

Jessica LaClair
Environmental Engineer, Division of Remediation
New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7013

Subject:
GLOBALFOUNDRIES B322 Renovation Project
Plan for Closure of SWMUs in Building 322 During 2020-2021
GLOBALFOUNDRIES US2 LLC Fab 10, Hopewell Junction, NY
Re: Permit Module II of IBM's 6NYCRR Part 373 Hazardous Waste Management
Permit

Dear Ms. LaClair:

This letter summarizes the approach that will be implemented to close solid waste management units (SWMUs) within Building 322 during 2020-2021 at the GLOBALFOUNDRIES US2 LLC Fab 10 Facility, Hopewell Junction, New York. This is a continuation of SWMU closures completed prior to demolition of the north end of B322 during 2018-2019. The methods and procedures presented in this plan are the same as those presented in the Closure Plan Letter for B322 submitted by Arcadis on April 10, 2018 to New York State Department of Environmental Conservation (NYSDEC) and approved by NYSDEC on May 9, 2018.

The SWMUs to be closed during the Project are in the following categories:

- Above-slab wastewater and solvent waste transfer piping within B322

These SWMUs were identified by IBM in accordance with Permit Module II of IBM's 6NYCRR Part 373 Hazardous Waste Management Permit.

The SWMUs associated with Building 322 were sorted from IBM's SWMU database and are listed in Attachment 1 as they appear in the Part 373 Permit Module. Attachment 1 provides the entire list of active, closed, inactive and removed SWMUs within or associated with Building 322. The approach outlined in this memo applies to the active SWMUs listed on Attachment 1 that are no longer required for operation of building systems, as noted "Yes" on Attachment 1 under "Scheduled for Closure/Removal".

Specifically, the SWMUs to be closed/removed under this 2020-2021 Project are:

- Unit # B322-FL - Fluoride/Heavy Metals Wastewater Piping: to be partially removed.

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Our ref:
B000130.0005

- Unit B322-IW – Industrial Wastewater Transfer Piping: to be partially removed.
- Unit B322-SO – Solvent Waste Transfer Piping: to be partially removed.

The SWMU closure verification activities to be implemented in support of the Project include:

- Conducting a reconnaissance of the SWMUs included in Attachment 1 to confirm the location and extent of SWMUs to be closed, document the existing conditions of the SWMUs, and formulate the final decontamination and/or disposition approach for each SWMU.
- Implementing and verifying decontamination and closure activities for the SWMUs.
- Preparing a Certification Letter to document that the SWMUs have been closed.

The proposed SWMU closure approach is presented below.

SWMU RECONNAISSANCE AND EXTENT OF SWMU CLOSURE

The initial step of the closure approach consists of field reconnaissance of the listed active SWMUs within the Project area to document the existing conditions of the SWMUs and formulate the final decontamination and/or disposition approach for each SWMU. The location and general extent of SWMU piping to be removed, will be marked on an existing Building 322 figure to be referenced in closure documentation. Preliminary reconnaissance and has been initiated to support the preparation of this closure approach letter.

All SWMUs to be closed will be removed up to the limits of the planned building renovation activities. Part of Building 322 was walled off and retained in an active condition, south of Column Line 22 as part of the 2018-2019 demolition project. The SWMU piping systems south of the Column Line 22 were cut and capped to remain in place until future renovation would allow access. The SWMUs to be removed within the 2020-2021 limits include the same piping systems south of Column Line 22, which are similarly running above the building slab under raised flooring platforms. As these platforms are removed, these SWMU systems will be removed up to the extent of the planned renovation and any remaining piping will be capped in place.

The GLOBALFOUNDRIES Facilities Engineering Team, who is implementing the project, is not aware of any previous environmental releases associated with any of the specific SWMU components to be closed under this Project.

SWMU CLOSURE ACTIVITIES

Closure activities, consisting of decontamination and removal of SWMU components, will be implemented by a qualified environmental contractor (Highground Industrial, LLC) and documented by Arcadis of New York, Inc. (Arcadis).

