

**ITEM 6**

# Engineering Design Report

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**SOLID WASTE FACILITY PERMIT RENEWAL APPLICATION  
STERICYCLE MEDICAL WASTE TREATMENT AND TRANSFER FACILITY**

**75 CROWS MILL ROAD  
KEASBEY, MIDDLESEX COUNTY, NEW JERSEY**

## **ENGINEERING DESIGN REPORT**



**REPORT**

# Engineering Design Report

*Application for Solid Waste Facility Permit Renewal  
Stericycle Medical Waste Treatment and Transfer Facility  
Woodbridge Township, Middlesex County, New Jersey*

Submitted to:

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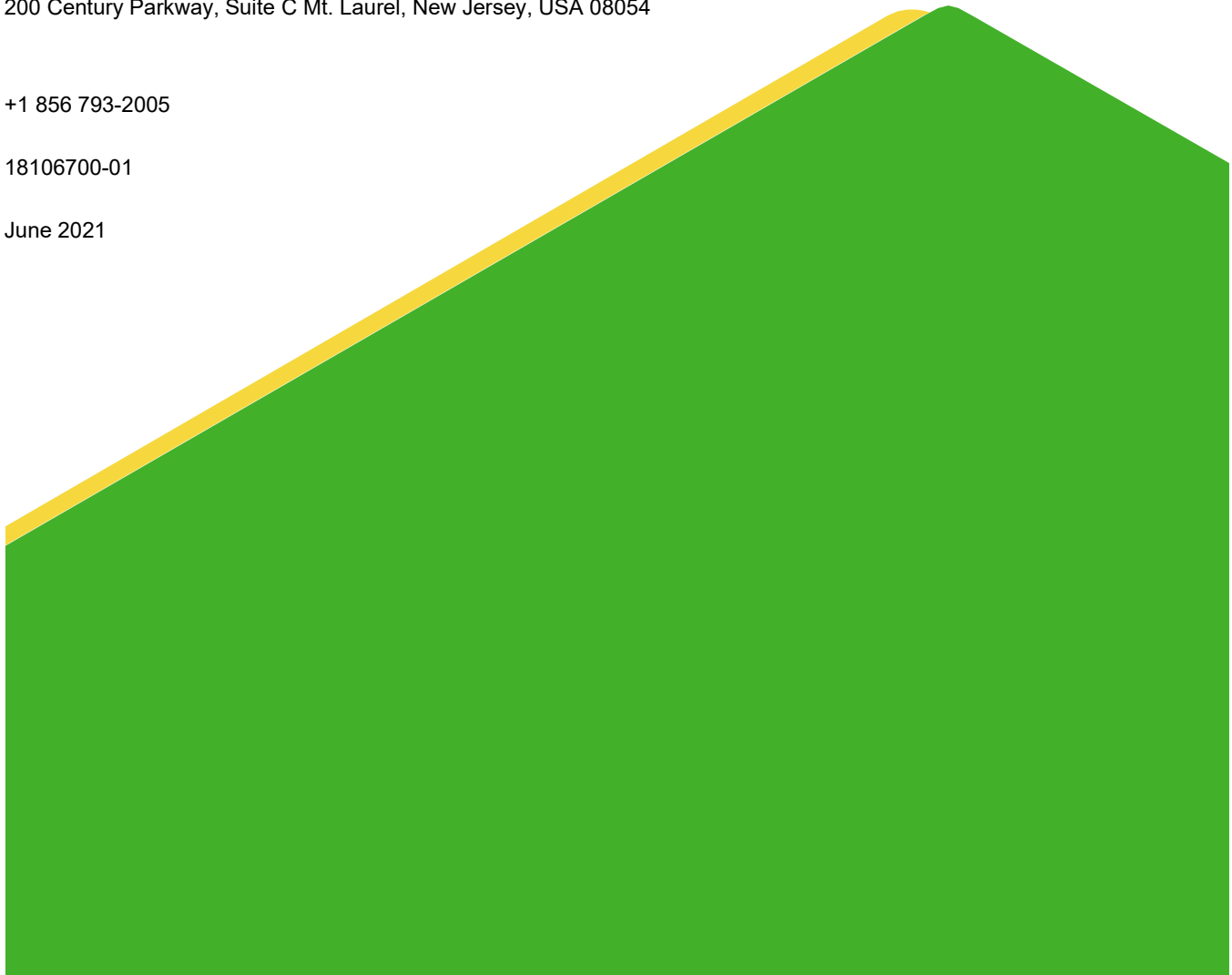
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## 1.0 INTRODUCTION

To provide a complete permit renewal application to the New Jersey Department of Environmental Protection (NJDEP) for a Solid Waste Facility, it is required per N.J.A.C. 7:26-2.4 (b) that an updated Engineering Design Report (EDR) be included in the submission. This EDR has been prepared by Golder Associates Inc. (Golder) and Stericycle, Inc. (Stericycle) to support a permit renewal application for a regulated medical waste (RMW) facility to be constructed within the Montecalvo Disposal Services Incorporated (MDS) parcel in Keasbey located in Woodbridge Township, Middlesex County, New Jersey (Site) (see Figure 1). The Facility is currently under construction and is anticipated to commence operation in late 2021. The initial Solid Waste Facility Permit (RMF130001) was issued by NJDEP on September 13, 2016.

Because there are no specific NJDEP rules or regulations regarding the establishment of a RMW facility in the State of New Jersey, this application has been prepared in accordance with the permit application requirements for a small-scale thermal destruction facility. This EDR has been prepared in accordance with the NJDEP Solid Waste Regulations, N.J.A.C. 7:26-2.10 and N.J.A.C. 7:26-2B.4.

## 2.0 REQUIRED MAPS [N.J.A.C. 7:26-2.10(B)]

In accordance with N.J.A.C. 7:26-2.10(b), the EDR is to include engineering design submittals that provide a presentation of the site location and layout. Figures showing the Site and the surrounding area are included in Appendix A.

### 2.1 Map Format [N.J.A.C. 7:26-2.10(b)1-3]

The figures contained in this EDR are prepared in a manner that is consistent with the General Practice and Procedures presented in N.J.A.C. 7:1D. The figures contained in Appendix A of this EDR are in North American Datum 1983 (NAD83) horizontal geodetic datum and in the New Jersey State Plane Coordinate system (SPC). The figures are designated as Figures 1 through 11. The specific engineering figures (Figures 6, 8 and 11) measure no larger than 30 inches by 42 inches or smaller than 24 inches by 36 inches in size.

Per N.J.A.C. 7:26-2.10(b)3, each of the attached figures presenting the engineering design bear the date of preparation and are signed and sealed by a New Jersey Licensed Professional Engineer. Three (3) complete sets of the application, including figures are being submitted to NJDEP.

### 2.2 Key Maps [N.J.A.C. 7:26-2.10(b)4(i)-(iv)]

As per N.J.A.C. 7:26-2.10(b)4, the Drawings contained in the EDR contain a Key Map which will consist of the United States Geological Survey (USGS) 7.5-minute Minute Services Quadrangles of Perth Amboy, NJ/NY, dated 1981 (see Figures 1 and 2). These maps show the general location of the Site and Figure 2 delineates a minimum of one (1) mile radius from the perimeter of the proposed facility boundaries.

The Site is located in the Bayshore Eco-Complex and Energy Park located in Keasbey (Woodbridge Township), Middlesex County, New Jersey at 75 Crows Mill Road. According to the USGS map, the center of the property is located at approximately North 40° 30' 54" Latitude and West 74° 18' 28.15" Longitude (State Plane Coordinates 545,554.890 East, 612,570.362 North).

As recommended in the regulations, for the purpose of clarity, information required in N.J.A.C. 7:26-2.10(b)4(i) through (iv) are being submitted in separate figures, as follows:

In accordance with N.J.A.C. 7:26-2.10(b)4(ii), a figure identified as Zoning Map is included in this EDR as Figure 3 that presents the zoning designations within one mile of the perimeter of the proposed facility. The proposed RMW facility is zoned as M-2 Heavy Industrial Zone, which is consistent with the surrounding area. The Site is also identified on the Woodbridge Township Tax Map as Block 51, Lots 1.02, 2, 2.01 and 2.03, and Block 41.03, Lots 1.012, 3.02, 4.01 and 4.02 as shown on Figure 4 of this EDR.

In accordance with N.J.A.C. 7:26-2.10(b)4(iii), a Street Map showing all main service corridors, transportation routes and main access roads that will be used as traffic routes to access the proposed facility are included on Figures 5 and 6 in the EDR. The main access to the proposed RMW facility and the other Bayshore facilities will be from Crows Mill Road.

