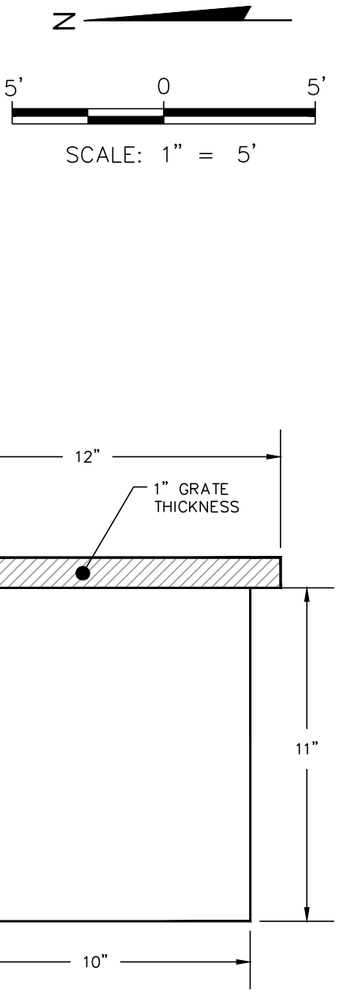




SECTION A-A'



SECTION B-B'



TRENCH DETAIL

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: WM WASTE, INC.

SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-5

FIGURE
S-5

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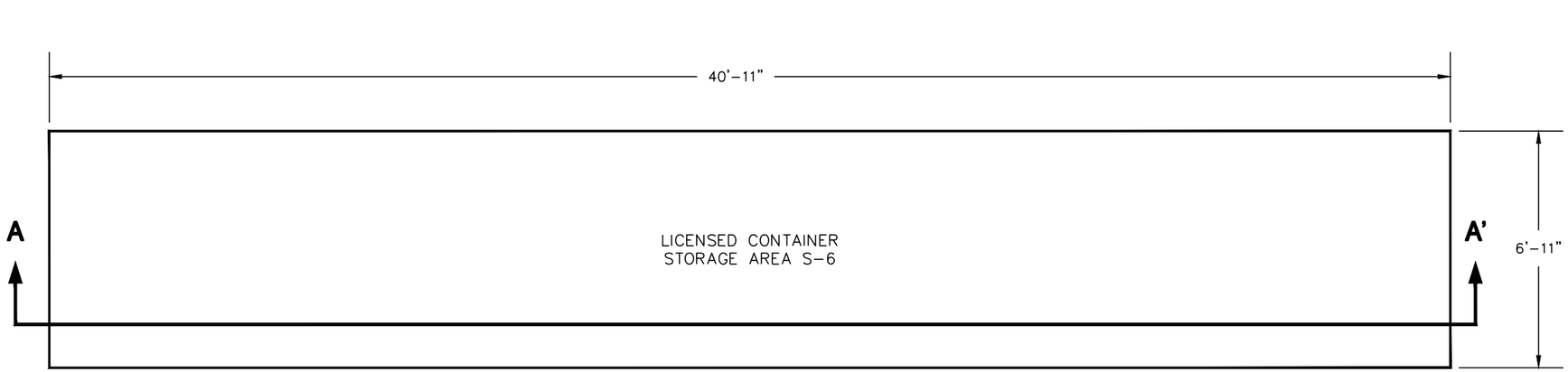

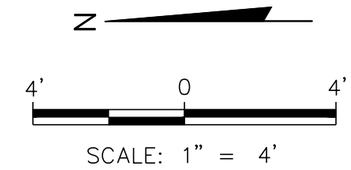

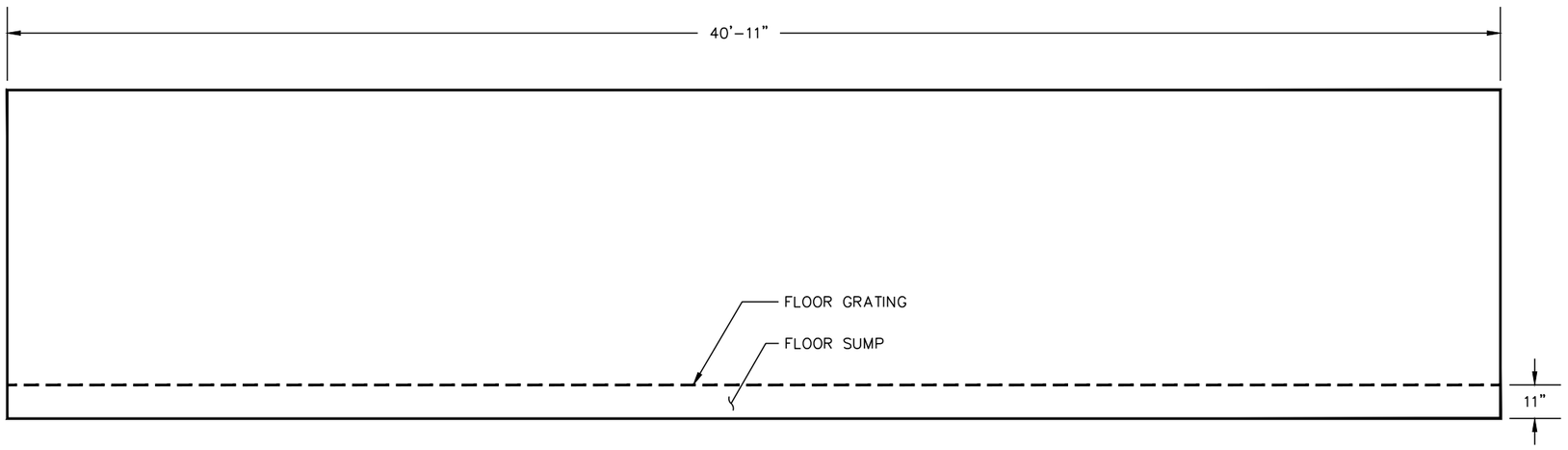

SECTION A-A'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER
SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: WM WASTE, INC.

SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-6

FIGURE
S-6

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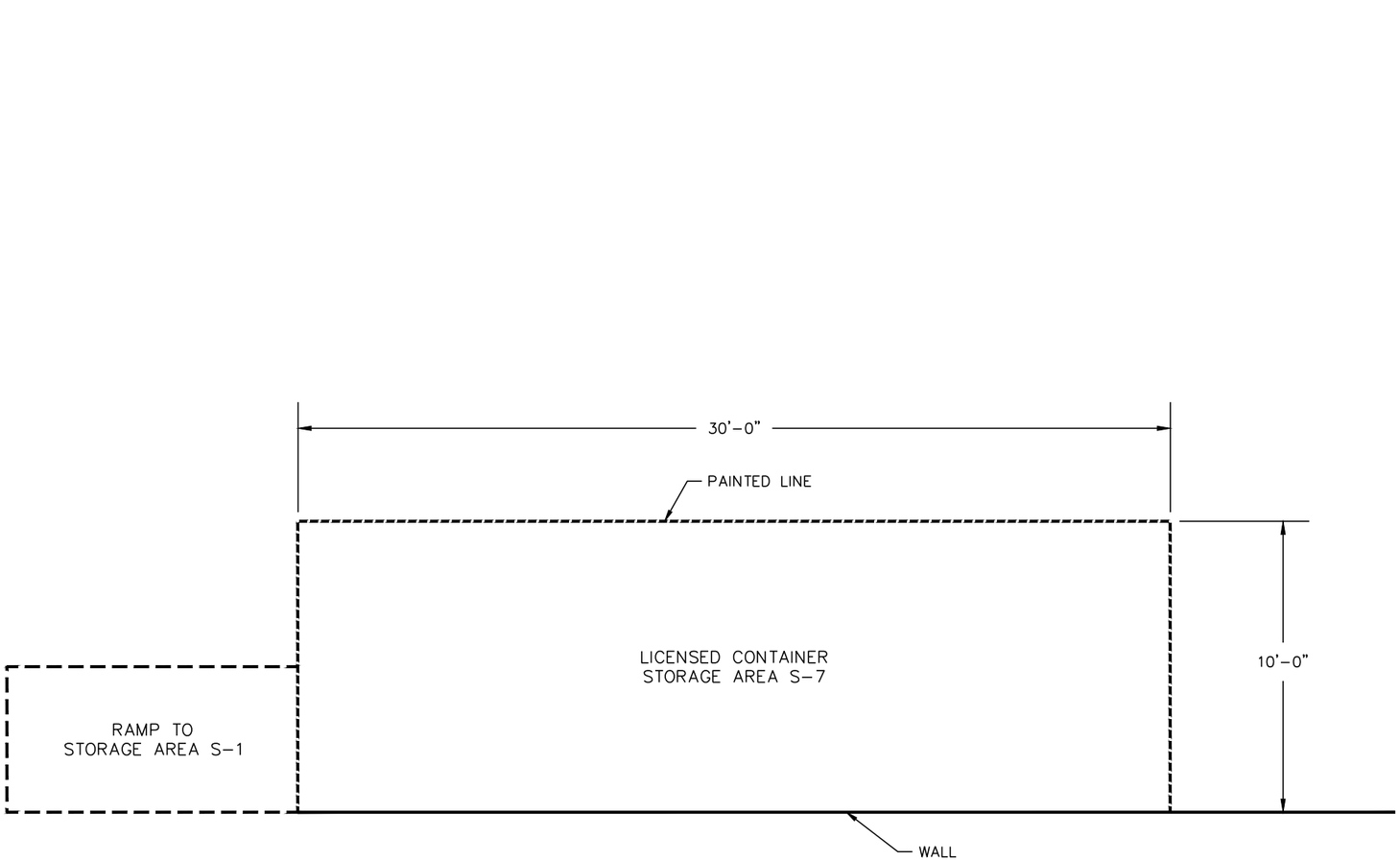
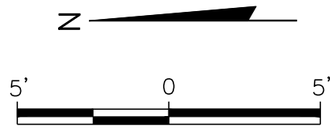




SCALE: 1" = 5'

LEGEND

RAMP

STORAGE AREA BOUNDARY

NOTE:

STORAGE AREA INFORMATION BASED ON FIGURE 16-7, SHEET FPOR-10, DATED 2/24/2011 BY NIELSEN MADSEN & BARBER S.C.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	JMO
REVISED:	12/15/2020	APPROVED BY:	JMO 12/23/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

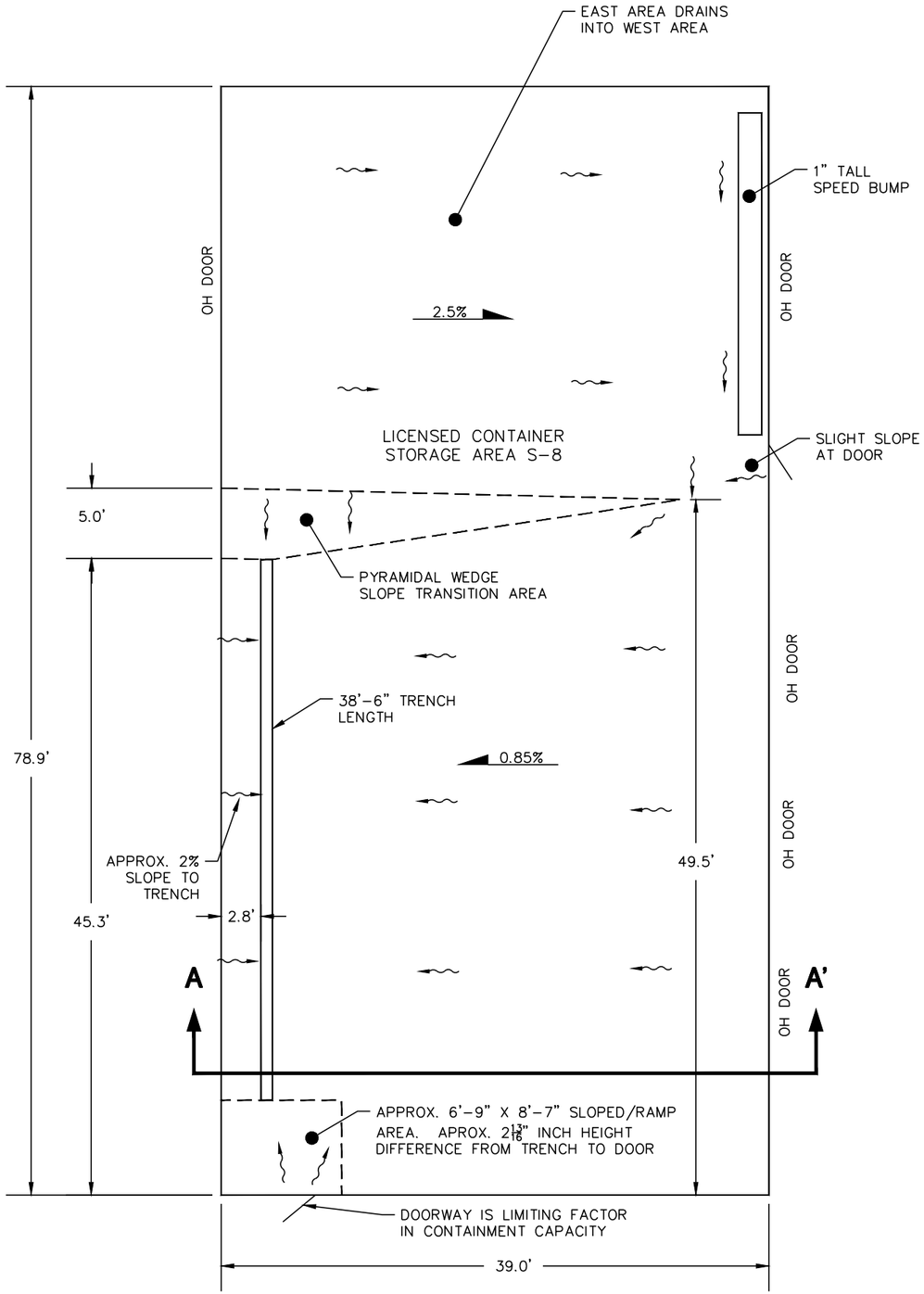
CLIENT: WM WASTE, INC.

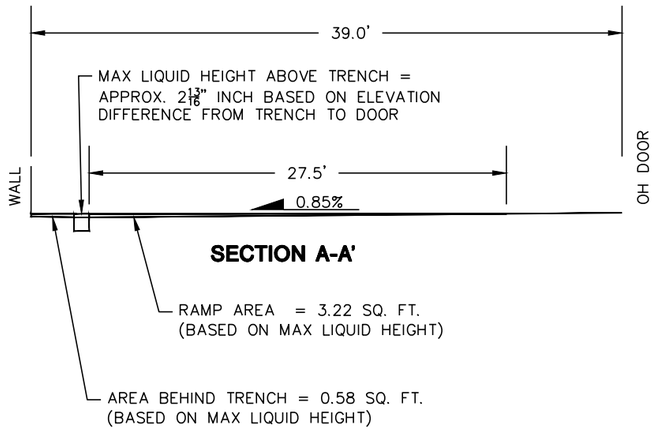
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-7

FIGURE
S-7

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/23/2020 □:28:00 AM





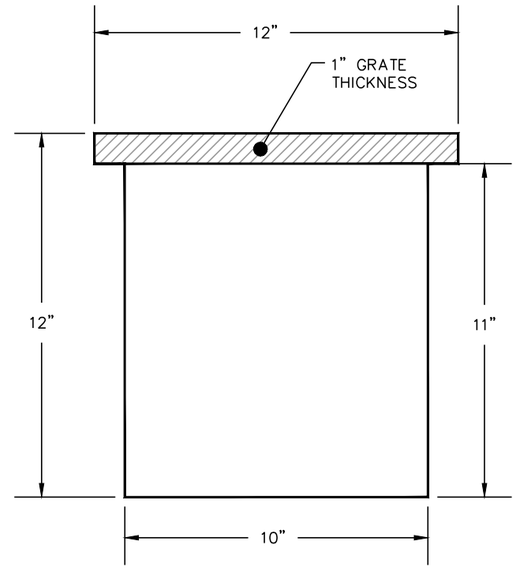
SECTION A-A'

RAMP AREA = 3.22 SQ. FT.
(BASED ON MAX LIQUID HEIGHT)

AREA BEHIND TRENCH = 0.58 SQ. FT.
(BASED ON MAX LIQUID HEIGHT)

LEGEND

- RAMP/WEDGE
- 2.5% SURFACE SLOPE PERCENT
- SURFACE FLOW DIRECTION



TRENCH DETAIL

N

10' 0 10'

SCALE: 1" = 10'

PROJECT NO.	25220201.00	DRAWN BY:	JMO
DRAWN:	12/03/2020	CHECKED BY:	MH
REVISED:	12/07/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

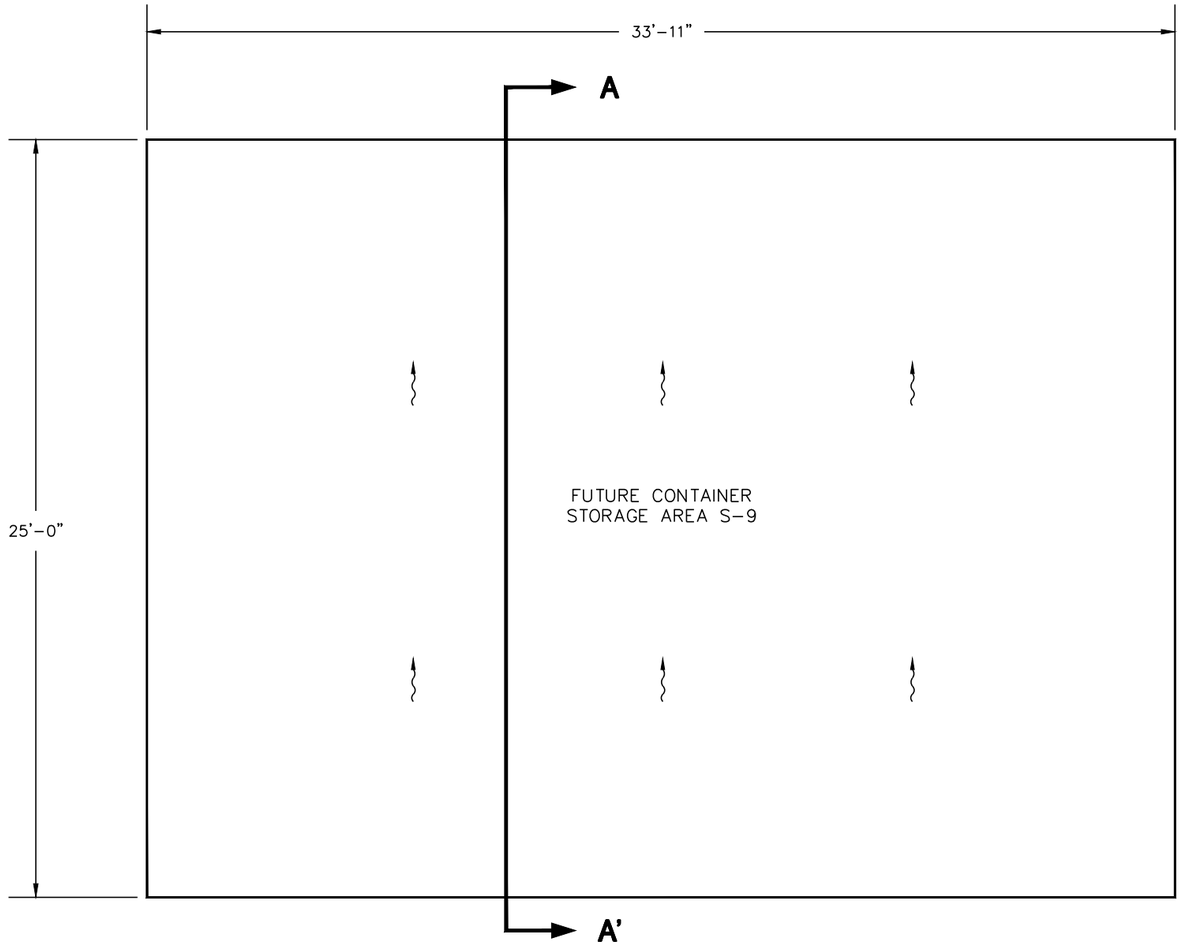
CLIENT: WM WASTE, INC.