Decontamination activities will generally include the following steps:

- Preparing the work area for decontamination activities by establishing health and safety requirements, including exclusion zones and appropriate personal protective equipment for the task.
- Removing wastewater and accumulated residues, if any, from SWMU components by pumping, flushing, pressure washing and/or use of hand tools. All potentially hazardous waste generated by

decontamination will be placed in appropriate DOT-compliant containers for waste profiling and subsequent onsite treatment or offsite disposal based on the appropriate waste profiles.

- Decontaminating SWMU component surfaces using treated facility water for rinsing components or wiping surfaces with wet rags. Treated facility water is a clean non-potable water supply to eyewash stations, sinks, lavatories, and general facility hose spigots. Water is the most appropriate cleaning agent for removing residual acid and inorganic sediment residue expected in the fluoride and industrial waste piping. Where additional measures are needed to complete decontamination, cleaning agents such as Simple Green® and/or acid neutralizers may be used. Wastewater generated by decontamination of non-solvent SWMUs will be conveyed to existing onsite wastewater treatment facilities. Wastewater generated by decontamination of solvent SWMUs will be placed in appropriate DOT-compliant containers for waste profiling and subsequent onsite treatment or offsite disposal based on the appropriate waste profiles.
- The SWMU components will be disassembled during decontamination and testing and rendered unusable. Scrap metal from the decontaminated SWMUs meeting the decontamination criteria stated below will be separated by metal type and shipped offsite for recycling. Decontaminated non-metal components of the SWMUs (e.g., PVC piping) meeting the decontamination criteria described below will be containerized for off-site disposal as a non-hazardous waste at a permitted solid waste landfill or waste-to-energy facility.
- Decontamination efforts will be considered complete when the following criteria are met:
 - o For SWMUs that handled only D002 hazardous waste (characteristic of corrosivity), which is limited to SWMU B322-IW (Industrial Wastewater Transfer Piping), decontamination will be complete when surface test results for pH of SWMU surfaces are within the neutral range of 5.0-8.0, based on field tests with pH test strips on surfaces lightly wetted with facility water (facility water at the site typically ranges from pH 5.5-6.5).
 - o For SWMUs that potentially handled toxicity characteristic metals, which is limited to SWMU B322-FL (Fluoride/Heavy Metals Wastewater Transfer Piping) and/or acids containing fluorides, decontamination will be complete when:
 - The pH of SWMU surfaces meets the neutral range of pH 5.0-8.0; and,
 - SWMU surfaces are cleaned to a clean debris surface as defined in 6NYCRR Part 376.4(g) (see Table 1, Footnote 3)
 - *"Clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area."*
 - If SWMU surfaces cannot be visually inspected as described in Part 376.4(g), rinse water samples will be collected and analyzed for the hazardous constituent(s) handled by the SWMU. Decontamination will be complete when the rinse water meets Class GA Groundwater Standards; or

- Where the clean debris standard or rinse water standard cannot be met, or items cannot be fully inspected (such as clogged valves and piping), the affected materials will be profiled for hazardous waste disposal and managed accordingly.
- o For SWMUs that potentially handled mixed solvent-waste (F001-F005), including solvent waste piping within B322 labelled mixed solvent waste or individual solvent waste piping labelled AZ STRIP(propylene glycol, NMP and TMAH), NBA (n-butyl acetate), isopropyl alcohol, and N-Methyl-2-Pyrrolidone (NMP), decontamination will be complete when the interior SWMU surfaces meet the criteria listed above, or the affected SWMU materials will be profiled for hazardous waste disposal and managed accordingly. Anticipated disposition of solvent piping within B322 is as follows:
 - For B322 solvent piping, which consists of 2-inch to 4-inch ID black steel piping, it is anticipated that all piping will be demolished and disposed as hazardous waste unless conditions and scheduling allow for interior decontamination, inspection and rinsate testing to qualify the steel for scrap metal recycling.
- o Building surfaces indicating visible evidence SWMU waste spills onto the containment slabs beneath the SWMU waste transfer piping systems will be cleaned to the same decontamination standards described above for their respective SWMUs. Decontamination will be complete when the SWMU-impacted surfaces meet the criteria listed above, including the criteria for meeting neutral pH. If the affected surface is to remain in place following renovation, and the decontamination criteria have not been met, alternative methods (e.g., scarification, encapsulation) may be proposed in an addendum to this closure approach letter.
- Onsite decontamination activities will be observed and documented by an Arcadis field representative. Arcadis will conduct representative real-time pH testing of fluoride and industrial waste SWMU components, inspect those SWMU materials for visual clean-debris determination, and collect rinsate samples if needed.
- The Arcadis field representative will complete a checklist for each SWMU or identified SWMU component that will document the status of inspection and decontamination activities, provide final decontamination verification/closure dates, and identify the final disposition of the SWMU components. Representative photographs will be attached to the checklists and pH verification data will be recorded on data tables for inclusion with the checklists and photographs.