### **2.3 Vicinity Map [N.J.A.C. 7:26-2.10(b)5(i)-(vi)]**

A Vicinity Map is included in the EDR as Figure 7 to delineate an area of three (3) miles from the perimeter of the proposed RMW facility. The figure the location of the proposed RMW building within the Bayshore Property, and all buildings and structures within the area and the proposed layout of the RMW facility. Industrial buildings are located to the North, East and West of the Site, and the Raritan River to the South.

### **2.4 Site Plan Map [N.J.A.C. 7:26-2.10(b)6(i)-(iv)]**

In accordance with N.J.A.C. 7:26-2.10(b)6, a Site Plan Map is attached to this EDR as Figure 8 to show the existing and final as-built contours of the facility, the layout of all buildings, access roads, internal routes of traffic flow and environmental controls. The Site consists of industrial buildings surrounded by bituminous concrete pavement, concrete pavement and soil. The proposed facility will be a one-story structure outlined on the Site Plan Map in the northerly portion of the Bayshore Complex Site. Stericycle will have leasehold ownership of the parcel of Bayshore property for the proposed RMW facility. A copy of the Leasehold Agreement is included in Appendix B.

### **2.5 Landscaping Plan [N.J.A.C. 7:26-2.10(b)11]**

As previously stated, the location of the proposed RMW is within the heavily industrialized Bayshore Eco-Complex and Energy Park that consists mainly of industrial buildings and asphalt parking. There is no anticipated vegetation to be established within the property limits of the proposed RMW facility; therefore, no Landscaping Plan will be developed.

### **2.6 Geotechnical and Soil Report [N.J.A.C. 7:26-2.10(b)7]**

Geotechnical and soils conditions at the existing Bayshore facility have been well documented from the permitting and construction of the existing facility. The following outlines the soils, geology and groundwater conditions at the Site and soils and geologic maps.

#### **2.6.1 Soils [N.J.A.C. 7:26-2.10(b)7(i)]**

In accordance with N.J.A.C. 7:26-2.10(b)7(i), a Soils Map, published by the United States Department of Agriculture, Natural Resources Conservation Service is presented as Figure 9 of this EDR. As shown on Figure 9, the Bayshore facility is located mainly on the Urban Land (UR) unit, with the northerly section of the facility being identified as the Pits, Clay (PHM) soil unit. The proposed RMW facility will be located in the northerly section of the Bayshore facility, thus will be situated in the Pits, Clay (PHM) soil unit.

## 2.6.2 Geology and Groundwater [N.J.A.C. 7:26-2.10(b)7(ii)]

In accordance with N.J.A.C. 7:26-2.10(b)7(ii), a Geologic Map for the Site and surrounding area is attached to this EDR as Figure 10. Based information obtained from the New Jersey Geological Survey, the location of the proposed RMW facility is in the Raritan Formation.

According to Surficial Geology of the Perth Amboy and Author Kill Quadrangles map (Stanford, 1999), the Site is situated on unconsolidated surficial material consisting of artificial fill and estuarine salt-marsh deposits in the southern portion of the property adjacent to the Raritan River. In the northern portion of the property, the underlying surficial geology consists of Cretaceous deposits. The artificial fill is generally composed of excavated silts, sands, gravel, rock, till, and man-made materials (e.g., bricks, cinders, ash, slag, glass, and minor amounts of trash) and was historically used to fill low laying areas such as marshes and floodplains. In this southern portion of the site, the artificial fill is underlain by estuarine deposits which formed in tidal marshes and embayments along the Raritan River estuary. The estuarine salt-marsh deposits are typically brown to dark gray in color and consist of peat and organic clay and silt with minor sand and shells. Underlying the estuarine deposits and outcropping in the northern portion of the Site are the Upper Cretaceous (upper Cenomanian) Coastal Plain deposits of the Raritan Formation (Owens et al., 1998). In Middlesex County, these Coastal Plain deposits are approximately 200 feet thick and overlie the Brunswick Shale, and underly the Magothy Formation. In general, the clays and sands composing formation represent a shift from fluvial floodplain and deltaic environments in the basal portion, to marginally marine in the middle, and to a marine environment in the upper portions. The deposits that outcrop beneath the site consist of gray, white, yellow, pink, red clay and fine-to-coarse quartz sand with minor quartz granular gravel (Stanford, 1999). The deposits can be massive to laminated and may contain mica, lignite, and ironstone. The clays may be jointed and the sands may include white Kaolinite clay resulting from the decomposition of feldspar.

The aquifer underlying the site is the Potomac-Raritan Magothy (PRM) aquifer system. The PRM consists of interbedded sand, gravel, silt, and clay and contains the Raritan confining unit, which is composed of interbedded sand silt and clay (Herman, et al., 1998). The PRM system is separated into upper, middle, and lower aquifers. The groundwater quality of the PRM is fresh, moderately hard, with neutral pH, and may contain elevated levels of iron and manganese. Salinity increases with proximity to coastline near the Delaware and Raritan Bays.

## 3.0 ENGINEERING COMPLIANCE [NJAC 7:26-2.10(B)8]

In accordance with the requirements NJAC 7:26-2.10, an application for a solid waste facility permit must provide engineering justification for the operations of the facility. The specific standards and the facility's means of compliance are described in the following sections.

### 3.1 Waste Disposal System Process [NJAC 7:26-2.10(b)8(0)]

The proposed RMW facility will provide a process system for the treatment of RMW from both the large quantity regulated waste generators, such as hospitals and pharmaceutical manufacturers, and also the small quantity generators of regulated waste, which include outpatient clinics, and medical and dental offices. Stericycle will manage and accept the RMW from contracted generators and transporters.

#### 3.1.1 Disposal Process

The Facility does not dispose of RMW. The RMW received at the Facility will either be treated, then disposed off-site, or be transported for off-site treatment and disposal. Stericycle plans to accept into their facility seven (7) classes of RMW that include cultures and stocks (Class 1), pathological wastes (Class 2), human blood and blood

products (Class 3), sharps (Class 4), animal waste (Class 5), isolation wastes (Class 6) and unused sharps (Class 7) as defined in N.J.A.C. 7:26-3A.6(a). All classes of RMW will be treated at the facility prior to disposal off-site, except for Class 2 Pathological Waste and Class 5 Animal Waste. Those materials will be segregated and handled separately from the main waste stream and transferred from collection vehicles to hauling vehicles for final disposal at incineration facilities contracted by Stericycle.

The RMW will be received at the Facility within containers that are approved and supplied to the RMW generators by Stericycle. The RMW will be contained within varying types of leak-proof, rigid or semi-rigid containers, as appropriate, which will be sealed prior to transport, as required by law. The sealed shipping containers and packaging will be inspected for damage or leakage prior to acceptance for processing. The pharmaceuticals, pathological waste, RCRA Empty Chemotherapy and animal waste materials are bagged materials that are containerized within their own separate, labeled packages that contain labels indicating that the enclosed materials are to be incinerated and will not be processed on site.

Certification of treated RMW at the Facility will contain, at a minimum, the following information:

- Name, address, and phone number of the Facility
- Printed name and signature of the Facility personnel responsible for the treatment process
- Description of the treated RMW
- Method of treatment
- A statement that the RMW has been managed in accordance with the New Jersey Solid Waste Management Law and rules and may legally be placed in a sanitary landfill.

### 3.1.2 RMW Off Load and Acceptance

Incoming RMW will be directed to the loading/unloading area as depicted on Figure 11. Trucks will back up to the loading/unloading area and the contents will be unloaded by conveyor, two-wheeled dollies, forklift or by manual labor. After the transport vehicle is completely off-loaded, the manifests for each generator will be reviewed and completed to record the waste arrived at the facility and any discrepancies concerning the waste will be noted. All containers of waste that will not be accepted for treatment at the facility will be segregated and either placed in a trailer or held for storage prior to transport for disposal at an alternate location. Any unacceptable waste that is sent to the facility for treatment, such as radioactive or hazardous waste, will be returned to the generator or held in a designated area for transport off-site to an appropriate disposal facility.

### 3.1.3 Waste Tracking System

Stericycle's Biotrack waste tracking system is designed to provide customers with complete information on the collection and treatment of their RMW. The Biotrack system uses scanning technology to record, track and document the movement of each waste stream. Under this tracking system, each customer will have complete documentation that all RMWs have been treated according to NJDEP regulations. General corporate information regarding Stericycle's tracking program and archiving system is provided in Appendix C.

#### 3.1.3.1 Generator

The Facility will provide the generator of RMW to be treated at the Facility with a manifest that will contain, at a minimum, the following information:

- Name, address, and phone number of the generator
- Name and address of the processing Facility and alternate disposal facility, if applicable
- Name, address, and New Jersey Transporter identification number of the transportation company
- Quantity of waste
- Name and signature block of transporter
- Name and signature block of the Facility

The manifest will be signed and dated by hand by the generator and by the transporter prior to transport of RMW materials. A printout of the manifest will be provided to the generator.