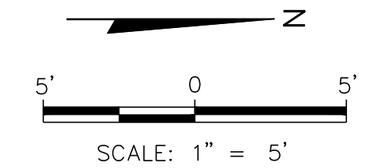
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

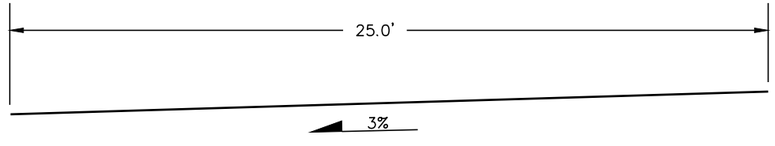
STORAGE AREA S-8

FIGURE
S-8

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 4:35:01 □M







SECTION A-A'

NOTES:

1. STORAGE AREA DIMENSIONS MATCH STORAGE AREA S-12
2. POSITIVE SLOPE TO THE WEST WAS CONFIRMED IN THE FIELD BY SCS ENGINEERS ON DECEMBER 1, 2020. SLOPE PERCENT IS APPROXIMATE, AND BASED ON RACINE COUNTY LIDAR DATA COLLECTED APRIL-MAY 2017.

PROJECT NO.	25220201.00	DRAWN BY:	MJT
DRAWN:	12/15/2020	CHECKED BY:	MH
REVISED:	12/18/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

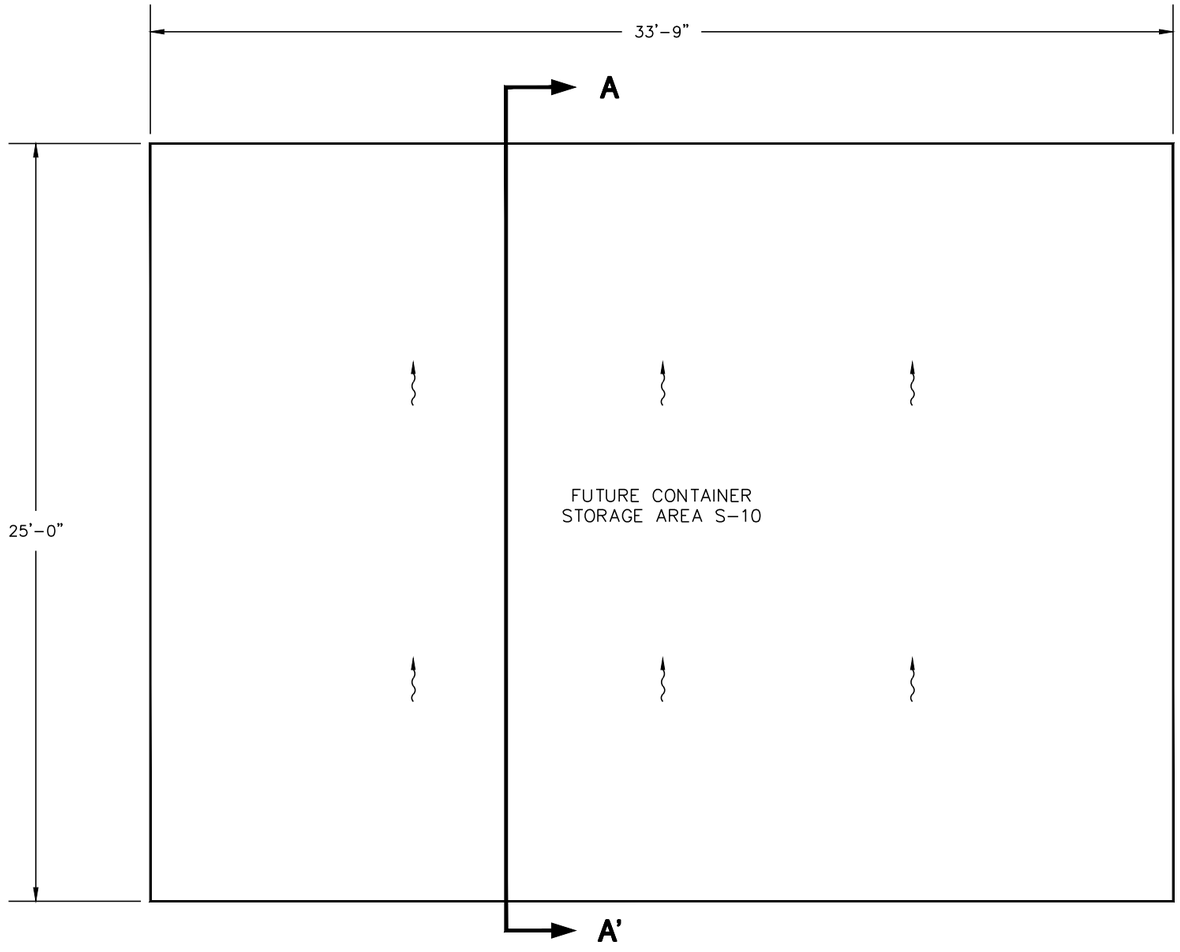
CLIENT: WM WASTE, INC.

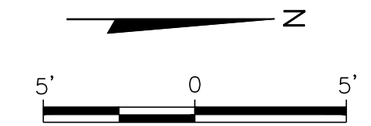
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

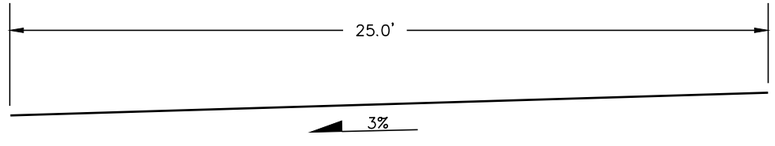
FUTURE STORAGE AREA S-9

FIGURE
S-9

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:35:17 AM







SECTION A-A'

NOTES:

1. STORAGE AREA DIMENSIONS MATCH STORAGE AREA S-13
2. POSITIVE SLOPE TO THE WEST WAS CONFIRMED IN THE FIELD BY SCS ENGINEERS ON DECEMBER 1, 2020. SLOPE PERCENT IS APPROXIMATE, AND BASED ON RACINE COUNTY LIDAR DATA COLLECTED APRIL-MAY 2017.

PROJECT NO.	25220201.00	DRAWN BY:	MJT
DRAWN:	12/15/2020	CHECKED BY:	MH
REVISED:	12/18/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

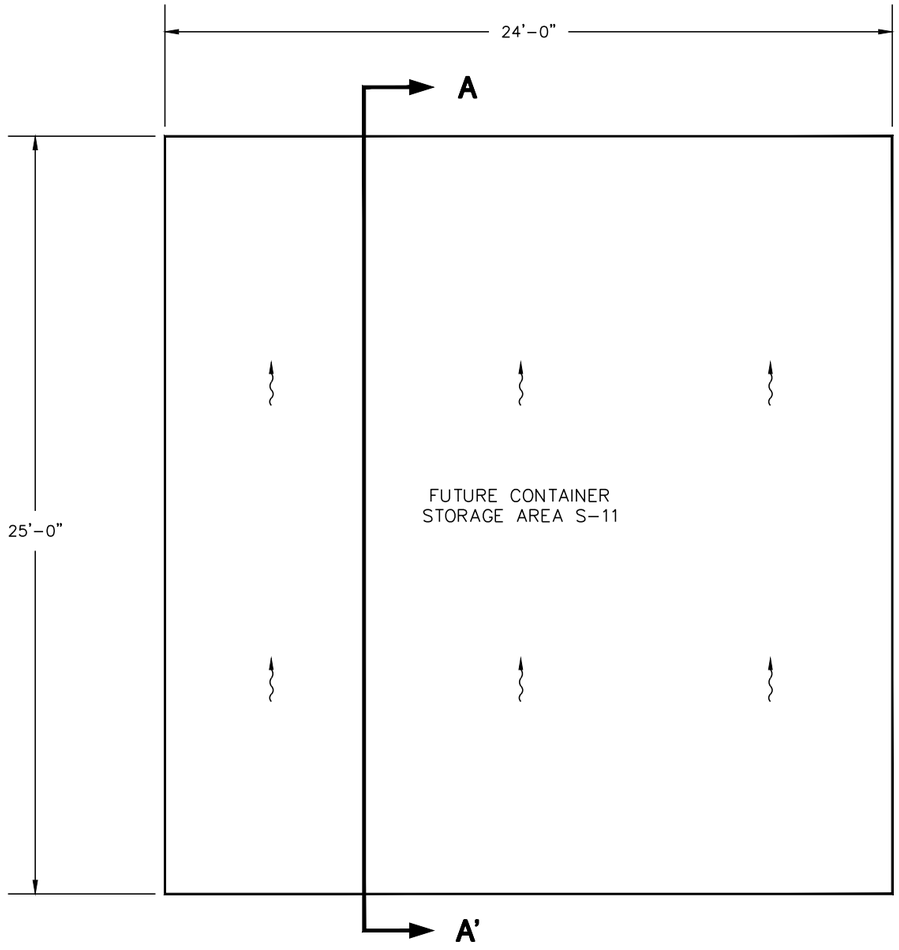
CLIENT: WM WASTE, INC.

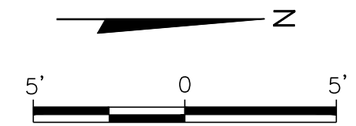
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

FUTURE STORAGE AREA S-10

FIGURE
S-10

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:35:22 AM



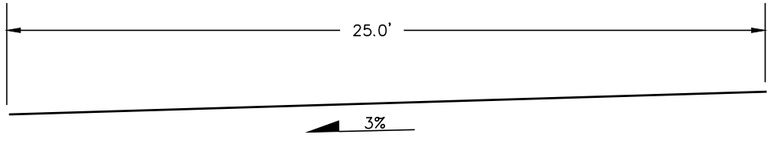


SCALE: 1" = 5'

LEGEND

3% SURFACE SLOPE PERCENT

SURFACE FLOW DIRECTION



SECTION A-A'

NOTES:

1. STORAGE AREA DIMENSIONS MATCH STORAGE AREA S-14
2. POSITIVE SLOPE TO THE WEST WAS CONFIRMED IN THE FIELD BY SCS ENGINEERS ON DECEMBER 1, 2020. SLOPE PERCENT IS APPROXIMATE, AND BASED ON RACINE COUNTY LIDAR DATA COLLECTED APRIL-MAY 2017.

PROJECT NO.	25220201.00	DRAWN BY:	MJT
DRAWN:	12/15/2020	CHECKED BY:	MH
REVISED:	12/18/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

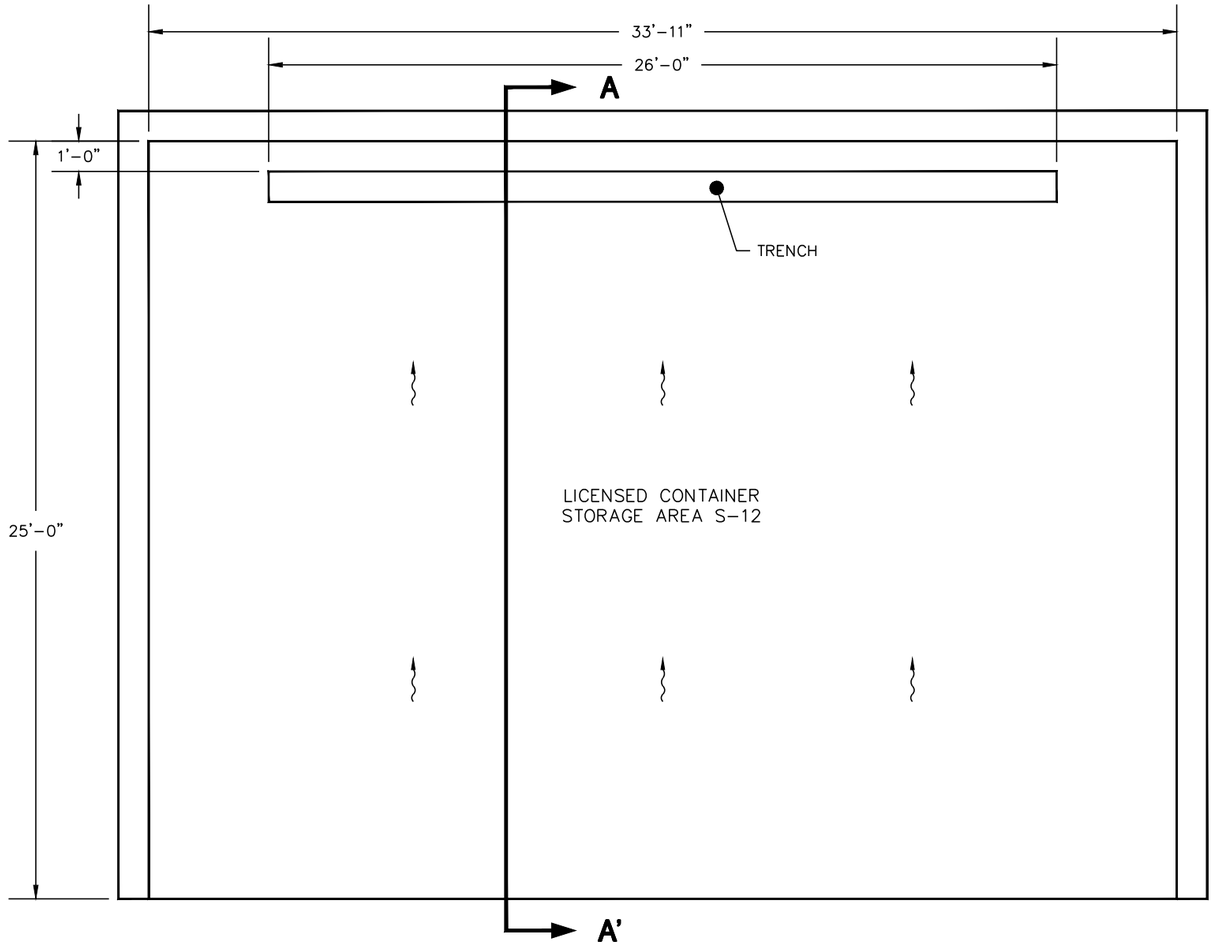
CLIENT: WM WASTE, INC.

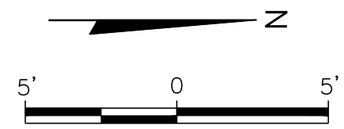
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

FUTURE STORAGE AREA S-11

FIGURE
S-11

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:35:28 AM

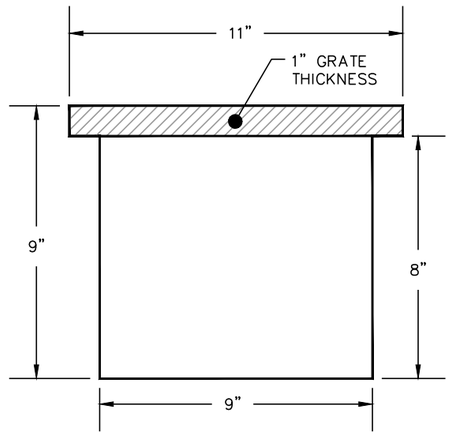




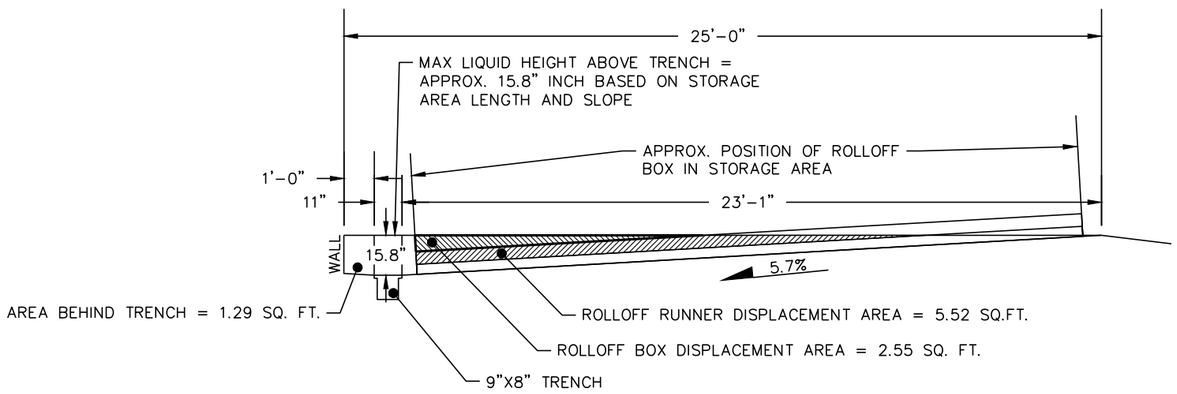
LEGEND

5.7% SURFACE SLOPE PERCENT

SURFACE FLOW DIRECTION



TRENCH DETAIL



SECTION A-A'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

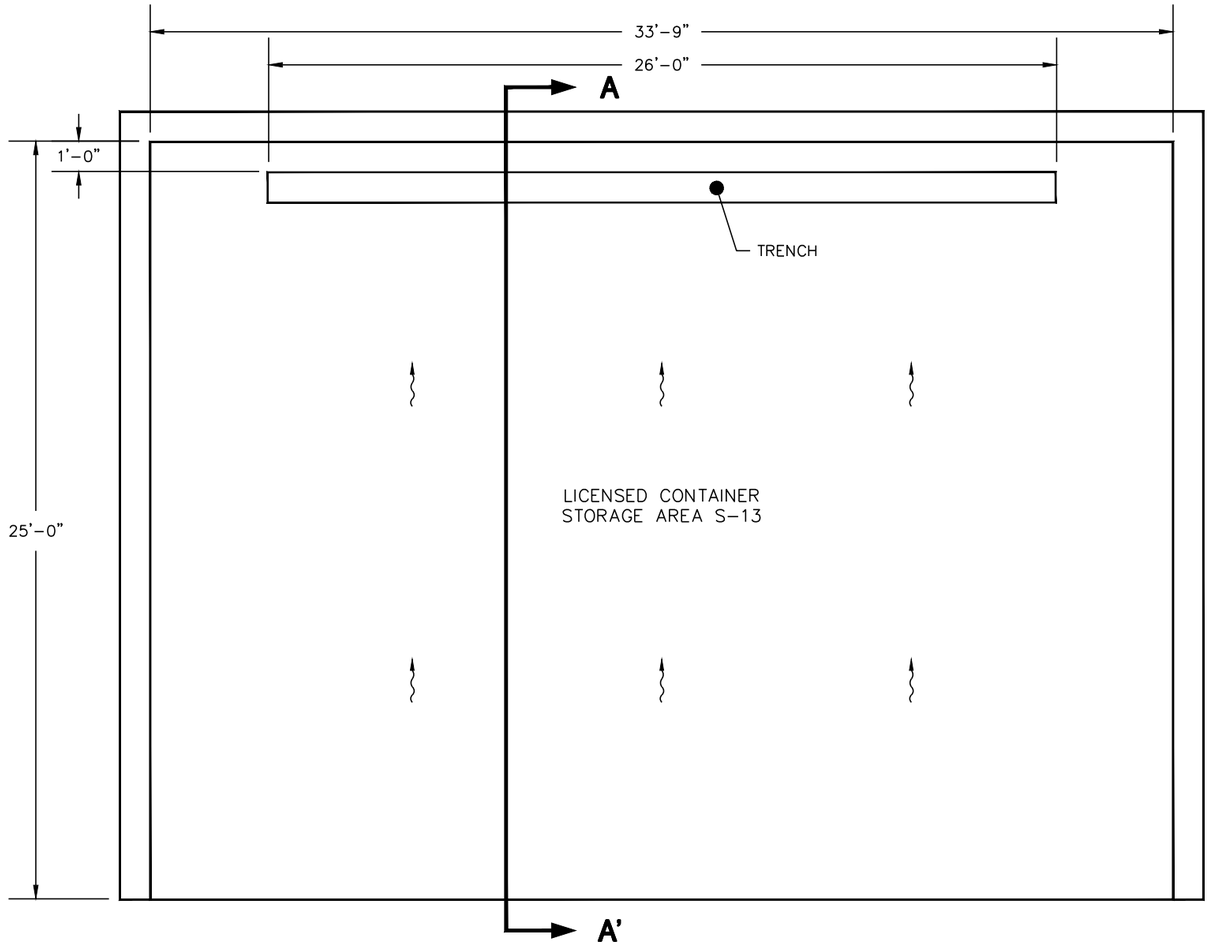
CLIENT: WM WASTE, INC.

