# Appendix G

Appendix G provides a series of images depicting a three-dimensional model of the cVOC and 1,4-dioxane plume beneath the OU 1 landfill footprint. These images illustrate the vertical complexity of the contaminant distribution beneath the site and provide visualizations of contaminant transport. Each visualization within this appendix is provided as a series of images. Clicking through these images provides the reader with a progressive rotation of the plume model, allowing a qualitative visual assessment of the vertical complexity and contaminant transport pathways.

In **Appendix G1**, the model illustrates the plume using a three-dimensional filled iso-concentration based on the data set of hand-held photo-ionization detector (PID) readings. A legend is provided showing the concentration range for each filled iso-concentration layer. The PID readings are the densest data set available, and therefore provide the most detailed depiction of the contaminant distribution. The model combines PID measurements from 2017 that utilized a parts per million (ppm)-range PID and measurements from 2019 that utilized a parts per billion (ppb)-range PID. Individual PID measurement locations and values are depicted on spheres at each boring location. The boring locations are mapped to an aerial photograph of the site using a thin black line. For reference to the filled PID isocontours, the screened intervals of monitoring wells are included in the model views as grey cylinders. The initial model view is looking to the east.

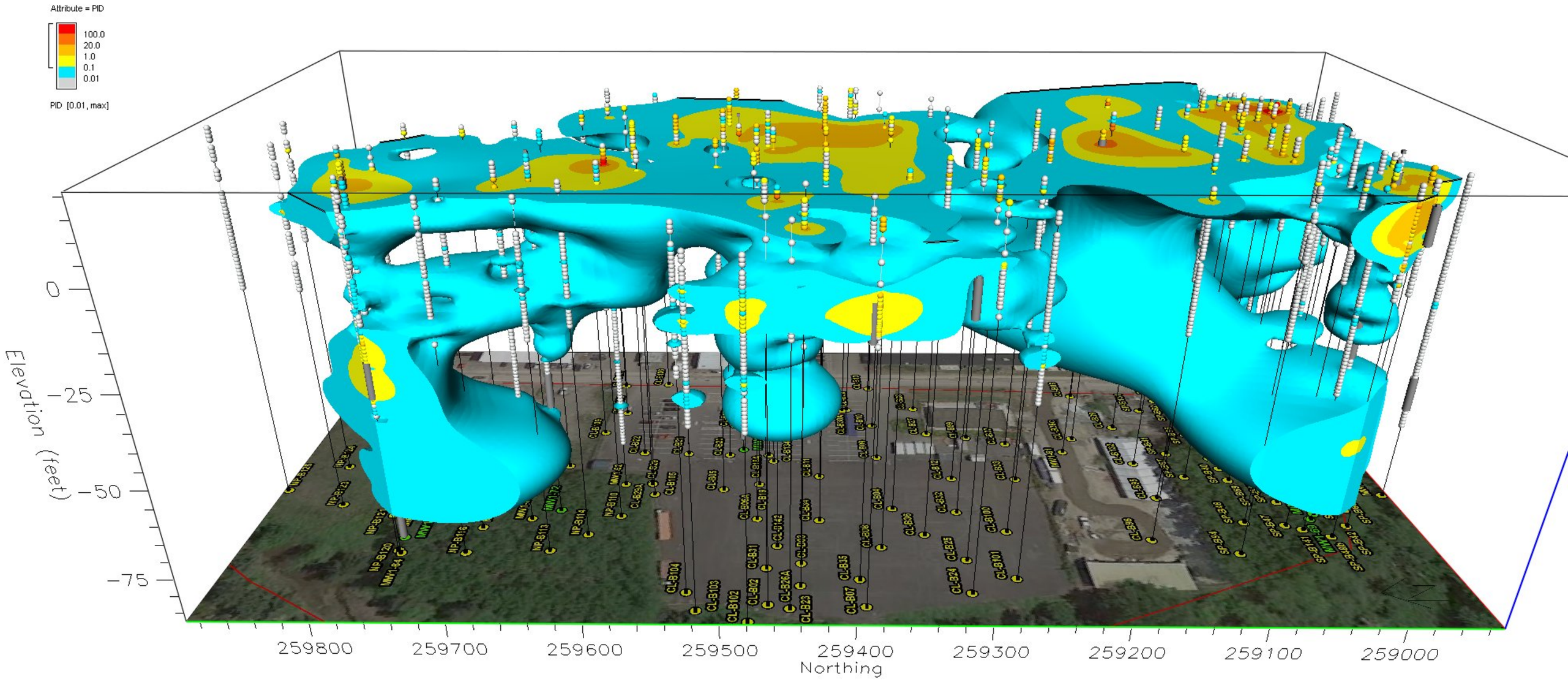
The model views shown in **Appendix G2** present the plume for each target cVOC and 1,4-dioxane based on the laboratory analytical results from grab groundwater data. The plume shape in these views is less detailed than the PID model, because the data set of grab groundwater samples is much smaller than the dataset of field PID measurements. The grab groundwater sample locations are shown as colored cylinders, coded to the