### **3.1.3.2 Transporter**

Transporters will not accept RMW from a generator without the required manifest as described above. Before transporting the RMW, the transporter will sign and date the manifest acknowledging acceptance of the waste from the generator.

The transporter:

- Will obtain the date of delivery and the signature of an authorized agent of the Facility on the manifest
- Retain one copy of the manifest completed as described above
- Provide a copy of the manifest to the Facility.

The transporter will deliver the entire quantity of RMW accepted from a generator to the Facility. If the RMW cannot be delivered, the transporter will contact the generator for further directions and revise the manifest accordingly.

### **3.1.3.3 Processing Facility**

The Facility will not accept RMW from a generator without the required information as described above. Upon receiving the RMW, the Facility will:

- Sign and date the accompanying manifest; the name of authorized agent is to be contained on the manifest
- Any significant discrepancies in the manifest will be noted on each copy of the manifest.

The Facility will record on the manifest the date the RMW is treated, or the date it is transported for off-site treatment and disposal.

Within 35 days after the date of waste acceptance by the transporter, the Facility will make available a copy of the completed manifest to the generator via electronic online database access.

Each container from every customer has a unique barcode label attached to it. The required information will be completed at the customer location, signatures of the customer and driver obtained, and each container noted on the manifest will be scanned at each customer location at pickup using a handheld, portable data terminal (PDT). Once each container is scanned at the customer location, the container will be tracked electronically from customer through processing. A receipt will be given to the customer at pickup, and no other paper is generated except upon demand, as requested by some customers.

The type of customer waste that is generated dictates the way the waste will be processed. Pathological, Resource Conservation and Recovery Act (RCRA) Empty Chemotherapy and Animal Wastes will be transported offsite for disposal. All other RMW will be autoclaved. Regardless of where each container goes for processing, it can be tracked electronically from collection through processing.

### **3.1.4 Waste Staging Area and Processing**

#### **3.1.4.1 Waste Receipt**

Trucks arriving at the facility containing untreated RMW proceed to the Loading/Unloading Area, or to the truck parking area. These areas are depicted on Figure 6 and Figure 11. When the waste arrives at the facility, workers will remove the containers of waste from the transport vehicles, and verify the information outlined on the tracking forms (shipping documents) and ensure that all wastes are packaged properly. The different waste streams will be separated and follow the path of that particular waste stream.

#### **3.1.4.2 Untreated Waste Storage**

The untreated waste containers that will temporarily be stored onsite will be labeled in accordance with all applicable State and Federal regulations. Each container of untreated RMW will have a water-resistant label affixed to or printed on the outside of the container to identify the enclosed materials as being "Medical Waste, Infectious Waste" or display the universal biohazard symbol on them. Vehicles used for storage will be secured so as to prevent unauthorized access. The storage vehicles and trailers will have floors that are sealed, impervious to liquids and that are capable of containing potential spills and are designed to facilitate cleaning. All waste storage areas of the Facility are designed to contain potential spills. It is recognized that the volume of RMW material contained in the packages/containers will not be at a quantity large enough to warrant a containment area that would be surrounded by a dike wall or berm.

RMW arriving at the Facility for treatment is stored in either transport vehicles in which it arrives until processed; storage/transfer trailers that are kept in the trailer storage area of the Facility; or unloaded at Loading/Unloading Area as shown on Figure 6. Per NJSA 7:26-3A.27(i), the RMW may be retained in a transportation vehicle up to 14 consecutive calendar days provided the waste does not become putrescent or emit any odors.

Waste containers will be inspected for damage, leaking or other abnormality. In the event that any packages of waste have exposed contents or are leaking will be placed in the autoclave bin for treatment or repackaged into new sealed containers for subsequent storage. Areas visibly soiled by such packages will be cleaned with a bleach solution (10:1).

As part of normal operations, once the Facility accepts the RMW it will treat the RMW at a rate necessary to attain the 150 tons per day (tpd), without having unprocessed waste stored for a period longer than 14 days. The treated RMW will then be removed from the facility as the disposal transport vehicle attains a volume suitable for transport to the designated disposal facility.

#### **3.1.4.3 Untreated Waste Handling**

The handling of the incoming untreated waste is as follows:

##### **Sharp Containers (<17-gallon containers)**

- Sharp containers in 2-gallon (gal), 3-gal, 4-gal, 8-gal and 17-gal size will be unloaded at the Loading/Unloading Area.
- Sharp containers will be moved to the scale/scan station.

- Each container is weighed, the barcode scanned and screened for radiation.
- Containers are then conveyed to the sharps dumper.
- The reusable sharps containers will be mechanically inverted so the contents are dumped out into an autoclave bin.
- Reusable containers are then conveyed into the container washer.

### ***Tub Containers (varying sizes and types)***

- Untreated RMW in 4-cubic foot (cf) and 7-cf boxes, and reusable 48-gal, 90-gal and 150-gal containers are manually unloaded at the Loading/Unloading Area.
- The tub containers are conveyed to the scale/scan station.
- Each tub container is weighed, the barcode scanned and screened for radiation.
- Tub containers are dumped into the autoclave bins or on the proper conveyor.
- The full autoclave bins are conveyed to the sterilizer.
- The reusable tub containers are then conveyed to the washing area for cleaning/sanitizing.
- Clean cardboard containers are manually emptied directly into the sterilizer bin. The unsoiled boxes will be recycled. Soiled boxes will be placed in the autoclave bin and treated as RMW.

### ***Large tubs with rollers on them – used in hospitals.***

- RMW in Large tubs are manually unloaded at Loading/Unloading Area.
- The large tubs are manually conveyed to the scale/scan station.
- Each container is weighed, the barcode scanned and screened for radiation.
- The containers are wheeled into one of two tub dumpers and emptied onto a trough conveyor.
- The waste material is conveyed to the autoclave bin.
- The carts are then manually conveyed to the washing area for cleaning/sanitizing.

### **3.1.5 Container Wash Area**

The empty reusable containers will be wheeled, conveyed, or dragged to the Container Wash Area where they will be washed using approved procedures. The Container Wash Area is depicted on Figure 11 and will consist of two (2) types of washers for the different size containers/tubs and wash processes. There will also be a separate container wash area for the Sharps containers as shown on Figure 11.

The smaller tubs will either be dollied or manually moved to the wash area. The small tub washer is a "conveyorized" unit for the reusable tub containers. The second washer is a pneumatic lift unit for the larger wheeled containers (referred to as "large tub washer"). The wheeled larger containers will be manually pushed from the dumper area to the wash area.



The tub washers will use either 180°F water for 15 seconds, 500 parts per million (ppm) sodium hypochlorite solution or and United States Environmental Protection Agency (USEPA)-registered disinfectant to decontaminate each container.

The third washer is for the reusable sharps system. The Sharps washer has two separate sets of wash nozzles and a blow dryer. The wash area uses 125°F water and 250 ppm solution of free sodium hypochlorite. The second set of nozzles use 180°F water for a minimum of 15 seconds. The final section of the washer is a heated blow dryer.

Wastewater from the Container/Sharps Wash Areas will be collected and discharged into the sanitary sewer system leading to the Middlesex County Utilities Authority (MCUA) publicly owned treatment works.

After washing, the clean reusable containers will be air-dried and moved from the washer area to a storage area, from which they will ultimately be transferred to an outgoing transport vehicle.

### **3.2 Facility Construction Details [NJAC 7:26-2.10 (b)8(ii)]**

The proposed facility will encompass approximately 6.3 acres of land. Ingress and egress will be from three (2) gated entrances off of Crows Mill Road. The parking and outdoor storage areas will be on paved surfaces. The entire facility will be surrounded by a chain link fence. A layout of the facility is provided in Figure 6.

The facility building will be approximately 51,000 square feet. The structure will consist of a concrete slab on grade with a prefabricated metal building. The building will contain offices, employee common areas, loading/unloading area(s), storage areas and the processing area. A layout of the building is presented in Figure 11.

### **3.3 Rated and Proposed Design Capability [NJAC 7:26-2 10(b)8(iii)]**

The proposed capacity of the Facility is 150 tpd of RMW. The maximum weight of material treated by the three (3) autoclaves on a daily basis will not exceed 150 tons. The quantity of waste handled, stored, and transferred each month will vary with the changing market.

### **3.4 Waste Transportation Details [NJAC 7:26-2.10(b)8(iv)]**

The RMW will be delivered to the Facility by vehicles that are owned or operated by Stericycle and third party haulers. The Facility was approved by the NJDEP and the County of Middlesex Department of Planning, Division of Solid Waste Management to operate the medical waste facility seven (7) days a week, twenty-four (24) hours per day (see Appendix D). It is anticipated that the monthly deliveries will be approximately 8,000,000 pounds (lbs) of RMW materials (133 tpd), not to exceed 9,000,000 lbs (150 tpd), as permitted.