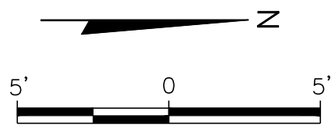
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-12

FIGURE
S-12

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:35:32 AM

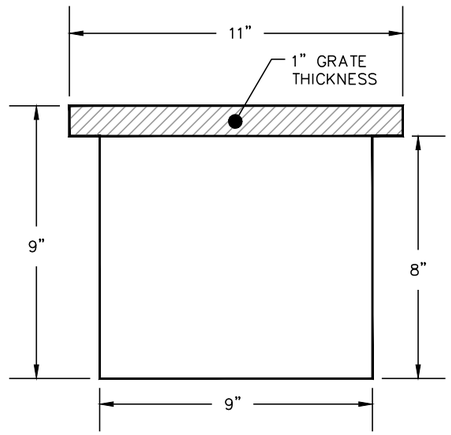




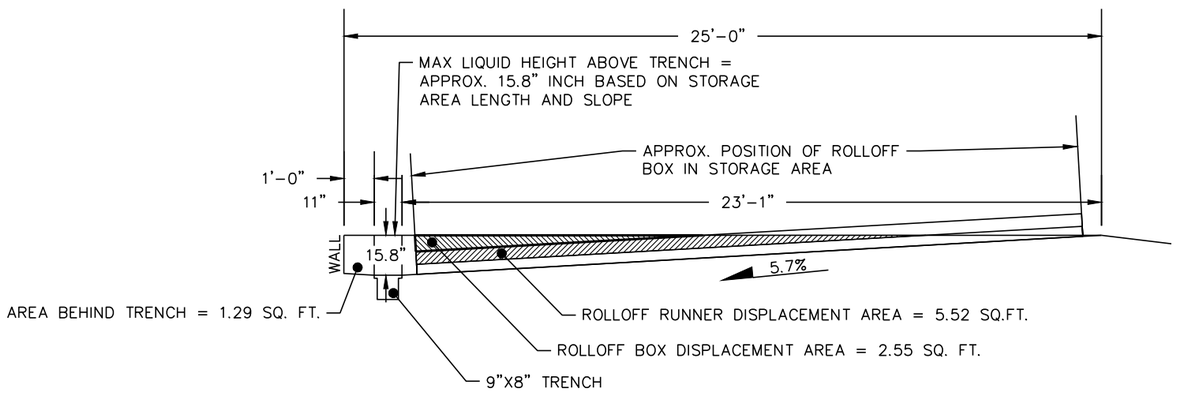
LEGEND

5.7% SURFACE SLOPE PERCENT

SURFACE FLOW DIRECTION



TRENCH DETAIL



SECTION A-A'

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

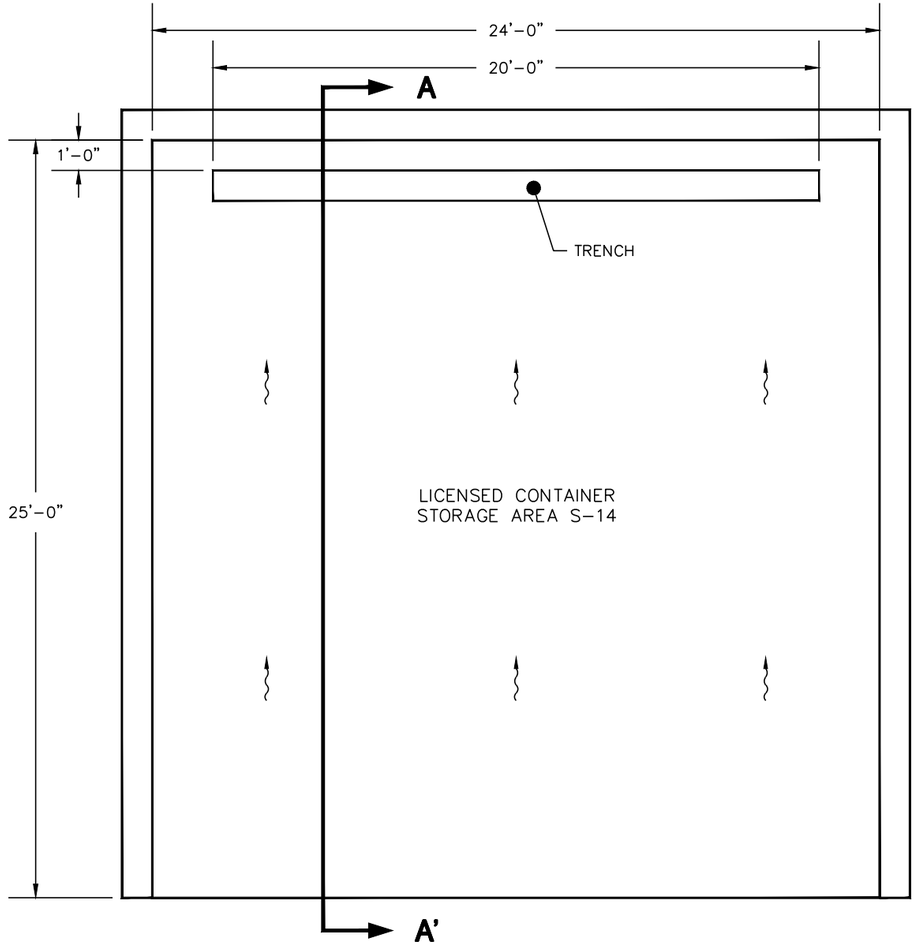
CLIENT: WM WASTE, INC.

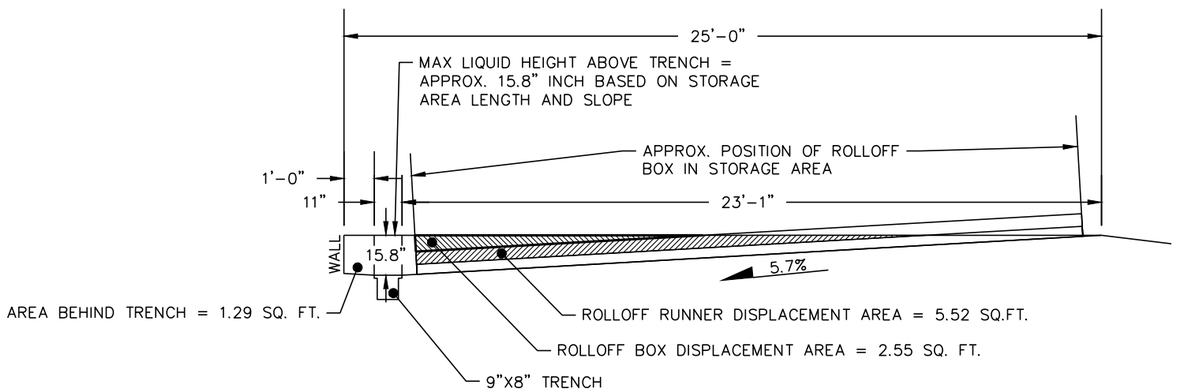
SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

STORAGE AREA S-13

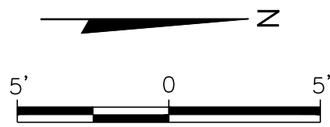
FIGURE
S-13

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:35:37 AM





SECTION A-A'

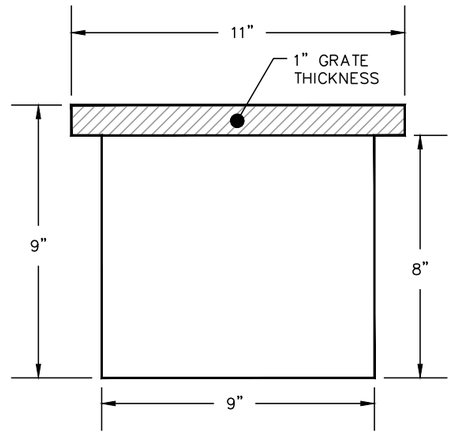


SCALE: 1" = 5'

LEGEND

5.7% SURFACE SLOPE PERCENT

SURFACE FLOW DIRECTION



TRENCH DETAIL

NOTE:
DIMENSIONS BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020.

PROJECT NO.	25220201.00	DRAWN BY:	JSK
DRAWN:	12/15/2020	CHECKED BY:	MJT
REVISED:	12/15/2020	APPROVED BY:	JMO 12/18/2020

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: WM WASTE, INC.

SITE: WM WASTE, INC.
21211 DURAND AVE, UNION GROVE, WI

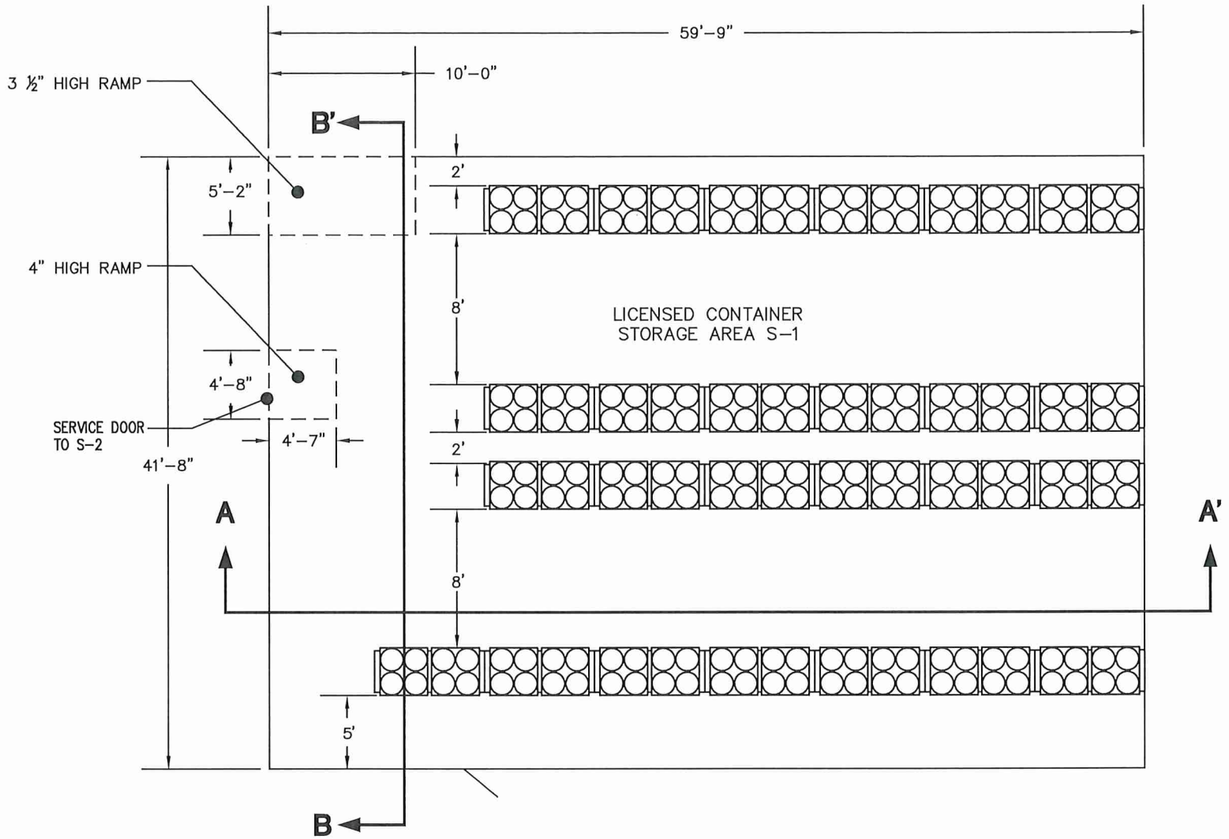
STORAGE AREA S-14

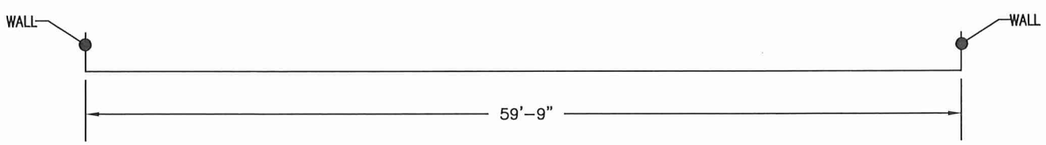
FIGURE
S-14

I:\25220201.00\Drawings\Storage Area Containment.dwg, 12/18/2020 11:35:42 AM

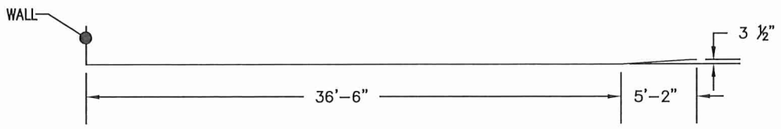
16-2

Container Configurations

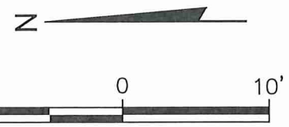




SECTION A-A'



SECTION B-B'

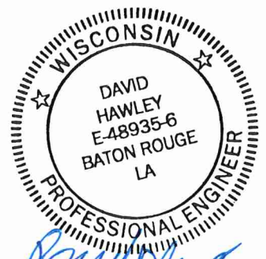


S-1 Containment Area	
Stacking Configuration	3 - Tier Racking System
Container Type	Drum
Maximum Number of Liquid Containers	600
Largest Container (gallons)	55
Proposed Permitted Capacity (Gallons)	33,000
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	3,300
Available Secondary Containment (gallons)	3,988
Sufficient Containment?	Yes
Proposed Upgrades	None
Proposed Containment (gallons)	3,988

LEGEND

– – – – – – RAMP

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.



Drawing from SCS Engineers

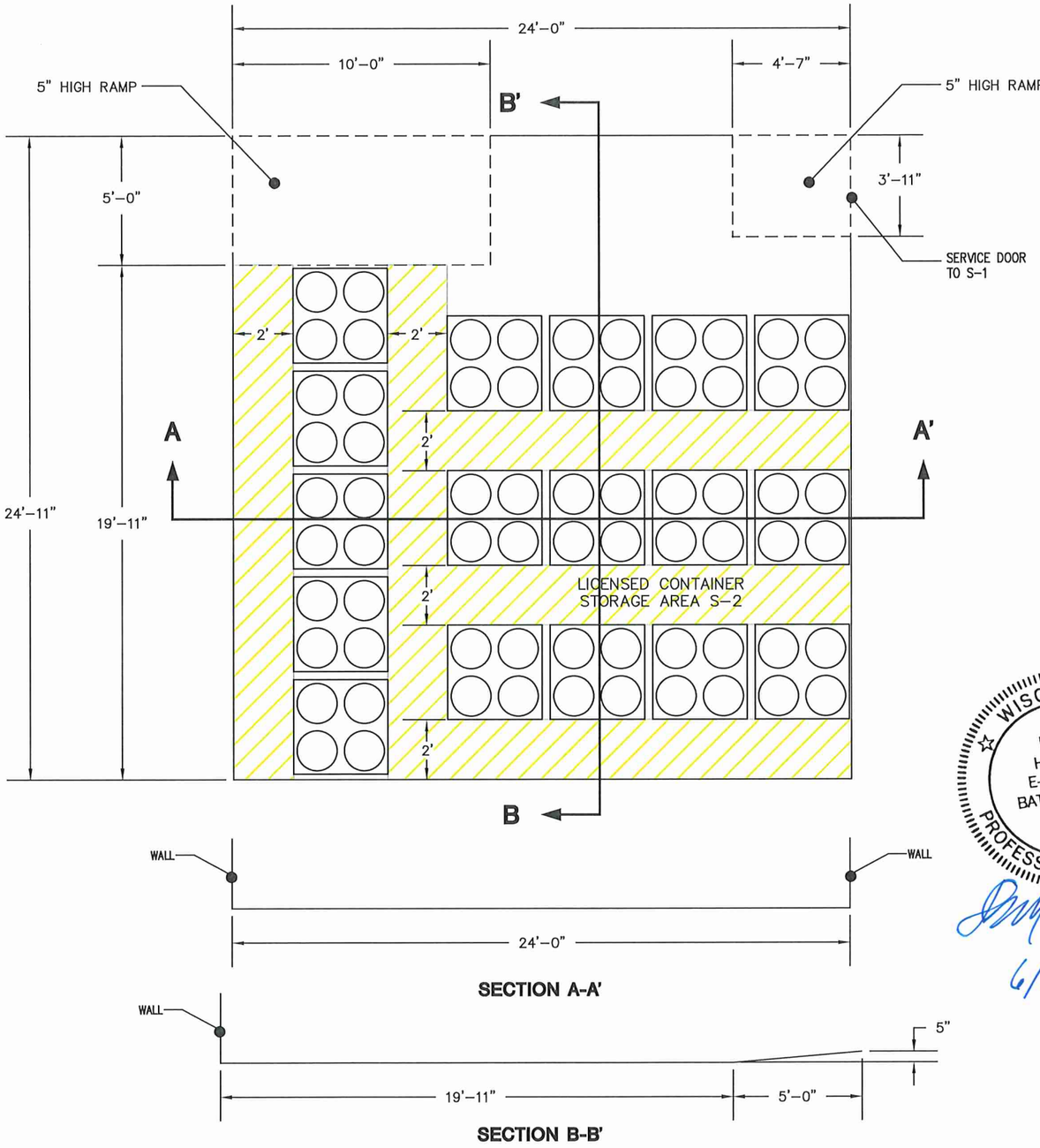
WM Waste, Inc.
Union Grove, Wisconsin

Storage Area S-1 Container Configuration

Racine County, WI

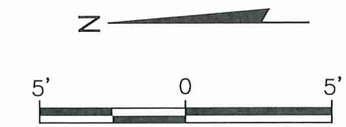
CK Associates Environmental Consultants

Drawn:	CAL/KAC-REV	Checked:	BDS
Date:	06/14/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-42		Figure 16-1