concentration values shown in the legend. The length of the cylinder shows the length of the groundwater sampling tool used (four or five feet). The screened intervals of permanent monitoring wells are included in the model views as grey cylinders. The 1,4-dioxane plume only covers the northern half of the landfill because 1,4-dioxane was not detected in initial sampling (2017) in the southern half of the landfill and therefore later samples were not analyzed for this contaminant. The architecture of the plumes for each contaminant and total VOCs is similar to, but less detailed than, the plume based on PID measurements. A comparison of the total VOC plume to the PID plume is shown in the stacked visualization included in **Appendix G3.**

**Appendix G4** provides a series of horizontal slices through the PID model, while showing the color-coded concentrations in individual grab groundwater samples for a specific contaminant as cylinders at each sample location. As the horizontal plane moves downward through the model and deeper grab groundwater sample results are revealed, a qualitative comparison can be made between the PID model and the grab groundwater results for a particular contaminant.

**Appendix G5** provides a series of visualizations depicting contaminant transport pathways. In the initial views, groundwater elevation contours and dark blue deep groundwater flow arrows and light blue shallow groundwater flow arrows are overlain on the model. Key cVOC transport in groundwater to shallow surface water is shown as red arrows, with subsequent transport in

surface water shown as orange arrows. PCB transport from the northern portion of the landfill to the adjacent wetland is shown as green arrows. Later views show the plume relative to the erosional surface of the Olympia Formation, which is interpreted to be strongly influencing contaminant transport in deeper groundwater to the northwest.

