



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

SUBJECT: Former IBM Corporation Manassas
Manassas, VA
RCRA ID: VAD 064872575
Five Year Remedy Review and
Long-term Stewardship Assessment

DATE: 05/06/2020

FROM: Barbara Smith
Project Manager (3LD10)

TO: Luis Pizarro, Chief
RCRA Corrective Action Branch 1 (3LD10)

Background: IBM Corporation owned and operated a manufacturing Facility in Manassas, VA from 1969 to 1994. IBM designed and manufactured semiconductors in two buildings at this Facility from 1969 to 1975. Large quantities of tetrachloroethylene (PCE) were stored and used in the manufacturing process. In 1981, IBM detected chlorinated volatile organic compounds (cVOCs) in groundwater, primarily PCE. In 1989, EPA issued IBM a 3008(h) Order requiring IBM to investigate soil and groundwater to delineate contamination, assess risk and propose clean-up/remedy alternatives. PCE was found in soil adjacent to one of the manufacturing buildings, B101, where PCE was used, recycled and stored and was found to a lesser degree at another area on-site. PCE tanks, pipes and contaminated soil were removed at B101. Groundwater contamination was found on and off-site in the early 1980's. In 1990, EPA selected the remedy for clean-up, which currently includes six groundwater pumping wells for treatment/removal of cVOCs and two vapor extraction systems to remove cVOCs (primarily PCE) from the shallow subsurface. Remedy implementation has been on-going since 1985, with on-going upgrades and expansions of the GW recovery/treatment and vapor extraction systems as needed. Remedy implementation is conducted by IBM even though IBM no longer owns the property.

Five Year Review of Remedy Effectiveness: EPA reviewed the data submitted by IBM from the years 2015 to 2019 and earlier. EPA concludes that the remedy continues to be effective because the on- and off-site PCE groundwater plume has been contained and has remained stable for at least 35 years. Also, the two on-site vapor extraction systems (VES) continue to capture subsurface vapor onsite and off-site in the McRae Court neighborhood adjacent to the Facility. The graph below shows the total amount of PCE that has been recovered and treated since 1985 and from 2010 to 2019.



| | | Estimated Mass of PCE Removed by Monitoring Period (Pounds) | | | | | | | | | | | |
|-------------------------------------------------------|----------|-------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|--------|--------|---------------------|---------------------|--------|--------|
| Site Area | Well # | 1985-1989 | 1990-1994 | 1995-1999 | 2000-2004 | 2005-2009 | 2010-2014 | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
| B101 | D-28 | 2,523 | 1,972 | 2,122 | 1,276 | 668 | 0.00 | - | - | 12.8 | 81.0 | 72.4 | 8,726 |
| | D-80 | - | - | - | - | 72.7 | 790 | 97.6 | 72.8 | 66.4 | 29.1 | 28.2 | 1,157 |
| | D-39 | 174 | 1,416 | 919 | 540 | 440 | 431 | 123 | 104 | 107 | 96.6 | 98.4 | 4,449 |
| Off-Site | OF-34 | - | - | 1,180 | 765 | 516 | 513 | 100 | 82.7 | 81.9 | 83.2 | 75.0 | 3,396 |
| | PW-07 | 820 | 601 | 581 | 255 | 197 | 226 | 37.0 | 37.3 | 32.5 | 30.6 | 31.5 | 2,848 |
| D-47/D-29 | D-47 | - | - | 4.04 | 53.9 | 31.0 | 32.9 | 6.17 | 5.74 | 5.17 | 5.15 | 5.47 | 150 |
| | D-29 | 213 | 135 | 78.1 | - | - | - | - | - | - | - | - | 426 |
| VES | PL VES | - | - | - | - | - | 4.39 | 1.13 | 1.44 | 0.71 | 0.62 | 1.56 | 9.85 |
| | B101 VES | - | - | - | - | - | - | 0.07 | 0.01 | 0.00 ⁽²⁾ | 0.00 ⁽²⁾ | 0.09 | 0.17 |
| Misc. | Misc. | 68.7 | - | - | - | - | - | - | - | - | - | - | 68.7 |
| Total PCE Removed per Monitoring Period | | 3,799 | 4,123 | 4,883 | 2,889 | 1,925 | 1,997 | 365 | 304 | 306 | 326 | 313 | 21,230 |
| Cumulative Total Estimated PCE Removed ⁽¹⁾ | | 3,799 | 7,922 | 12,805 | 15,694 | 17,619 | 19,616 | 19,981 | 20,285 | 20,591 | 20,917 | 21,230 | |

⁽¹⁾ Cumulative total mass of PCE removed based on the associated monitoring period
⁽²⁾ Mass removed is too low to be shown based on the number of significant figures used.

Prepared by: TK
Checked by: JLF
Reviewed by: APTM

The Table above, from the 2019 Annual Report, shows that 21,230 pounds of PCE has been removed and treated since 1985. The total PCE removed for the last five years (2015-2019) is 1,614 pounds.

Lockheed Martin, the owner of the B101 property at the time, recorded institutional controls (ICs) for the B101 and B102 portion of the Facility with Prince William County, VA on October 15, 2018. The IC runs with the land and restricts groundwater and land use and potential exposure to vapor and soil. A summary table of the covenant restrictions are attached to this memo.

Reference Documents:

- IBM Annual Corrective Measures Implementation Reports, 2016-2019;
- 2015 Groundwater Characterization Report, Golder Associates, April 8, 2016;
- Various Reports from 1985 to 2015.
- Declaration of Covenants and Restrictions at B101 and B102 Area and B101 Restricted Area, registered on October 15, 2018.
- Google Earth Map April 2018 image of Facility.

Institutional Control/Engineering Control
Corrective Action Remedy Summary

| | | | | |
|--------------------------------------------------|---------------------------------------|----|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Facility Name | Former IBM Manassas | | | |
| Address | 2500 Godwin Drive, Manassas, VA 20110 | | | |
| EPA ID Number | VAD064872575 | | | |
| Are there restrictions or controls that address: | Yes | No | Area(s) | Description of restrictions, controls and mechanism |
| Groundwater Use | X | | B101 and B102 Area | EC prohibits: potable or process use, irrigation without gov't approved treatment. Only IBM to extract & treat GW. IBM has obligation to perform remediation and monitoring ('The Work'). |
| Residential Use | X | | B101 and B102 Area | EC prohibits: residential, day care, preschool, elementary school. B101 Restricted Area: only use for commercial & industrial use. |
| Excavation | X | | B101 Restricted Area | EC requires conformance with Soil Mgmt. Plan in 'Exhibit C' of EC. IBM has obligation to manage subsurface soil in B101 Restricted Area. |
| Vapor Intrusion | X | | B101 and B102 Area | EC requires a vapor intrusion removal system installed in new buildings. |
| Capped Area(s) | | X | | |
| Other Engineering Controls | X | | B101 and B102 Area | EC prohibits installation or operation of USTs (petroleum, chemical, septic) or underground waste disposal systems. |
| Other Restrictions | X | | B101 and B102 Area | Owner/operators shall not interfere with IBM remediation work. Owner to notify IBM at least 60 days prior to sale or transfer of property. B101 Restricted Area: any demolition, must work with IBM on a Work Plan. |