The waste deliveries will arrive at the facility in varying vehicles and loads with varying cycle times that are dependent on market conditions. At the permitted capacity, the RMW delivery counts are estimated in Table 1 below:

Table 1

Daily RMW Deliveries				
Vehicle Type	Estimated Weight (lbs per vehicle)	Estimated No. of Trucks	Estimated RMW Weight (lbs)	Estimated RMW Weight (tons) <sup>(1,2)</sup>
Roll-Offs	5,000	13	65,000	32
Trailer (RMW)	12,500	18	225,000	112
Trailer (Sharps)	5,500	5	27,500	13

Notes: (1) The number of trucks on a daily basis will vary, but Stericycle estimates approximately 46 vehicles per day as stated in the Stericycle EHIS.

(2) The total daily RMW not to exceed 150 tpd.

### 3.5 Design Testing Results and Calculations [NJAC 7:26-2.10(b)8(v)]

Steam sterilization by autoclave of RMW has a long history of success. The Facility will use steam sterilization (autoclave), an approved NJDEP process, to treat infectious waste materials using sufficient temperatures for adequate periods of time to kill infectious agents present in the waste but not at a level at which harmful byproducts are created.

Efficacy testing performed by a third party for Bondtech, the manufacturer of the autoclaves to be utilized at the Facility showed that the results of the medical waste sterilization testing demonstrated that the Bondtech autoclave systems tested achieved the required sterilization effectiveness using *Bacillus stearothermophilus* as the biological indicator. This kill rate is in excess of log<sub>6</sub> (in excess of 99.9999%) and meets or exceeds all regulations and standards established by the USEPA and state environmental agencies. Results of testing are summarized in Table 2 below:

**Table 2  
Sterilization Cycle Time, Waste Load Weights and Sterilization Test Results  
Bondtech Steam Autoclaves January 26, 1994**

Bondtech Autoclave	Waste Packaging <sup>(1)</sup>	Test Load No.	Load Weight (kg) (lb)		Cycle Time (min)	Test Results <sup>(2)(3)</sup>
1	Bag	1	613	1352	30.25	+ / +
1		2	560	1235	30.25	+ / +
1		3	500	1103	29.75	+ / +
1	Box	1	450	991	29.75	+ / +
1		2	484	1068	29.25	+ / +
1		3	537	1183	28.80	+ / +
2	Bag	1	622	1371	32.27	+ / +
2		2	665	1465	32.30	+ / +
2		3	654	1442	32.85	+ / +
2	Box	1	558	1231	30.80	+ / +
2		2	379	835	29.75	+ / +
2		3	494	1089	30.70	+ / +
Average Bag Weight			602	1328		
Average Box Weight			484	1066		
Average Cycle Time (min)					30.56	

## Notes:

- (1) Bag-bagged waste; Box-boxed waste
- (2) Biological indicators were incubated at 55°C for 60 hours. A 100% kill of *Bacillus stearothermophilus* is an indication of a successful test.  
Tests marked (+) were successful (100% kill).  
Tests marked (-) were not successful (<100% kill).
- (3) + / + - Biological test indicator results for front and back waste bin of each of test load.

The validation and approval of the Bondtech autoclaves at the proposed RMW Facility will be obtained from Bondtech upon their pending compliance with final validation testing as dictated by the NJDEP.

### 3.6 Projected Facility Life Expectancy [NJAC7:26-2.10(b)8(vi)]

The project life expectancy of the facility is indefinite. The facility will continue to process RMW materials as long as there is a sufficient volume of the incoming waste material.

### 4.0 OPERATIONS AND MAINTENANCE MANUAL [N.J.A.C. 7:26-2.10(B)9]

As part of the permit application, an Operations and Maintenance manual must be prepared as per N.J.A.C. 7:26-2.10(b)9. Operations and Maintenance documents that are specific to the proposed RMW facility are provided as Appendix E to this EDR and are summarized in the following sections.

## 4.1 Proposed Methods of Facility Operation [N.J.A.C. 7:26-2.10(b)9(i)]

### 4.1.1 Hours of Operation

The proposed RMW process and transfer facility will accept, process, and transfer RMW for disposal up to 24 hours 7 days per week. It is anticipated that there will be fluctuating shifts due to volume and seasonal market demands.

### 4.1.2 Types of Equipment

Stericycle will operate a state-of-the-art facility for the treatment and disposal of RMW. The facility's operation is dependent on the following major components:

- (2) Victory Energy Model 300 HP boiler systems to produce steam
- (3) Bondtech Model BTT8X32 8' X 32' Autoclaves. Each autoclave will have 6 autoclave bins that will hold waste inside each autoclave
- (42) Autoclave Bins to hold waste for treatment
- (1) Lauyans & Company Autoclave Bin Conveyor System with (2) Transfer Cars to move Autoclave Bins in and out of Autoclaves
- (3) Vecoplan Model Vaz 2000-M-F-T-MW Shredding Systems to destroy waste after treatment
- (3) Sebright Model SSC 4260-1-6-92 Compactor Systems including (3) autoclave Bin Dumpers to move waste into Receiver boxes for transport after treatment and destruction
- (3) Air Draulic Engineering Inversion Dumping Systems for dumping sharps containers
- (1) Better Engineering Model C-36 reusable container washer for small tubs
- (1) Better Engineering Model C-36 reusable container washer for large carts
- (1) Better Engineering Model C-72 reusable container washer for sharps containers
- (1) Kemper Engineering Dump Hopper and Trough Conveyor System to move loose waste to the Autoclave Bins for treatment
- (2) Stewart Glapat Model 2074Q Extendable Conveyors to unload incoming RMW containers
- (1) Stewart Glapat Model 2580T Extendable Conveyor to reload outgoing clean containers
- Various powered conveyors to move containers within the plant for processing
- (1) Sullair Model 1509 Compressor System including (2) 20 HP Screw Compressors
- (1) Marlo Incorporated MGT-450-3 Twin Alternating Water Softener System
- (1) Marlo Incorporated MGT-120-1-1/2 Single Water Softener System (Polishing Softener)

### 4.1.3 Implementation Schedule

Stericycle is currently working and coordinating with the various regulatory agencies to acquire the necessary permits. Stericycle plans to have the facility in full operations by the end of 2021. This facility is not a final destination facility; therefore, there is no date of ultimate closure.

### 4.1.4 Monitoring

It is the generators responsibility to ensure all waste materials are packaged properly. In general, Stericycle does not open containers/packages except to dump and treat the waste inside the manufacturing facility. As a good housekeeping practice, employees at the facility are trained to locate packages that are leaking or improperly packaged. This process is completed throughout the treatment/transfer process. Some of the items include:

- Monitor the work environment and inspect each container for leaks
- Inspect the loading dock, trucks for spills
- Inspect safety equipment
- Report any needed repairs
- Keep a record of inspection.

### 4.1.5 Security

To prevent any unauthorized entry, the facility is surrounded by a fence, and access to the facility is through a gate. The gate is closed and locked during non-operational hours.

Once inside the facility, access to the building will be through the front door and the “Employee Only” entrance door. The front door will be unlocked during normal business hours, approximately 8:00 a.m. to 5:00 p.m. The Shift Supervisor is the only person that will be able to allow non-Stericycle employees access to the processing facility after hours. All visitors and unauthorized personnel must sign in at the office.

### 4.1.6 General Operating Requirements

The general operating requirements are outlined in the Operations and Maintenance Manual included as Appendix E of this EDR.

## 4.2 Facility Inspection Plan [N.J.A.C. 7:26-2.10(b)9(ii)]

The Inspection Plan for the Facility is further discussed in the following sections and Appendix E. The inspection program assures that any leaks or any condition that could lead to a leak will be detected early. Inspections are managed through the following programs:

- Continuous inspections throughout the day by employees
- Routine visual inspections of materials, and containers in the storage areas
- Maintain records onsite of all inspections.

In addition to conducting inspections of materials and containers to identify leaks, employees will also inspect the equipment for integrity, deterioration and leak, and the overall Facility as follows:

- Once daily, or prior to each use, whichever is less frequent in the loading/unloading area

- Once weekly in the treatment area
- Once monthly in other storage areas and secondary containment, or aboveground pipes
- Once quarterly for all other aboveground valves, pumps, flanges, connections and equipment, and all security fences and locks.

### 4.3 Maintenance Plan [N.J.A.C. 7:26-2.10(b)9(iii)]

This section contains scheduled maintenance instructions for the major equipment components in the Facility. The instructions include a scheduled maintenance action index and tabular listings of preventative maintenance checks and services. Personnel shall also use detailed maintenance manuals for each equipment component that has been developed by the original manufacturers.