# Appendix G1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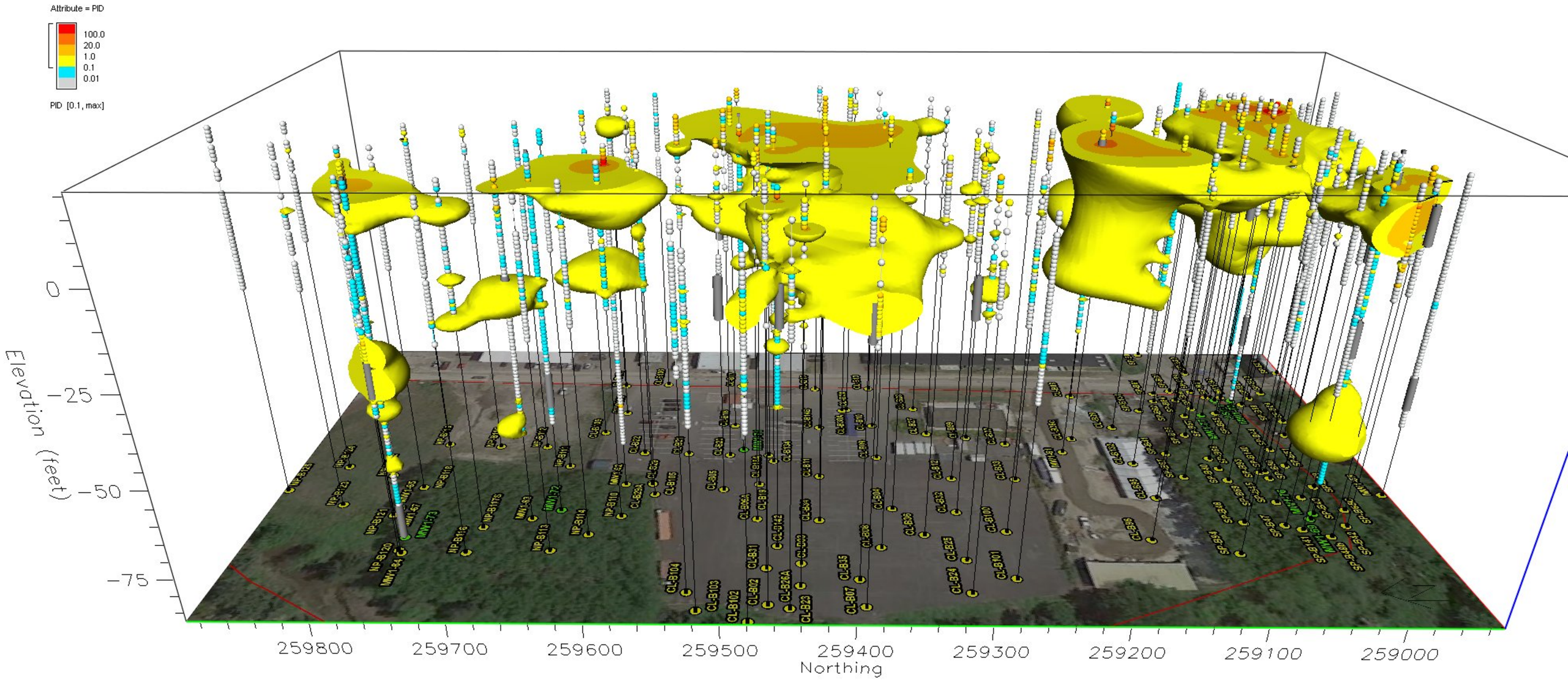
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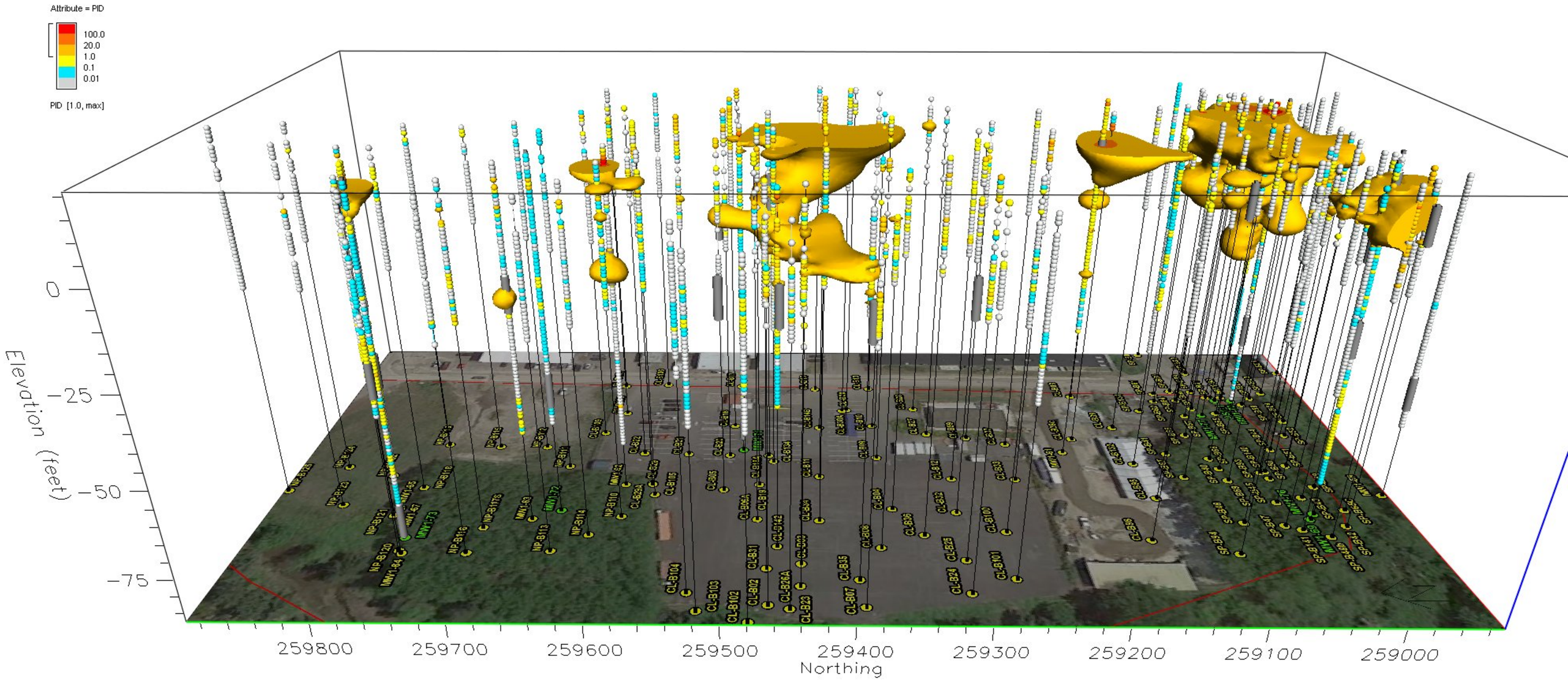
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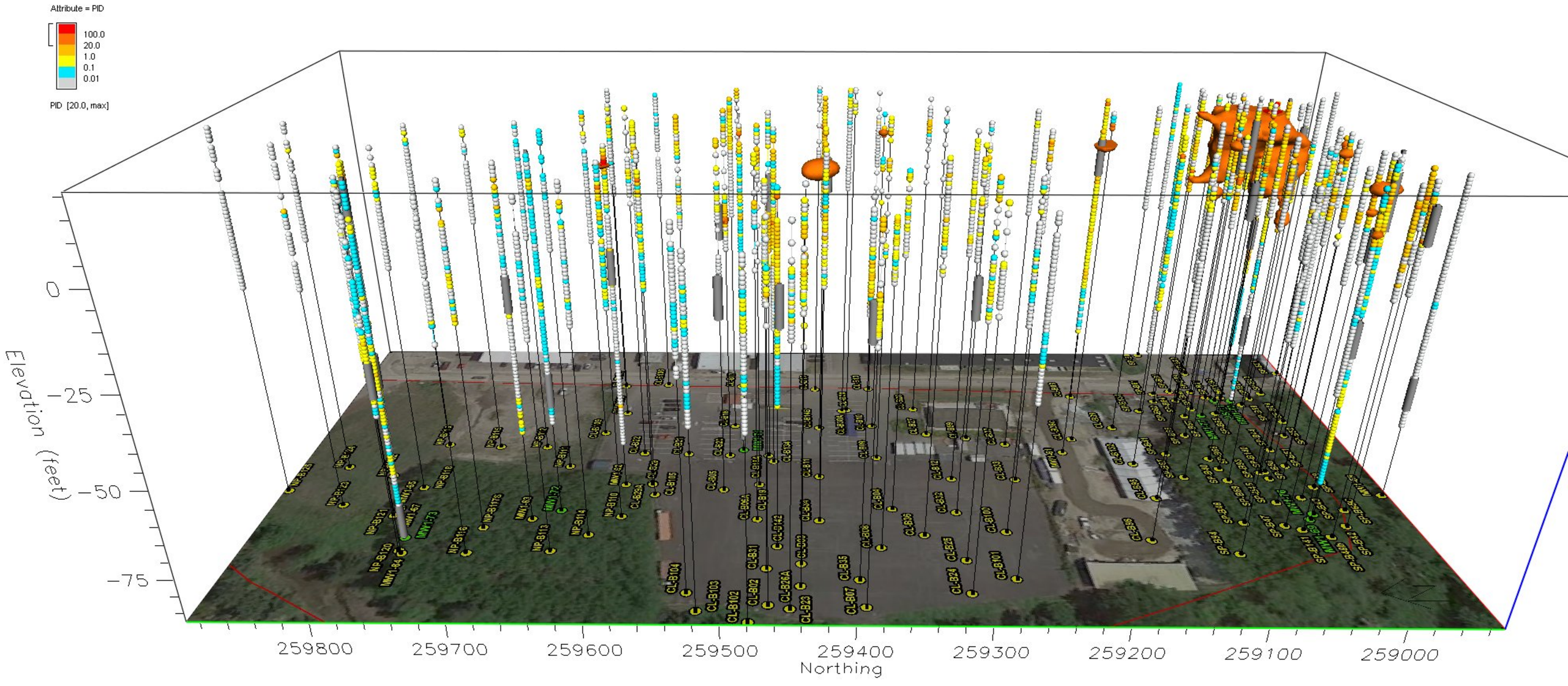
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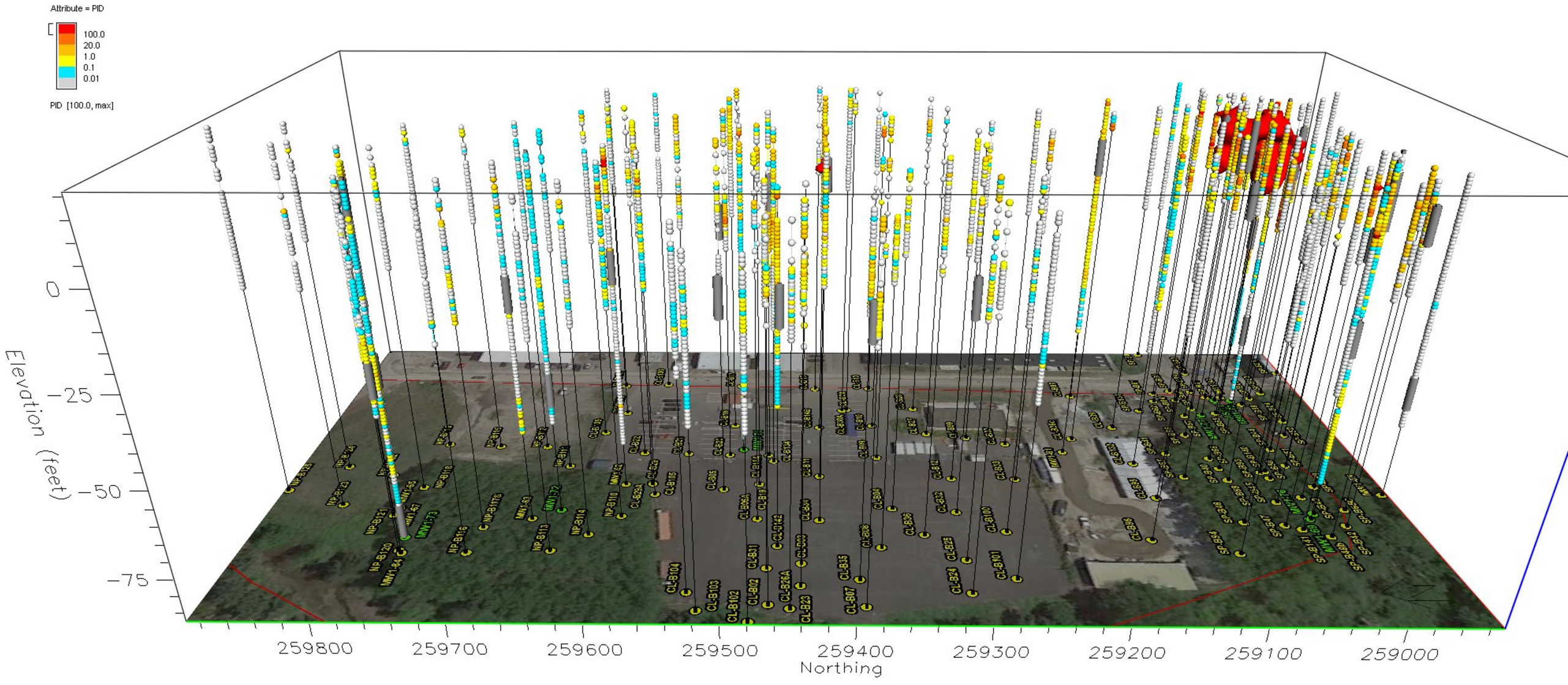
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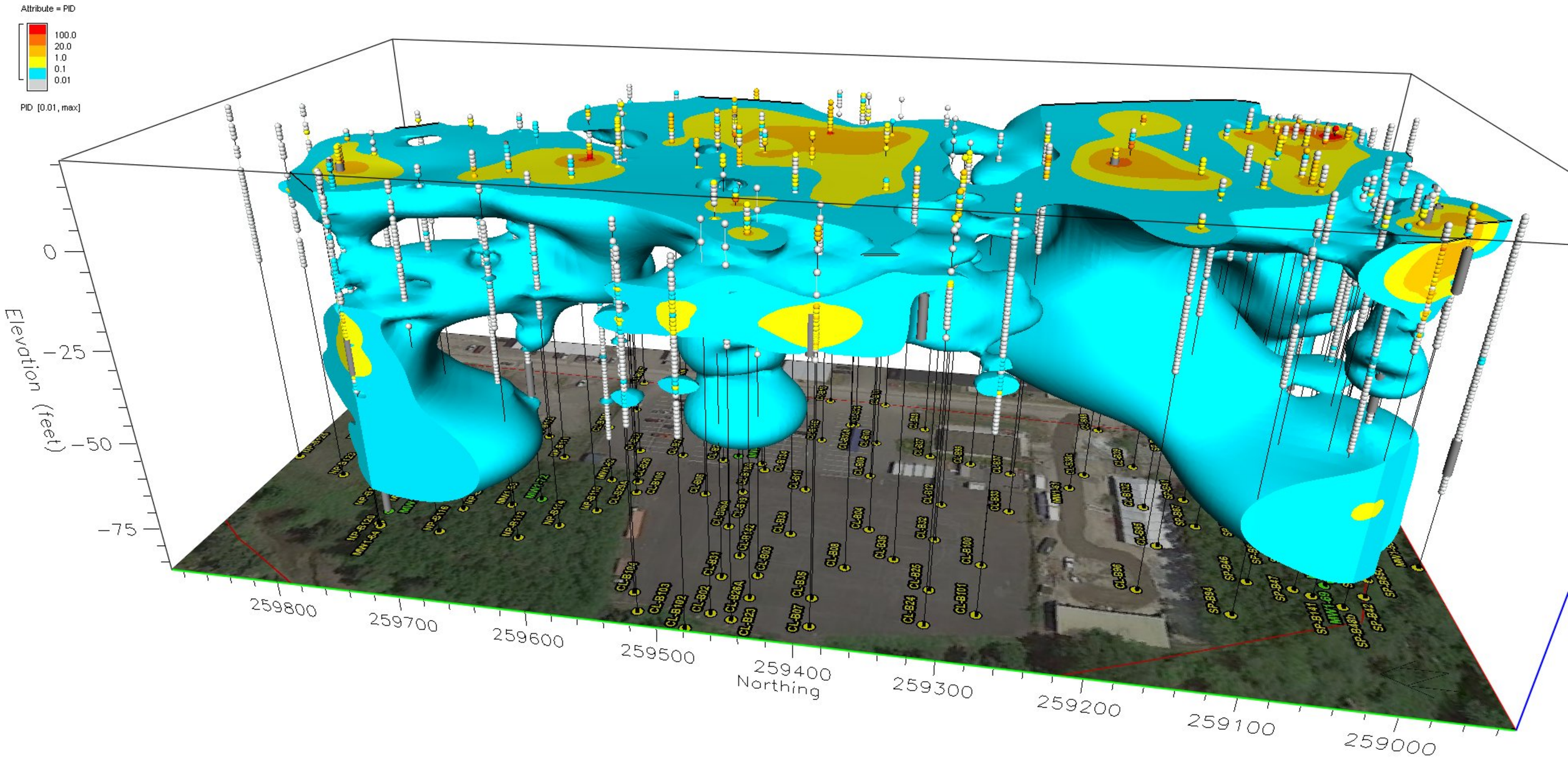
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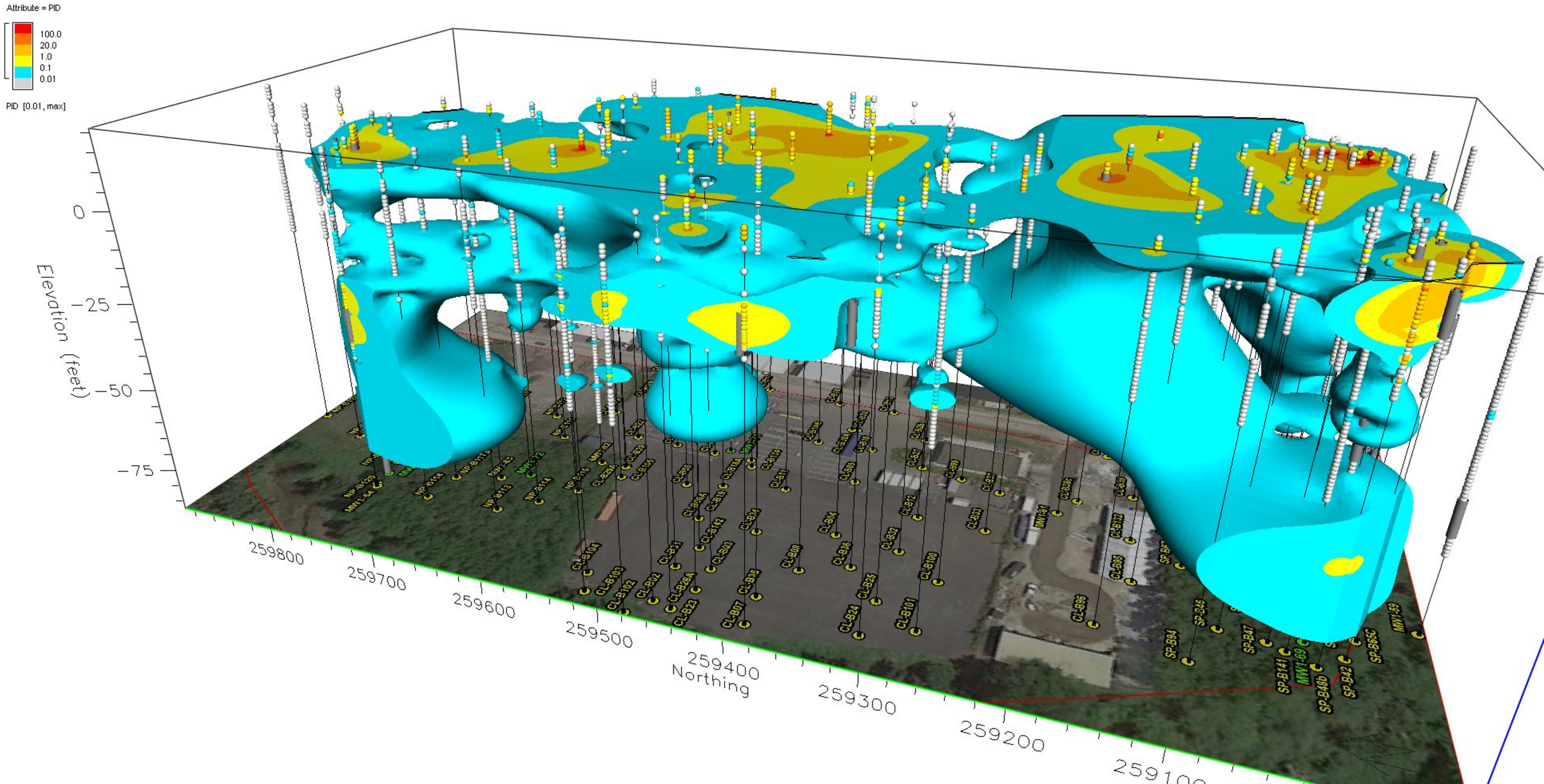
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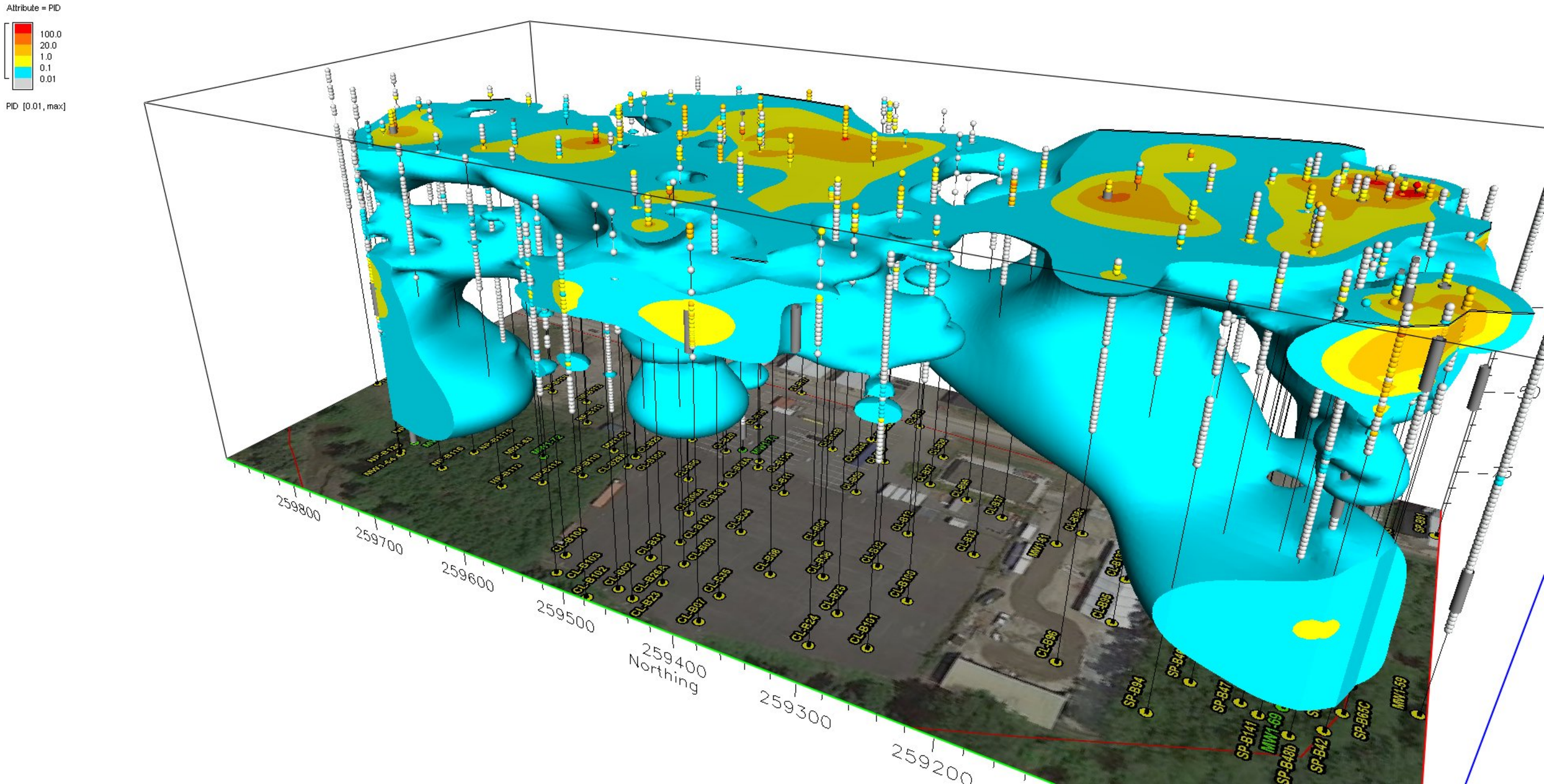
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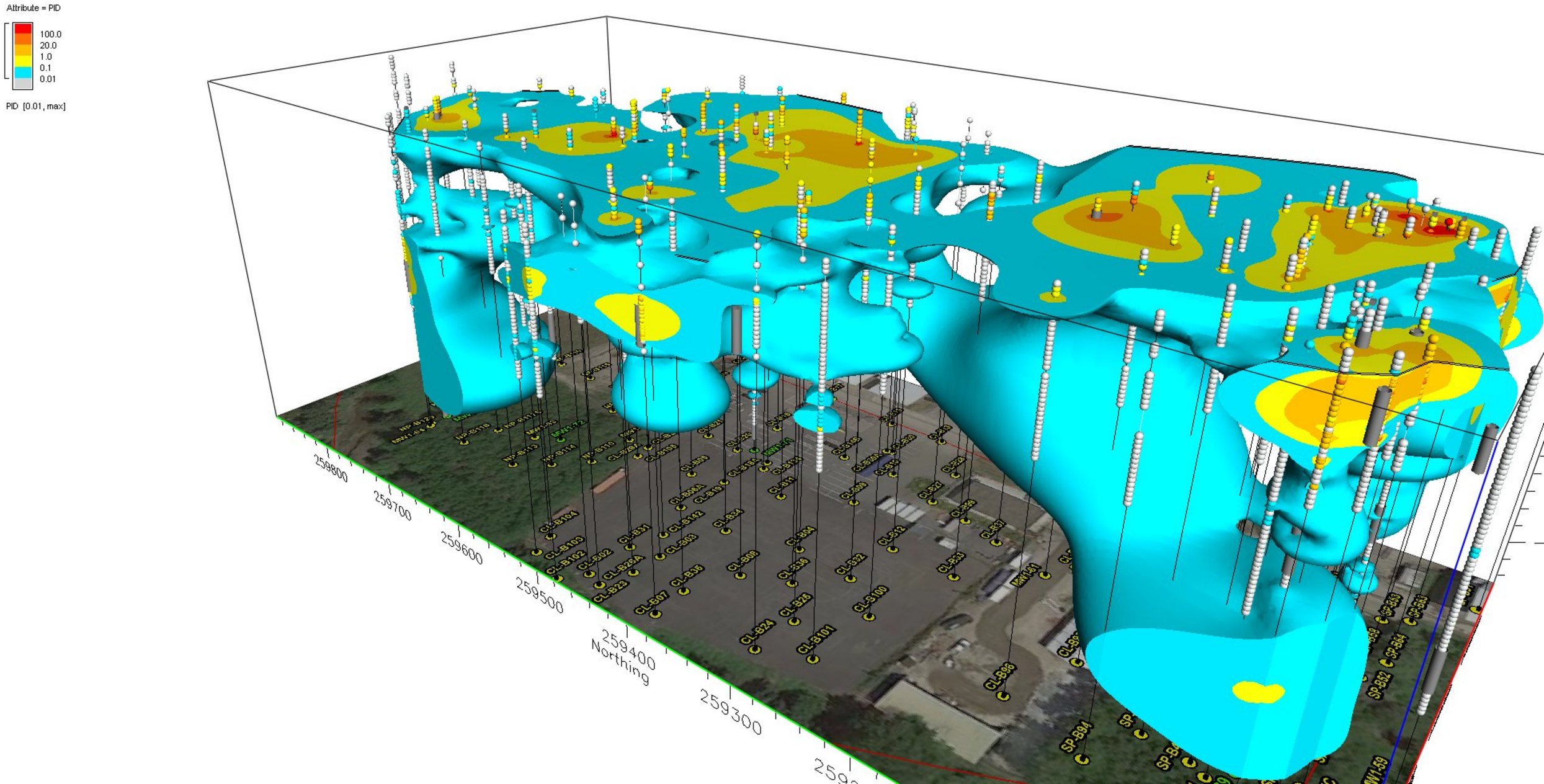
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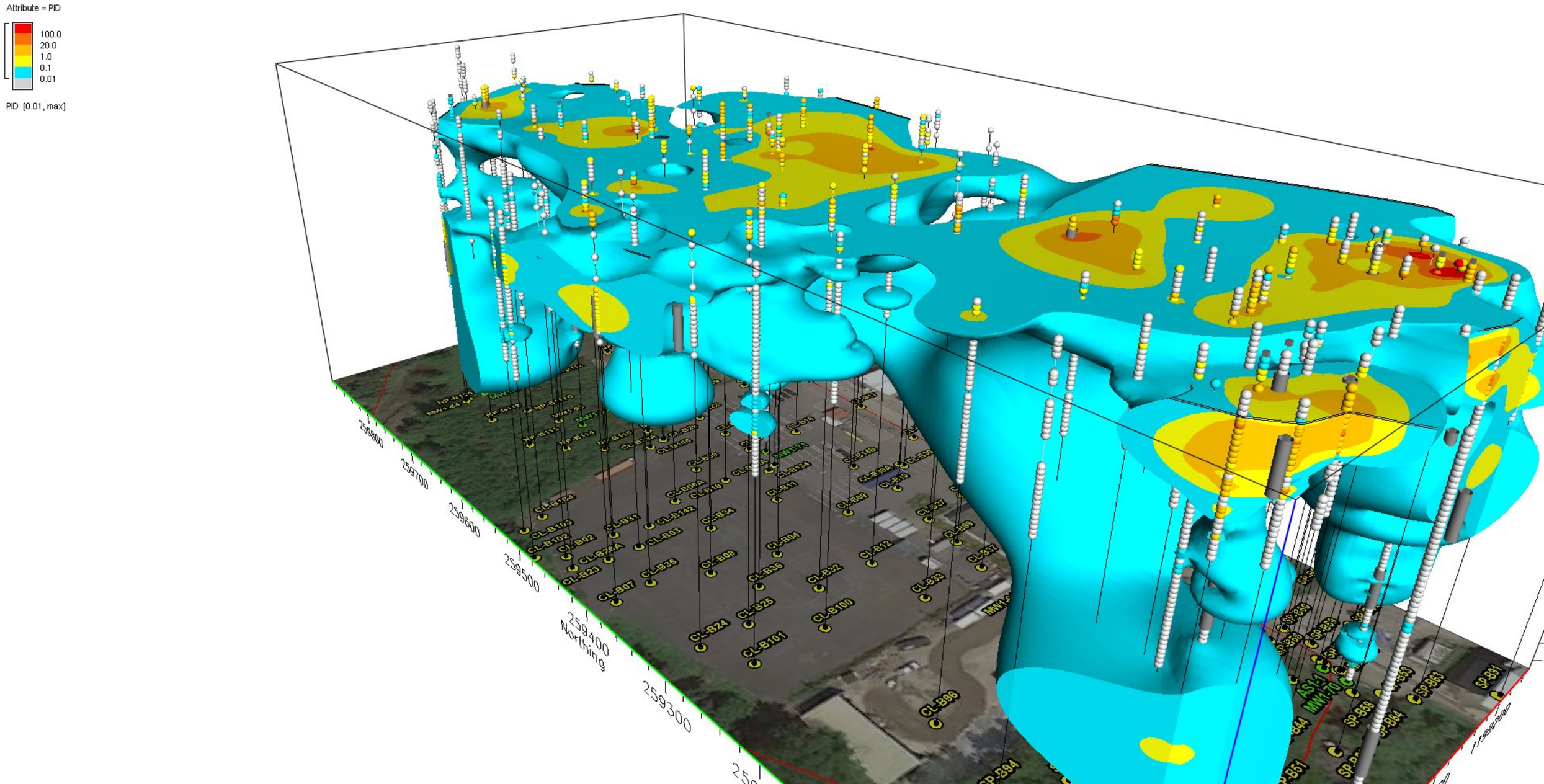
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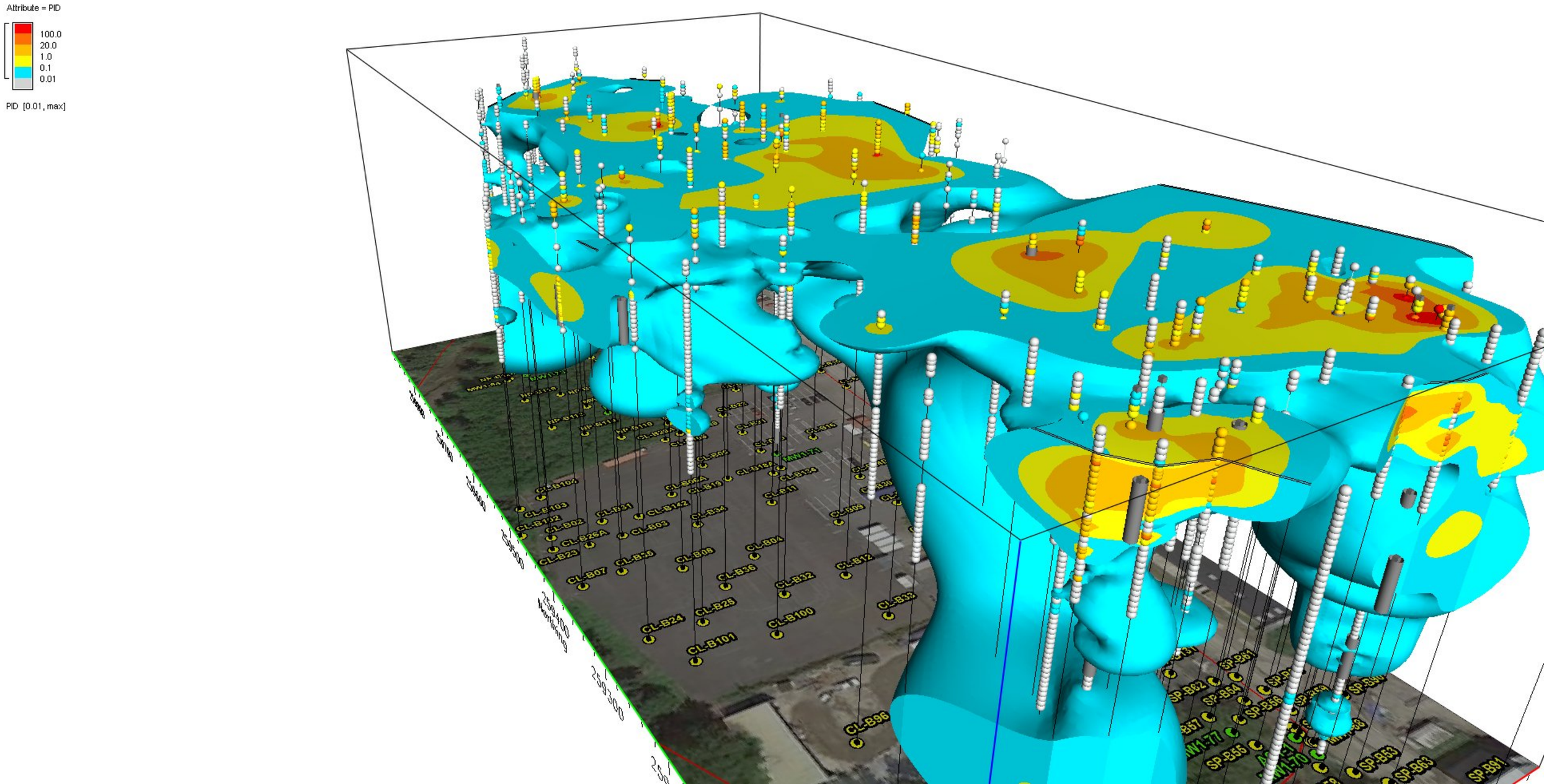
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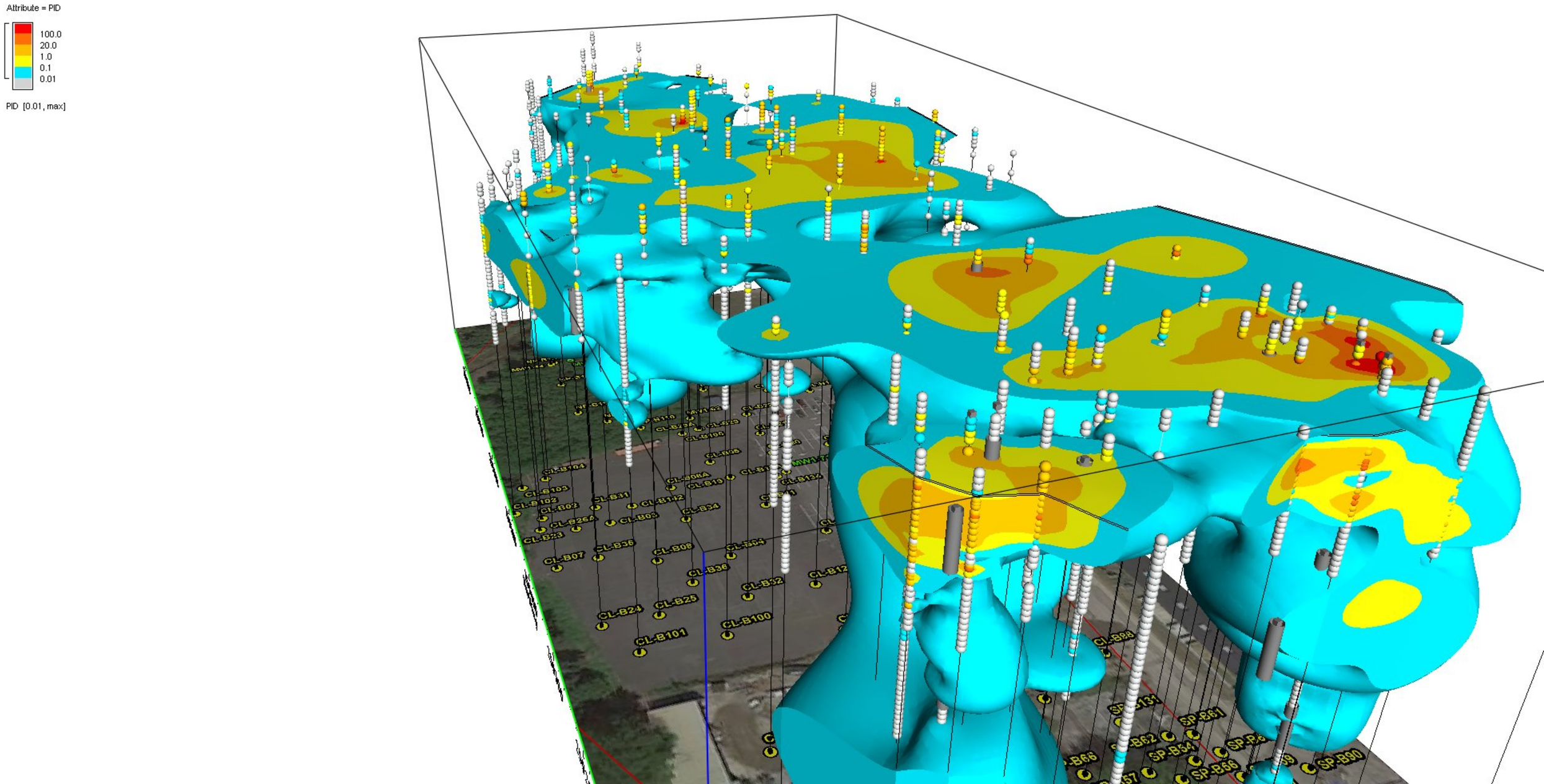
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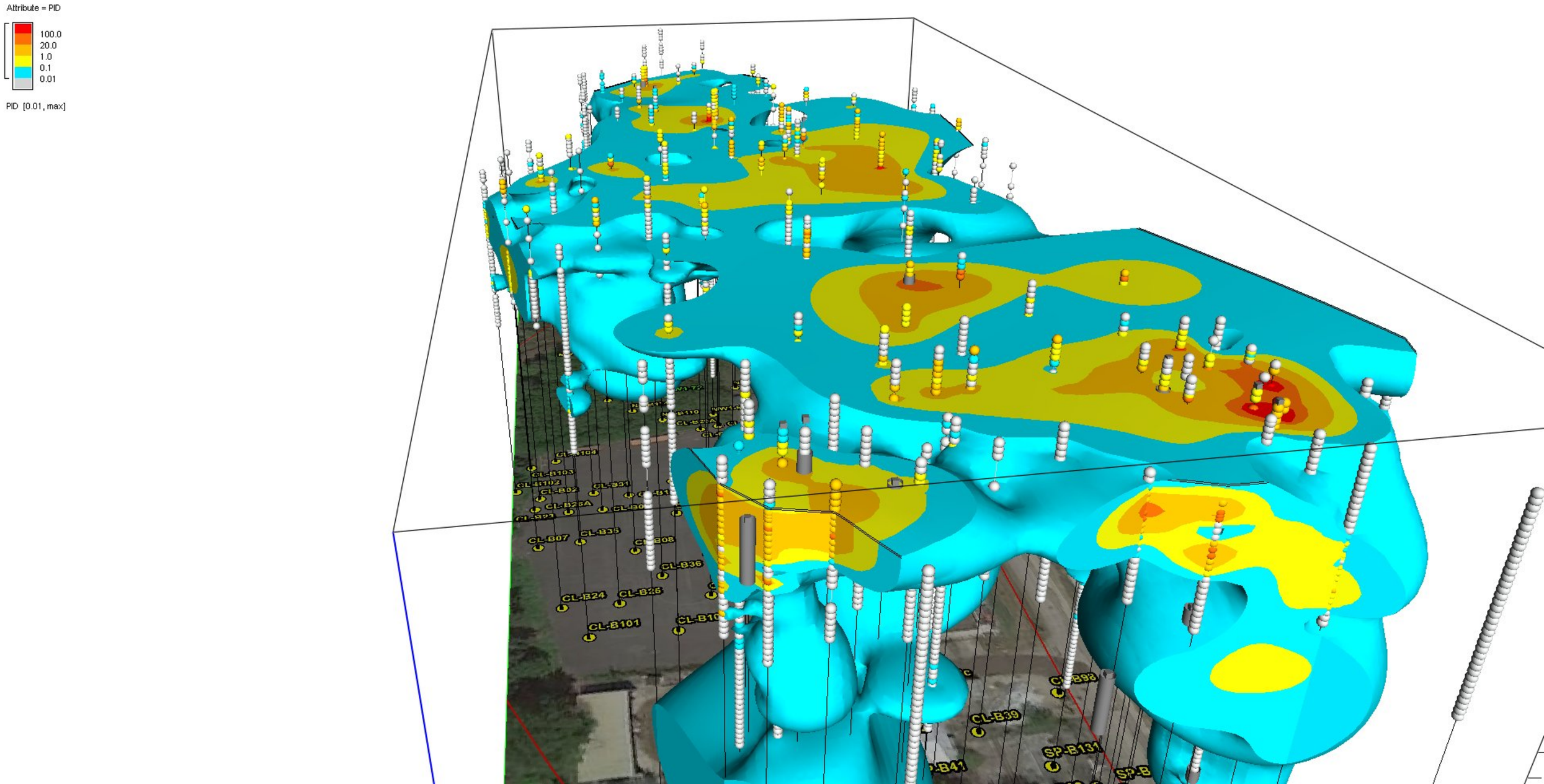