SECTION A-A'

SECTION B-B'



S-2 Containment Area	
Stacking Configuration	2-Tier Stacking
Container Type	Drum
Maximum Number of Liquid Containers (55-gallon drums or DE)	136
largest container (gallons)	55
Proposed Permitted Capacity (Gallons)	7,480
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	748
Available Secondary Containment (gallons)	1,102
Sufficient Containment?	Yes
Proposed Upgrades	None
Proposed Containment (gallons)	1,102

WISCONSIN
DAVID HAWLEY
E-48935-6
BATON ROUGE
LA
PROFESSIONAL ENGINEER

6/24/22

LEGEND

RAMP

PAINTED AISLES

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

Drawing from SCS Engineers

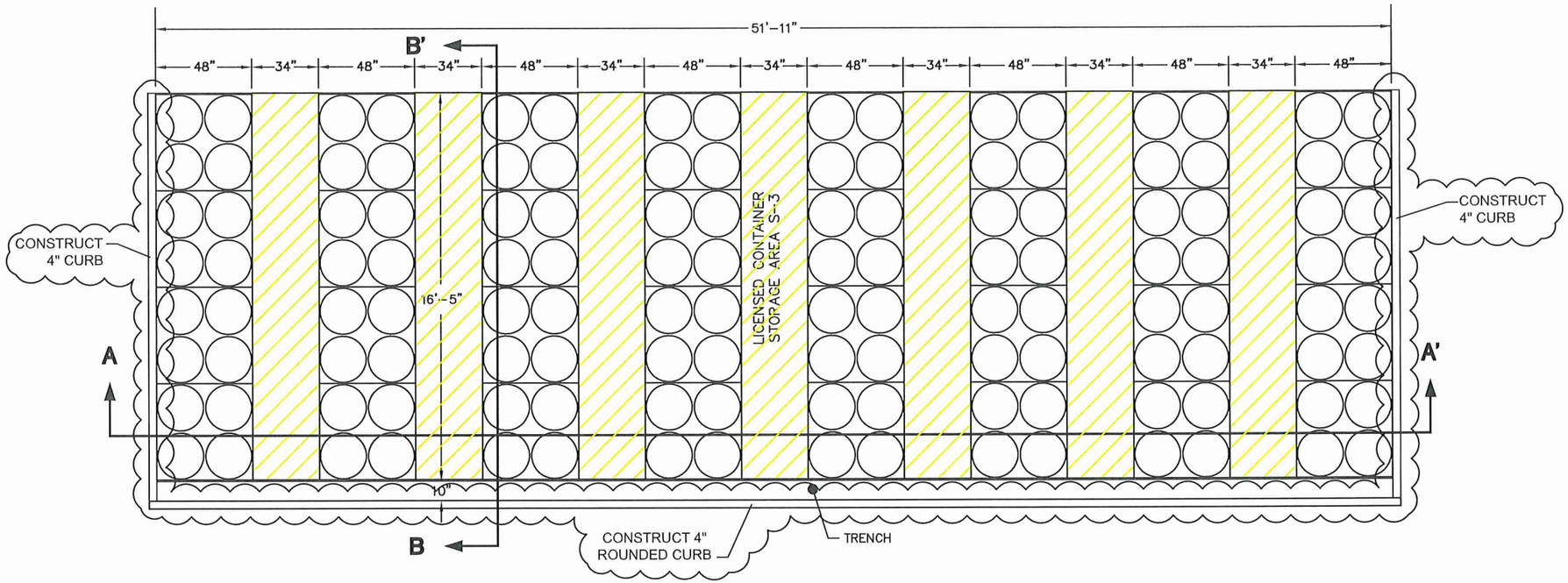
WM Waste, Inc.
Union Grove, Wisconsin

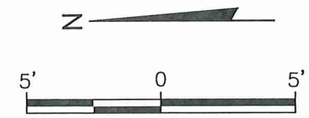
Storage Area S-2
Container Configuration

Racine County, WI

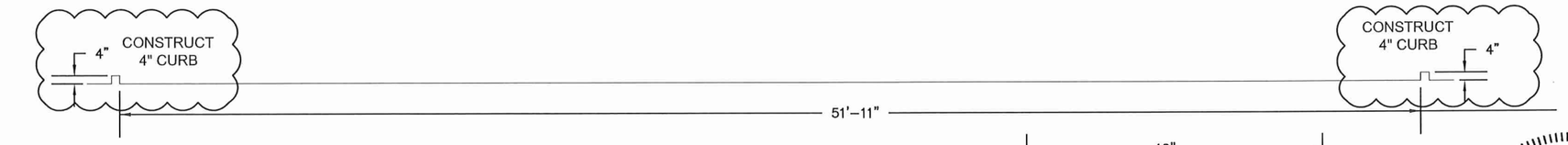
CK Associates Environmental Consultants

Drawn:	CAL	Checked:	BDS
Date:	6/14/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-43		Figure 16-2

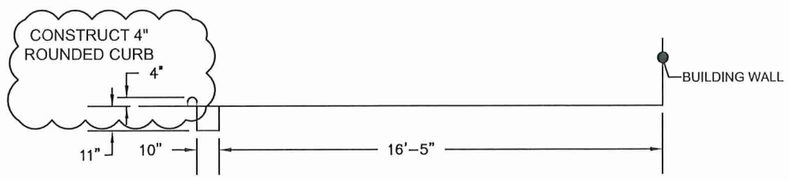




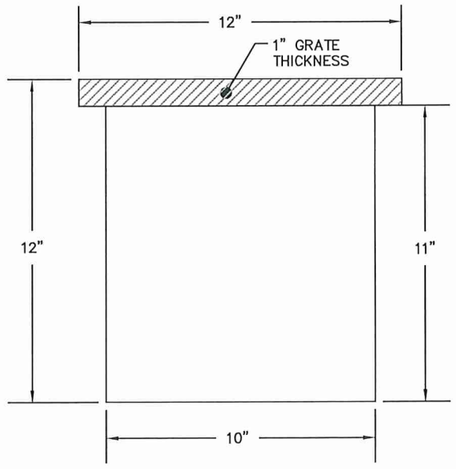
S-3 Containment Area	
Stacking Configuration	2-Tier Stacking
Container Type	Drum
Maximum Number of Liquid Containers (55-gallon drums or DE)	256
largest container (gallons)	55
Proposed Permitted Capacity (Gallons)	14,080
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	1,408
Available Secondary Containment (gallons)	297
Sufficient Containment?	No
Proposed Upgrades	Add 4 inch curbing. See details on drawing.
Proposed Containment (gallons)	1,535



SECTION A-A'



SECTION B-B'



TRENCH DETAIL

LEGEND

PROPOSED UPGRADE

PAINTED AISLES

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

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BATON ROUGE
LA
PROFESSIONAL ENGINEER

6/24/22

Drawing from SCS Engineers

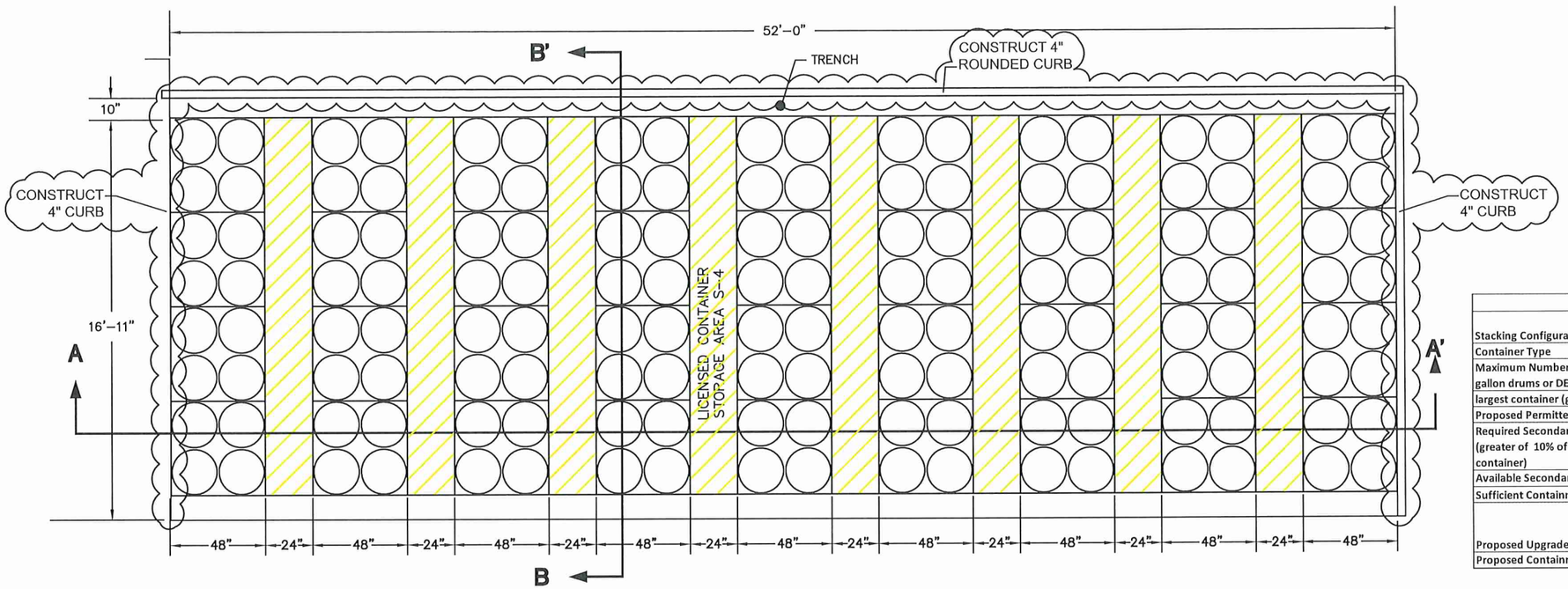
WM Waste, Inc.
Union Grove, Wisconsin

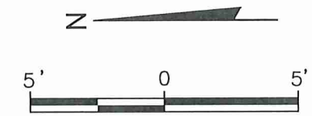
Storage Area S-3 Container Configuration

Racine County, WI

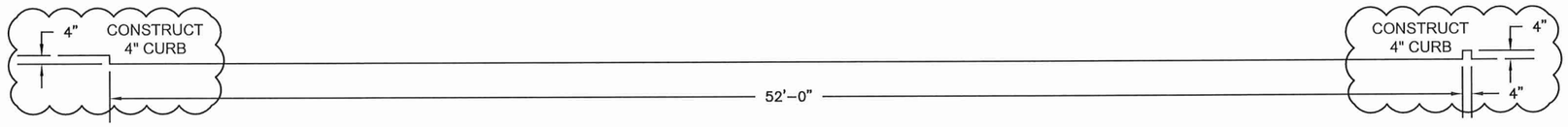
CK Associates Environmental Consultants

Drawn:	CAL	Checked:	BDS
Date:	6/14/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-44		Figure 16-3

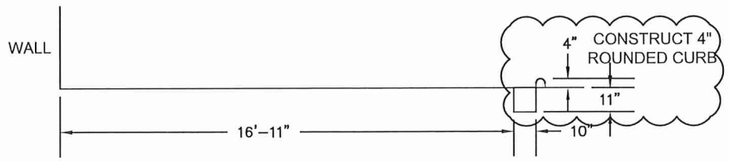




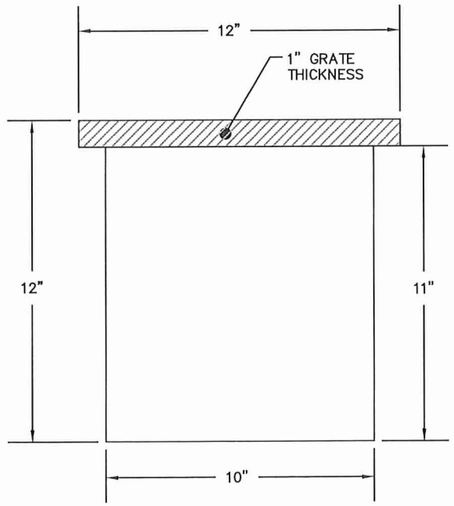
S-4 Containment Area	
Stacking Configuration	2-Tier Stacking
Container Type	Drum
Maximum Number of Liquid Containers (55-gallon drums or DE)	256
largest container (gallons)	55
Proposed Permitted Capacity (Gallons)	14,080
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	1,408
Available Secondary Containment (gallons)	297
Sufficient Containment?	No
Proposed Upgrades	Add 4 inch curbing. See details on drawing.
Proposed Containment (gallons)	1,478



SECTION A-A'



SECTION B-B'



TRENCH DETAIL

LEGEND

PROPOSED UPGRADE

PAINTED AISLES

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DAVID HAWLEY
E-48935-6
BATON ROUGE
LA
PROFESSIONAL ENGINEER

6/24/22

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

WM Waste, Inc.
Union Grove, Wisconsin

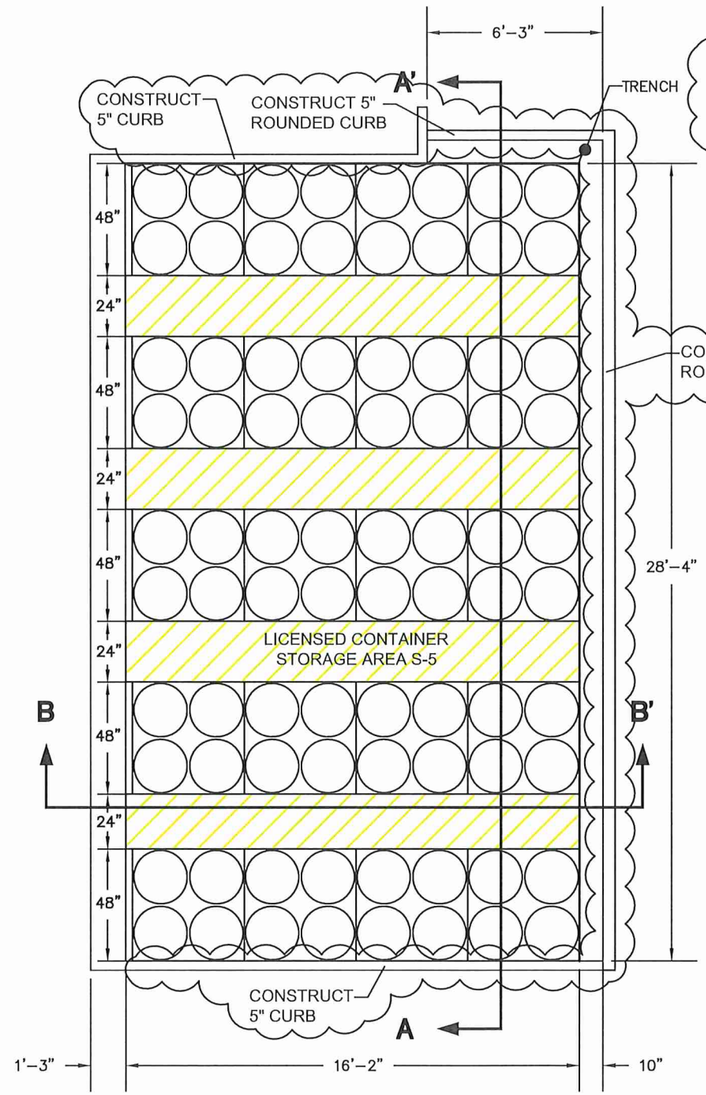
Storage Area S-4 Container Configuration

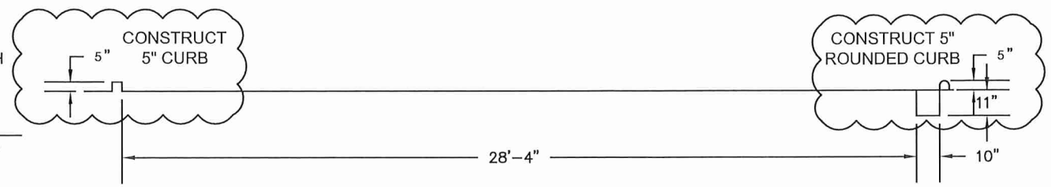
Racine County, WI

CK Associates Environmental Consultants

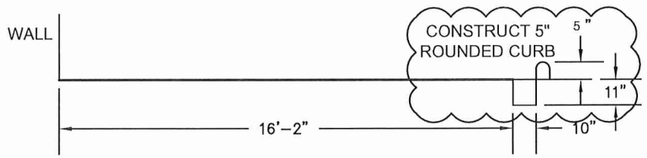
Drawn:	CAL/KAC-rev	Checked:	BDS
Date:	06/14/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-45		Figure 16-4

Drawing from SCS Engineers

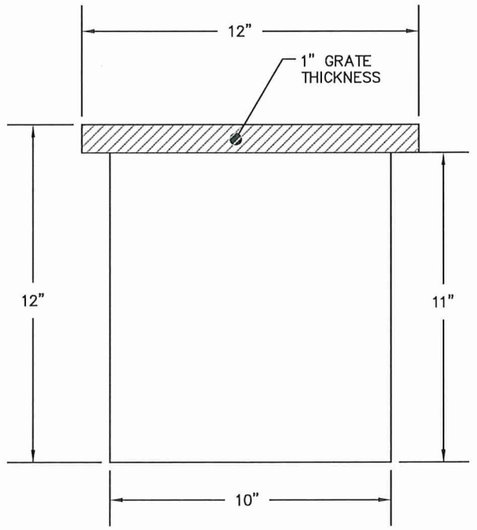




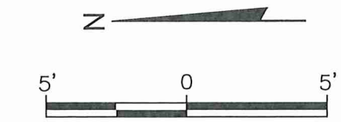
SECTION A-A'



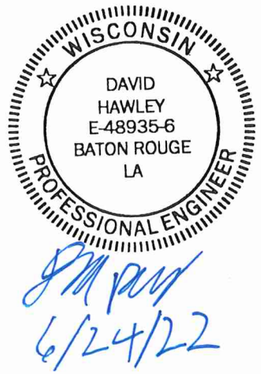
SECTION B-B'