#### 4.3.1 Scheduled Maintenance Action Index

The scheduled maintenance action index, provided in Table 3 below, lists the required maintenance tasks and recommended intervals for performance based on the total operating hours of the Facility equipment. Preventative maintenance checks should be performed on a routine basis based on the operating environment within the Facility. Tables 4, 5 and 6 provide more detailed descriptions of the daily, weekly, and monthly maintenance and service checks. Table 7 describes the annual maintenance requirements.

**Table 3**  
**Maintenance Tasks and Recommended Intervals**

Daily, or every 8 hours of operation	Visual inspection Physical inspection Functional check Cleaning Remove and replace Lubrication
Weekly, or every 40 hours of operation	Visual inspection Physical inspection Cleaning Lubrication
Monthly, or every 160 hours of operation	Visual inspection Cleaning Remove and replace Lubrication
Annually, or every 3000 hours of operation	Visual inspection Physical inspection Remove and replace Cleaning Functional check Calibration

### 4.3.2 Preventive Maintenance Checks and Services

All personnel performing preventative maintenance checks and services will be required to familiarize themselves and comply with the general safety precautions of Stericycle, the Facility and the equipment manufacturer's manuals and instructions.

Any work performed on surfaces where exposure to potentially contaminated surfaces will be decontaminated prior to any maintenance. Proper lockout procedures as defined in the Facility Safety Plan retained onsite will be followed. Proper personal protective equipment (PPE) will be worn, as specified in the Safety Plan, for workers.

**Table 4**  
**Daily Preventative Maintenance Checks and Services**

Autoclave	(See Bondtech O&M Manual in Appendix E-1)	
Boiler	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Check temperature gauge	Verify operating levels
	Check water filters	Verify usable life, replace as required
Container Washer	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Fluids Level(s)	Check and replenish as required
	Check temperature gauge	Verify operating level
	Check drain strainer	Remove debris and clean as required
Radiation Detector	N/A	Check battery level and clean as necessary
Waste Compactor	Hydraulic Unit	Check for leaks
	Operation	Warning lights, pressure gauge, key switches and emergency stop
Platform Scale – Weighing System	Platform & Keyboard	Cleaning and housekeeping per supplier manual as needed

**Table 5**  
**Weekly Preventative Maintenance Checks and Services**

Autoclave	(See Bondtech O&M documents in Appendix E-1)	
Boiler	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Check temperature gauge	Verify operating levels
	Check water filters	Verify usable life, replace as required
Container Washer	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Fluids Level(s)	Check and replenish as required
	Check temperature gauge	Verify operating level
	Check drain strainer	Remove debris and clean as required
Radiation Detector	N/A	Check battery level and clean as necessary
Waste Compactor	Structure	Physical appearance, wear points, ground anchors, wiper blade and follower plate
	Lubrication and Inspection	Door hinges, door handles, paddle latches, turnbuckles, assess gates, motor, motor coupling, ram track and guides
Platform Scale – Weighing System	Platform and Keyboard	Cleaning and housekeeping per supplier manual as needed



**Table 6**  
**Monthly Preventative Maintenance Checks and Services**

Autoclave	(See Bondtech O&M Manual in Appendix E-1)	
Boiler	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Check temperature gauge	Verify operating levels
	Check water filters	Verify usable life, replace as required
Container Washer	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Fluids Level(s)	Check and replenish as required
	Check temperature gauge	Verify operating level
	Check drain strainer	Remove debris and clean as required
Radiation Detector	Annual Inspections, Calibration and Service	Confirm integrity of case, meter, and snap connections; Check that extension cable is intact and serviceable; Clean battery contacts and battery terminals, as required; Check for direct contamination of the high impedance feed-thru insulator on ionization chamber, clean if necessary; Perform Zero and Circuit Check operations after two minute warm-up at Zero settings; Check meter needle for free movement throughout range; Place fresh descant packet in case before closing; Clean outside casing and tag it
Waste Compactor	Hydraulic Unit Check	Condition of hoses and fittings, oil level and condition, cylinder shaft wear and leakage. Operating pressure check
	Inspection of Electrical Control Panel	Wire condition, tight connectives, relays and switches for good contact and proper operation
	Safety and Limit Switches	Inspect and adjust
Platform Scale – Weighing System	Platform & Keyboard	Cleaning and housekeeping per supplier manual as needed

**Table 7**  
**Annual Preventative Maintenance Checks and Services**

Autoclave	(See Bondtech O&M documents in Appendix E-1)	
Boiler	Flanges, Couplings, Fittings, Valves and Seals	Check for leaks and address per manufacturer's instructions
	Check temperature gauge	Verify operating levels
	Check water filters	Verify usable life, replace as required
Container Washer	Pumping System / Spray Nozzles	Remove the pump cover panel and check the impeller vanes and wear plate or wear rings for the recommended clearance (consult pump manual if necessary). Inspect the main pump seal, which is usually a pressurized double seal with either spring-loaded grease cup or titanium carbide seal. The seal should be air and water-tight. Check pump bearings for wear, which can cause overheating issues if not promptly replaced. Make sure pump bearings are lubricated. Check the pump motor to insure that it is functioning correctly and does not require tune-up.
	Temperature, Pressure, and Level Sensor Calibration	Manufacturer typically recommends annual validation of sensors. Standard calibration methods apply.
	Electrical Control Panel Shut unit down and lock out all power	Clean control panel and check for
Radiation Detector	N/A	Calibrate
Waste Compactor	Door Seal	Annual Service from supplier; check and replace door seal as required.
	Container	Visual inspection of the container floor will also be performed to check for wear and possible other leakage points.
Platform Scale – Weighing System	Platform and Keyboard	Calibration per State requirements

### 4.3.3 Maintenance Support Services

Facility maintenance personnel will be utilized to perform routine inspections, minor preventative maintenance and repairs and lubrication of equipment. These personnel will receive training from the equipment manufacturers and suppliers. Major equipment maintenance and repairs will be provided by recommended third party sources, or from the manufacturers themselves. The following may be used for major equipment:

- Autoclaves – Bondtech, 1278 Hwy 461, Somersset, KY 42503
- Boilers – Victory Energy, 10701 E. 126th Street North, Collinsville, Oklahoma 74021
- Container Washer – Alliance, 1368 Capital Dr., Fond du Lac, WI 54937.

### 4.3.4 Spare Part Inventory

The facility will maintain an adequate supply of spare parts for major equipment pieces to prevent extensive downtime for the operation. This includes the autoclaves, boiler, container washer, conveyor, platform scale and container washer.

### 4.3.5 Emergency Equipment and Supply

First aid supplies will be located within the Facility for use by Facility personnel. There is no first aid or cardiopulmonary resuscitation (CPR) training provided to employees, so any treatment to other employees is prohibited. All employees are to treat their own minor injuries. If the injury is severe or life threatening, the local first aid responders will be notified for immediate response. In addition, employees are not trained in rescue operations, therefore all employees are trained not to attempt to rescue other employees in the event of an emergency.

The Facility contains portable fire extinguishers for fighting incipient fires within the operations. Any fire, other than an incipient stage fire, will not be attempted to be extinguished by the facility's employees. The local fire company will be contacted to extinguish all other fires.

## 4.4 Health and Safety Plan [N.J.A.C. 7:26-2.10(b)9(iv)]

A Health and Safety Plan (HS Plan) specifically designed for the Facility will be implemented and retained onsite. A copy of a typical HS Plan is presented in Appendix F.

## 4.5 Unusual / Peak Loading Plan [N.J.A.C. 7:26-2.10(b)9(v)]

The daily capacity of the Facility is 150 tpd. Should the capacity of the Facility be exceeded on any given day, or during operating times when incoming waste volumes are high (at peak), the waste will be stored in the transporting vehicles or transferred to trailers for future treatment.

## 4.6 Incoming Waste Flow During Facility Shutdown [N.J.A.C. 7:26-2.10(b)9(vi)]

Temporary shutdown of the Facility will not impede incoming waste flow of the RMW to be treated. The Facility is designed to have ample storage of RMW in the loading/unloading areas. The worst case scenario is that the RMW remain in the transporting vehicles or transferred to refrigerated trailers that will be staged in the secured parking areas of the facility.

## 4.7 Waste Inspection Plan [N.J.A.C. 7:26-2.10(b)9(vii)]

Waste inspection and tracking will be provided on a continuous basis from the point of collection through the point of treatment as part of Stericycle's Biotrack system. Waste is handled and inspected as discussed in Section 3.0 of this EDR.

## 4.8 Failure Modes and Effects Analysis

The primary pieces of equipment at the Facility are the two (2) boiler(s) and three (3) autoclave units. Due to the duplicity of the equipment, if one (1) piece of equipment shuts down, it will not shut down the entire processing of the RMW. The remaining equipment that is in full operation will allow the Facility to continue with the processing and treatment of RMW. A temporary boiler may also be brought onsite to supplement the process if both boilers shut down. If the entire Facility is shut down due to a power failure or some other facility wide failure mode, Stericycle has the ability to transport the collected RMW to other permitted treatment facilities for treatment and disposal.