CERTIFICATION LETTER

Following completion of the SWMU closure activities, Arcadis will prepare a closure Certification Letter signed by a licensed New York State Professional Engineer to document that certain specific SWMUs or SWMU components have been closed with no documented releases or remaining environmental concerns associated with the SWMUs (if applicable), in accordance with this closure plan. The Certification Letter will include the results of the field reconnaissance, a description of the decontamination activities for each SWMU, the results of decontamination verification samples, and checklist-based documentation of the final disposition of each SWMU. The Closure Certification letter will be submitted to the NYSDEC RCRA Corrective Action Project Manager for IBM's 6NYCRR Part 373 Hazardous Waste Management Permit. Following NYSDEC acceptance of the certification letter, GLOBALFOUNDRIES will

update the status of the “active” Building 322 SWMUs that have been completely removed during the Project to a “removed” status in the facility listing of RCRA SWMUs that is submitted to the NYSDEC on a periodic basis in accordance with Module II of the 6NYCRR Part 373 Hazardous Waste Management Permit.

We look forward to your comments and approval of this closure/removal plan for the SWMUs listed herein. Please do not hesitate to contact Raymond Kapp at raymond.kapp@arcadis.com or by phone at 845-346-6454 if you have any questions or need any additional information.

Sincerely,

Arcadis of New York, Inc.



Raymond M. Kapp
Certified Project Manager/Principal Scientist

Copies:

Robert Lamothe, GLOBALFOUNDRIES
Randall Duggan, GLOBALFOUNDRIES
Mike Jones, Arcadis
Don Sauda, Arcadis

Enclosures:

Attachments

- 1 Building 322 SWMUs

**Solid Waste Management Units - As Identified in
Permit Module II of IBM's 6NYCRR Part 373
Hazardous Waste Management Permit.**

Attachment 1
Building B322 SWMUs

GLOBALFOUNDRIES US2 LLC FAB 10
Hopewell Junction, NY

UNIT ID #	DESCRIPTION	Unit Type ⁽¹⁾	LOCATION	STATUS	GW REMEDIATION AREA?	RCRA STATUS	LOT NUMBER(S)	SWMU OWNER	SCHEDULED FOR REMOVAL 2020-2021
L/UL Area #25	Tank Truck Loading/Unloading Area	TS/CSA	B/322 E	Active	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
CW L/UL 322	Container Waste Loading/Unloading Area	TS/CSA	B/322	Closed	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
204	Solvent Waste-Mixed	S/TT	B/322 E	Removed	No	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
205	NBA Waste	S/TT	B/322 E	Removed	No	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
206	Isopropyl Alcohol Waste	S/TT	B/322 E	Removed	No	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
207	N-Methyl-2-Pyrrolidone Waste	S/TT	B/322 E	Removed	No	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
208	Solvent Waste-Mixed (Spill Tank)	S/TT	B/322 W	Removed	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
3093	Freon TF Waste	S/TT	B/322 K21	Removed	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
3100	Freon TF Waste	S/TT	B/322 J-20	Removed	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	No
B322-SO	Solvent Waste Transfer Piping	Other	B/322	Active	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	Yes - Partial
B322-FL	Fluoride/Heavy Metals Wastewater Transfer Piping	Other	B/322	Active	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	Yes - Partial
B322-IW	Industrial Wastewater Transfer Piping	Other	B/322	Active	B/322 AOC	No Further Action *	5	GLOBALFOUNDRIES U.S. 2 LLC	Yes - Partial

(1) Unit Type

Key:

TS/CSA	Transfer Stations and Container Storage Areas (CSA's)
S/TT	Storage/Treatment Tanks
Other	Other
AOC	Areas of Concern