TRENCH DETAIL



S-5 Containment Area	
Stacking Configuration	2-Tier Stacking
Container Type	Drum
Maximum Number of Liquid Containers (55-gallon drums or DE)	160
largest container (gallons)	55
Proposed Permitted Capacity (Gallons)	8,800
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	880
Available Secondary Containment (gallons)	198
Sufficient Containment?	No
Proposed Upgrades	Add 5 inch curbing. See details on drawing.
Proposed Containment (gallons)	942



LEGEND

PROPOSED UPGRADE

PAINTED AISLES

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

WM Waste, Inc.
Union Grove, Wisconsin

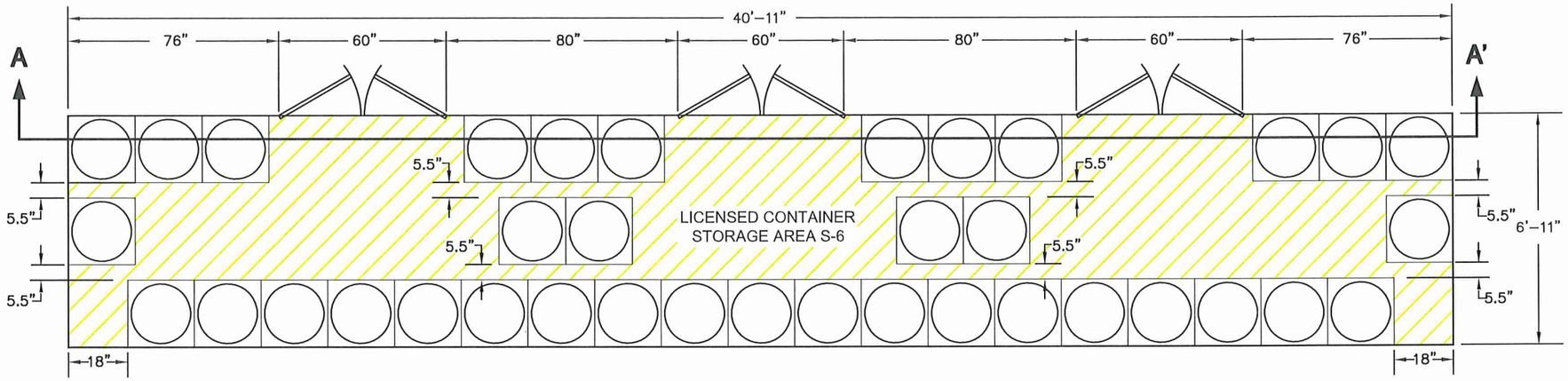
Storage Area S-5
Container Configuration

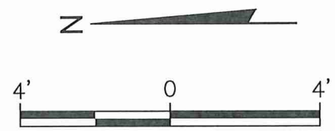
Racine County, WI

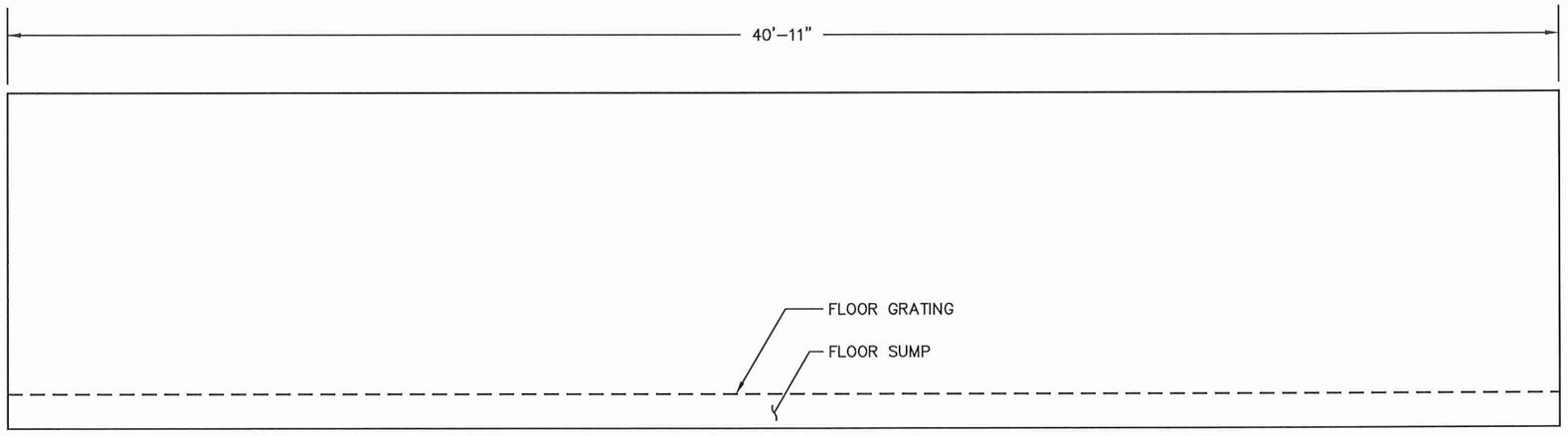
CK Associates Environmental Consultants

Drawn:	CAL/KAC-rev	Checked:	BDS
Date:	06/03/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-46		Figure 16-5

Drawing from SCS Engineers







SECTION A-A'

S-6 Containment Area	
Stacking Configuration	1-Tier Stacking
Container Type	Drum
Maximum Number of Liquid Containers (55-gallon drums or DE)	37
largest container (gallons)	55
Proposed Permitted Capacity (Gallons)	2,035
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	204
Available Secondary Containment (gallons)	1,941
Sufficient Containment?	Yes
Proposed Upgrades	None
Proposed Containment (gallons)	1,941

LEGEND

PAINTED AISLES

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

WISCONSIN
DAVID
HAWLEY
E-48935-6
BATON ROUGE
LA
PROFESSIONAL ENGINEER

6/24/22

Drawing from SCS Engineers

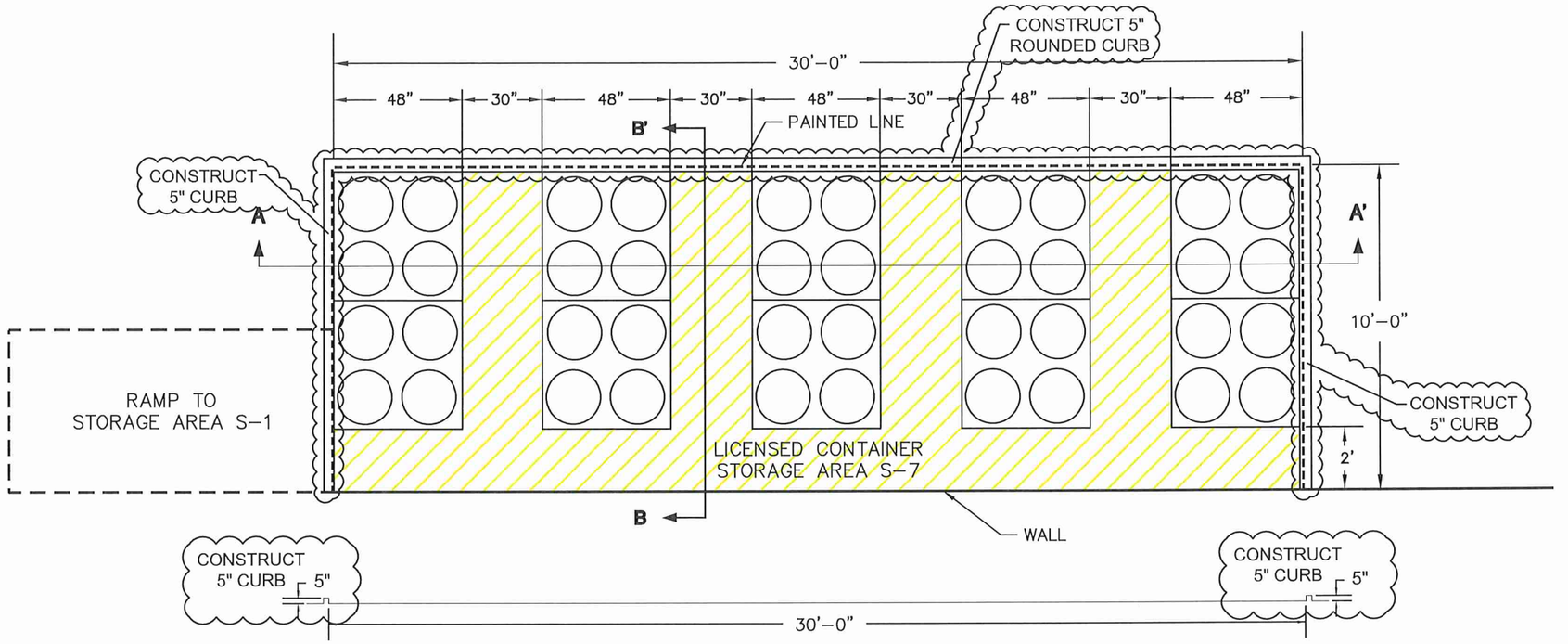
WM Waste, Inc.
Union Grove, Wisconsin

Storage Area S-6 Container Configuration

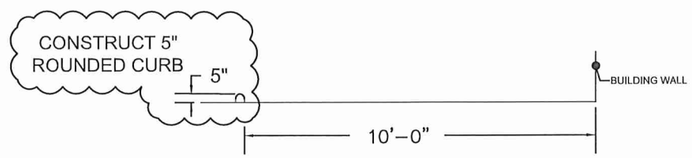
Racine County, WI

CK Associates Environmental Consultants

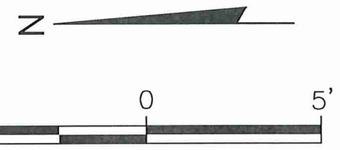
Drawn:	CAL/KAC-rev	Checked:	BDS
Date:	06/14/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-47		Figure 16-6



SECTION A-A'



SECTION B-B'



S-7 Containment Area	
Container Configuration	2-Tier Stacking
Container Type	Drum or Tote
Maximum Number of Liquid Containers (55-gallon drums or DE)	80
largest container (gallons)	275
Proposed Permitted Capacity (Gallons)	4,400
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	440
Available Secondary Containment (gallons)	0
Sufficient Containment?	No
Proposed Upgrades	Add 5 inch curbing. See details on drawing.
Proposed Containment (gallons)	553

LEGEND

- RAMP
- STORAGE AREA BOUNDARY
- PROPOSED UPGRADE
- PAINTED AISLES

NOTE:
STORAGE AREA INFORMATION BASED ON FIGURE 16–7, SHEET FPOR–10, DATED 2/24/2011 BY NIELSEN MADSEN & BARBER S.C.
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

WISCONSIN
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E-48935-6
BATON ROUGE
LA
PROFESSIONAL ENGINEER

6/24/22

WM Waste, Inc.
Union Grove, Wisconsin

Storage Area S-7 Container Configuration

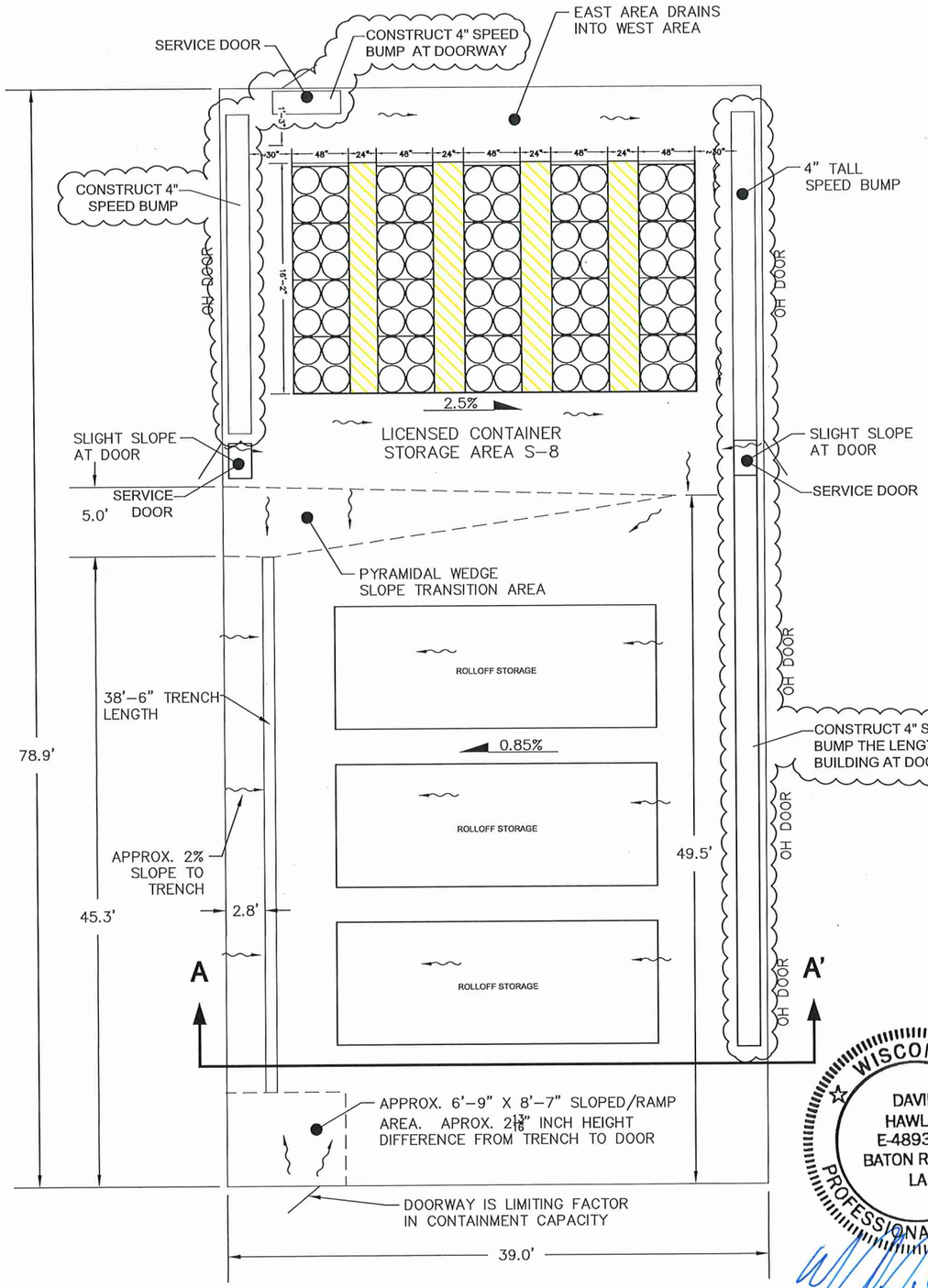
Racine County, WI

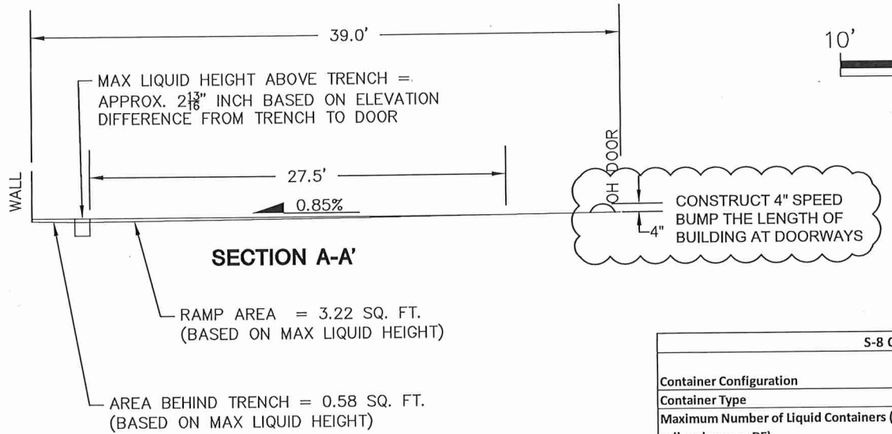
CK Associates Environmental Consultants

Drawn:	CAL/KAC-rev	Checked:	BDS
Date:	06/14/2022	Approved:	BHR
Dwg. No.:	WA5011-18114-48		Figure 16-7

Drawing from SCS Engineers

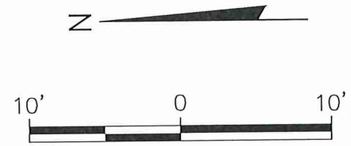
\\projects\Client Files\7-Z\Waste Management Mercury Waste, Inc - Union grove, WI - WA5011\P18114 - RCRA License Renewal\IMAGES AND MAPS\WA5011-18114-48_Storage_Area_S-7.dwg 6/17/2022 - 12:20pm





SECTION A-A'

TRENCH DETAIL



S-8 Containment Area	
Container Configuration	3 Roll-Off Boxes, 2-Tier Stacking
Container Type	Roll-Off Box, Drum
Maximum Number of Liquid Containers (55-gallon drums or DE)	3 40 yd roll-off boxes, 160 Drums
largest container (gallons)	8,079
Proposed Permitted Capacity (Gallons)	33,037
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	8,079
Available Secondary Containment (gallons)	1,545
Sufficient Containment?	No
Proposed Upgrades	Add 4 inch curbing. See details on drawing.
Proposed Containment (gallons)	8,278

LEGEND

- RAMP/WEDGE
- 2.5% SURFACE SLOPE PERCENT
- SURFACE FLOW DIRECTION
- PROPOSED UPGRADE

NOTES:

EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

S-8 MAY ALSO BE USED FOR COMPATIBLE HAZARDOUS WASTE DEBRIS CONSOLIDATION.