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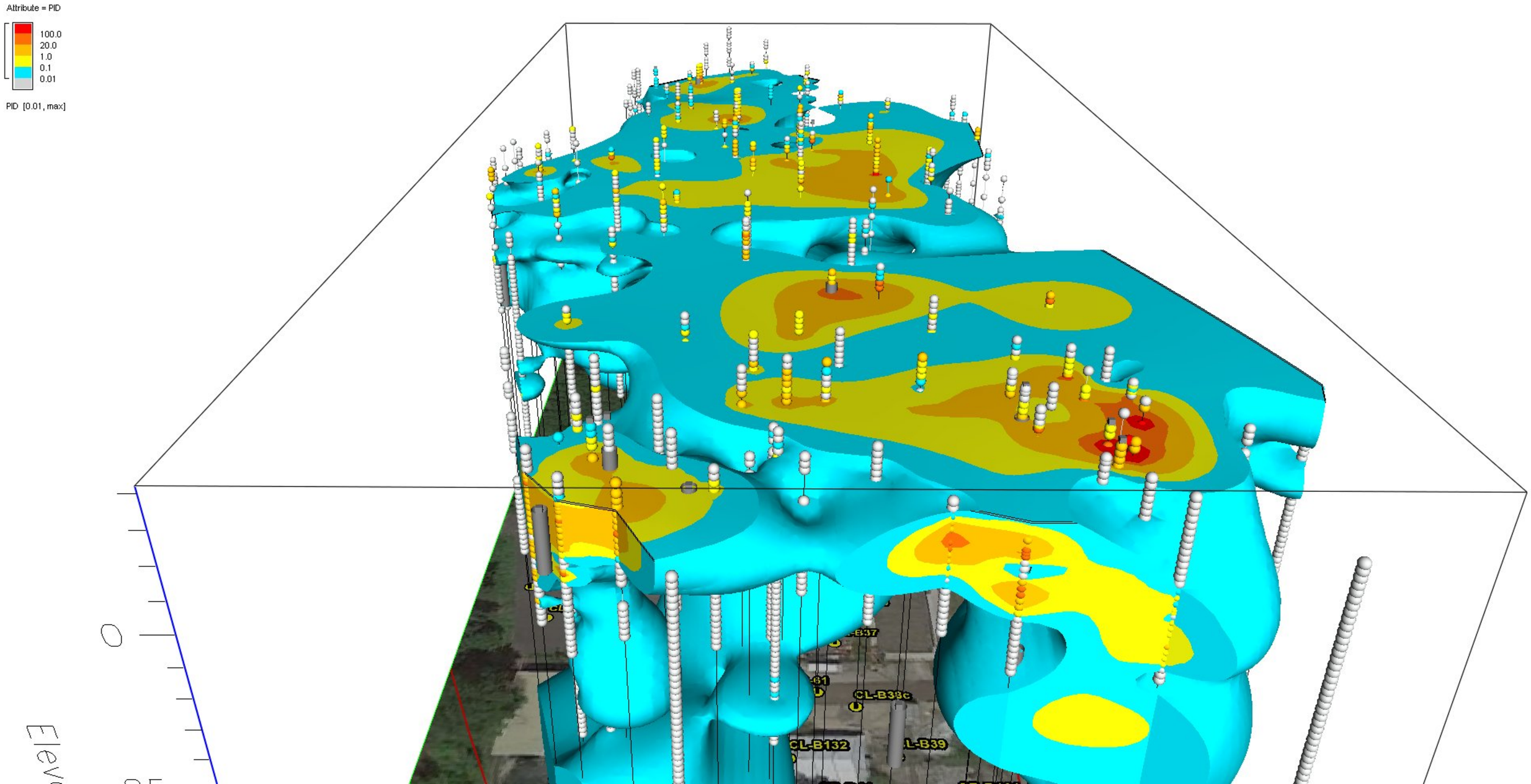
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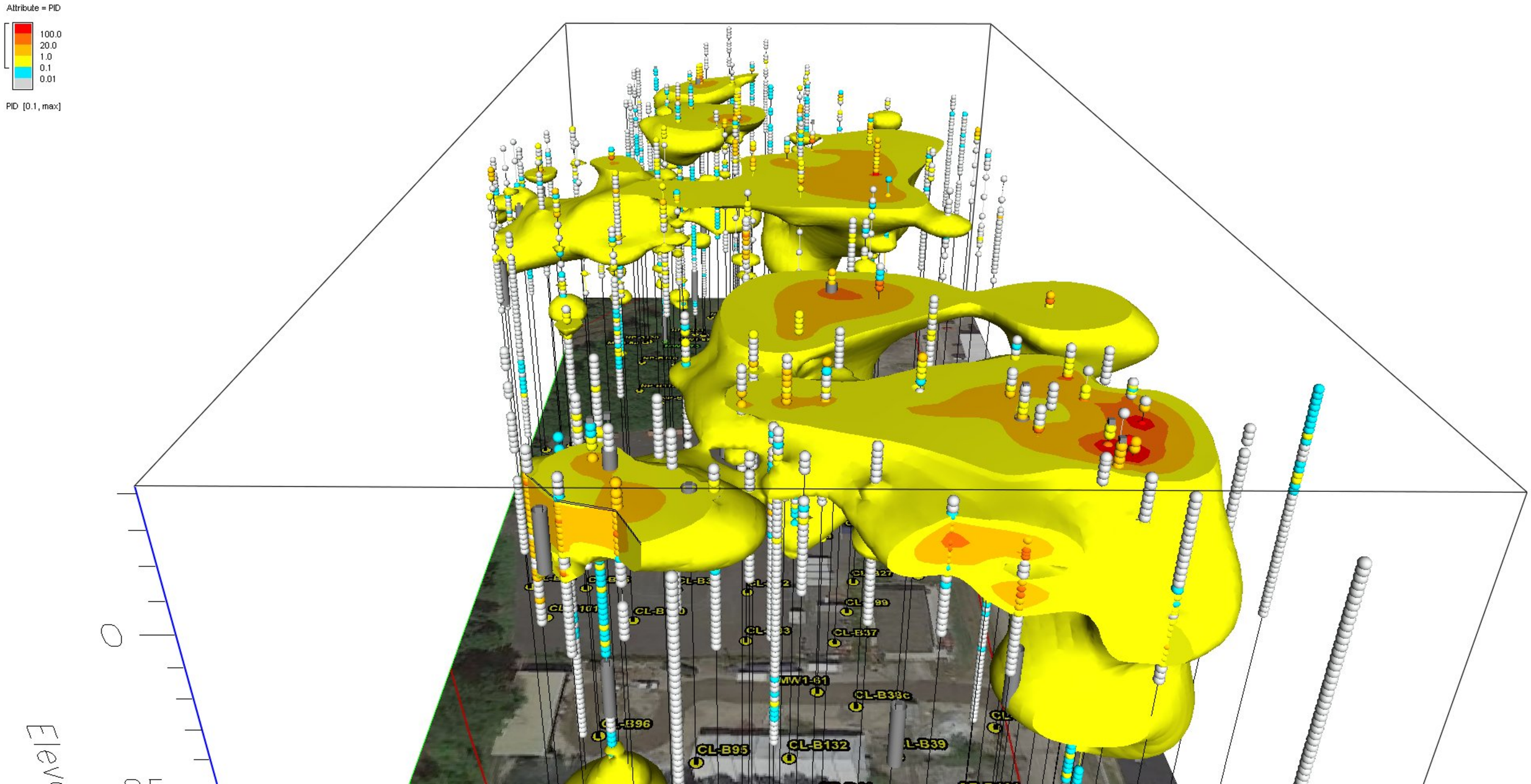
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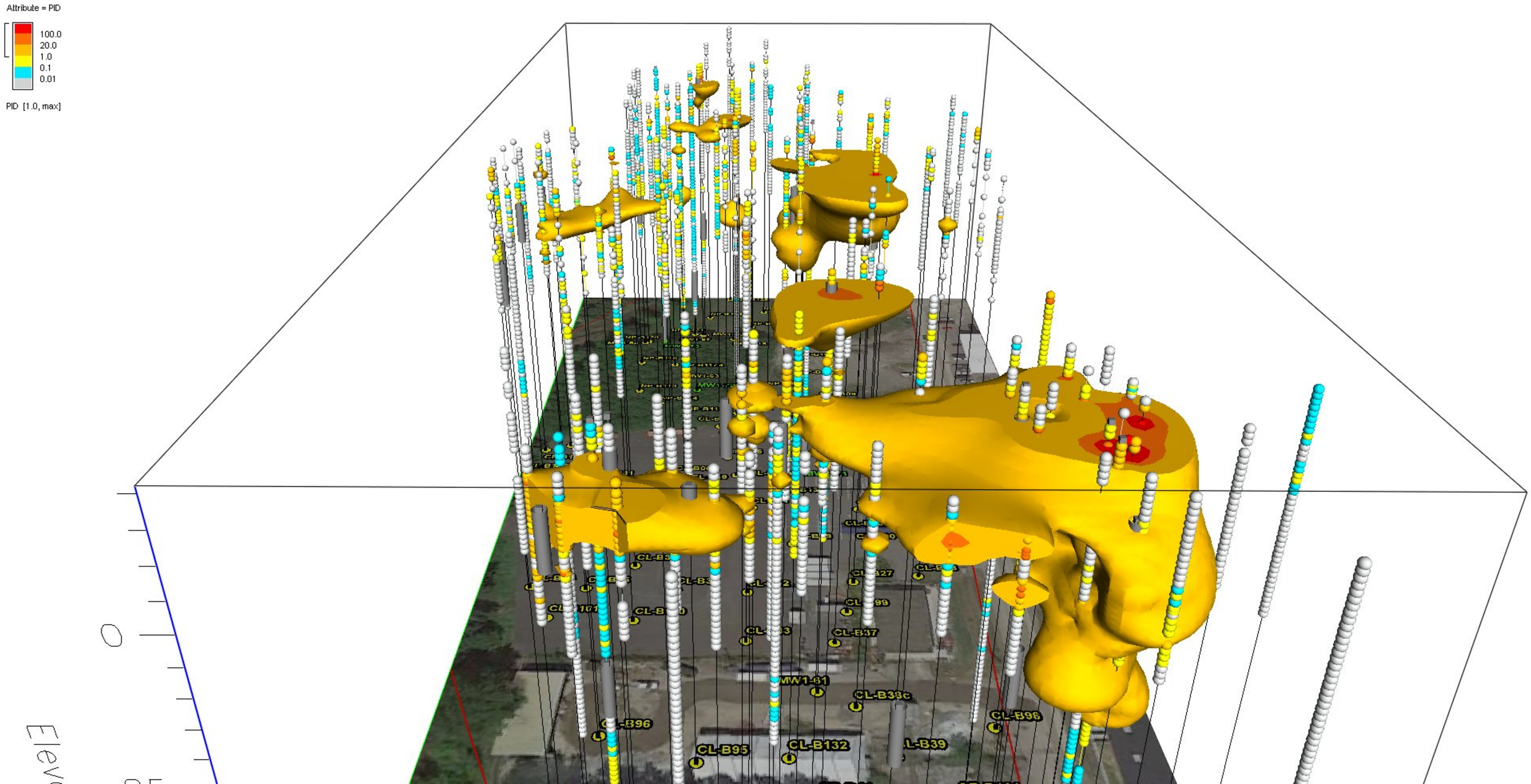
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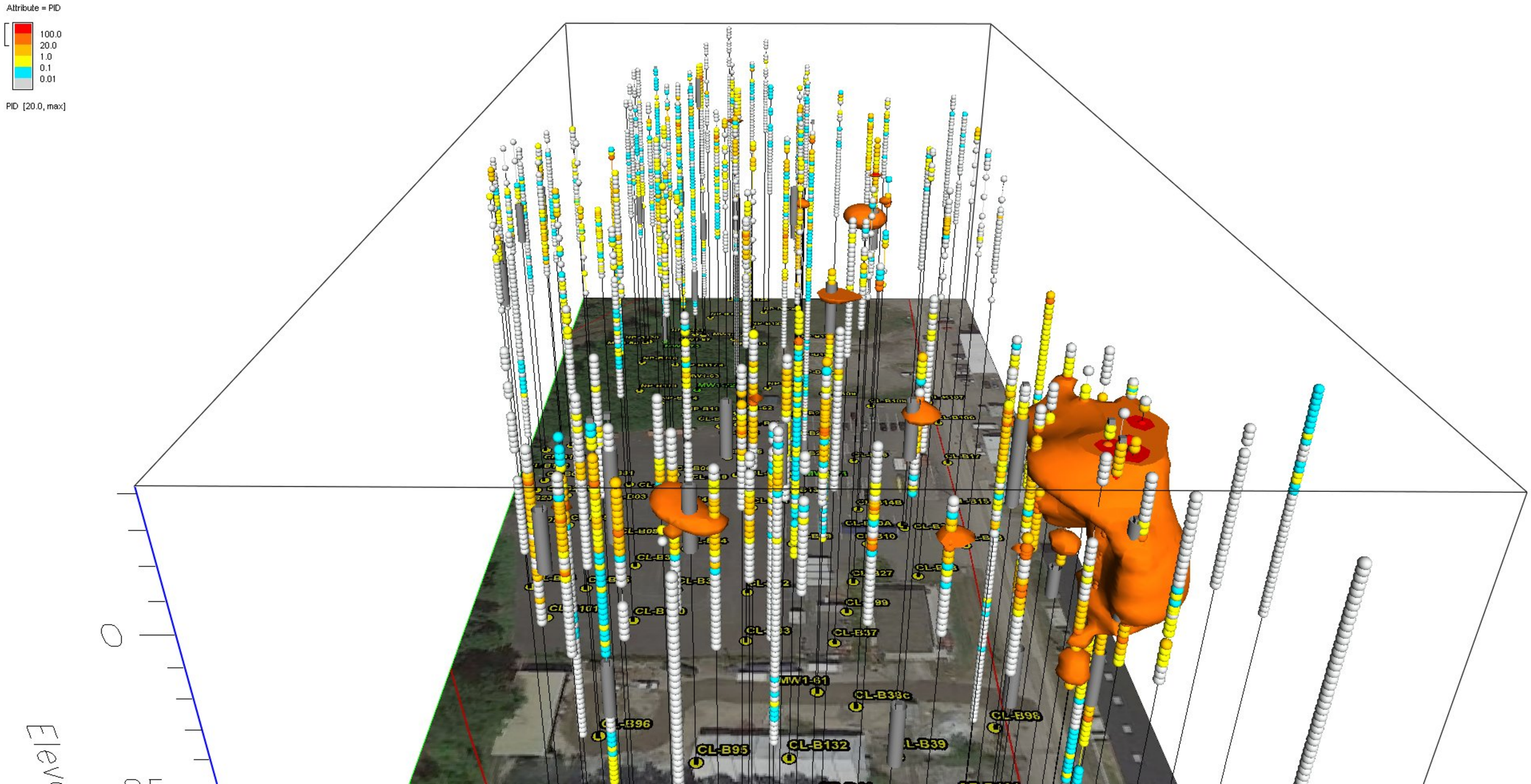
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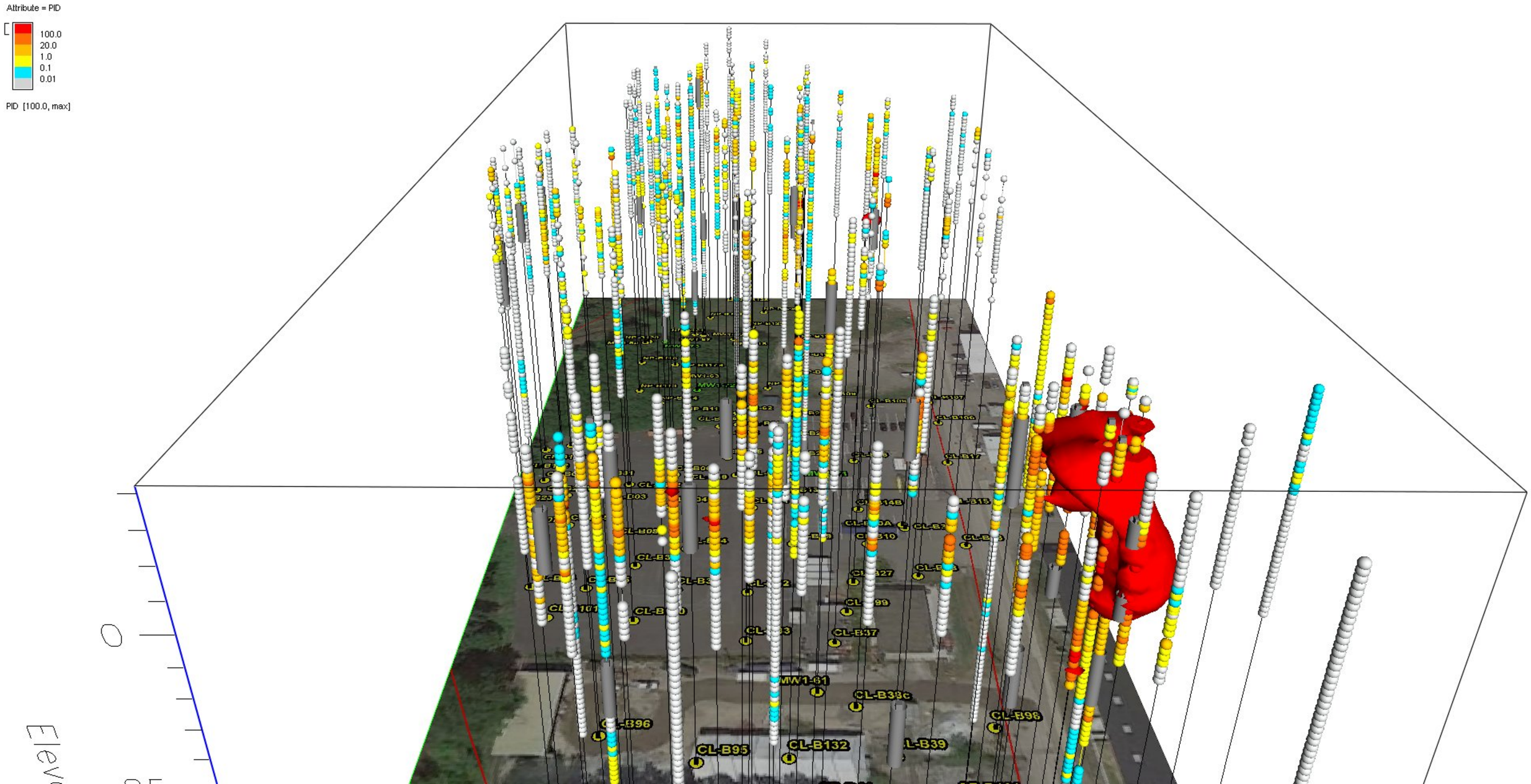
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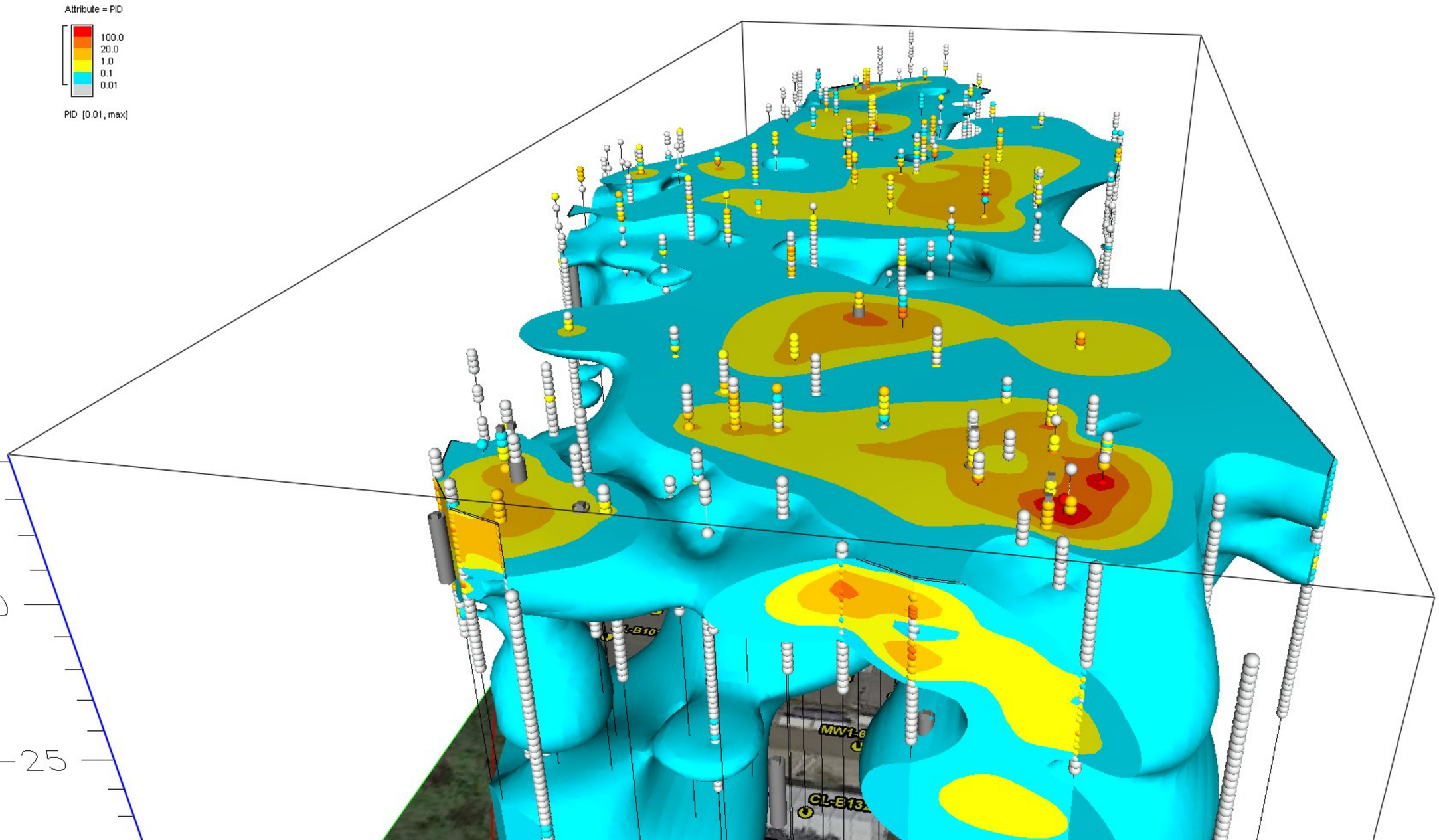
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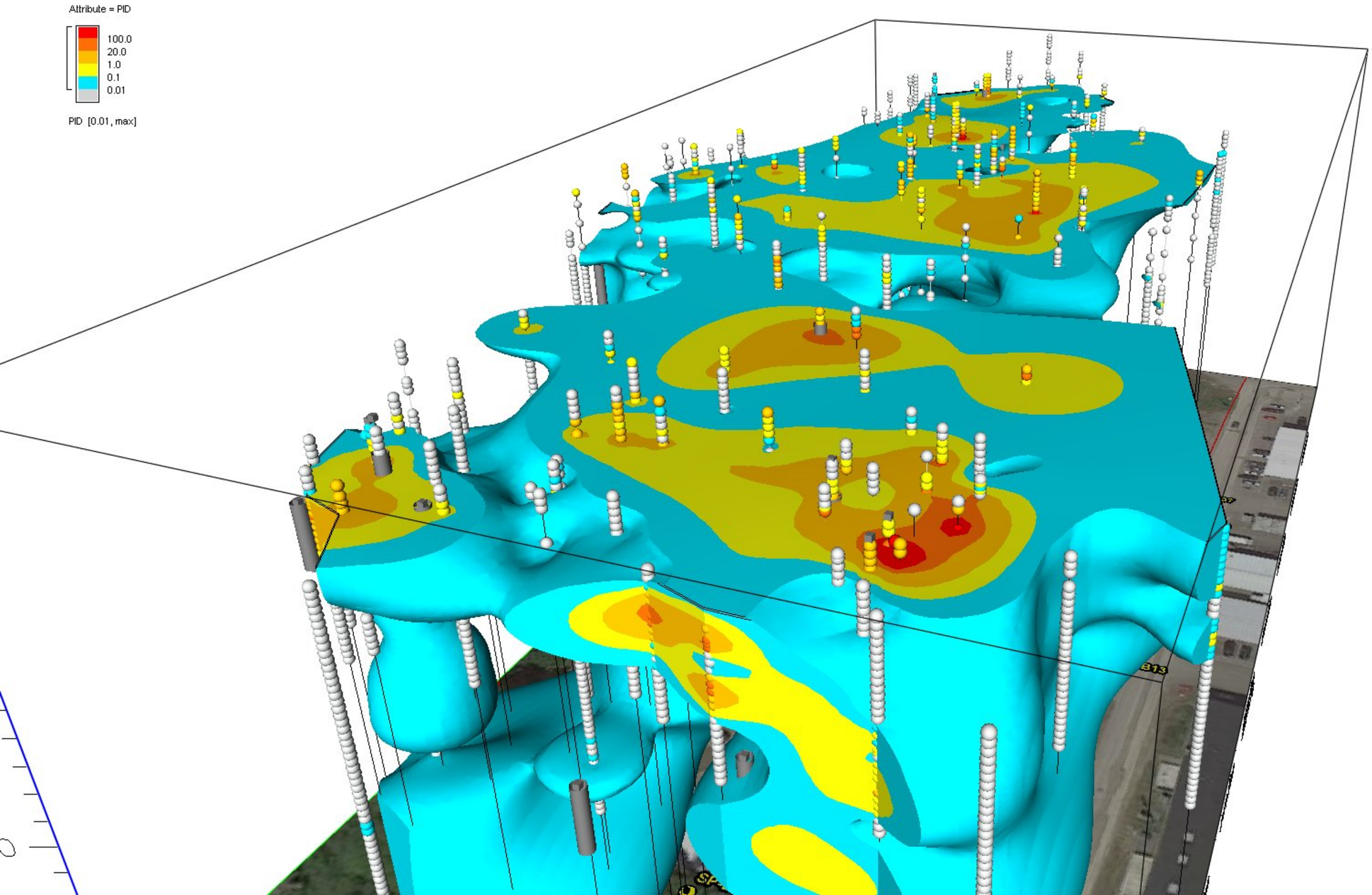
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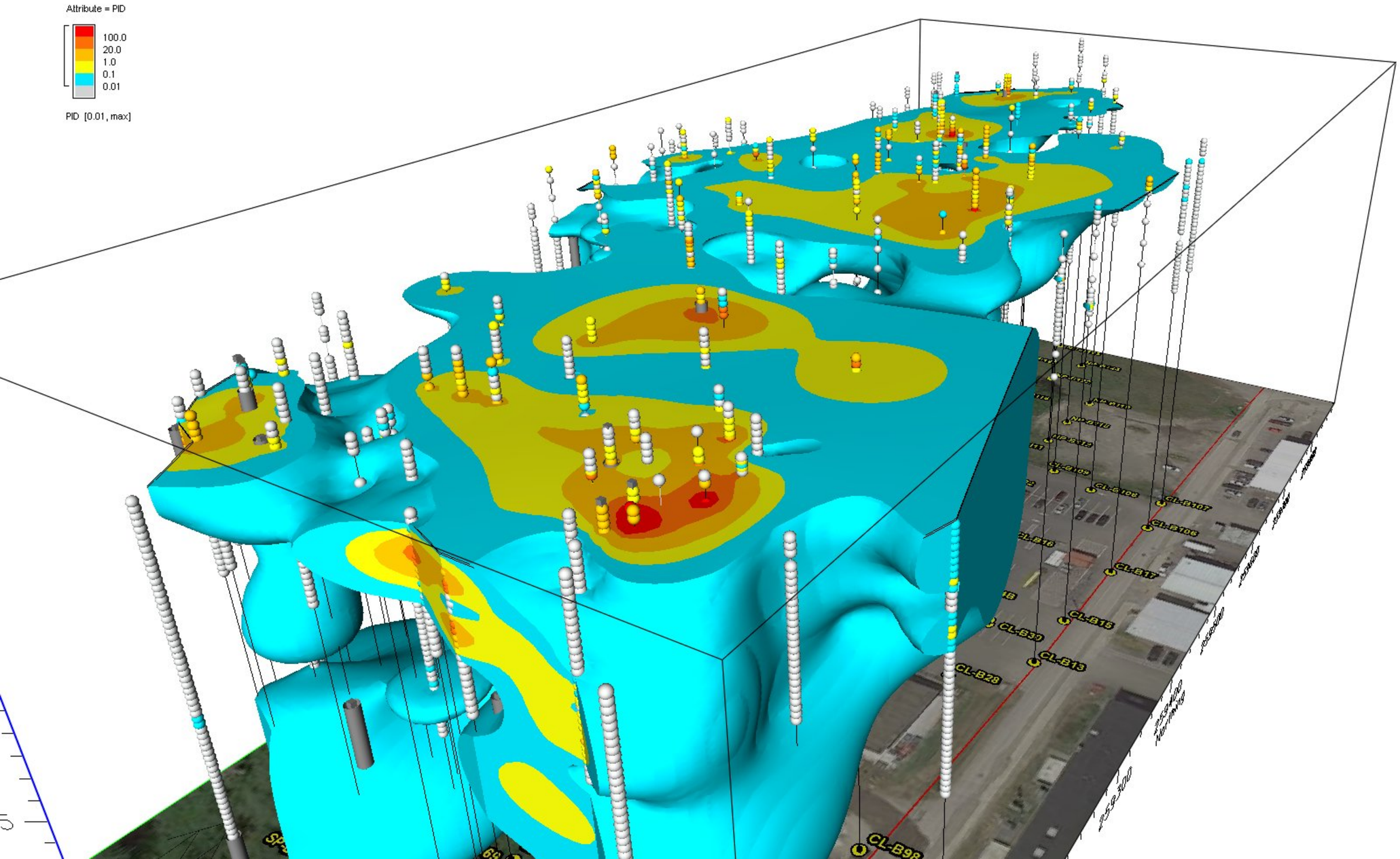
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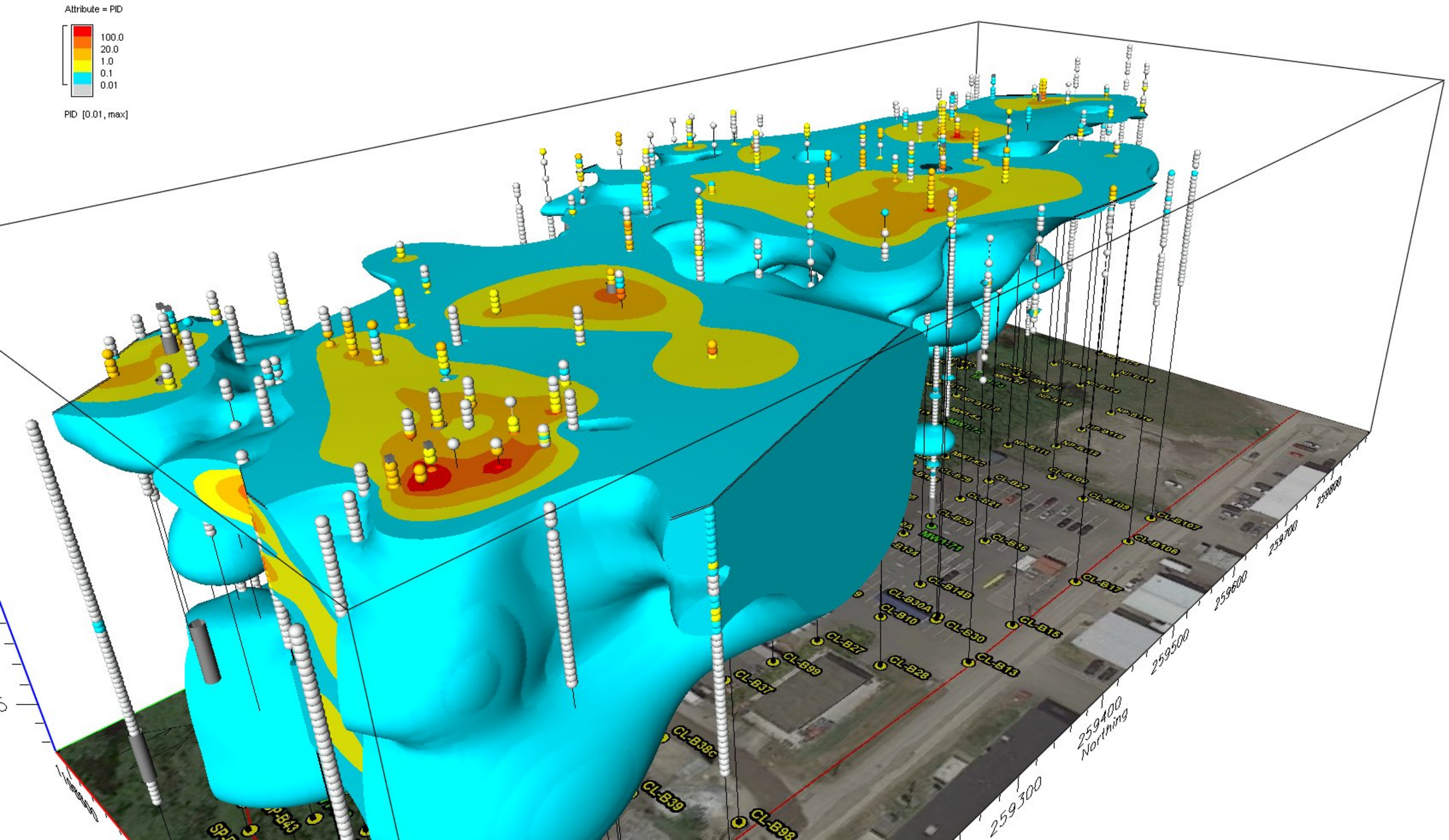
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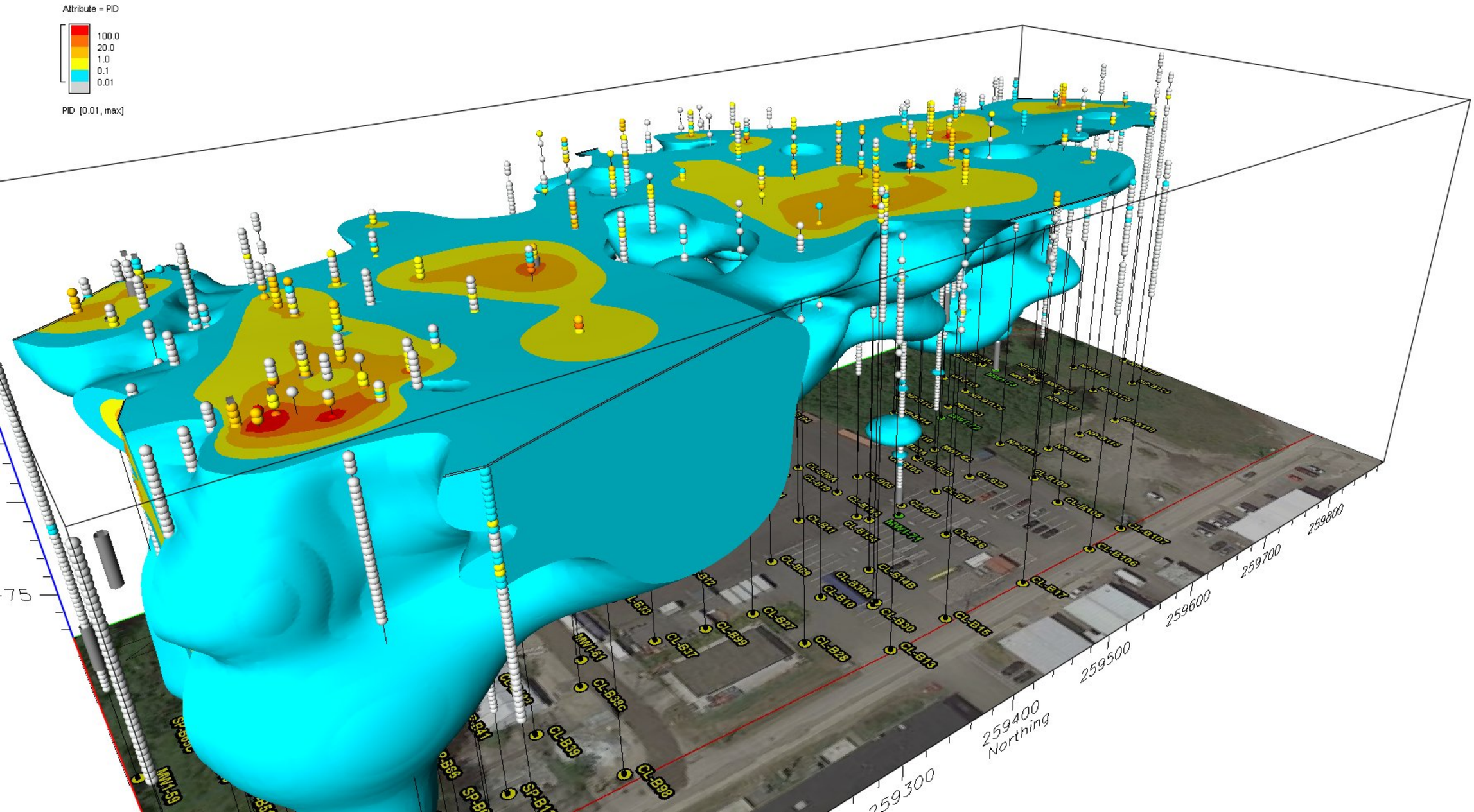
