Mapping of Institutional and Engineering Controls in RCRA Corrective Action
Land and Chemicals Division - EPA Region 3
July 7, 2016

Contact:

Joel Hennessy
Office of Technical and Administrative Support (3LC10)
Land and Chemicals Division
U.S. Environmental Protection Agency, Region 3
Philadelphia, PA 19103-2029
phone: 215-814-3390
email: hennessy.joel@epa.gov

EPA relies on institutional controls, such as land and water use restrictions, to protect the public at many RCRA Corrective Action and Superfund sites. Institutional controls are only effective if people know what the restrictions are and where they apply. EPA Region 3 has developed a strategy to increase the effectiveness of institutional controls, through website mapping, database integration, and field oversight.

The Land and Chemicals Division in EPA Region 3 uses Google Earth KML files for web-based mapping of the geographic extents of institutional and engineering controls, with hyperlinks to supporting documents describing the controls. In order to do this mapping, EPA needs geographic data from RCRA Correction facilities that rely on engineering and/or institutional controls. This information may already exist in many different forms, including ArcGIS shapefiles, CAD drawings, and property metes and bounds descriptions. These different file formats must be converted to a KML file format to be mapped on the Region 3 website. The KML file format also provides geographic data in a format which can be uploaded into RCRAInfo, EPA's national RCRA database.

We are asking each facility to provide the following:

For each institutional or engineering control:

- Determine the geographic extent over which the control applies. For example, an environmental covenant requiring non-residential use of an entire facility would best be represented by the property boundary. An engineering control for a landfill would best be represented by the geographic extent of the landfill cap.
- Provide map files of the geographic extent of each control. As most controls are best represented as an area, the files should represent polygons.
- Ideally, map files would be provided as Google Earth polygon KML files, but other file formats can be usable as well, such as ArcGIS shapefiles in a real world coordinate system with a known datum.
- If surveying is to be conducted to delineate a newly defined area, or to generate real world coordinates of an existing property defined by metes and bounds, the following should be considered:
    - Obtain geographic survey coordinates for each point (property corner) identified in the metes and bounds description (or each vertex of the polygon) as follows:
        - longitude and latitude in decimal degrees
        - to at least 7 decimal places

- using the World Geodetic System (WGS) 1984 datum
- west longitude indicated as a negative number
  - o The coordinates should be provided in a tabular format as follows:
    - The first and last coordinate values in the table should be the same, and should represent the coordinates of the Point of Beginning of the metes and bounds description
    - If the metes and bounds description includes arc segments (rather than straight line segments) defined by the beginning and ending of an arc of a specific radius, additional geographic control points should be calculated along the arc so that a straight line approximation from point to point does not deviate from the true arc by more than 0.1 foot.
    - The table of coordinate values should be provided separately as an electronic file, in a comma separated value (CSV) format, or provided as a KML file.
- If an environmental covenant is being developed for the site, a table of coordinate values should be provided for each control area described in the covenant in addition to the required metes and bounds description. The table of coordinate values (longitude/latitude of polygon vertices) should be incorporated into or provided as an attachment to the covenant.
- Map exhibits for environmental covenants should be developed to clearly indicate each restricted area (e.g., property boundary, capped area, no-dig area, etc.). Exhibits should label polygon vertices, provide geographic coordinates, include a bar scale, north arrow, and be simple line drawings with a light or no background so that the exhibit can be copied in black and white multiple times and still retain readable information (see example in Figure 1). The exhibit should be designed to be usable at 8.5 X 11 inch.

Coordinate Table (WGS 1984)		
Label	Longitude	Latitude
1	-80.7203741	40.0800187
2	-80.7199196	40.0794937
3	-80.7197261	40.0795925
4	-80.7195709	40.0794132
5	-80.7195153	40.079349
6	-80.7194617	40.0792839
7	-80.7194099	40.0792179
8	-80.7193601	40.0791511
9	-80.7193123	40.0790834
10	-80.7192664	40.0790148
11	-80.7192226	40.0789455
12	-80.7191808	40.0788755
13	-80.7196252	40.0785571
14	-80.7200882	40.0782254
15	-80.7210367	40.0790065
16	-80.7207334	40.0794697