WISCONSIN
DAVID HAWLEY
E-48935-6
BATON ROUGE LA
PROFESSIONAL ENGINEER
2/8/23

Drawing from SCS Engineers

WM Waste, Inc.
Union Grove, Wisconsin

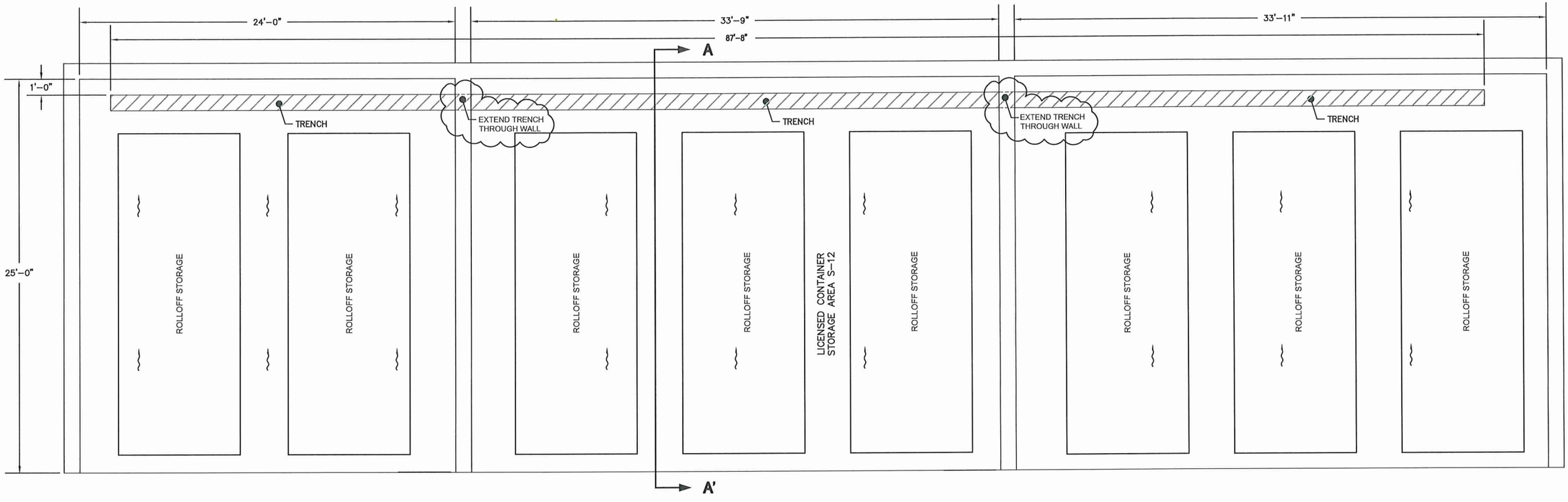
Storage Area S-8 Container Configuration

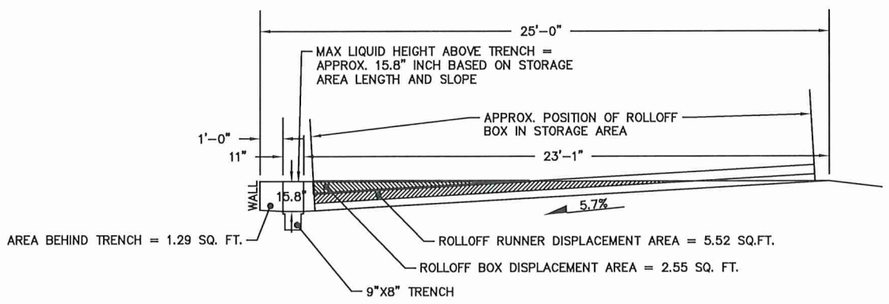
Racine County, WI

CK Associates Environmental Consultants

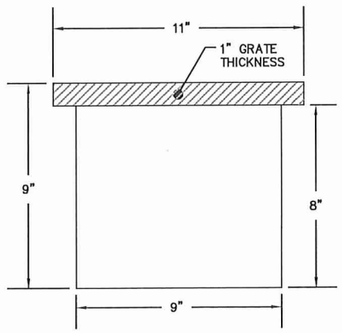
Drawn:	CAL	Checked:	DWH
Date:	1/26/2023	Approved:	DWH
Dwg. No.:	WA5011-18114-49		Figure 16-8

P:\T-Z\Waste Management Mercury Waste, Inc - Union grove, WI - WA5011\P18114 - RCRA License Renewal\IMAGES AND MAPS\WA5011-18114-49_Storage_Area_S-8.dwg 1/27/2023 - 9:25am



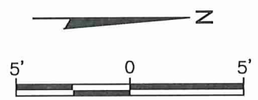


SECTION A-A'



TRENCH DETAIL

S-12 Containment Area	
Container Configuration	8 Roll-Off Boxes, spaced as previously in individual units
Container Type	Roll-Off Box
Maximum Number of Liquid Containers (55-gallon drums or DE)	8 40 yd roll-off boxes
largest container (gallons)	8,079
Proposed Permitted Capacity (Gallons)	64,627
Required Secondary Containment Capacity (greater of 10% of total capacity or largest container)	8,079
Available Secondary Containment (gallons)	4,127
Sufficient Containment?	No
Proposed Upgrades	Combine S-12, -13, and -14 into one unit. Extend trench through inner walls. See details on drawing.
Proposed Containment (gallons)	11,234



LEGEND

5.7% SURFACE SLOPE PERCENT

SURFACE FLOW DIRECTION

PROPOSED UPGRADE

NOTE:
EXISTING SECONDARY CONTAINMENT BASED ON FIELD MEASUREMENTS COLLECTED BY SCS ENGINEERS ON DECEMBER 1, 2020, AND DOCUMENTED IN A REPORT DATED DECEMBER 23, 2020.
SCS MEASURED THE STORAGE AREA DIMENSIONS WITH A TAPE MEASURE AND A LASER DISTANCE MEASURE, AND MEASURED SLOPED AREAS WITH A LASER LEVEL.

WISCONSIN
DAVID HAWLEY
E-48935-6
BATON ROUGE LA
PROFESSIONAL ENGINEER

6/24/22

Drawing from SCS Engineers

WM Waste, Inc.
Union Grove, Wisconsin

Storage Area S-12 Container Configuration

Racine County, WI

CK Associates Environmental Consultants

Drawn:	CAL/KAC-rev	Checked:	BDS
Date:	06/14/22	Approved:	BHR
Dwg. No.:	WA5011-18114-50		Figure 16-9

Appendix 17

BRRTS Activity # 02-52-586-974
Site Investigation Report and Remedial Action Plan

October 25, 2022

Candace Sykora
Hydrogeologist
Wisconsin Department of Natural Resources
890 Spruce St
Baldwin, WI 54002

Re: 2022 Site Investigation Report and Remedial Action Plan
WM Waste, Inc.
21211 Durand Avenue, Union Grove, Racine County, WI 53182
BRRTS Activity # 02-52-586974
DNR FID # 252195350

Dear Ms. Sykora:

On behalf of WM Waste, Inc. (WM Waste), Cornerstone Environmental Group, LLC, a Tetra Tech Company (Tetra Tech) is submitting this Site Investigation Report and Remedial Action Plan (RAP) based on an investigation conducted at the Facility located in Union Grove, Wisconsin. The investigation was performed in accordance with an approved Site Investigation Work Plan (SIWP). The SIWP was submitted to the Wisconsin Department of Natural Resources (WDNR) on October 15, 2021 and approved by the WDNR in a Review of Site Investigation Work Plan Letter Dated March 9, 2022 (Attachment 1).

The purpose of the SIWP was to define the extent and magnitude of residual contamination remaining after a previous soil excavation was conducted associated with the release of mercury impacted carbon during change-out activities. On May 24, 2022, Tetra Tech collected soil samples from predetermined locations, private well samples, one surface water sample from the retention pond and one discharge water sample from the retention pond at the Facility.

In general, the following activities were performed during the 2022 Site Investigation. Soil and water samples were collected and analyzed for total mercury at a certified laboratory. The soil sample analytical results were compared to the 3.13-mg/kg standard residual contaminant limits (RCLs) for direct contact. Some soil sample locations exceeded the 3.13 mg/kg total mercury RCL and therefore required the collection of additional or step-out samples to further define the boundary of RCL exceeding soil. This action was performed in accordance with the approved SIWP. This Site Investigation Report has been prepared and Remedial Action Plan developed based upon the evaluation of the data collected during the field activities and is being submitted as required in the approved SIWP.

1.0 SITE INFORMATION

Site name: WM Waste, Inc. Facility

Address: 21211 Durand Avenue, Union Grove, Racine County, WI 53182

Parcel IDs: 006-03-20-36-029-000 and 006-03-20-36-031-021

Environmental Protection Agency ID #: WID000000356

Facility ID #: 252195350)

Site location: Northeast ¼ of the Northeast ¼ of section 36 of Township 3 North and Range 20 East, Racine County, Wisconsin

Responsible Party's name and address: WM Waste, Inc., 21211 Durand Avenue, Union Grove, Racine County, WI 53182

Consultant name and address: Tetra Tech, 8413 Excelsior Drive, Suite 160, Madison, WI, 53717

2.0 BACKGROUND INFORMATION

The Facility is located in a small industrial park. The facility and is bordered to the north by Durand Avenue followed by agricultural land. The remainder of the surrounding area consists of industrial properties to the south and residences to the east and west. The site location is shown on Figure 1.

The facility was historically used as a mercury recycling and licensed hazardous waste storage and treatment facility. Mercury recycling activities were conducted utilizing retort ovens. Emissions from the mercury retort ovens were directed to a granular activated carbon (GAC) system. The facility no longer operates the ovens nor processes mercury for recycling. Nonetheless, the GAC system remains operational at the facility. The GAC's carbon media is replaced approximately every five years.

Beginning in 2012, WM Waste has been required as a condition of its operating license to collect bi-annual surficial soil samples from grid locations and analyze them for total mercury using a certified laboratory. Once received, the soil sample results are recorded on a drawing and in tabular format and became part of the facility's operating record. If the 10 mg/kg threshold is met or exceeded in any of the bi-annual soil samples, WM Waste is required to notify in writing the WDNR's designated Hazardous Waste Inspector assigned to the facility.

On August 28, 2020, the bi-annual soil sampling event was conducted by Environmental Monitoring & Technologies, Inc. (EMT). EMT collected grab soil samples from the facility and submitted them to a certified laboratory for mercury analysis. The analytical results indicated seven of the 89 samples exceeded the site-specific standard of 10 mg/kg. The suspected source of the elevated concentrations in these seven samples was spillage of approximately one gallon of carbon media that occurred during the last GAC changeout event on September 26, 2018. WM Waste was not aware of the release prior to the 2020 sampling event. The changeout was reportedly performed by new employees, and although plastic tarping was used, carbon media was spilled on the ground surface near the carbon vessels on the west side of the facility while being transferred to totes.

Remedial action was taken to address the site-specific exceedances. Over-excavation of contaminated soil was conducted from December 10, 2020 through December 16, 2020. WM Waste personnel over-excavated soils to a depth of approximately 1-foot below ground surface (bgs) based on analytical results around the GAC spill and visual observations. The approximate extent of the excavation is shown on Figure 2. Post-excavation confirmation samples collected from the bottom of the excavation were analyzed at a laboratory

and the sample results were below the site-specific standard of 10 mg/kg as well as the direct contact RCL of 3.13 mg/kg.

WM Waste submitted a Request for No Further Action Letter dated February 15, 2021 that described the remedial action, pre-excavation and post-excavation results and a recommendation for no further action. The WDNR responded with a No Further Action Not Recommended Letter Dated July 14, 2021. The Letter stated a need to further define the degree and extent of contamination and a need to conduct further remedial action if any soil has total mercury concentrations above the RCL. WM Waste responded by submitting a Site Investigation Work Plan Dated October 15, 2021. The WDNR sent a Review of Site Investigation Work Plan Letter Dated March 9, 2022, which agreed with the proposed sampling from the SIWP. The WDNR Correspondence Letters are provided in Attachment 1.

Between the previous remedial action in December of 2020 and the implementation of the SIWP, routine sampling has continued at the site including annual sediment sample collection in the stormwater retention pond and biannual sitewide surficial samples. The annual sediment samples from the stormwater retention pond were collected by Tetra Tech on December 21, 2020 and November 22, 2021. Concentrations of total mercury were present in the pond sediment in both events. Sediment samples collected from the stormwater retention pond have had detections for total mercury since the pond sediment was first analyzed in 2012.

Bi-annual surficial soil sampling was completed by Tetra Tech between April 26, 2022 and April 29, 2022. These samples were collected from the soil just below the grass or gravel surface in an established grid pattern across the site. The sample concentrations of total mercury were below the site-specific limit of 10mg/kg and therefore the WDNR was not notified of the results. The samples in the vicinity of the GAC cleanout spill and excavation area from the bi-annual sampling were used to further characterize the extent of the soil contamination related the spill that remained following the original remedial action. Specifically, biannual sample locations E6, E6a, E7, E7a, F5a, F6, F6a, F7 and F7a, are located within the remediated area or between the GAC location and the paved road to the West. None of the samples from the locations had concentrations above the NR 720 RCL of 3.13 mg/kg for direct contact (RCL) as indicated in Table 1.

Following the biennial soil sampling in April 2022, the SIWP was implemented in two phases (1A and 1B) during May 2022 and July - August 2022, respectively. The activities associated with the SIWP are summarized and described below.

3.0 METHODS OF INVESTIGATION

During the May 2022 Phase 1A Investigation, soil samples were collected at six locations. Soil sample locations are approximately 12 feet beyond the boundary of the December 2020 excavation. Two samples were collected at each sample location, one below the grass or gravel surface and one at 12 inches of depth. In grass areas, sampling was conducted by using a shovel to remove the overburden and expose the soil just below the grass surface. In areas with gravel fill, a shovel was used to remove the gravel to expose native soil. A stainless-steel soil sampling probe or hand auger was also used to aid in sample collection as needed. If there was an obstruction in the sample location, such as pavement, woody vegetation, culverts, or surface water, the sample was taken at an offset to the nearest accessible location. After removal of the overburden, a

soil sample was collected by using clean latex gloves. New, clean latex gloves were used for each sample. Between samples, the equipment was decontaminated. After the decontamination process, once every six to eight samples, distilled water was poured over the sampling equipment and collected in a sample container and analyzed for total mercury to confirm the efficiency of the decontamination procedures. Each soil sample location was surveyed with a GPS unit. The May 2022 soil sample locations are shown on Figure 2.

Water samples were taken using new, clean latex gloves. Groundwater samples were collected at the two on-site private wells. Specifically, the samples were collected at spigots outside the buildings after water was discharged or purged for 30 minutes. The private water supply wells at the facility do not have water treatment systems. The surface water in the stormwater retention pond was sampled in two locations: one sample from within the pond and one sample from the pond discharge while it was flowing.

Immediately following collection of the samples, they were placed into appropriate sample containers provided by Pace Laboratories, Green Bay, WI (Pace). The samples were placed on ice in a cooler. The sample coolers were delivered to Pace for total mercury analysis. The decontamination wastewater and disposable sampling items such as nitrile gloves and paper towels were containerized in labeled 55-gallon drums and left at the site for proper disposal at a permitted facility.

4.0 SAMPLE RESULTS AND EVALUATION

4.1 SOIL SAMPLES

The results of the soil sample collection and analysis are summarized in the following text and provided tables and figures.

Initial (Phase 1A) Soil Samples

During the initial (Phase 1A) of the Investigation a total of 12 soil samples and two decontamination water samples were collected in accordance with the SIWP and analyzed in a laboratory for total mercury using United States Environmental Protection Agency (USEPA) Method 7471. The 12 samples were collected at six locations and depths described in Section 3 of this report. Figure 3 shows the sample locations and analytical results. The May 2022 analytical results are summarized on Table 2. Out of the six sample locations, laboratory results showed that the surficial soils at two locations (S4 and S5) had concentrations of total mercury above the RCL of 3.13 mg/kg. The remaining surficial soil samples were below the RCL or non-detect. Although the concentration of total mercury at S1 (3.0mg/kg) was below the RCL, it was determined that step out sampling was appropriate to provide additional confidence in the mercury concentration surrounding this area. None of the samples collected during May 2022 at a depth of one foot below the surface had total mercury detections above the RCL.

Based on the results of the Initial (Phase 1A) investigation, further definition of the extent of mercury impacted soil was necessary to develop an effective and comprehensive remedial action plan. As a result, a Step Out (Phase 1B) Sampling Plan was developed in accordance with the SIWP around the Initial (Phase 1A)

soil sample locations S1, S4 and S5. Figure 3 shows the step out sample locations. The rationale and plan for each of these three locations is summarized below.

Step Out (Phase 1B) Samples

The Step Out samples were collected on July 12, 2022. Due to the July 2022 results, a subsequent or confirmation sample was collected adjacent to the SP4N1 location on August 17, 2022. Step-Out soil sample locations are shown on Figure 3. Samples were collected near the surface and at a depth of one foot below the surface following the same sampling techniques as the initial samples. Additional step out samples were collected around Phase 1A sample locations S1, S4 and S5 because the total mercury concentration approached or exceeded the RCL. Each of the 34 total step out samples were collected between areas that samples exceeded the RCL and/or warranted further investigation and a known boundary delineation. Boundary delineations are further defined for each initial sample point below.

S1 Step-outs

Two step-out samples were collected in three directions from Phase 1A sample point S1 - to the North (SP1N1 and SP1N2), East (SP1E1 and SP1E2) and West (SP1W1 and SP1W2). In each direction the first step out was collected three feet away from S1, then the second sample was collected six feet away from S1. Samples were not collected to the South of S1 because that boundary was delineated by the results at S2 that are below the RCL as well as the previously remediated area. The first step out sample (SP1N1) to the North had a concentration at the surface above the RCL for total mercury, but the second sample (SP1N2) had a concentration below the RCL for total mercury so the delineation boundary for mercury contamination north of S1 was placed between SP1N1 and SP1N2 just south of SP1N2. Both step out samples (SP1E1 and SP1E2) to the east of S1 had total mercury concentration at the surface above the RCL so the delineation boundary to the east of S1 was extended to the edge of the building. The building foundation acts as a barrier to further spread of the surface level contamination. The first step out sample (SP1W1) to the West had a concentration at the surface below the RCL for total mercury, but the second sample (SP1W2) had a concentration above the RCL for total mercury. The delineation boundary for mercury contamination west of S1 was extended to the paved road, which is a higher elevation and impervious to precipitation. These two factors likely hindered the spread of the spilled granular carbon material. Results from the bi-annual samples show that the area to the west of the paved road has total mercury concentrations below the direct contact RCL. The original subsurface sample at S1 and the subsequent subsurface samples all collected at a depth of one foot below the surface had concentrations of total mercury below the RCL, so the vertical delineation boundary of the mercury contamination is to a depth of one foot below the ground surface in the area around S1.

S4 Step-outs

Step-out samples were collected in two directions from Phase 1A soil sample location S4 - to the North (SP4N1 and SP4N2) and West (SP4W1 and SP4W2). Two samples were collected at each sample point. To the North, the first step out sample (SP4N1) was collected approximately three feet North of S4 or one-third the distance between S4 and the access road North of S4. The second sample (SP4N2) was collected at approximately six feet or two-thirds the distance to the access road. The total mercury concentration at the surface in sample SP4N1 was below the RCL. Based on this finding, the road is being used to define the contamination

boundary. The road is at a higher elevation that likely hindered the spread of the spilled granular carbon material. Results from the bi-annual samples and other initial samples show that the area to the north of the road has total mercury concentrations below the direct contact RCL. SPN41B was the only sample out of all the samples taken in Phase 1B investigation to have a concentration higher than the total mercury RCL at the one foot below the surface depth. It was suspected the SP4N1B result might be a field or laboratory error, so the location was resampled again at both depths to confirm the July 2022 result at an offset of four inches from the initial sample location. The samples were labelled SP4N1R and SP4N1BSR. The August 2022 result confirmed the elevated July mercury result at the SP4N1BS (deep) location. Since the concentration of total mercury at SP4N1BS and SP4N1BR were over the RCL at a depth of one foot, the vertical boundary delineation has not been determined in this specific area and will be specifically addressed in the Remedial Action Plan Section of this Report.

Two step-out samples were collected to the West of S4. The first (SP41W) was approximately four feet west S4 and the second (SP4W2) was approximately eight feet west of S4. Sample locations to the West were chosen to set a boundary delineation to the west. Both samples SP4W1 and SP4W2 were over the RCL at the surface, but below the RCL at a depth of one foot. Since both surface samples were over the RCL, the delineation boundary was set at the edge of the paved road to the west of S4 because the paved road is a higher elevation and impervious to precipitation. These two factors likely hindered the spread of the spilled granular carbon material. Results from the bi-annual samples show that the area to the west of the paved road has total mercury concentrations below the direct contact RCL.