## 5.0 ADDITIONAL ENGINEERING COMPLIANCE [N.J.A.C. 7:26-2B.4]

### 5.1 Facility Capacity [N.J.A.C. 7:26-2b.4(a)1]

Storage capacity is based upon the maximum capability of the processing equipment. For the purposes of this permit application, Stericycle estimates that up to 150 tpd of RMW will be accepted and treated at the Facility. RMW will be stored in a manner that minimizes leakage and maintains the integrity of the packaging, and in accordance with applicable regulations. The waste will be stored in containers prior to treatment. Treated wastes will be stored in the walking floor trailers. Should the facility storage capacity be reached due to unexpected conditions (e.g., equipment breakdown, loss of power), the Facility will restrict the acceptance of any new wastes until the amount of stored waste is reduced or transport the collected RMW to other Stericycle facilities.

### 5.2 Rate of Waste to Combustion Unit

This section is not applicable because the proposed treatment method is steam sterilization.

### 5.3 Projected Daily Deliveries

Projected daily deliveries of RMW to the facility will be 150 tpd.

### 5.4 Handling Incoming Waste

There are seven (7) main types of RMW accepted at the facility. The waste types are as follows:

- Class 1 Cultures and Stocks
- Class 2 Pathological Wastes
- Class 3 Human Blood and Blood Products
- Class 4 Sharps
- Class 5 Animal Wastes
- Class 6 Isolation Wastes
- Class 7 Unused Sharps.

Stericycle does not plan to process Class 2 Pathological Waste or Class 5 Animal Waste at the Facility. For these wastes, the facility will serve as an intermittent transfer point. The procedures for handling the various waste classes are described in the following sections.

#### 5.4.1 Class 1, 3, 4, 6 and 7

RMW includes red bag and sharps wastes. The facility accepts these wastes that are generated in the diagnosis, treatment and immunization of humans and animals or related research.

#### 5.4.2 Packaging

All RMW received at the Facility will be packaged within leak-proof, rigid or semi-rigid containers that can be closed. The containers will be clearly marked with the universal biohazard symbol, the proper United Nations (UN) number, the words “Regulated Medical Waste” and labeled “Infectious Waste” or “Biohazard Waste.” Containers will be kept in a closed manner until ready to be dumped to completely contain the waste and the outsides of the containers will be kept free of contamination.

#### 5.4.3 Waste Receipt

Trucks arriving at the facility containing untreated RMW proceed to the Loading/Unloading Area. This area is depicted on Figure 6.

#### 5.4.4 Untreated Waste Storage

The untreated waste packages and containers that will temporarily be stored onsite will be labeled in accordance with all applicable State of NJ and Federal regulations. Each container of untreated RMW will have a water-resistant label affixed to or printed on the outside of the container to identify the enclosed materials as being “Medical Waste, Infectious Waste” or display the universal biohazard symbol on them. Vehicles used for storage will be secured so as to prevent unauthorized access. The storage vehicles and trailers will have floors that are impervious to liquids and that are capable of containing potential spills and are designed to facilitate cleaning. Waste storage areas of the Facility are designed to contain potential spills.

Red bag waste arriving at the Facility for treatment is stored in either transport vehicles in which it arrives until processed, storage/transfer trailers that are kept in the trailer storage area of the Facility or unloaded at the Loading/Unloading Area as shown on Figure 6. As part of normal operations, once the Facility accepts the red bag waste it will be treated or transferred offsite within 14 days.

#### 5.4.5 Untreated Waste Handling

The procedures for normal loading and unloading of the RMW materials that are to be employed in the facility’s handling of the incoming RMW are described in Section 3.0 of this EDR.

##### **Waste Treatment**

- Autoclave bins containing untreated red bag waste are mechanically loaded into an autoclave.
- A vacuum is applied to the autoclave to remove air from the vessel to allow the steam to more effectively penetrate the waste. This is referred to as the pre-vacuum.
- Steam is injected into the autoclave to obtain proper operating temperature and pressure. This is referred to as the ramp-up.

- Autoclave operational temperatures, pressures and treatment times (operational parameters) will be determined based on results of the initial validation testing for each unit. Operation of the autoclave at the operational parameters will be sufficient to kill infectious agents present in the waste. This is referred to as the soak cycle. The proposed operating parameters are 280°F at 36 pounds per square inch (PSI) with a soak time of 30 minutes.
- At the end of the soak cycle, the steam is vented and condensed and a vacuum applied to the autoclave. This is referred to as post-vacuum.
- After autoclaving, the treatment phase of the process is complete.

#### 5.4.6 Treated Waste Storage

Red bag waste that has been treated in the autoclave is no longer infectious. The autoclave bins are conveyed to the compactor and are mechanically emptied into the compactor.

In case the compactor is not working the autoclave bins may also be conveyed by forklift to roll-off boxes within the treatment area. When these containers are full, they will be covered or tarped and moved to a holding area within the facility.

#### 5.4.7 Treated Waste Disposal

Treated wastes from the compactor or being stored in the roll-off boxes will be pushed into the walking floor trailers to be transported off-site to a properly permitted disposal facility.

#### 5.4.8 Class 2 and Class 5 Wastes

Class 2 Pathological wastes and Class 5 Animal Waste are not treated on-site, but the incoming vehicles containing these wastes proceed to the designated bays in the Loading/Unloading Area for offload, wherein the wastes will be consolidated and transferred to alternate vehicles to be transported for off-site treatment and disposal.

#### 5.4.9 Incinerate Waste Storage

The incoming containers that contain incinerate waste materials for treatment will be stored in designated storage areas within the Facility and be properly labeled for identification. Vehicles used for storage will be secured so as to prevent unauthorized access. The storage vehicles and trailers will have floors that are impervious to liquids and that are capable of containing potential spills and are designed to facilitate cleaning. Waste storage areas of the Facility are designed to contain potential spills.

Incinerate waste arriving at the Facility for treatment will be stored in a designated storage area within the Facility. As part of normal operations once the facility accepts the incinerate waste it will then be removed from the facility within 14 days after acceptance.

#### 5.4.10 Incinerate Waste Handling

- At the loading dock, incinerate wastes are unloaded and segregated from wastes to be treated on-site.
- Incinerate waste containers are manually moved from the loading dock to the designated storage transfer trailer.

#### 5.4.11 Class 2 and Class 5 Waste Transfer

Incinerate wastes are transported off-site to a permitted incinerator.

#### 5.4.12 Hazardous/Radioactive Material Identification and Storage

Hazardous waste is classified by the generator as such. The facility will not treat hazardous or radioactive wastes. Radioactive waste would be identified by radiological detectors used by facility at the scanner/scale area to screen for any incoming radioactive materials. Facility employees receive routine training on waste recognition, labeling, and acceptable waste types. Any hazardous or radioactive waste identified within a load of waste is removed from the waste stream and stored in an isolated area. Hazardous waste will be sent back to the generator or disposed through a third-party permitted facility. Radioactive waste is typically staged to determine if the levels are at or below background radiation. The storage period for regulated medical waste may exceed one year to provide for the decay of radioactive materials in accordance with 7:26-3A.12(2i). Stericycle proposed a maximum of 45 days storage of radioactive RMW to allow for decay. If the waste is not decayed in 45 days, the container will be returned to the generator by a licensed hauler or Stericycle will obtain a NJ Department of Transportation (DOT) exemption.

#### 5.4.13 Nonconforming Waste

Non-conforming wastes will not knowingly be accepted by the Facility. This includes wastes that are improperly packaged, radioactive waste, hazardous waste, compressed gas cylinders and human remains. Should a non-conforming waste be identified, the waste will be returned to the generator.

#### 5.4.14 Universal Wastes

Universal wastes are not routinely accepted at the Facility from outside sources. Universal wastes generated by the Facility are kept in the area and are removed on an as needed basis by an appropriate third-party vendor and properly disposed of or recycled.

#### 5.4.15 Movement of Waste within Facility

As waste containers enter the Facility, they are placed on a conveyor system. The waste container passes through the scale and scanner and then into the processing area. The waste is removed from the containers and emptied into the bins. The bins are moved by conveyor to the autoclave. After autoclaving, the bins are moved by conveyor to the compactor.

Treated waste is pushed by the compactor into the walking floor trailers. The walking floor trailers are hauled to a permitted disposal facility.

### 5.5 Emergency Disposal Capabilities

The design capacity of the Facility will not be exceeded during operation. If the Facility receives waste quantities that cannot be treated within a time frame to prevent creation of a problem, additional waste will not be received until the problem conditions are abated. The maximum storage time for unprocessed waste is 14 days.