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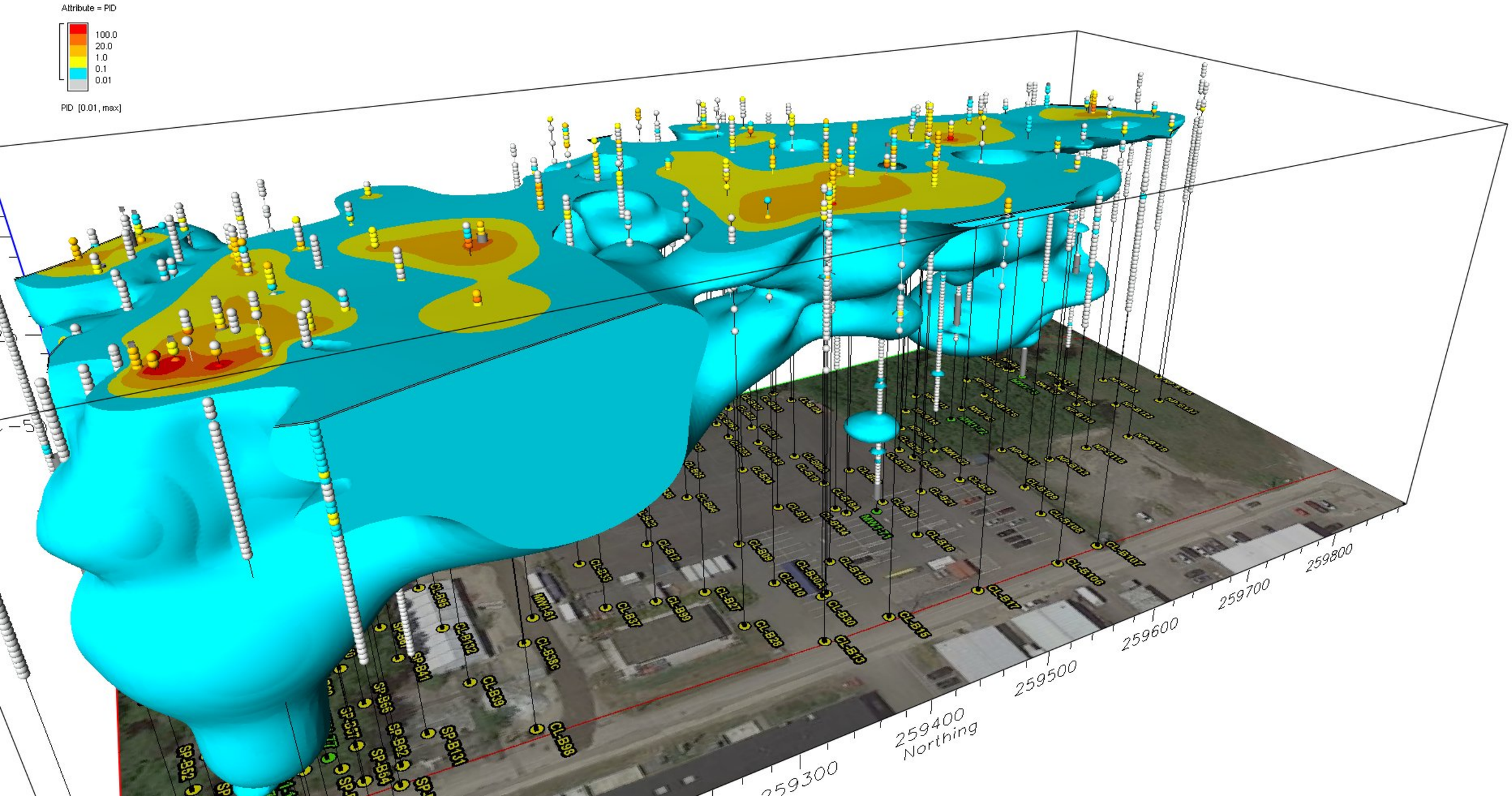
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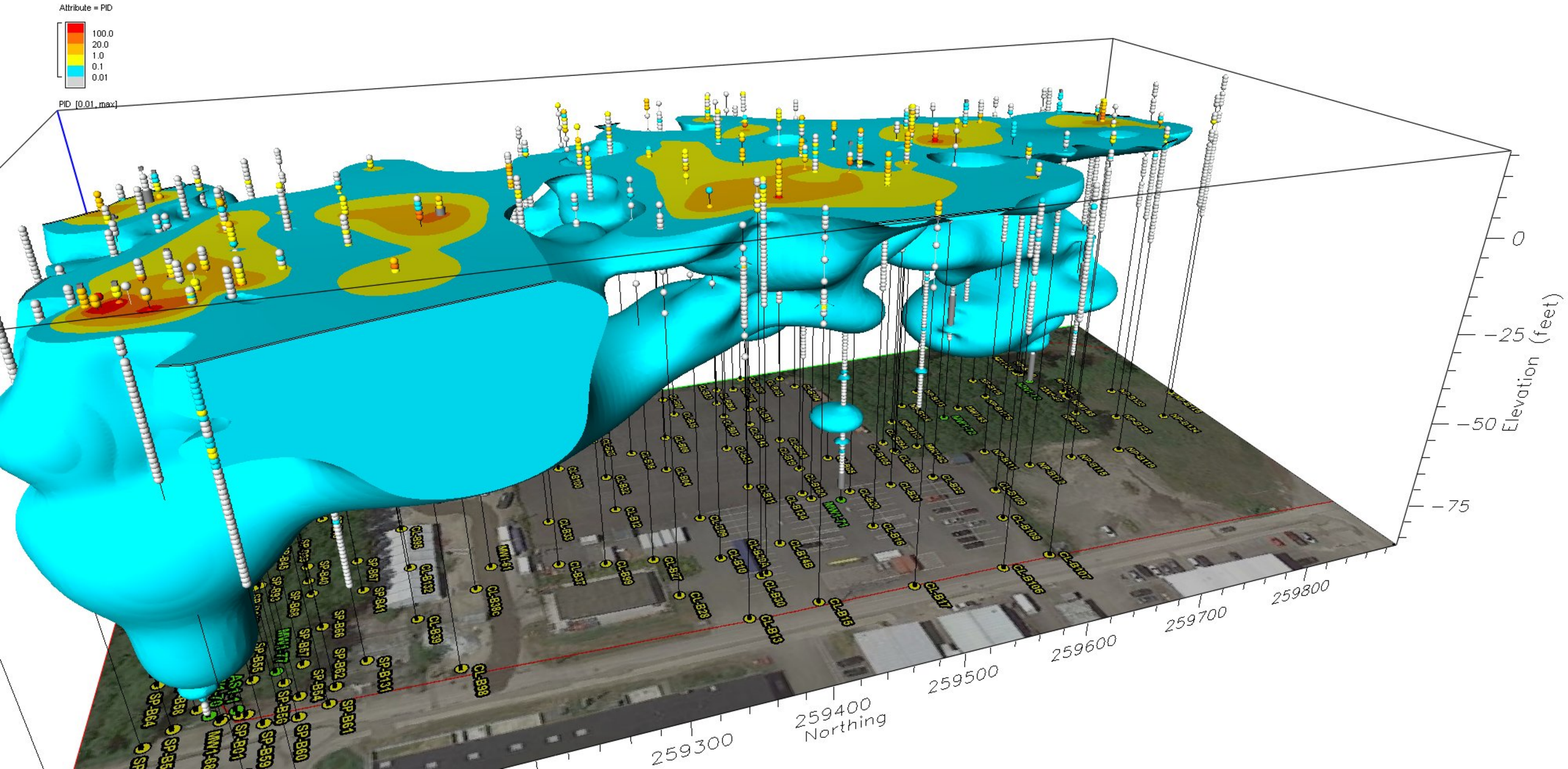
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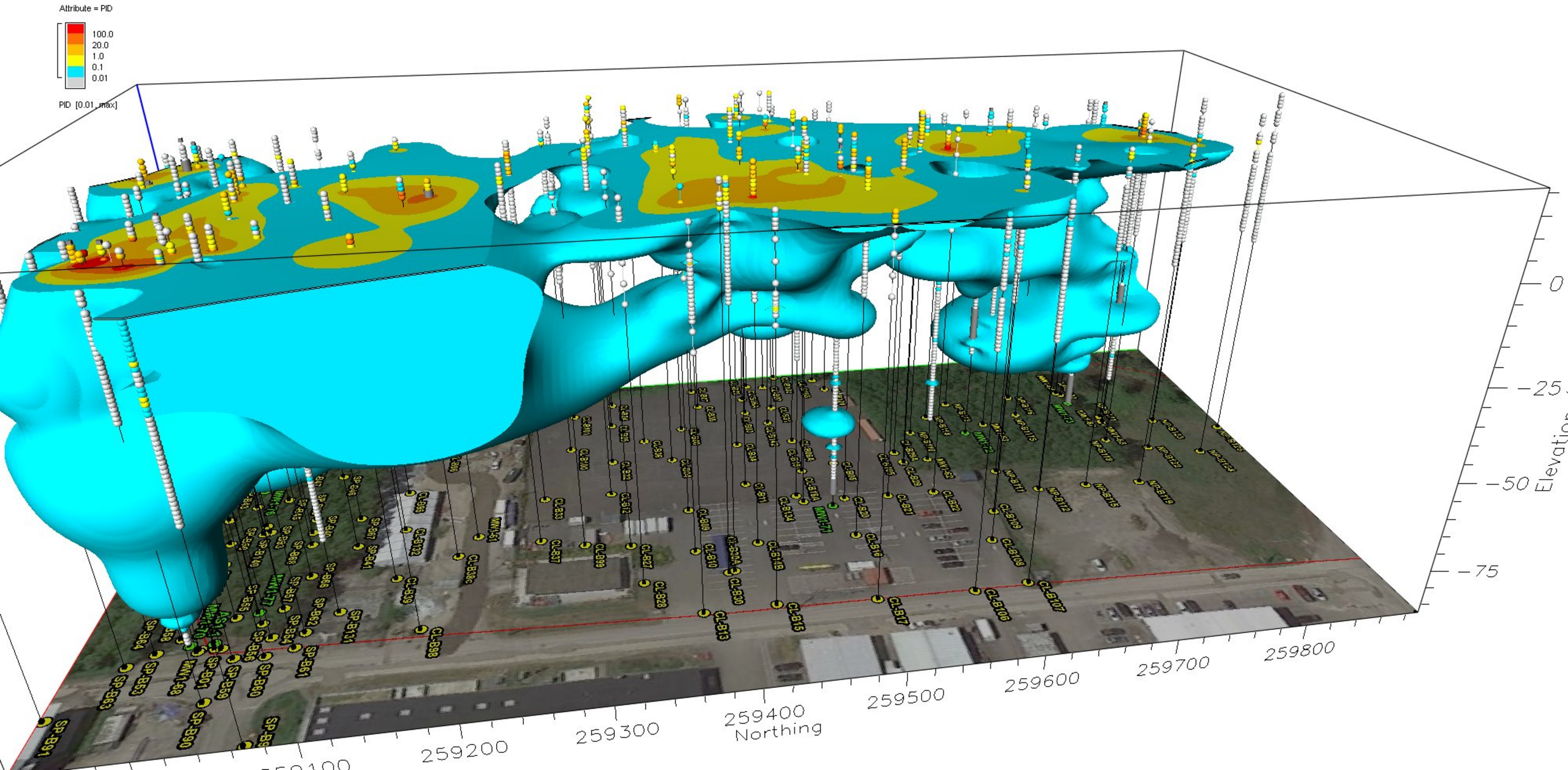
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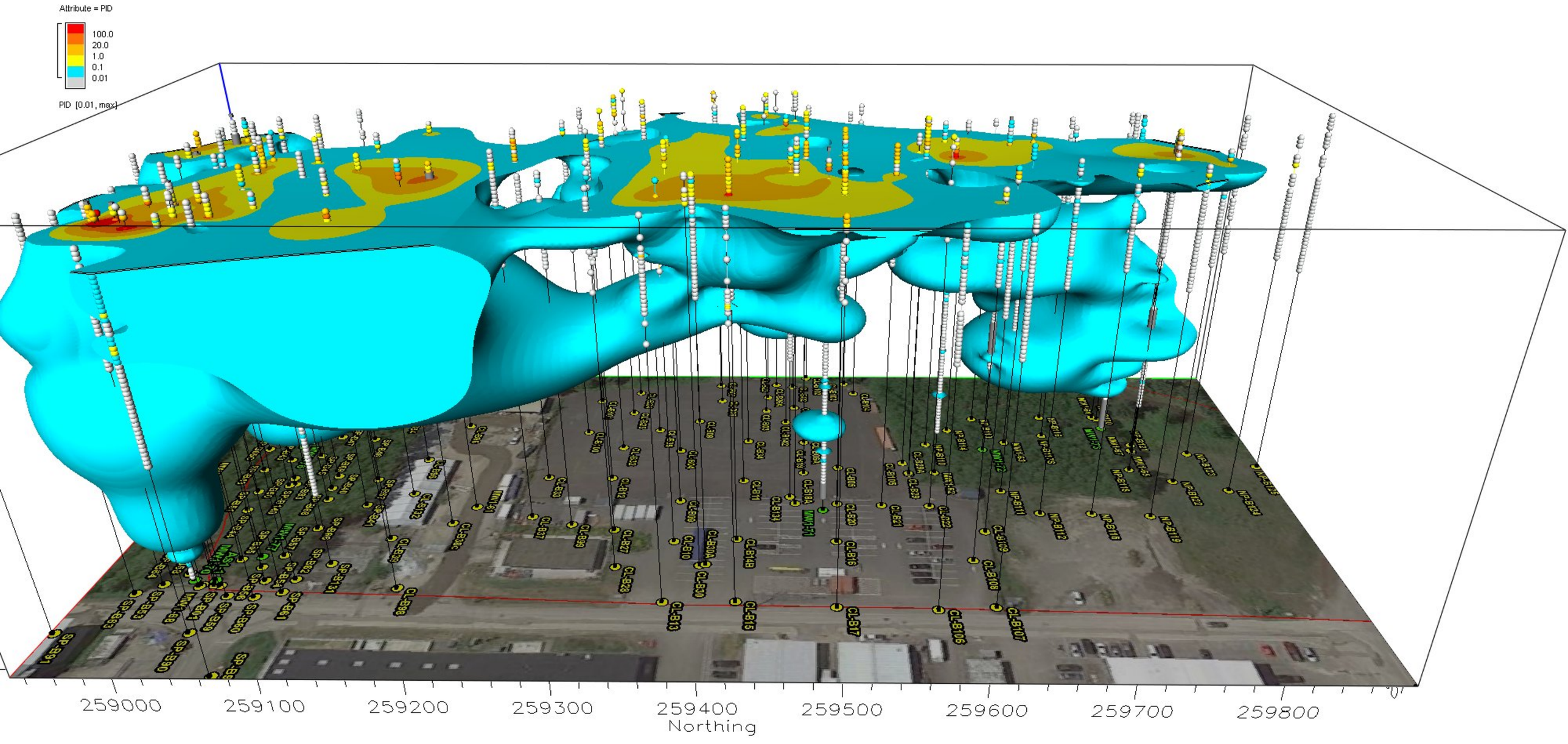
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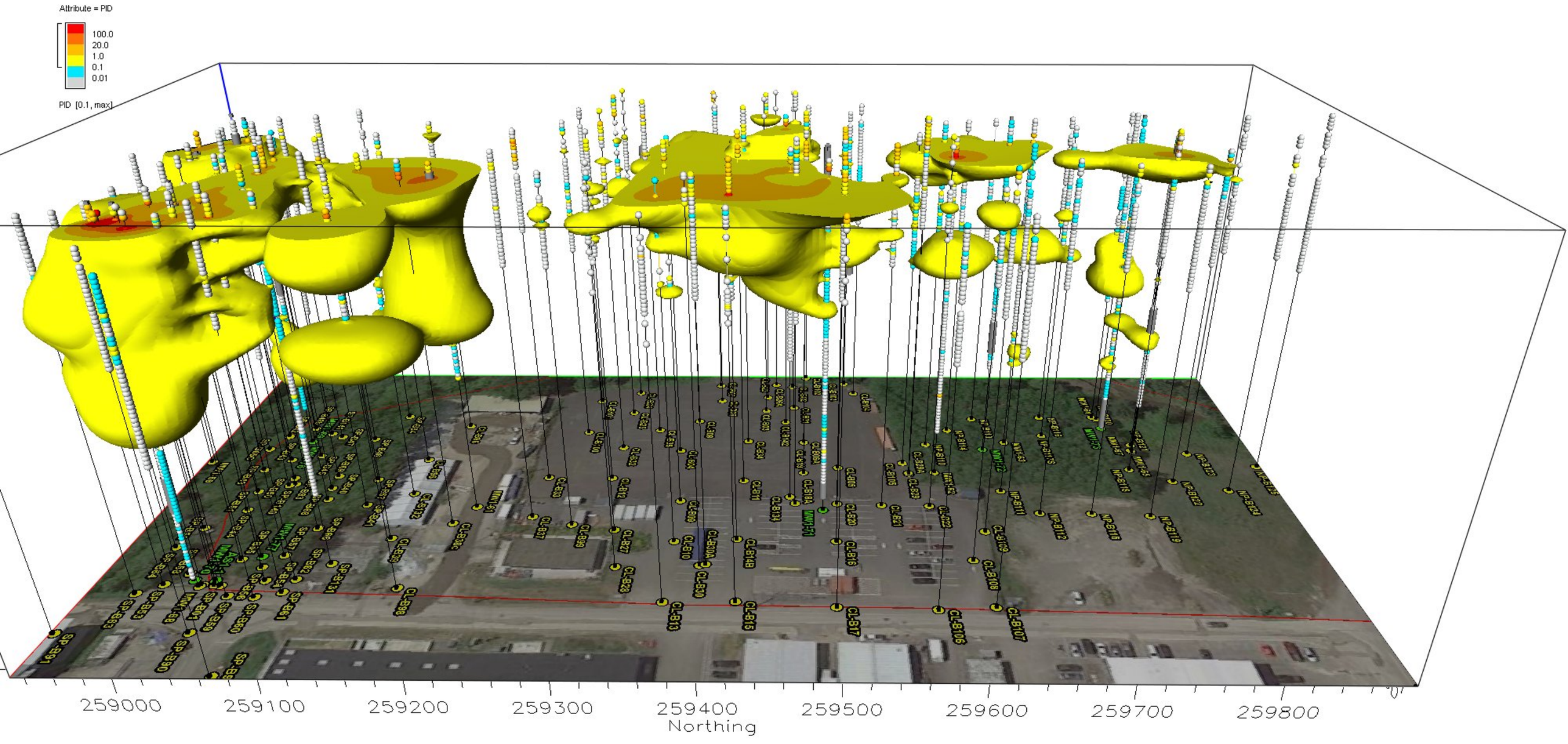
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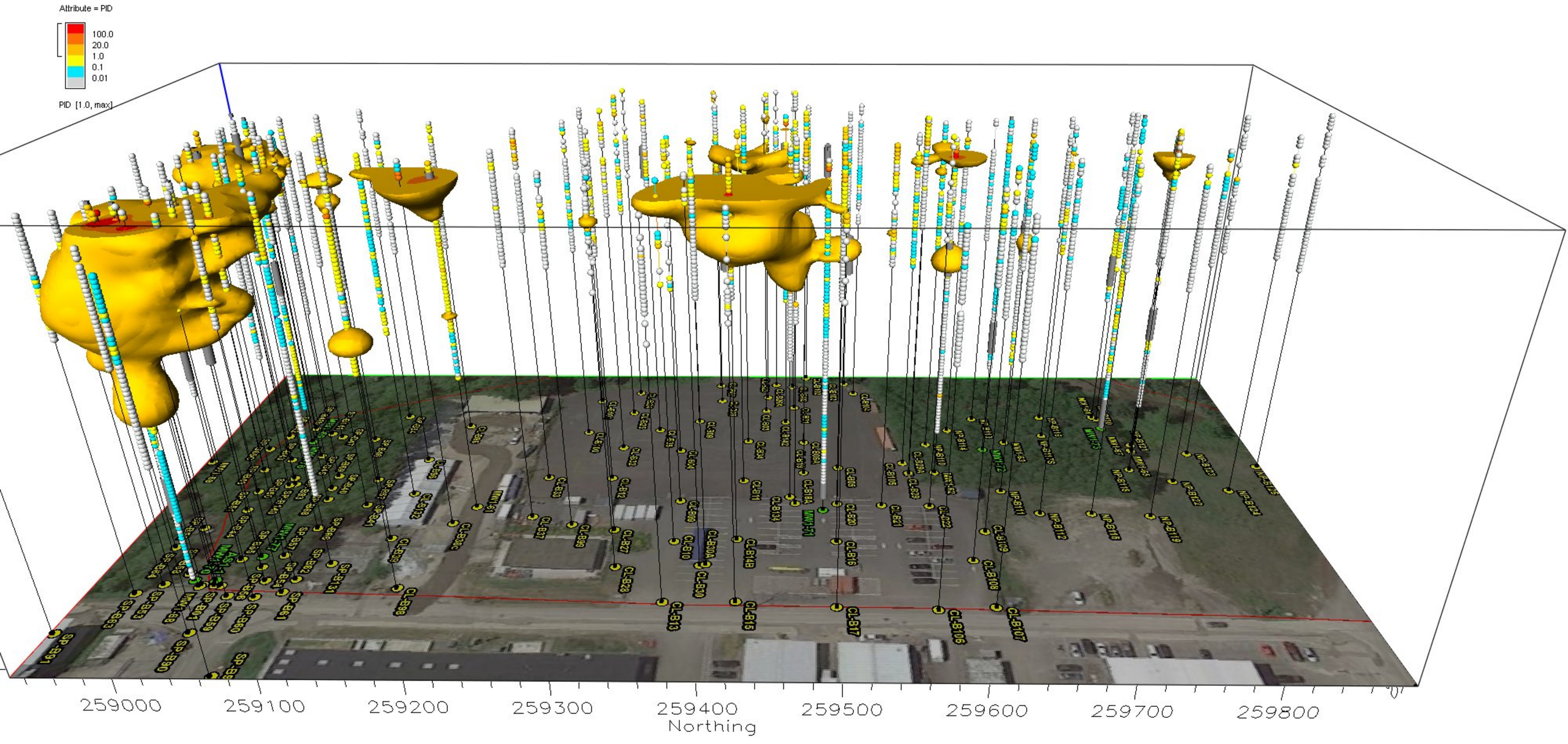
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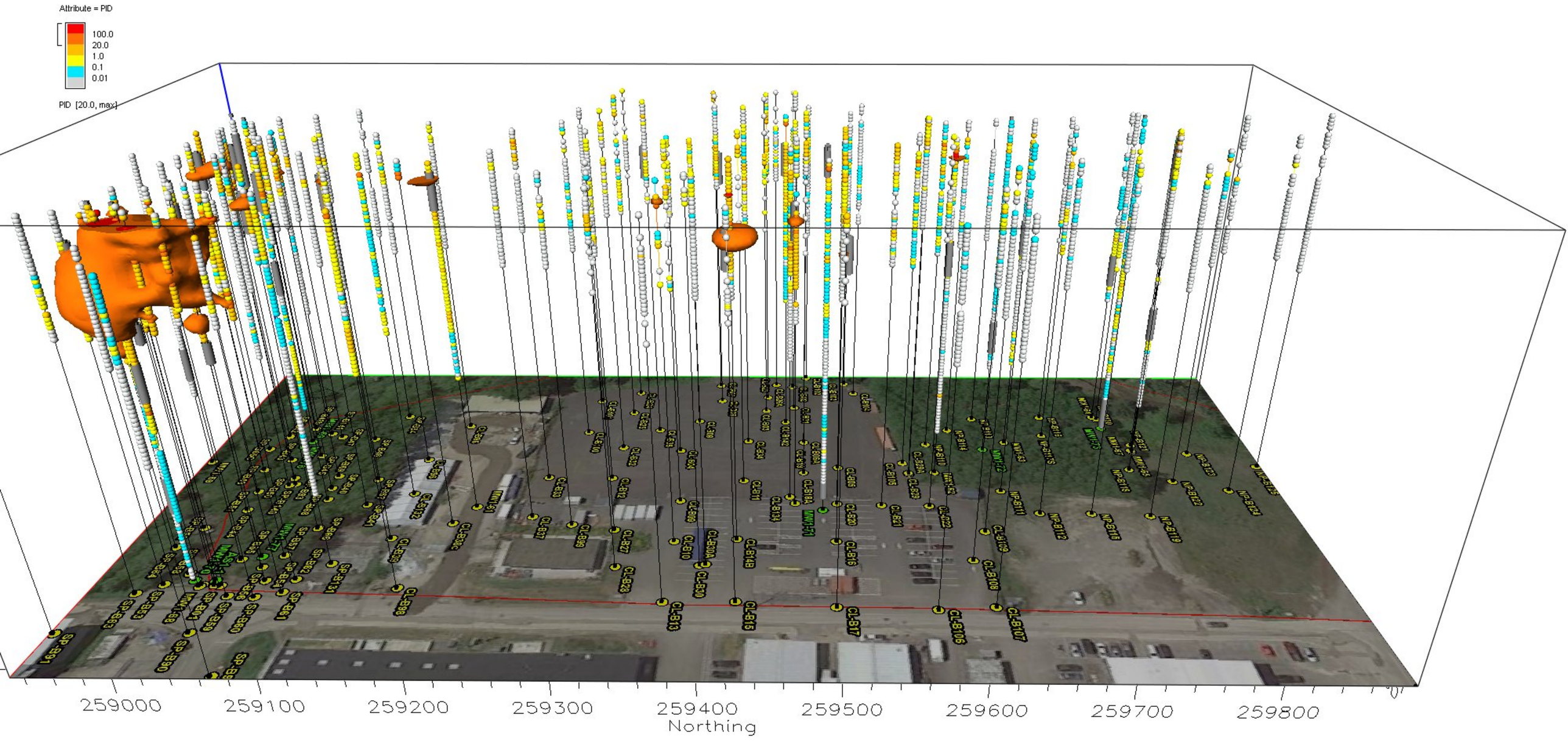
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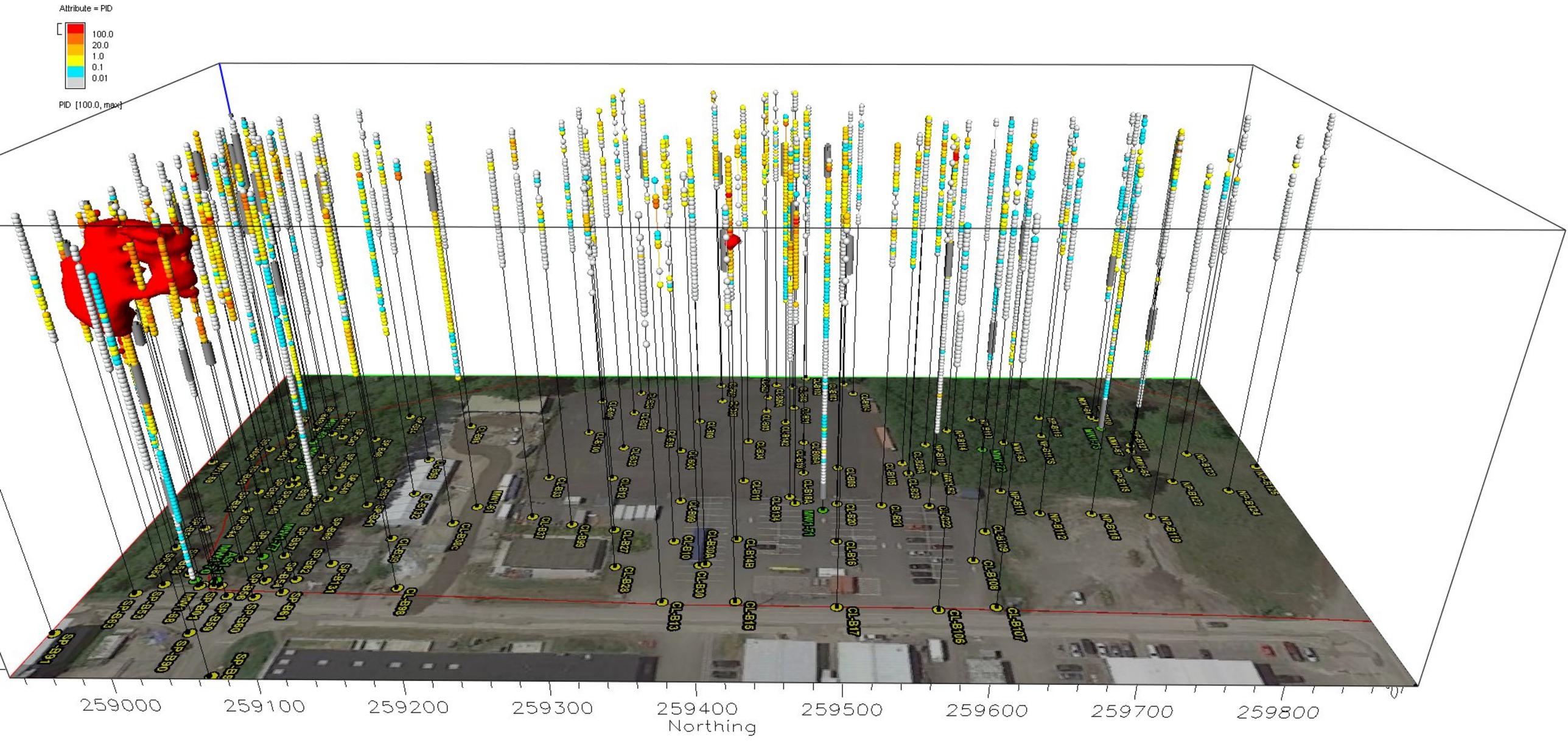
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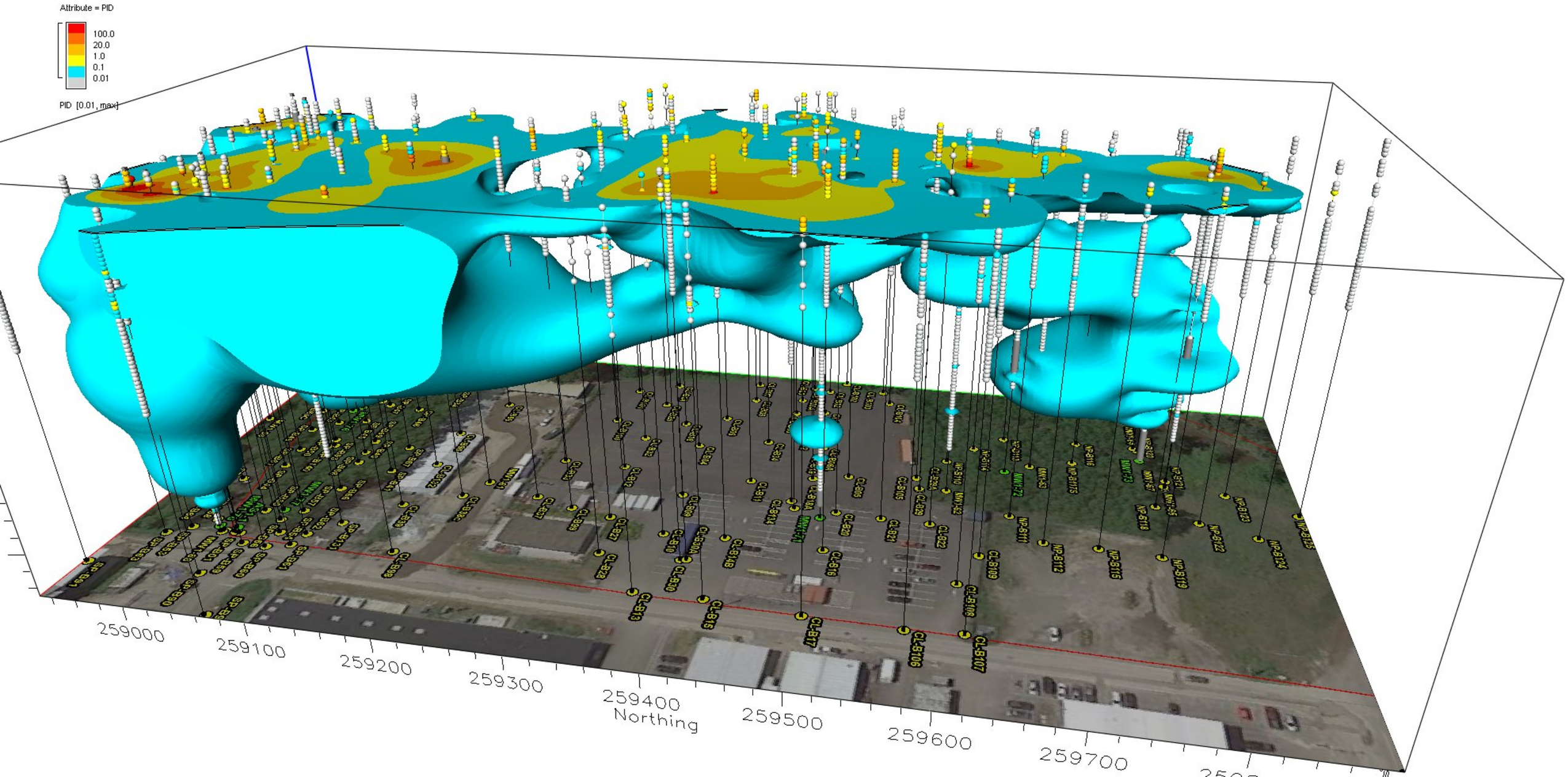
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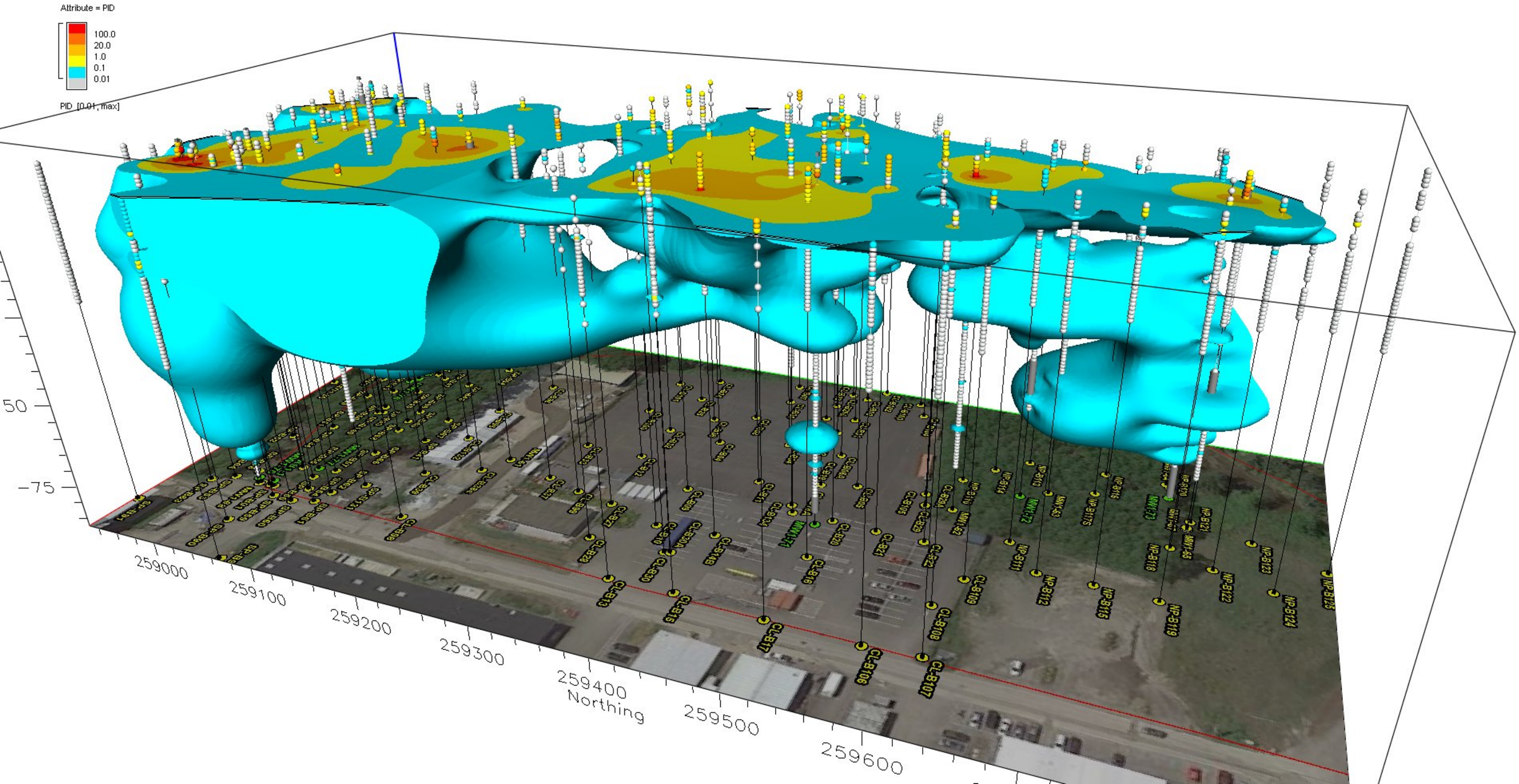
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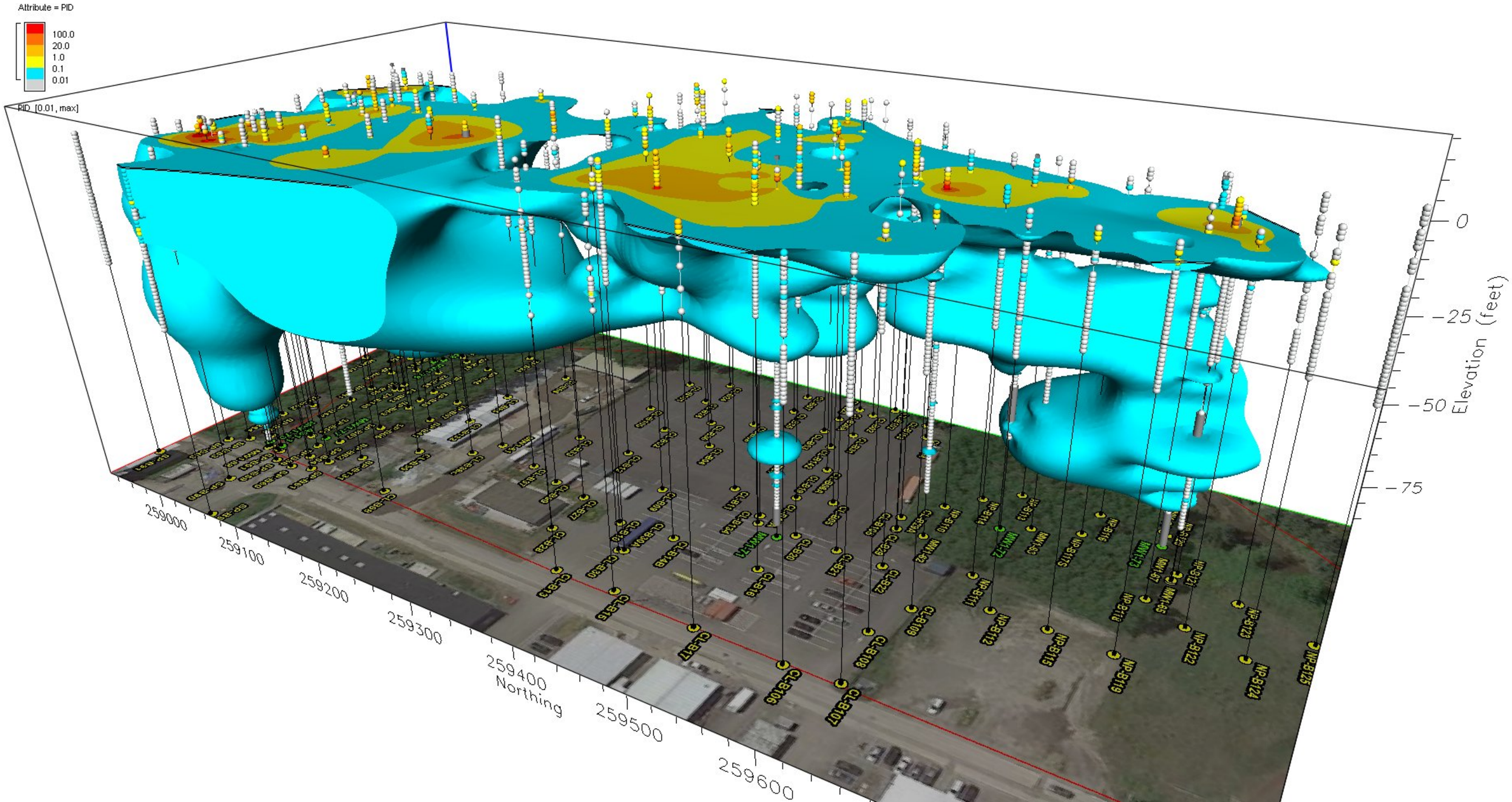