S5 Step-outs

Step-out samples were collected to the Northwest (SP5NW1 and SP5NW2), Southwest (SP5SW1 and SP5SW2 and Southeast (SP5SE1, SP5SE2 and SP5SE3). To the Northwest and southwest, the step-out samples were collected to delineate the contamination boundary to the west of S5. To the Northwest, the step-out samples SP5NW1 and SP5NW2 were collected at three and six feet away from S5, respectively. S5NW1 had a total mercury concentration that exceeded the RCL at the surface and SP5NW2 had a total mercury concentration that was below the RCL. Based on these findings in the Northeast direction from S5 the contamination boundary was delineated just Southeast of sample SP5NW2. To the Southwest the step-out samples SP5SW1 and SP5SW2 were collected at four and eight feet away from S5. SP5SW1 and SP5SW2 had total mercury concentrations that were below the RCL. Based on these findings in the Southeast direction from S5, the contamination boundary was delineated just Northeast of sample SP5SW1. Sample S6 is located to the Southeast of S5 and had a concentration that was below the RCL for total mercury. To define the contamination boundary, the area between S5 and S6 was divided into three equally distanced step-out samples to delineate the boundary of contamination between them (SP5SE1, SP5SE2 and SP5SE3). SP5SE1, SP5SE2 and SP5SE3 all had concentrations of total mercury at the surface that exceeded the RCL. Based on these findings the contamination delineation boundary in the Southeast was placed directly North of S6. None of the step-out samples collected around S5 at a depth of one foot below the ground surface exhibited concentrations above the RCL. As a result, the contamination depth in the vicinity of S5 is delineated at one foot below the surface.

The surficial soil in the area as well as the unconsolidated deposits are made up of clay that extends to between 40 and 120 feet below the ground surface. The groundwater is at a depth of approximately 100 feet below the ground surface as noted in the surficial soils, geology and hydrology sections of the SIWP submitted to the WDNR on October 15, 2021. The thick clay deposit and depth to groundwater acts as a substantial barrier between the residual mercury contaminated soil and the groundwater. Groundwater contact is not anticipated as the results of the water supply well samples in the Section 4.2 of this report confirm.

The step out samples collected aroundS1, S4 and S5 were performed in accordance with the SIWP. The results of step-out sampling showed surficial concentrations above the 3.13 mg/kg limit in 12 of the 17 step-out locations. One step-out location had a concentration above the 3.13 mg/kg limit one foot below the surface depth. Figures 3 shows the step sample results as they relate to the delineation boundaries and the Table 3 shows the results in tabular form.

4.2 WATER SAMPLES

Water quality of the samples collected from the stormwater retention pond and the two water supply wells onsite were analyzed for total mercury using USEPA Method 7470. The sample locations are shown on Figure 3. The laboratory results are summarized in Table 2 and in the laboratory reports in Attachment 2. Samples were collected in accordance with the Sample and Analysis section of the SIWP on May 24, 2022. Total mercury was not detected in either of the two onsite water supply well samples (PW-1 and PW-2). The surface water in the stormwater pond and the stormwater pond discharge had detectable concentrations of total mercury. The sample collected in the pond had a concentration of 0.90 ug/L and the sample collected from the pond discharge had a concentration of 0.42ug/L. There is not an established standard to compare surface water concentrations. Once the Remedial Action Plan is implemented for the contaminated soil, it will no longer be a potential source of contamination for the surface water at the site and concentrations should decrease.

5.0 REMEDIAL ACTION PLAN

The proposed Remedial Action Plan (RAP) is based on analytical and field data collected from various investigations of the soil, surface water and groundwater, an understanding of the geology beneath and surrounding the facility, topographic conditions, and an assessment of the likely movement of the mercury impacted GAC near the spill area. The RAP proposes to excavate soil adjacent and surrounding portions of the previously performed soil excavation at the facility. The boundary of the expanded excavation area will be either set by a sample with a detection less than the RCL or by an impermeable surface such as a paved road or an area of greater elevation that would reasonably prevent mercury dispersion.

Soil samples used to designate the proposed excavation area were collected on May 24, 2022, July 12, 2022, and August 17, 2022. The proposed excavation will encompass two areas, one to the north around exceedances found at S1 and its associated step-out locations (Area A), and a second to the southwest of the previously remediated area in December 2020 surrounding S4 and S5 and their associated step-out samples (Area B). The remediation area will be excavated to a depth of one foot and encompass the boundaries

delineated by soil sample results, the previous remediated area and the manmade features such as roads and buildings as shown on Figure 4. At the location of SP4N1 and SP4N1R, a 5-foot diameter area will be excavated to a depth of one and a half feet to account for the mercury concentration over the RCL limit of 3.13 mg/kg at the 12 inches below ground surface.

The soil will be excavated with a backhoe or front-end bucket loader by site personnel. The soil will be loaded into roll-off containers for disposal. The excavation activities will be performed under the direction of a consultant. Given the limited depth of the excavation, six confirmation samples will be collected from the floor of the excavation following the completion of the excavation in Area A. The samples will be evenly spaced across the bottom of the excavation with four samples collected in the area located to the North and Northwest of the previously excavated area and two samples collected in the southern section of Area A to the west of the previously excavated area.

Seven confirmation samples will be collected from the base of the Area B excavation. Similar to Area A, the samples collected in Area B will be evenly spaced with five samples collected in the area to the West of the previously excavated area and two to the southwest of the previously excavated area. One confirmation sample will be collected within the five-foot radius around SP4N1 and SP4N1R that will be excavated to greater depth than the other excavation areas.

The confirmation samples will be shipped to a certified laboratory. The Area A and B excavations will stay open until confirmation sample results are received. The proposed excavation areas and confirmation sample locations are shown on Figure 4. If a confirmation sample exceeds the RCL, that area will be further excavated, and an additional confirmation sample or samples will be collected and analyzed until the concentration in the remaining soil is below the RCL. Excavation procedures will be considered complete once the soil sample results within the excavated or remediated areas are analyzed below the RCL. Upon completion of the remediation activities, the roll-off containers will be removed from site and disposed under proper chain-of-custody. The excavated areas will be backfilled with clean topsoil, general fill and/or gravel from a local supplier.

Once the on-site remediation activities are completed, a report will be prepared summarizing the remediation activities, confirmation sample results, soil disposal documentation and final dimensions of the excavated areas. The report will include a Request for No Further Action submitted to the WDNR.

WM plans to complete the soil excavation and backfilling activities during 2022 before the ground freezes. The remediation is anticipated to begin during October or early November 2022 and take less than two weeks to complete depending on confirmation sample results and laboratory turnaround times.

If you have any questions, concerns, or need further clarification, please contact Lee Daigle at (951) 236-2526 or lee.daigle@tetratech.com.

Sincerely,

Cornerstone Environmental Group, LLC – A Tetra Tech Company

Lee Daigle, P.E.
Client Manager

John Oswald, P.G.
Central Area Manager

Enclosures:

Tables:
Table 1 – Summary of April 2022 Analytical Soil Results
Table 2 – Summary of May 2022 Analytical Soil and Water Results
Table 3 – Summary of July and August 2022 Soil Analytical Results

Figures:
Figure 1 – Site Location Map
Figure 2 – Site Investigation Sample Locations
Figure 3 – Remedial Excavation Area Boundary
Figure 4 – Remedial Confirmation Sample Locations

Attachments:
Attachment 1 – WDNR Correspondence
Attachment 2 – Laboratory Reports

Cc: Sixto Ortiz – WM
Michelle Gale – WM
Mark Noel – WM Steven Smolko – WM
Todd Washburn – WM
David Crass – Michael Best & Friedrich, LLP

TETRA TECH

Table 1
Summary of April 2022 Sample Analytical Results
Bi-Annual Sampling
WM Waste, Inc.
Union Grove, Wisconsin

Client Project	Sample ID	Lab ID	Collected Date	Method	Matrix	Parameter	Results	Units	PQL
WM Waste, Inc.	E-6	40244305030	04/29/2022 08:50	EPA 7471	Solid	Mercury	0.18	mg/kg	0.034
WM Waste, Inc.	E-6A	40244305031	04/29/2022 10:15	EPA 7471	Solid	Mercury	0.26	mg/kg	0.035
WM Waste, Inc.	E-7	40244305032	04/29/2022 10:45	EPA 7471	Solid	Mercury	0.13	mg/kg	0.036
WM Waste, Inc.	E-7A	40244305033	04/29/2022 11:15	EPA 7471	Solid	Mercury	0.087	mg/kg	0.036
WM Waste, Inc.	F-5A	40244305044	04/27/2022 13:30	EPA 7471	Solid	Mercury	0.69	mg/kg	0.048
WM Waste, Inc.	F-6	40244305045	04/27/2022 13:40	EPA 7471	Solid	Mercury	0.70	mg/kg	0.041
WM Waste, Inc.	F-6A	40244305046	04/27/2022 13:50	EPA 7471	Solid	Mercury	0.26	mg/kg	0.041
WM Waste, Inc.	F-7	40244305047	04/27/2022 14:55	EPA 7471	Solid	Mercury	2.4	mg/kg	0.095
WM Waste, Inc.	F-7A	40244305048	04/27/2022 15:05	EPA 7471	Solid	Mercury	1.3	mg/kg	0.047

Notes:

1) Samples denoted with an "A" were taken at a depth of 12" below surface. Samples not denoted with an "A" were taken at the surface.
2) Tetra Tech collected 2022 soil sample results 4-26-2022 through 4-29-2022.

Prepared By: RME
Checked By: DJP

TETRA TECH

Table 2
Summary of May 2022 Sample Analytical Results
Phase 1A Investigation
WM Waste, Inc.
Union Grove, Wisconsin

Client Project	Sample ID	Lab ID	Collected Date	Method	Matrix	Parameter	Results	Units	PQL
WM Waste, Inc.	S6A	40245577006	05/24/2022 13:45	EPA 7471	Solid	Mercury	0.036 J	mg/kg	0.040
WM Waste, Inc.	S6	40245578006	05/24/2022 13:30	EPA 7471	Solid	Mercury	1.9	mg/kg	0.039
WM Waste, Inc.	S5A	40245577005	05/24/2022 13:20	EPA 7471	Solid	Mercury	0.89	mg/kg	0.040
WM Waste, Inc.	S5	40245578005	05/24/2022 13:10	EPA 7471	Solid	Mercury	185	mg/kg	22.2
WM Waste, Inc.	S4A	40245577004	05/24/2022 13:00	EPA 7471	Solid	Mercury	0.051	mg/kg	0.044
WM Waste, Inc.	S4	40245578004	05/24/2022 12:45	EPA 7471	Solid	Mercury	753	mg/kg	39.6
WM Waste, Inc.	S3A	40245577003	05/24/2022 12:00	EPA 7471	Solid	Mercury	0.49	mg/kg	0.039
WM Waste, Inc.	S3	40245578003	05/24/2022 11:50	EPA 7471	Solid	Mercury	0.66	mg/kg	0.041
WM Waste, Inc.	S2A	40245577002	05/24/2022 11:40	EPA 7471	Solid	Mercury	0.16	mg/kg	0.046
WM Waste, Inc.	S2	40245578002	05/24/2022 11:30	EPA 7471	Solid	Mercury	1.1	mg/kg	0.046
WM Waste, Inc.	S1A	40245577001	05/24/2022 11:15	EPA 7471	Solid	Mercury	0.53	mg/kg	0.039
WM Waste, Inc.	S1	40245578001	05/24/2022 11:00	EPA 7471	Solid	Mercury	3.0	mg/kg	0.081
WM Waste, Inc.	PW1	40245579003	05/24/2022 10:30	EPA 7470	Water	Mercury	<0.066	ug/L	0.20
WM Waste, Inc.	PW2	40245579004	05/24/2022 10:00	EPA 7470	Water	Mercury	<0.066	ug/L	0.20
WM Waste, Inc.	POND DISCHARGE	40245579002	05/24/2022 09:10	EPA 7470	Water	Mercury	0.42	ug/L	0.20
WM Waste, Inc.	POND SURFACE	40245579001	05/24/2022 09:00	EPA 7470	Water	Mercury	0.90	ug/L	0.20
WM Waste, Inc.	RINSE #1	40245579005	05/24/2022 12:15	EPA 7470	Water	Mercury	<0.066	ug/L	0.20
WM Waste, Inc.	RINSE #2	40245579006	05/24/2022 14:00	EPA 7470	Water	Mercury	<0.066	ug/L	0.20

Notes:

1) Samples denoted with an "A" were taken at a depth of 12" below surface. Samples not denoted with an "A" were taken at the surface.
2) The above Site Investigation Work Plan sample locations were approved by the WDNR on March 9, 2022 (Attachment 1).
3) Total Mercury concentration results designated with a "J" Qualifier are estimated concentrations greater than the limit of detection and less than the limit of quantitation

Prepared By: RME
Checked By: DP

TETRA TECH

Table 3
Summary of July and August 2022 Sample Analytical Results
Phase 1B Investigation
WM Waste, Inc.
Union Grove, Wisconsin

Client Project	Sample ID	Lab ID	Collected Date	Method	Matrix	Parameter	Results	Units	PQL
WM Waste, Inc.	4N1B	40250049002	08/17/2022 11:30	EPA 7471	Solid	Mercury	11.9	mg/kg	0.37
WM Waste, Inc.	4N1	40250049001	08/17/2022 11:20	EPA 7471	Solid	Mercury	0.038 J	mg/kg	0.041
WM Waste, Inc.	SP5SE3BS	40248114034	07/12/2022 17:10	EPA 7471	Solid	Mercury	0.57	mg/kg	0.36
WM Waste, Inc.	SP5SE3S	40248114033	07/12/2022 17:05	EPA 7471	Solid	Mercury	3.4	mg/kg	0.40
WM Waste, Inc.	SP5SE2BS	40248114032	07/12/2022 16:50	EPA 7471	Solid	Mercury	0.87	mg/kg	0.39
WM Waste, Inc.	SP5SE2S	40248114031	07/12/2022 16:45	EPA 7471	Solid	Mercury	7.0	mg/kg	0.42
WM Waste, Inc.	SP5SE1BS	40248114030	07/12/2022 16:35	EPA 7471	Solid	Mercury	1.7	mg/kg	0.40
WM Waste, Inc.	SP5SE1S	40248114029	07/12/2022 16:30	EPA 7471	Solid	Mercury	5.2	mg/kg	0.39
WM Waste, Inc.	SP5SW2BS	40248114028	07/12/2022 16:15	EPA 7471	Solid	Mercury	0.42	mg/kg	0.035
WM Waste, Inc.	SP5SW2S	40248114027	07/12/2022 16:10	EPA 7471	Solid	Mercury	2.1	mg/kg	0.40
WM Waste, Inc.	SP5SW1BS	40248114026	07/12/2022 16:00	EPA 7471	Solid	Mercury	0.10	mg/kg	0.035
WM Waste, Inc.	SP5SW1S	40248114025	07/12/2022 15:55	EPA 7471	Solid	Mercury	0.60	mg/kg	0.36
WM Waste, Inc.	SP5NW2BS	40248114024	07/12/2022 15:35	EPA 7471	Solid	Mercury	0.054	mg/kg	0.036
WM Waste, Inc.	SP5NW2S	40248114023	07/12/2022 15:30	EPA 7471	Solid	Mercury	1.7	mg/kg	0.40
WM Waste, Inc.	SP5NW1BS	40248114022	07/12/2022 15:10	EPA 7471	Solid	Mercury	0.34	mg/kg	0.038
WM Waste, Inc.	SP5NW1S	40248114021	07/12/2022 15:05	EPA 7471	Solid	Mercury	7.5	mg/kg	0.37
WM Waste, Inc.	SP4W2BS	40248114020	07/12/2022 14:45	EPA 7471	Solid	Mercury	0.11	mg/kg	0.037
WM Waste, Inc.	SP4W2S	40248114019	07/12/2022 14:40	EPA 7471	Solid	Mercury	48.1	mg/kg	2.0
WM Waste, Inc.	SP4W1BS	40248114018	07/12/2022 14:20	EPA 7471	Solid	Mercury	0.46	mg/kg	0.037
WM Waste, Inc.	SP4W1S	40248114017	07/12/2022 14:15	EPA 7471	Solid	Mercury	114	mg/kg	3.6
WM Waste, Inc.	SP4N2BS	40248114016	07/12/2022 12:55	EPA 7471	Solid	Mercury	1.1	mg/kg	0.038
WM Waste, Inc.	SP4N2S	40248114015	07/12/2022 12:50	EPA 7471	Solid	Mercury	71.9	mg/kg	2.0
WM Waste, Inc.	SP4N1BS	40248114014	07/12/2022 12:35	EPA 7471	Solid	Mercury	69.1	mg/kg	1.8

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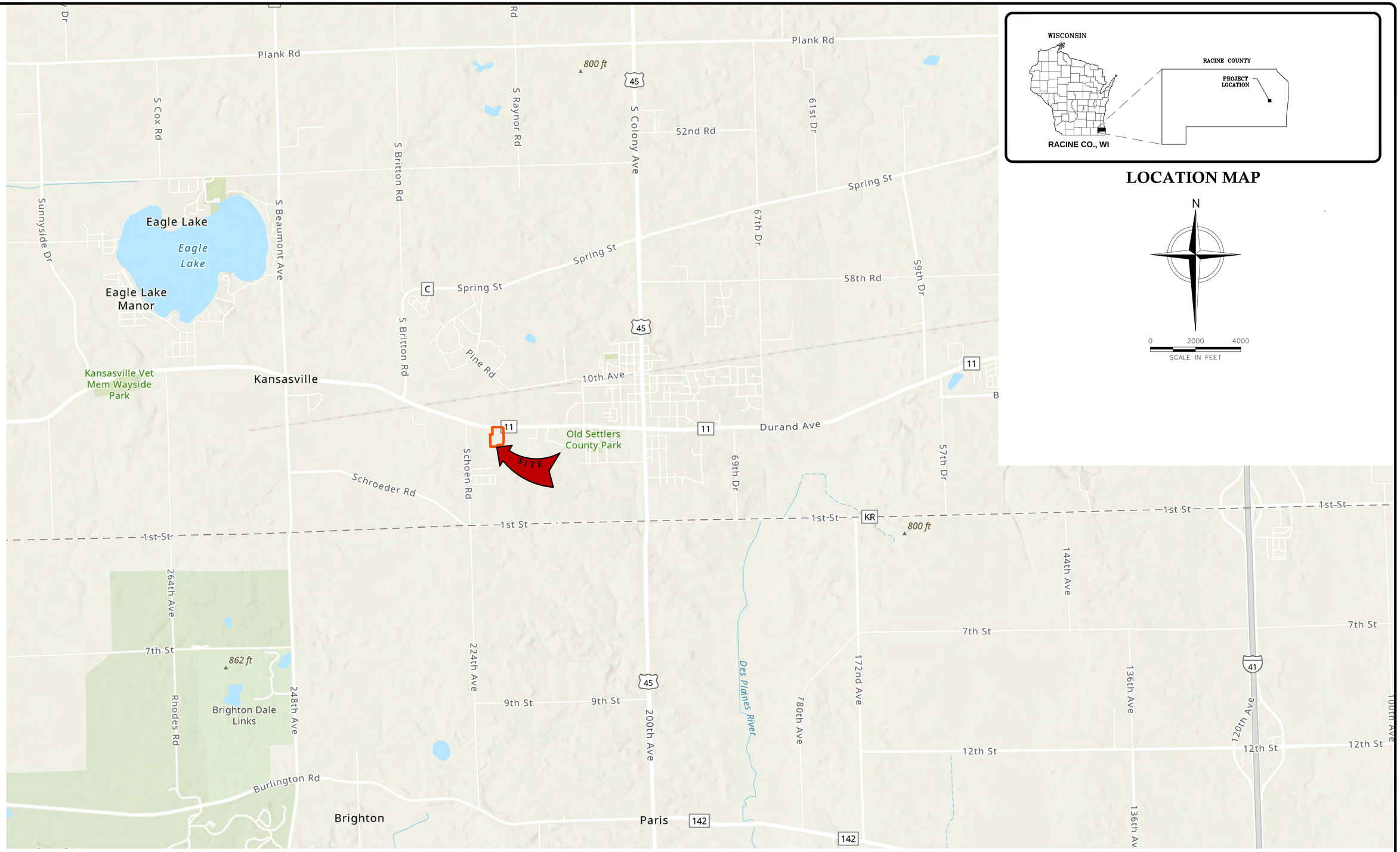
Table 3
Summary of July and August 2022 Sample Analytical Results
Phase 1B Investigation
WM Waste, Inc.
Union Grove, Wisconsin