The maximum number, size, type, and function of equipment utilized at the Facility based on the estimated waste acceptance rate and other operational requirements are listed in Section 5.9 of this report. If a significant work stoppage should occur at the Facility due to mechanical breakdown or other causes, the Facility shall restrict the receipt of waste until repairs have been performed. Under such circumstances, incoming waste will not be accepted and will be diverted to another approved facility.

### 5.6 Waste Residue

Following treatment of RMW, the process residue is considered a medical waste material under NJ law.

## 5.7 Disposal Location

The medical waste residues will be transported and disposed of at an approved permitted disposal facility.

## 5.8 Recycling Activities

A minimal amount of recycling activities will take place at the Facility. The normal recyclable wastes generated by the Facility will be recycled. If reusable containers are taken out of service, they will be disinfected and sent out for recycling. In addition, the medical devices that are recovered during the sorting process will be sent out to a contracted reprocessing facility. The medical devices will be reprocessed and reused.

## 5.9 Equipment and System Specs

### 5.9.1 Process Equipment

The process equipment is identified below, and Appendix G contains specifications for the equipment directly related to the waste processing, including Autoclave and boilers.

#### 5.9.1.1 Autoclave

Three (3) Bondtech BTT autoclaves will provide treatment at the Facility. The autoclave units are a pressure vessel cylinder that is designed for a maximum allowable working pressure of 125 pounds per square inch gauge (psig) and a maximum design temperature of 370°F. It is designed and fabricated in accordance with the standards of Schedule VII, Division I of the American Society of Mechanical Engineers pressure vessel code.

Waste is delivered to the autoclave in the bins by the conveyer. The maximum number of bins that can be placed in the autoclave for any one treatment cycle is six (6) per autoclave.

The autoclave, on average, is anticipated to operate at a minimum temperature of 280°F and a pressure of 36 psig for a time period of 30 minutes. Initial and validation testing have shown that this is a sufficient temperature and adequate period of time to kill infectious agents present in the waste. At the end of the treatment cycle, the steam is vented to a condenser for conversion of the steam to condensate and a vacuum applied to the autoclave. The treatment of the waste is then complete.

#### 5.9.1.2 Boiler

There will be two (2) boilers that are standard 3-pass wetback firetube boilers designed to have a maximum design pressure of 200 psig. The boilers generate steam for use in the autoclaves.

#### 5.9.1.3 Washer

The washer is used to clean and disinfect the waste containers, tubs, and bins prior to reuse. The containers are washed and disinfected after each use.

#### 5.9.1.4 Fan

The fan is used to pull steam out of the washer area.

#### 5.9.1.5 Conveyor

The conveyor assists in moving the waste containers through the scale and scanner and over to the processing area so that the waste within the containers can be dumped into the bins that will go to the autoclave. Upon completion of treatment, the conveyor will transport the treated waste material from the autoclave treatment area to the compactor area.



### **5.9.1.6 Bins**

The bins are used to place the medical waste to be treated in the autoclave and then move the treated waste to the compactor. The bins are typically moved by a conveyor system.

### **5.9.1.7 Compactor**

The compactor is used to consolidate and store the treated medical waste into a closed top walking floor trailer, or similar container, prior to shipment to the landfill disposal facility.

### **5.9.1.8 Other**

The facility has floor drains and other various drains to collect liquids such as condensate, wash water, and process water prior to discharge to the sanitary sewer system. The evaporation drain and holes trap any excess water and lets it evaporate. Any solid waste collected in the evaporation drain is collected from the screen and processed with other medical wastes.

## **5.9.2 Waste Containers**

The varying types and sizes of waste containers are described in Section 3.0 of this EDR.

## **5.10 Building Profile**

The building layout has been established as presented in Figure 11. The design of the profile views of the building is still in design.

## **5.11 Transportation**

It is not anticipated that the proposed Stericycle facility will have any adverse environmental or health impact on existing transportation patterns within the facility or surrounding road system. While the new facility at its maximum capacity could receive approximately 46 new incoming trucks per day, the existing roads will be able to handle the traffic and the impacts will be negligible due to the location of the facility in a heavily industrialized area and the nearby major roadway network. Road access to the facility is well planned with operations being easily accessible from the Garden State Parkway, New Jersey Turnpike, Routes 440, 287, 35, 9, 1 and the Outerbridge Crossing. Local roads, such as Smith Street, Crows Mill Road and Industrial Way are also active trucking routes used to access the facility. As noted previously, access to the medical waste facility will be via Crows Mill Road. This will be a dedicated entrance to the Facility for RMW vehicles only and all other traffic to MDS and its affiliated companies will continue to access the site via Crows Mill Road.

The traffic flow within the Facility boundary is identified on Figure 6. The transport vehicles will enter the Facility from Crows Mill Road through a gate and either park in the designated parking area near the office building or continue to the Loading/Unloading area in the rear of the building. Once the vehicle has been unloaded, the vehicles will be staged in the parking area in the rear of the building for future transport of RMW materials. When the trucks are readied and dispatched for pickup of additional RMW, the transport vehicle will exit the Facility.

## **5.12 Floor Plans**

The floor plans of the proposed RMW facility have been developed as shown on Figure 11. The building will be separated into two (2) separate areas serving two separate functions. The Office section of the building will house multiple office spaces, conference rooms, and other necessities to perform the activities associated with the logging of waste deliveries, manifests and general documentation for the acceptance, processing, and disposal of the RMW material. The Processing section of the Facility will provide the basis for the treatment of the

RMW materials. The incoming transport vehicles will go to the Loading/Unloading area situated in the Processing section of the Facility, where the waste will be unloaded and treated as permitted. The Processing section will contain all of the required equipment for the treatment of the RMW, including autoclave units, boilers, conveyor system, washers, and compactor.

## 5.13 Utility Plan

A utility plan for the RMW facility was developed in March 2018 as part of the approved Preliminary and Final Site plan submitted to the NJDEP.

## 5.14 Waste Supply Analysis Program

### 5.14.1 Composition

Stericycle plans to pick-up RMW materials from generators within New Jersey, and other areas, as required. The Facility will accept all seven classes of RMW for treatment but does not plan to process Class 2 Pathological Waste or Class 5 Animal Waste. This material would be received separately and transferred from collection vehicles to hauling vehicles for final disposal at incineration facilities contracted by Stericycle.

### 5.14.2 Quantities of RMW

The types and quantities of RMW materials transported to the Facility for treatment will vary from day to day as market conditions change, and contracts are approved with generators. However, the maximum quantity to be received by the Facility is 150 tpd.

## 5.15 Materials and Energy Balance

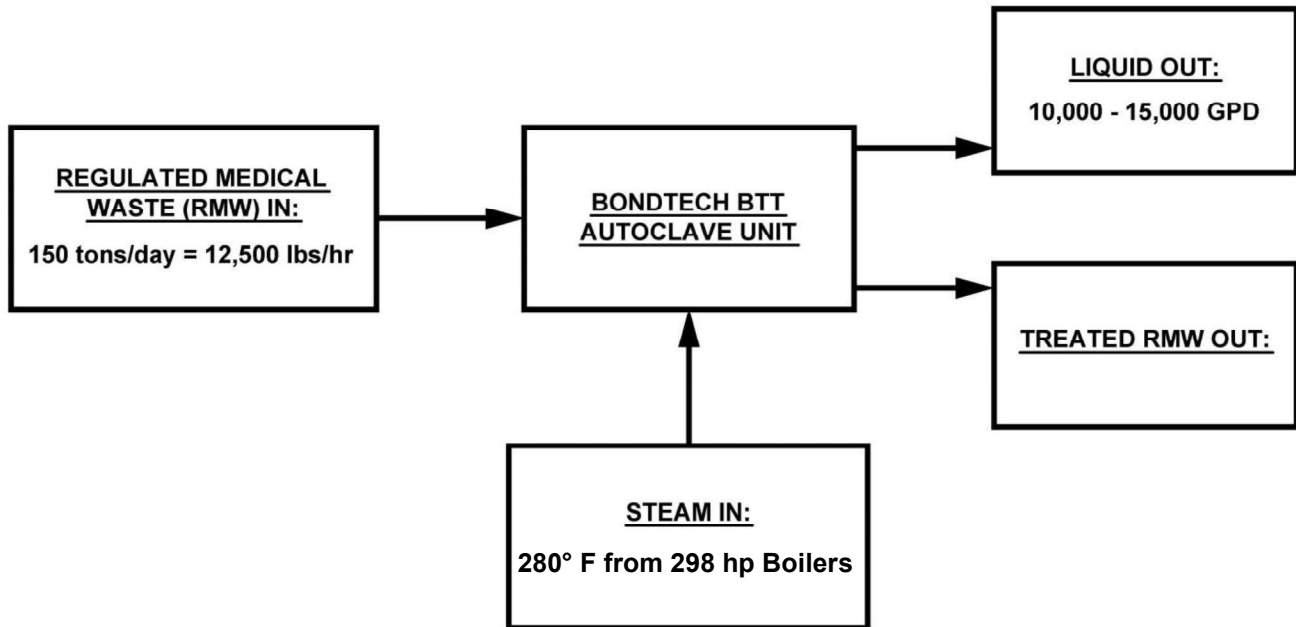
The mass flow of waste per hour will vary over time because of the varying weights of the materials within the bins and containers, and the composition and density of the incoming RMW. These factors cannot be controlled by the operators. The autoclave will operate at the minimum time, temperature, and pressure standards established during validation testing. It is being assumed that the density of incoming RMW material will be approximately 200 lb/cubic yard (cy) since the typical density is 80-230 lb/cy.