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Exhibit A
Safety-Kleen Systems, Inc.
10 Industrial Park
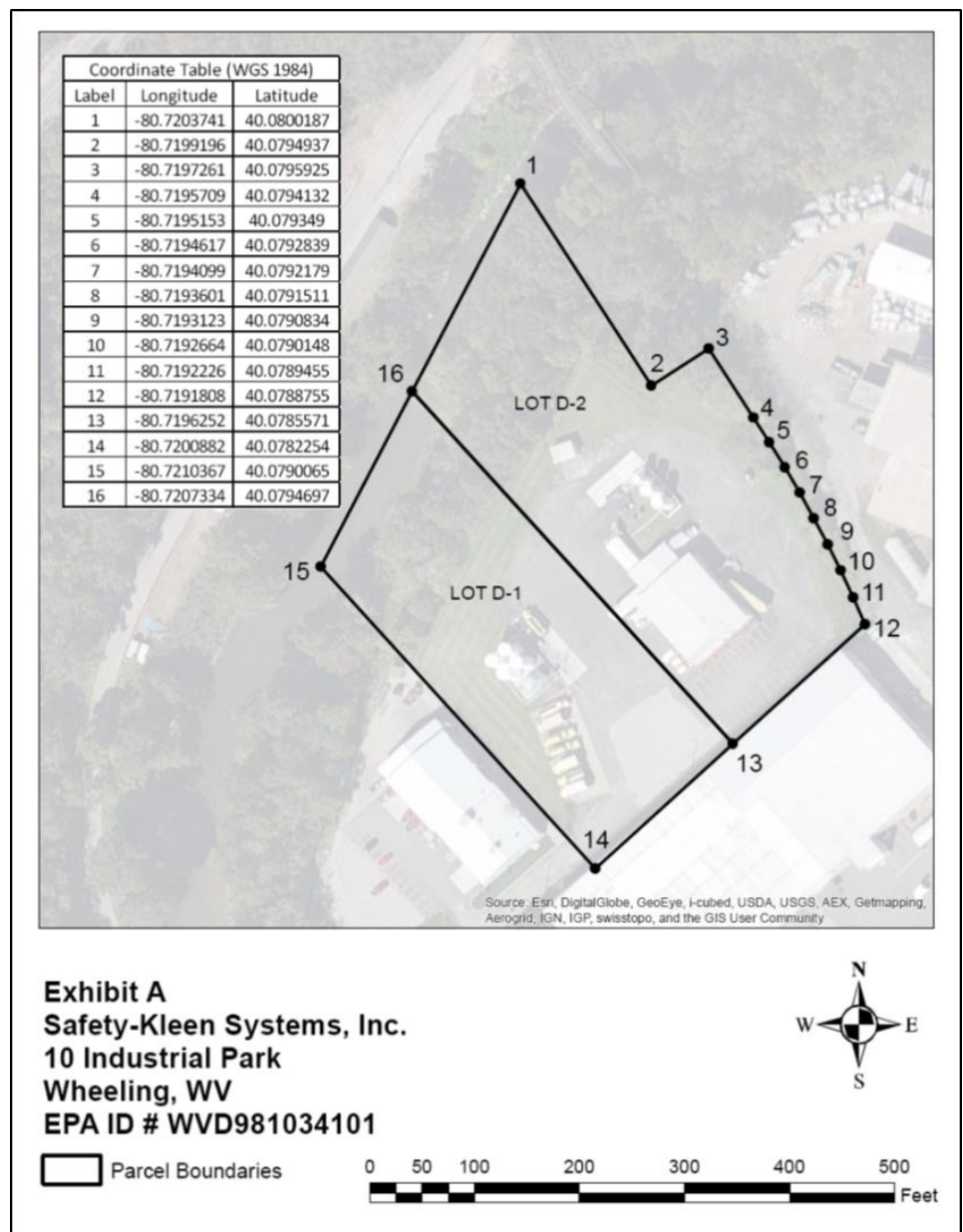**Wheeling, WV**
EPA ID # WVD981034101

Parcel Boundaries

0 50 100 200 300 400 500 Feet

Figure 1: Example Covenant Exhibit