Client Project	Sample ID	Lab ID	Collected Date	Method	Matrix	Parameter	Results	Units	PQL
WM Waste, Inc.	SP4N1S	40248114013	07/12/2022 12:30	EPA 7471	Solid	Mercury	0.081	mg/kg	0.039
WM Waste, Inc.	SP1W2BS	40248114012	07/12/2022 12:10	EPA 7471	Solid	Mercury	0.71	mg/kg	0.040
WM Waste, Inc.	SP1W2S	40248114011	07/12/2022 12:05	EPA 7471	Solid	Mercury	3.7	mg/kg	0.080
WM Waste, Inc.	SP1W1BS	40248114010	07/12/2022 11:45	EPA 7471	Solid	Mercury	0.30	mg/kg	0.039
WM Waste, Inc.	SP1W1S	40248114009	07/12/2022 11:40	EPA 7471	Solid	Mercury	0.36	mg/kg	0.039
WM Waste, Inc.	SP1E2BS	40248114008	07/12/2022 11:25	EPA 7471	Solid	Mercury	2.7	mg/kg	0.079
WM Waste, Inc.	SP1E2S	40248114007	07/12/2022 11:20	EPA 7471	Solid	Mercury	6.3	mg/kg	0.20
WM Waste, Inc.	SP1E1BS	40248114006	07/12/2022 11:00	EPA 7471	Solid	Mercury	0.32	mg/kg	0.039
WM Waste, Inc.	SP1E1S	40248114005	07/12/2022 10:55	EPA 7471	Solid	Mercury	4.7	mg/kg	0.20
WM Waste, Inc.	SP1N2BS	40248114004	07/12/2022 10:45	EPA 7471	Solid	Mercury	0.27	mg/kg	0.041
WM Waste, Inc.	SP1N2S	40248114003	07/12/2022 10:40	EPA 7471	Solid	Mercury	2.2	mg/kg	0.075
WM Waste, Inc.	SP1N1BS	40248114002	07/12/2022 10:35	EPA 7471	Solid	Mercury	0.22	mg/kg	0.040
WM Waste, Inc.	SP1N1S	40248114001	07/12/2022 10:30	EPA 7471	Solid	Mercury	3.8	mg/kg	0.084
WM Waste, Inc.	RINSE #1	40248114035	07/12/2022 11:30	EPA 7470	Water	Mercury	<0.066	ug/L	0.20
WM Waste, Inc.	RINSE #2	40248114036	07/12/2022 13:00	EPA 7470	Water	Mercury	<0.066	ug/L	0.20
WM Waste, Inc.	RINSE #3	40248114037	07/12/2022 15:40	EPA 7470	Water	Mercury	<0.066	ug/L	0.20
WM Waste, Inc.	RINSE #4	40248114038	07/12/2022 17:20	EPA 7470	Water	Mercury	<0.066	ug/L	0.20

Notes:
1) Samples denoted with a "BS" were taken at a depth of 12" below surface. Samples denoted with a "S" were taken at the surface. Samples denoted "4N1" and "4N1B" are resembled on the planview sheet as "SP4N1R".
2) Total Mercury concentration results designated with a"J" qualifier are estimated concentrations greater than the limit of quantitation

Prepared By: RME
Checked By: DP



LOCATION MAP

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE OCT. 2022
DRAWN BY RME
DESIGNED BY RME
CHECKED BY LRS/CLD
APPROVED BY JCO

TETRA TECH

WM WASTE, INC.
UNION GROVE, WISCONSIN

2022 SITE INVESTIGATION REPORT AND REMEDIAL ACTION PLAN

SITE LOCATION MAP

FIGURE NO. **1**

PROJECT NO. 4221563

1" 1/2" 0" 1"

□□G□□D

- □RO□□RT□ □O□□DAR□
- × S8 — SOI□ SAM□□□ □OCATIO□ A□D ID□□TI□ICATIO□
- × □W — □RI□AT□ W□□□ SAM□□□ □OCATIO□ A□D ID□□TI□ICATIO□
- □0.00□□TO□□ — SOI□ TOTA□ M□RC□R□ CO□C□□TRATIO□ AT S□R□AC□ □mg/□g
- □0.00□□OTTOM — SOI□ TOTA□ M□RC□R□ CO□C□□TRATIO□ 12" □□□OW S□R□AC□ □mg/□g
- □0.00□□g/□ — WAT□R M□RC□R□ CO□C□□TRATIO□
- 1400 — □□ISTI□G 10□CO□TO□R
- 1402 — □□ISTI□G 2□CO□TO□R
- A□□RO□. □□T□□T O□ D□C□M□□R 2020 □□CA□ATIO□

□OT□S:

1. T□TRA T□C□ CO□□□CT□D SOI□ SAM□□□S, S□R□AC□ WAT□R SAM□□□S, A□D □RI□AT□ W□□□ SAM□□□S O□ 5/24/2022.
2. SAM□□□ □OCATIO□S W□R□ S□R□□□□D I□ T□□ □I□□D.
3. TOTA□ M□RC□R□ CO□C□□TRATIO□ R□S□□TS W□R□ R□□ORT□D □□ □AC□ A□A□□TICA□ □□□□ □, 2022 A□D □□□□ 7, 2022.
4. TOTA□ M□RC□R□ CO□C□□TRATIO□ R□S□□TS D□SIG□AT□D WIT□ A "□" □□A□I□□R AR□ □STIMAT□D CO□C□□TRATIO□S GR□AT□R T□A□ T□□ □IMIT O□ D□T□CTIO□ A□D □□SS T□A□ T□□ □IMIT O□ □□A□TITATIO□.
5. T□□ 2017 □□ISTI□G S□R□AC□ IS TA□□□ □ROM T□□ WI STAT□ CARTOGRA□□□R□S O□□IC□.

N

0 20 40

SCALE IN FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE: OCT. 2022
DRAWN BY: RME
DESIGNED BY: RME
CHECKED BY: LRS/CLD
APPROVED BY: JCO

TETRA TECH

ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

WM WASTE, INC.
UNION GROVE, WISCONSIN

2022 SITE INVESTIGATION REPORT AND REMEDIAL ACTION PLAN

SITE INVESTIGATION SAMPLING LOCATIONS

FIGURE NO. **2**

PROJECT NO. 4221563

1" 1/2" 0" 1"

F7a (1.3)
E7a (0.087)
(2.2) (TOP) (0.27) (BOTTOM) SP1N2
(3.8) (TOP) (0.22) (BOTTOM) SP1N1
S1 (3.0) (TOP) (0.53) (BOTTOM)
(3.7) (TOP) (0.71) (BOTTOM) SP1W2
SP1E2 (6.3) (TOP) (2.7) (BOTTOM)
(0.36) (TOP) (0.30) (BOTTOM) S□1W1
SP1E1 (4.7) (TOP) (0.32) (BOTTOM)
R□T□□TIO□ □ASI□
S2 (1.1) (TOP) (0.16) (BOTTOM)
E7 (0.13)
(2.4) F7
R□T□□TIO□ □ASI□ I□□□T
(0.66) (TOP) (0.49) (BOTTOM) S3
E6a (0.26)
(0.26) F6a
GRO□□DWAT□R □□OW DIR□CTIO□
SP4N2 (71.9) (TOP) (1.1) (BOTTOM)
SP4N1R (0.038J) (TOP) (11.9) (BOTTOM)
(48.1) (TOP) (0.11) (BOTTOM) SP4W2
SP4N1 (0.081) (TOP) (69.1) (BOTTOM)
(114) (TOP) (0.46) (BOTTOM) SP4W1
S4 (753) (TOP) (0.051) (BOTTOM)
SP5NW2 (1.7) (TOP) (0.054) (BOTTOM)
F6 (0.70)
SP5NW1 (7.5) (TOP) (0.34) (BOTTOM)
E6 (0.18)
(185) (TOP) (0.89) (BOTTOM) S5
SP5SE1 (5.2) (TOP) (1.7) (BOTTOM)
(2.1) (TOP) (0.42) (BOTTOM) SP5SW2
SP5SE2 (7.0) (TOP) (0.87) (BOTTOM)
(0.60) (TOP) (0.10) (BOTTOM) SP5SW1
SP5SE3 (3.4) (TOP) (0.57) (BOTTOM)
S6 (1.9) (TOP) (0.036J) (BOTTOM)
F5a (0.69)

□□G□□D

- □RO□□RT□ □O□□DAR□
- SOI□SAM□□□ □OCATIO□ A□D ID□□TI□ICATIO□
- SOI□TOTA□ M□RC□R□ CO□C□□TRATIO□ AT S□R□AC□ □mg/□g
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- SOI□M□RC□R□ CO□C□□TRATIO□ □□□OW GRASS □A□□R □mg/□g
- 1400 □□ISTI□G 10□CO□TO□R
- 1402 □□ISTI□G 2□CO□TO□R
- A□□RO□. □□T□□T O□ D□C□M□□R 2020 □□CA□ATIO□
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3. TOTA□ M□RC□R□ CO□C□□TRATIO□ R□S□□TS W□R□ R□□ORT□D □□ □AC□ A□A□□TICA□MA□ 1□, 2022.
4. TOTA□ M□RC□R□ CO□C□□TRATIO□ R□S□□TS D□SIG□AT□D WIT□ A "□" □□A□I□□R AR□ □STIMAT□D CO□C□□TRATIO□S GR□AT□R T□A□ T□□ □IMIT O□ D□T□CTIO□ A□D □□SS T□A□ T□□ □IMIT O□ □□A□TITATIO□.
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1. T□TRA T□C□ CO□□□CT□D SOI□ SAM□□□S, S□R□AC□ WAT□R SAM□□□S, A□D □RI□AT□ W□□□ SAM□□□S O□ 5/24/2022.
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2. SAM□□□ □OCATIO□S W□R□ S□R□□□□D I□ T□□ □I□□D.
3. TOTA□ M□RC□R□ CO□C□□TRATIO□ R□S□□TS W□R□ R□□ORT□D □□ □AC□ A□A□□TICA□ □□□□ 28, 2022.

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2. T□TRA T□C□ CO□□□CT□D SOI□ SAM□□□ O□ 8/17/2022.
3. SAM□□□ □OCATIO□ WAS S□R□□□□D I□ T□□ □I□□D.
4. TOTA□ M□RC□R□ CO□C□□TRATIO□ R□S□□T WAS R□□ORT□D □□ □AC□ A□A□□TICA□A□G□ST 22, 2022.

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SCALE IN FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE OCT. 2022
DRAWN BY RME
DESIGNED BY RME
CHECKED BY LRS/CLD
APPROVED BY JCO

TETRA TECH
ALL PROFESSIONAL ENGINEERING WORK IS PERFORMED BY DULY LICENSED PROFESSIONAL ENGINEERS UNDER THE APPROPRIATE STATE REGISTERED PROFESSIONAL ENTITY.

WM WASTE, INC.
UNION GROVE, WISCONSIN

2022 SITE INVESTIGATION REPORT AND REMEDIAL ACTION PLAN
REMEDIAL EXCAVATION AREA BOUNDARY

FIGURE NO. **3**
PROJECT NO. 4221563

File: C:\TtDrive\PROJECTS\WM-MERIDIAN\4221563 - WI 716 Field Investigation and Report_Plan Set\03-4221563-WM Mercury-Test Results-10"pcde-CONT_ZONE_dwg Layout: 03-BI User: RileyEklund Oct 14, 2022 - 11:05am

1" 1/2" 0" 1"

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E7a
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R1
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SP4N2
SP4N1R
R7
R8
SP4W2
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F6
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SP5NW1
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EXCAVATION
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B
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R12
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SP5SW2
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□OT□S: □□CA□ATIO□ A□D R□M□DIATIO□

1. T□TRA T□C□ WI□□ S□R□□□ □□CA□ATIO□ □O□□DARI□S A□D CO□□IRMATIO□ SAM□□□ □OCATIO□S □O□□OWI□G □□CA□ATIO□.

2. T□□ □RO□OS□D □□CA□ATIO□ AR□AS □AR□A A A□D AR□A □□WI□□ □□ □□CA□AT□D TO A D□□T□ O□ O□□ □OOT □□□OW □□ GRO□□D S□R□AC□. T□□ □1□□ □OOT RADI□S ARO□□D S□4□1 □ S□4□1R WI□□ □□ □□CA□AT□D TO A D□□T□ O□ 1.5 □□□T □□□OW T□□ GRO□□D S□R□AC□.

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SCALE IN FEET

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

DATE OF ISSUE OCT. 2022
DRAWN BY RME
DESIGNED BY RME
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TETRA TECH

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WM WASTE, INC.
UNION GROVE, WISCONSIN

2022 SITE INVESTIGATION REPORT AND REMEDIAL ACTION PLAN

REMEDIAL CONFIRMATION SAMPLE LOCATIONS

FIGURE NO. **4**

PROJECT NO. 4221563

1" 1/2" 0" 1"

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ATTACHMENT 1 – WDNR CORRESPONDENCE

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
890 Spruce Street
Baldwin, WI 54002

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

July 14, 2021

Sixto Ortiz
WM Waste, Inc.
800 Capitol Street
28th floor
Houston, TX 77002

Subject: No Further Action Not Recommended
WM Waste, Inc Facility, 21211 Durand Avenue, Union Grove, Racine County, Wisconsin
DNR BRRTS Activity # 02-52-586974
FID #: 252195350

Dear Mr. Ortiz:

On June 3rd, the Wisconsin Department of Natural Resources (DNR) reviewed the No Further Action request for the case identified above. As you are aware, the DNR reviews environmental remediation cases for compliance with applicable laws, including Wis. Stat. ch. 292 and Wis. Admin. Code chs. NR 700 – 754 and whether any further threat to public health, safety or welfare or the environment exists at the site or facility, per Wis. Admin. Code § NR 726.13 (2) (b). As discussed with your consultant on 6/15/21, case closure is not recommended because additional legal requirements must be met. The purpose of this letter is to inform you of the remaining requirements for obtaining closure.

Need to Define the Degree and Extent of Contamination
Additional soil, groundwater, surface water, sediment, sampling is needed to define the degree and extent of contamination per Wis. Admin. Code § NR 716.11. Based on the identified soil impacts additional investigation is needed to establish the extent and magnitude of the release to the environment. This includes but is not limited to the soil previously identified as having impacts but also, the adjacent pond and pertaining sediments, and on-site groundwater.

Need to Conduct Additional Remedial Action
Additional remedial action is needed to comply with the closure criteria of Wis. Admin. Code ch. NR 726. Excavations of impacted soils were completed using the hazardous waste site-specific standard of 10ppb. The site-specific standard for mercury is a permitted number but not a standard used nor allowed for a release to the environment. Remedial actions addressing impacts to the environment are required to meet residual contaminant limits (RCLs). The direct contact RCL for mercury is 3.13 mg/kg and the groundwater (leachability to groundwater) RCL is 0.208 mg/kg.

Schedule
Within 60 days of the date of this letter, respond in writing with a schedule of your plans to meet these requirements.

Until requirements are met, your site will remain “open” and you are required to submit semi-annual progress reports, per Wis. Admin. Code § NR 700.11. You are also responsible for any operation and maintenance activities required under Wis. Admin. Code § NR 724.13. Once the additional work has been completed, documentation should be submitted to the DNR to demonstrate that the applicable requirements have been met.

Conclusion
If you have any questions regarding the information in this letter or would like to schedule a meeting to discuss this case, please contact the DNR project manager, Candace Sykora at 715-928-0452. For more information on the closure reconsideration process, please see DNR publication, RR-102, "Wis. Admin. Code ch. NR 726 Case Closure Reconsideration Process" by visiting dnr.wi.gov, search: RR-102, for more information.

The DNR appreciates your efforts to restore the environment at this site.

Sincerely,

Candace Sykora
Hydrogeologist
Remediation & Redevelopment
Wisconsin Department of Natural Resources
890 Spruce St, Baldwin, WI 54002
Phone: 715-928-0452
Candace.sykora@wisconsin.gov

cc: Lee Daigle, Tetra Tech

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
890 Spruce Street
Baldwin, WI 54002

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

March 9, 2022

Sixto Ortiz
WM Waste, Inc.
800 Capitol Street
28th Floor
Houston, TX 77002

Re: Review of Site Investigation Work Plan
WM Waste, Inc Facility,
21211 Durand Avenue, Union Grove, Racine County, WI 53182
DNR BRRTS Activity #02-52-586974
FID#: 252195350

Dear Mr. Ortiz:

Thank you for the submittal of Site Investigation Work Plan (Report) to the Wisconsin Department of Natural Resources (WDNR), received on October 15, 2021. The report was prepared by Tetra Tech on behalf of WM waste, Inc. The SIWP has been prepared in response to a letter to a WDNR letter dated July 14, 2021.

The purpose of this SIWP is to complete a site investigation to define the extend and magnitude of residual contamination associated with the release of impacted carbon during change-out activities. The extent of soil contamination in the vicinity of the granular activated carbon (GACs) spill will be defined by collecting soil samples from six locations to the north, west and south of the area of the spill. The sample locations are 12 feet beyond the boundary of the previously excavated area. Soils samples (S1-S6) will be analyzed for Total Mercury. If lab results indicate mercury levels within the soil samples are above the direct contact residual contaminant limits (RCLs) of 3.3mg/L, additional soil samples will be collected in a step out phase. One surface water sample will be collected from the stormwater pond. A sample will be collected from each of the two private water supply wells.

Based on the review of the report the WDNR agrees with the sampling proposed and understands that upon receiving laboratory results additional sampling may be necessary to define the extent of impacted media. One note is to establish that the laboratory limit of detection is set low enough to compare the RCL for groundwater (0.208mg/kg) in soil.

If you have any further questions or concerns, please feel free to contact me at any time.

Candace Sykora
Hydrogeologist
West Central Region
Remediation and Redevelopment
Email: Candace.sykora@gmail.com
Phone: (715) 928-0452