The prime factor on mass flow of waste will be the temperature set point of the Bondtech autoclave unit. The autoclave unit is anticipated to operate at a temperature of 280°F during the residency time that the RMW is within the unit. On average, the unit will operate at the minimum temperature of 280°F for a time period of 30 minutes.

The two (2) 298 horsepower (hp) boilers will produce steam for the autoclave units. They will continue to provide steam through the pipes for injection into the autoclave vessel until the minimum temperature within the autoclave reaches 280°F. The temperature within the autoclave units is based on the steam injection to the autoclaves, which are both controlled by a programmable logic controller (PLC). This PLC will be preprogrammed with the operating parameters established in the validation testing.

The treatment of the waste within the autoclave units is managed in cycles. The operator can only feed waste into the autoclave units when the prior treatment process is completed, and another load of waste can be placed within the empty unit.

The following Figure presents the mass and energy balance:



## 5.16 Staffing Plan

### 5.16.1 Job Positions

Staffing at the facility will vary depending on the amount of waste being accepted and processed. The typical number of full-time employees at the facility is eighteen (18). The position and the corresponding number of anticipated staff are as follows:

- Supervisor – 1
- Maintenance Manager – 1
- Plant Operators – 15
- Bio-Track Administrator – 1

Employee duties vary throughout the course of the working day but may include:

- Acceptance of incoming waste materials
- Verification of manifests
- Separation of wastes
- Removal of wastes from containers
- Treatment of wastes
- Disinfecting of containers
- Placement of treated waste in compactor unit.

## 5.17 Training Plan and Outline

Facility personnel are provided periodic training in health and safety, contingency response, inspection methodologies, and site security. The facility's training program is presented in Appendix E.

Implementation of the Training Program encompasses:

- Identification of the training requirements (for each job)
- Selection of qualified instructors
- Conduction training
- Employee testing and performance evaluation
- Documentation of training
- Training Plan components include:
  - Scope of training for new personnel
  - Job specific training
  - Training program administration
  - Continued training frequency and content.

Training of employees will be documented in the facility operating record and will include, at a minimum the name of each employee that received the training, the date(s) training occur and a brief description of the material covered in the training.

Records of employee training are maintained in the administrative offices of the Facility for a period of at least three (3) years after the employee leaves the employment of Stericycle.

## 5.18 Emergency Contingency Plan

### 5.18.1 Purpose

The purpose of a contingency plan is to provide structure for an emergency response function and guidelines of action. In order for the plan to be effective, employees must be familiar with the provisions of the plan and trained in emergency response.

### 5.18.2 Content of the Plan

This section describes the emergency procedures that will be activated in the event of a significant accident or release of infectious waste while collecting, transporting, storing, or processing waste materials. Emergency Response information is located in Appendix F. This plan details procedures to minimize hazards to human health or the environment from fires, explosions, or any unplanned release of infectious constituents. Various structural and operational measures are in place to minimize the possibility of implementation of the contingency plan.

- Due to the nature of the treatment process, we do not anticipate any explosions. However, the same contingency plan would be in effect for explosions as for fires.

- Due to the biological nature of the material, the potential for exposure via release of the waste suddenly or non-suddenly would not appear to pose a problem, should that release be to air or soil.

## ARRANGEMENTS WITH EMERGENCY AUTHORITIES

The local fire department is Protection Fire Company No. 1 of Keasbey, 420 Smith Street, Keasbey, NJ 08832; phone 732-738-4343.

The closest acute care facility and hospital will be utilized which would provide emergency services to our employees in the event of contamination or occupational injury. Those facilities are listed below:

### Acute Care:

Concentra Urgent Care  
135 Raritan Center Parkway  
Edison, NJ 08837  
(732) 225-5454

### Hospitals:

Raritan Bay Medical Center  
530 New Brunswick Ave.  
Perth Amboy, NJ 08861  
(732) 442-3700

John F. Kennedy Medical Center.  
55 James Street  
Edison, NJ 08820  
(732) 321-7000

## EMERGENCY COORDINATOR AND ALTERNATIVES

One of the following Emergency Coordinators will always be available:

Operations Manager	Cell Phone (732) 254-3072
Facility Manager	Cell Phone (267) 718-6497
Environmental Manager	Cell Phone (443) 271-3928

If the Emergency Coordinator determines spills to be unmanageable by Stericycle staff, the spill must be reported to the appropriate local or state agency.

### **Woodbridge Fire Department**

Emergency:	911
Non-emergency – Fire Prevention Bureau	(732)-634-0231

### **Woodbridge Police Department**

Emergency	911
Non-emergency	(732)-634-7700
National Response Center	(800)-424-8802
NJDEP Spill Hotline	(877) -927-6337
Middlesex County Haz/Mat Hotline	(732)-727-6622

## EVACUATION PLAN

Fire, explosion, or another emergency as deemed necessary by the Emergency Coordinator would require an evacuation. In the event of evacuation, an announcement will be made and employees will be instructed to leave the building immediately. All personnel will be instructed to use the most convenient exits of the facility.

**Evacuation: In the event of an emergency at the transfer station, all employees are to meet at the entrance of the Building. In the event of an emergency at the facility's office, all employees are to meet at the entrance of the transfer station area.**

## EMERGENCY RESPONSE EQUIPMENT

The emergency response equipment includes, but is not limited to, the following items:

- Fire extinguishers
- Emergency Eyewashes and Showers
- Phones, either land lines or cell phones
- Flares or emergency triangles in trucks.

## EMERGENCY PROCEDURES:

- Fire or Explosion:
  - Call Woodbridge Fire Department - 911
  - Make announcement to evacuate area.
  - Non-fire-fighting employees gather at the Rally Point and get a head count.
  - All employees trained in fire safety procedures are authorized to fight fires with appropriate firefighting equipment.
  - Notify Emergency Coordinator(s) immediately.
- Tornado or Natural Disaster:
  - Find cover to avoid falling or flying objects, and remain there until the situation has subsided.
  - Notify Emergency Coordinator(s) immediately.
- Personal Injury:
  - Determine the nature and extent of the injury.
  - Call emergency medical technicians if necessary: 911
  - Notify supervisor or Emergency Coordinator(s) immediately.
- Major Medical Waste Spill (not including in-facility spills):
  - Determine, and write down, the location and severity of incident.
  - If there are any injuries refer to Personal Injury section.

- Notify Emergency Coordinator(s) immediately.
- If the spill is manageable, clean up spill. Spill supplies include personal protective equipment (PPE), clean-up materials and packaging materials. Spill clean-up materials must be readily available in the plant and trucks.
  - PPE: Safety Glasses, Tyvek Suit, Puncture Resistant Gloves, Latex or Nitrile Gloves
  - Cleanup Materials: Wisk Broom & Dustpan, Absorbent, disinfectant, hand sanitizer, tongs (optional)
  - Packaging materials: Liners, DOT Biohazard labels (in trucks), small sharps container, Shipping Tape.

## 5.19 Community Relations Plan

For facilities that have a design capacity of 500 tpd or greater, a community relations plan is required, per N.J.A.C. 7:26-2B.4(a)19. This community relations plan is to identify the steps that the owner and/or operator will take to transfer information and solicit input from the community in which the facility is located. In recognition that the maximum allowable capacity of the proposed RMW Facility is 150 tpd, this requirement is not applicable.

## 6.0 REFERENCES

- Herman, Gregory, et al., (1998). "Aquifers of New Jersey," Department of Environmental Protection, Division of Science & Research, New Jersey Geological Survey.
- Owens, J.P., et al., (1998). "Bedrock Geologic Map of Central and Southern New Jersey," U.S. Geological Survey, Geologic Investigations Series I-2540-B, Scale 1:100,000.
- Stanford, Scott D., (1999). "Surficial Geology of the Perth Ambo and Arthur Kill Quadrangles, Middlesex and Union Counties, New Jersey," U.S. Geological Survey, National Geologic Mapping Program.

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