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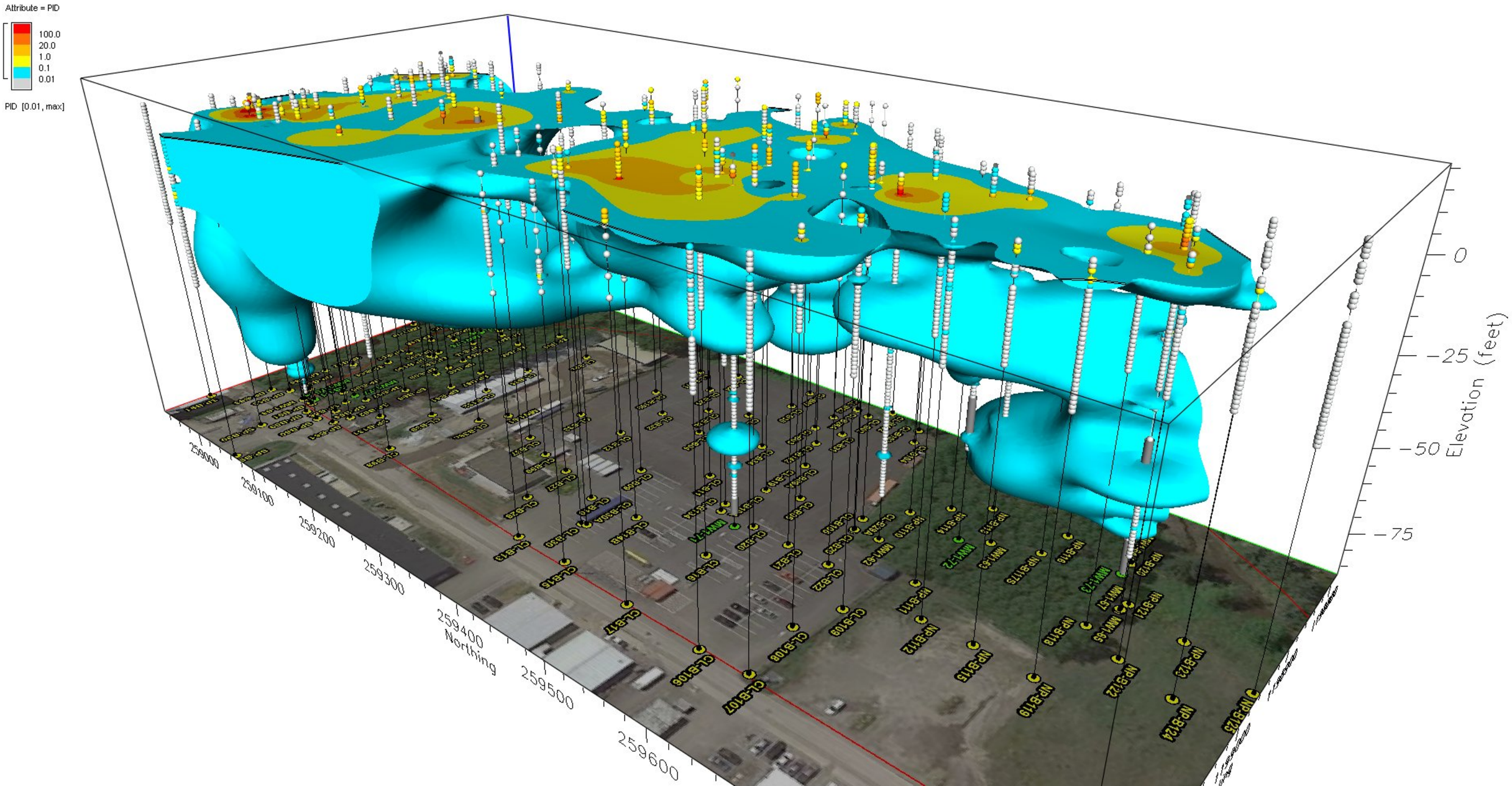
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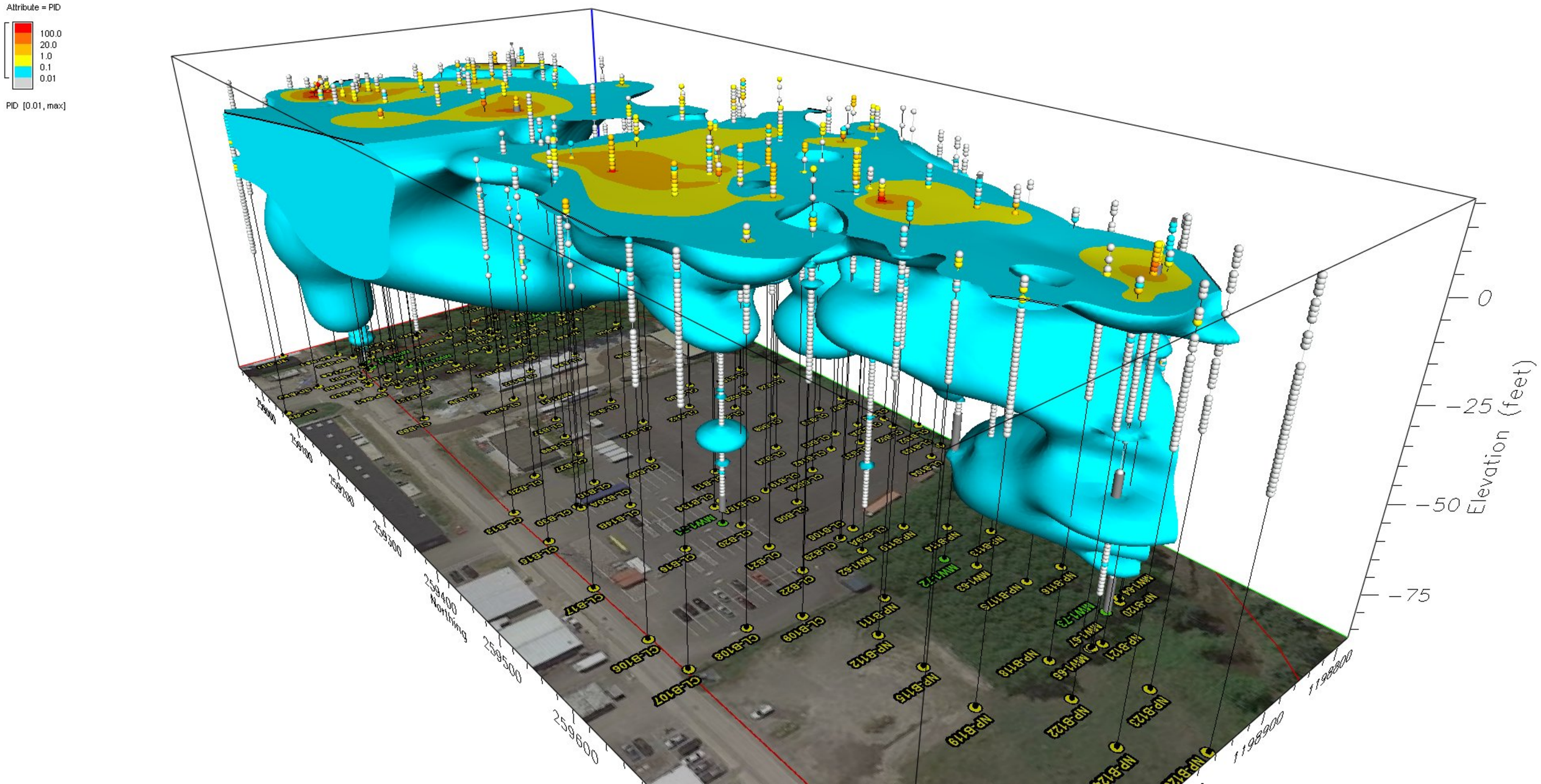
Elevation (feet)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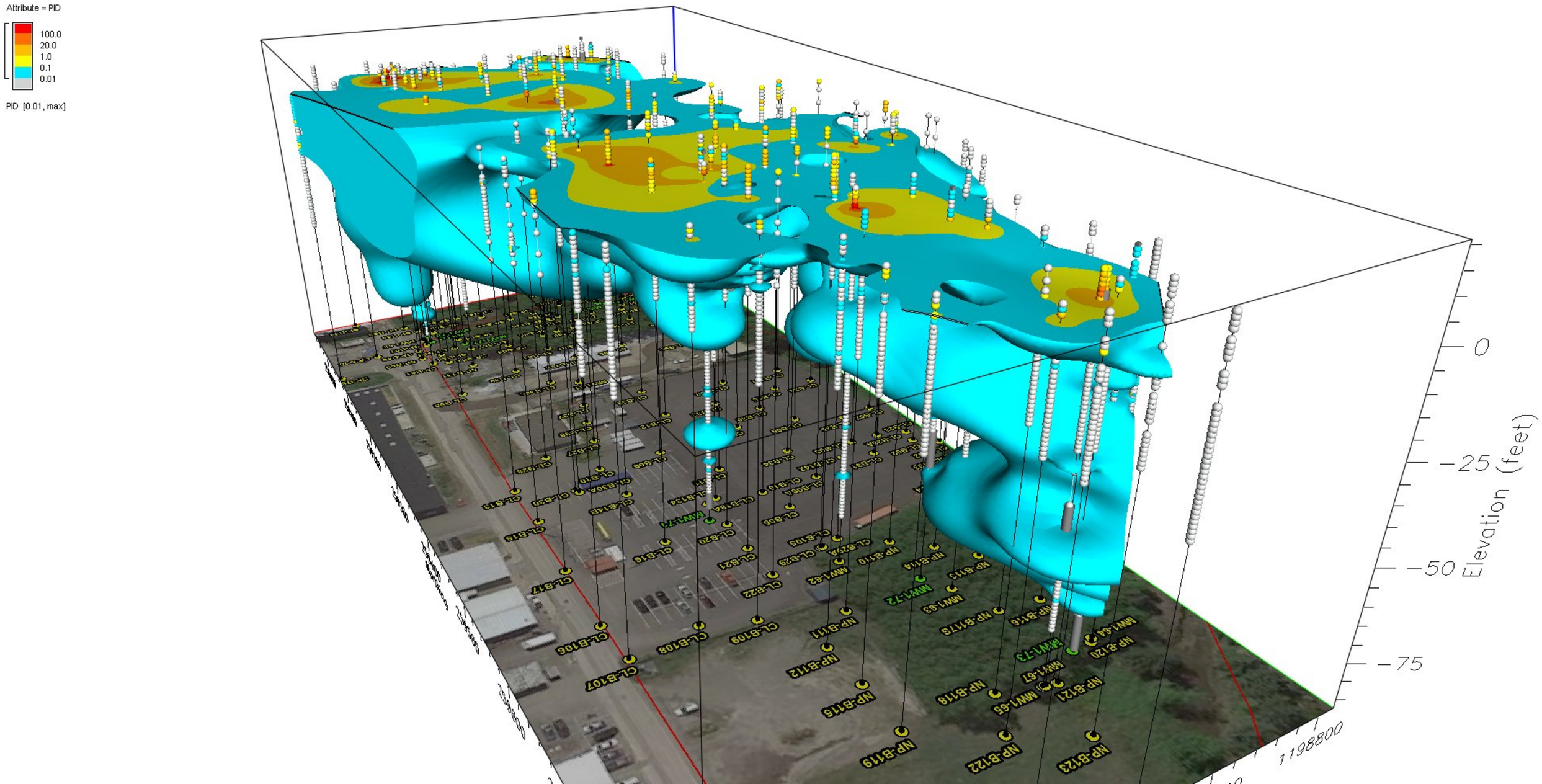
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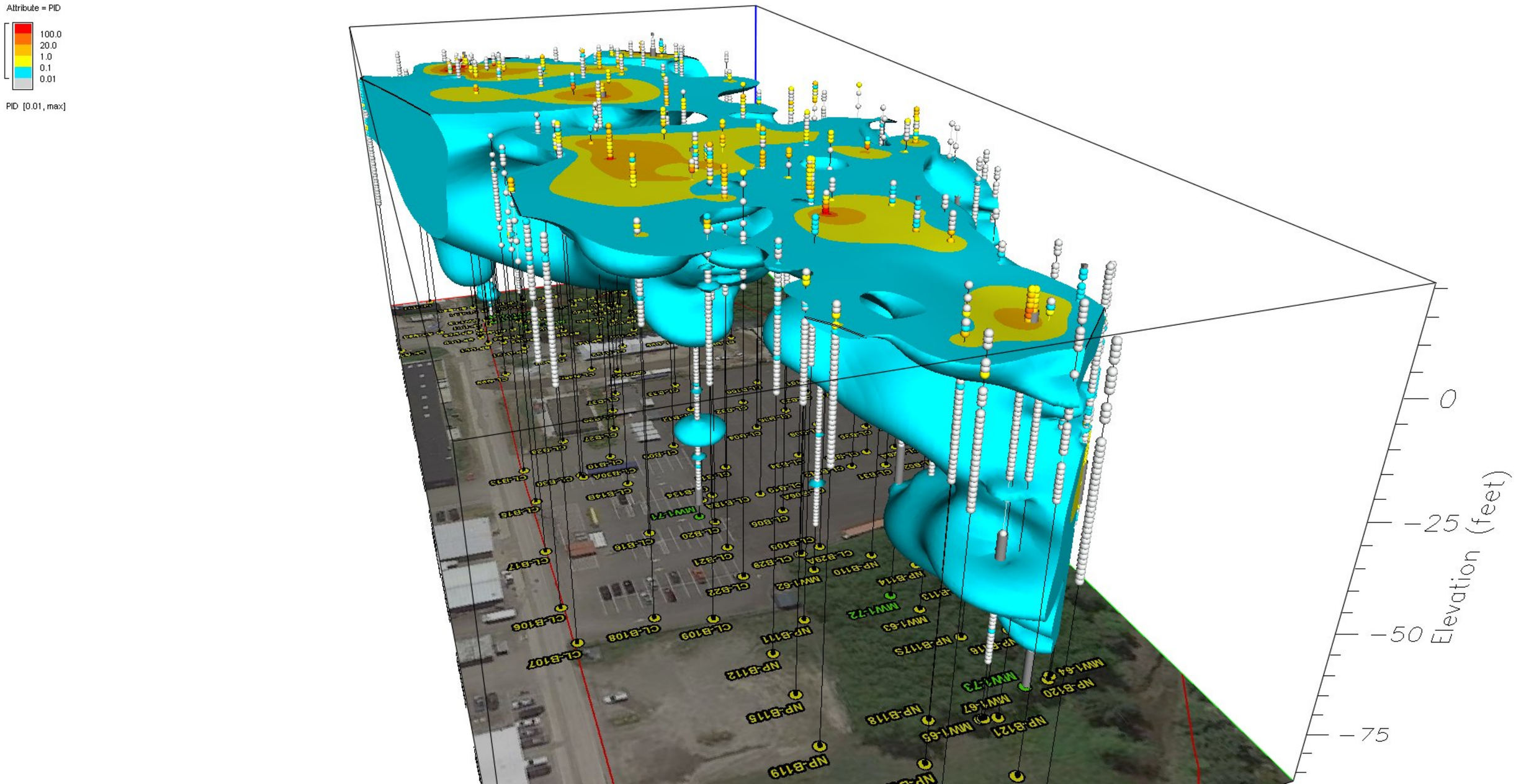
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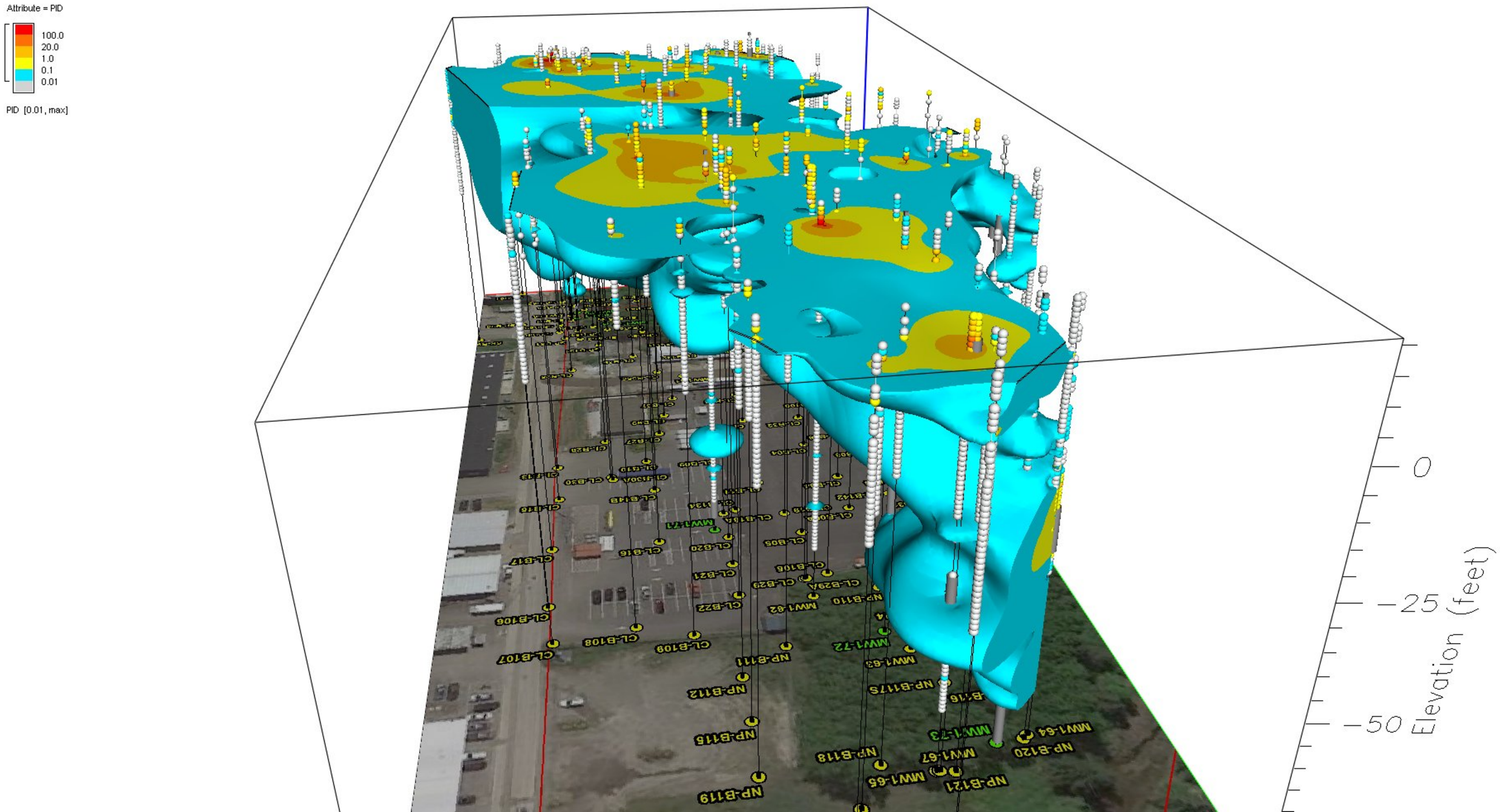
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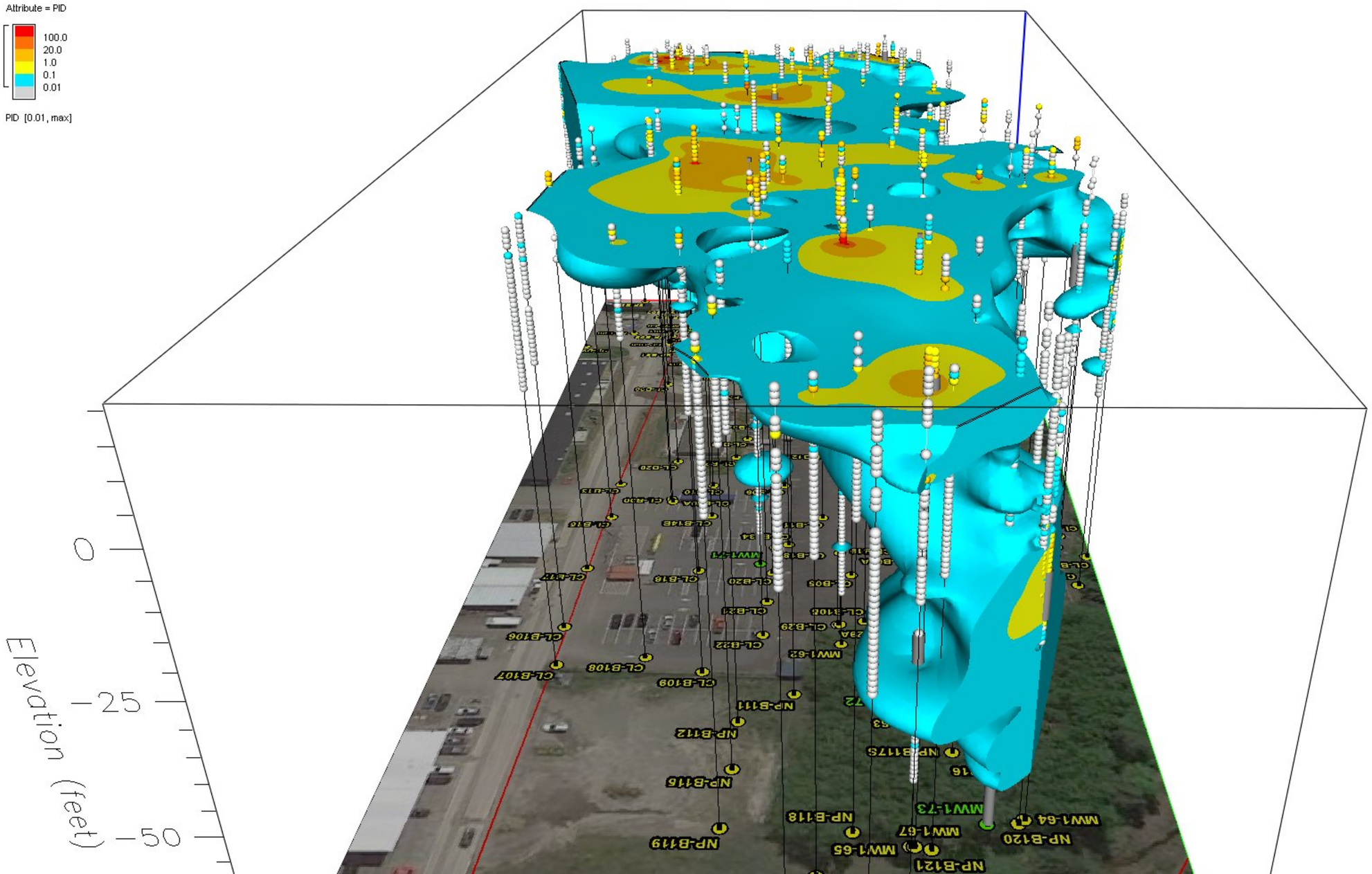
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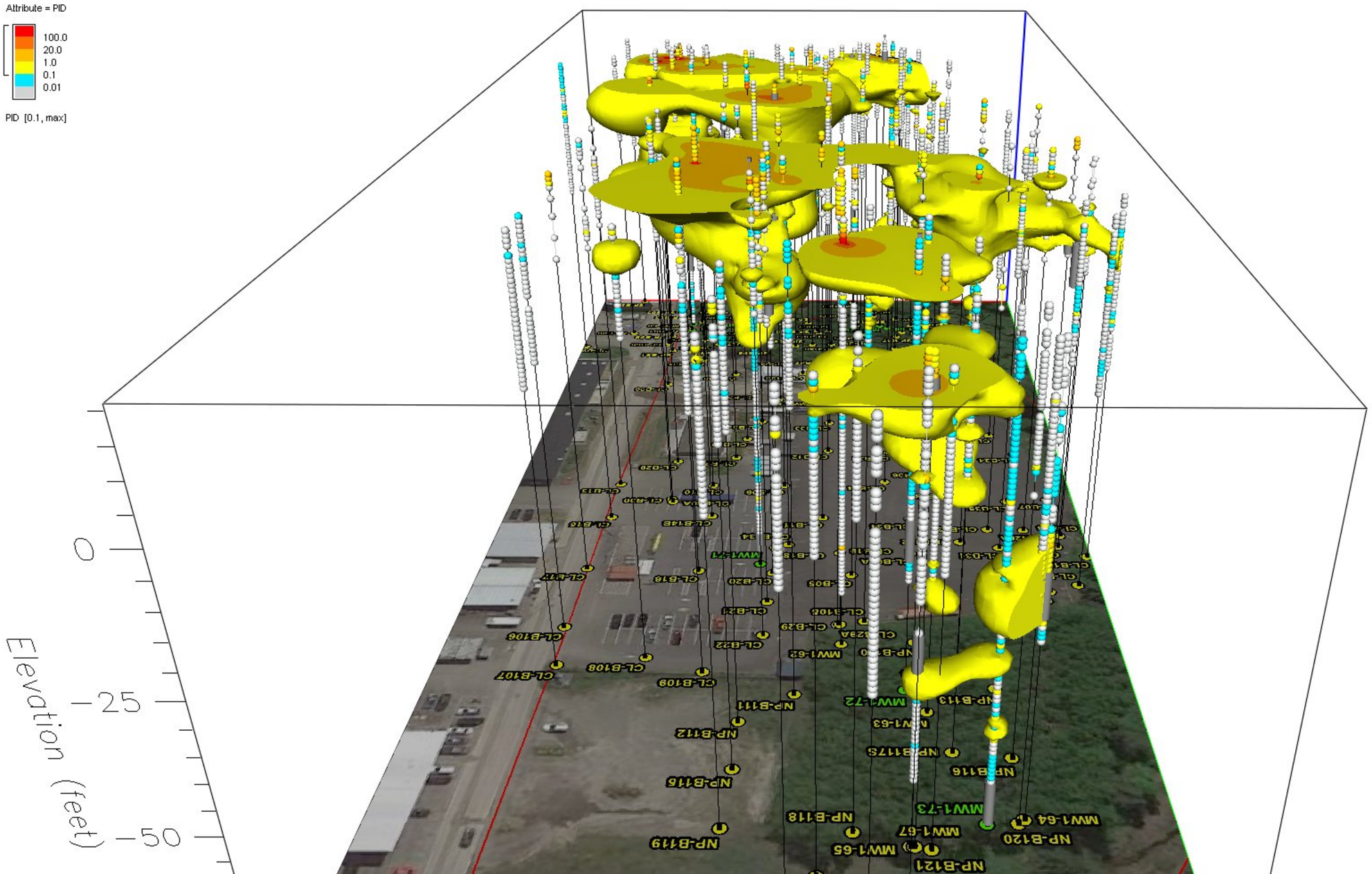
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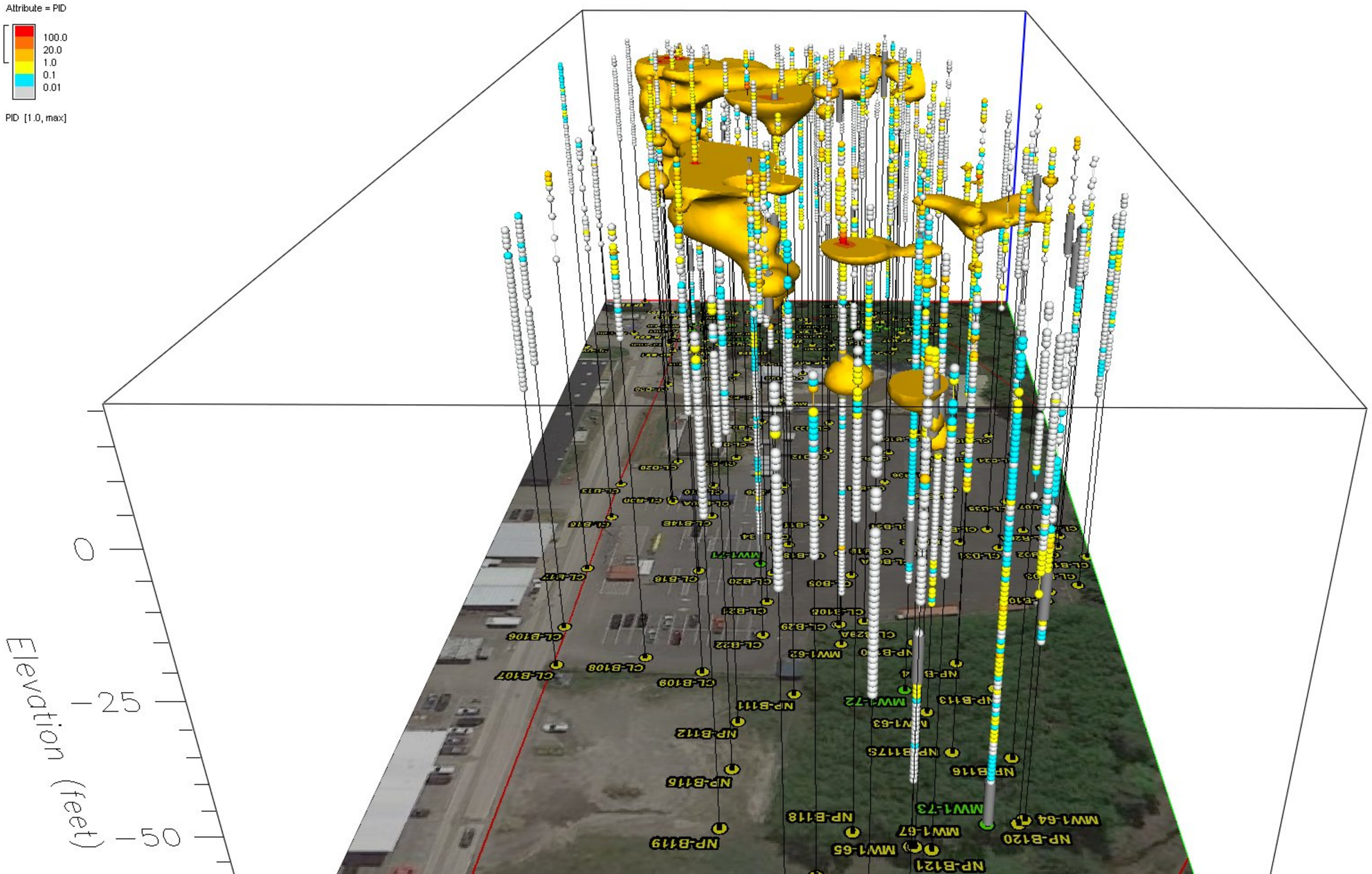
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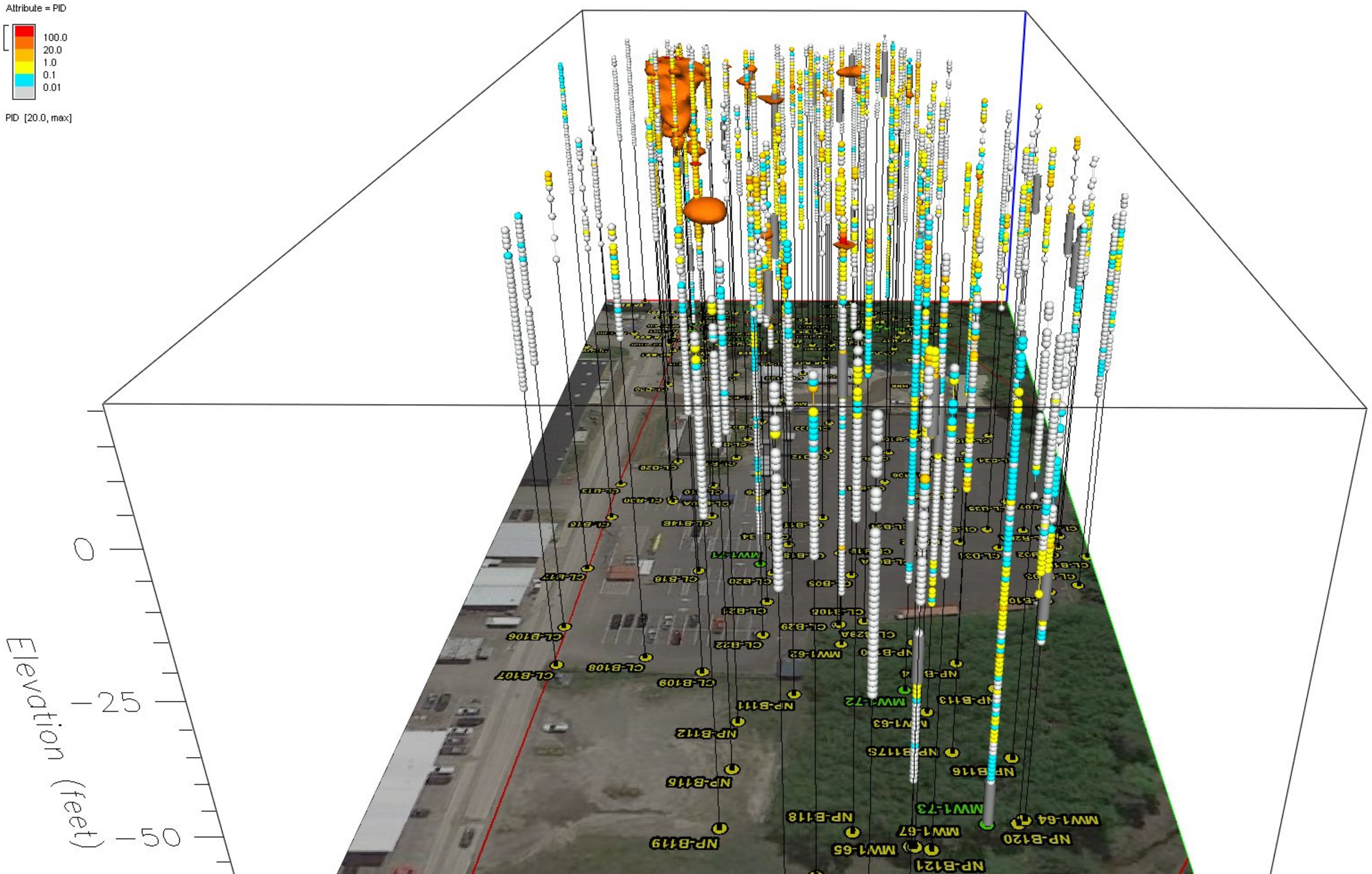
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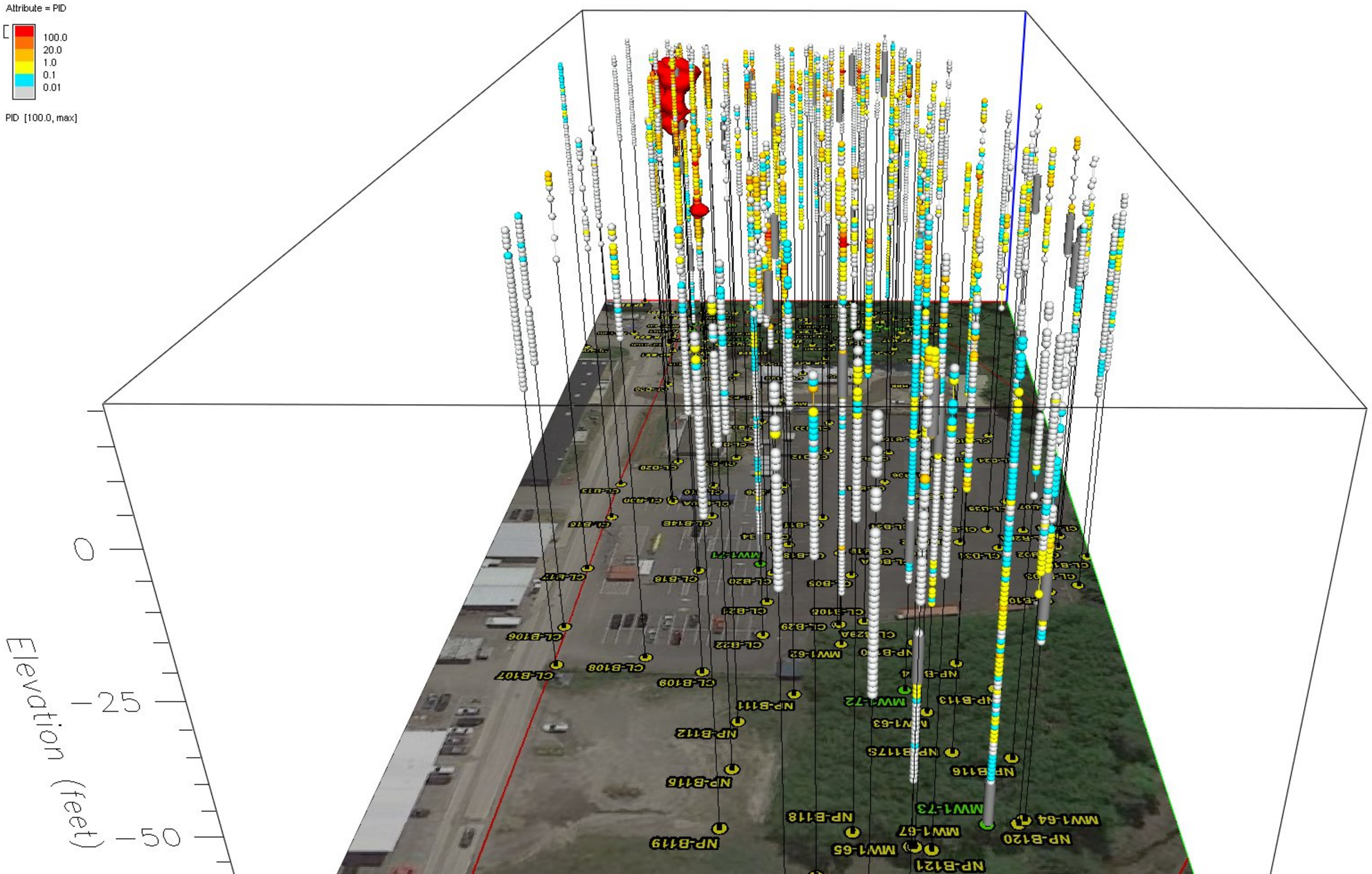
Elevation (feet)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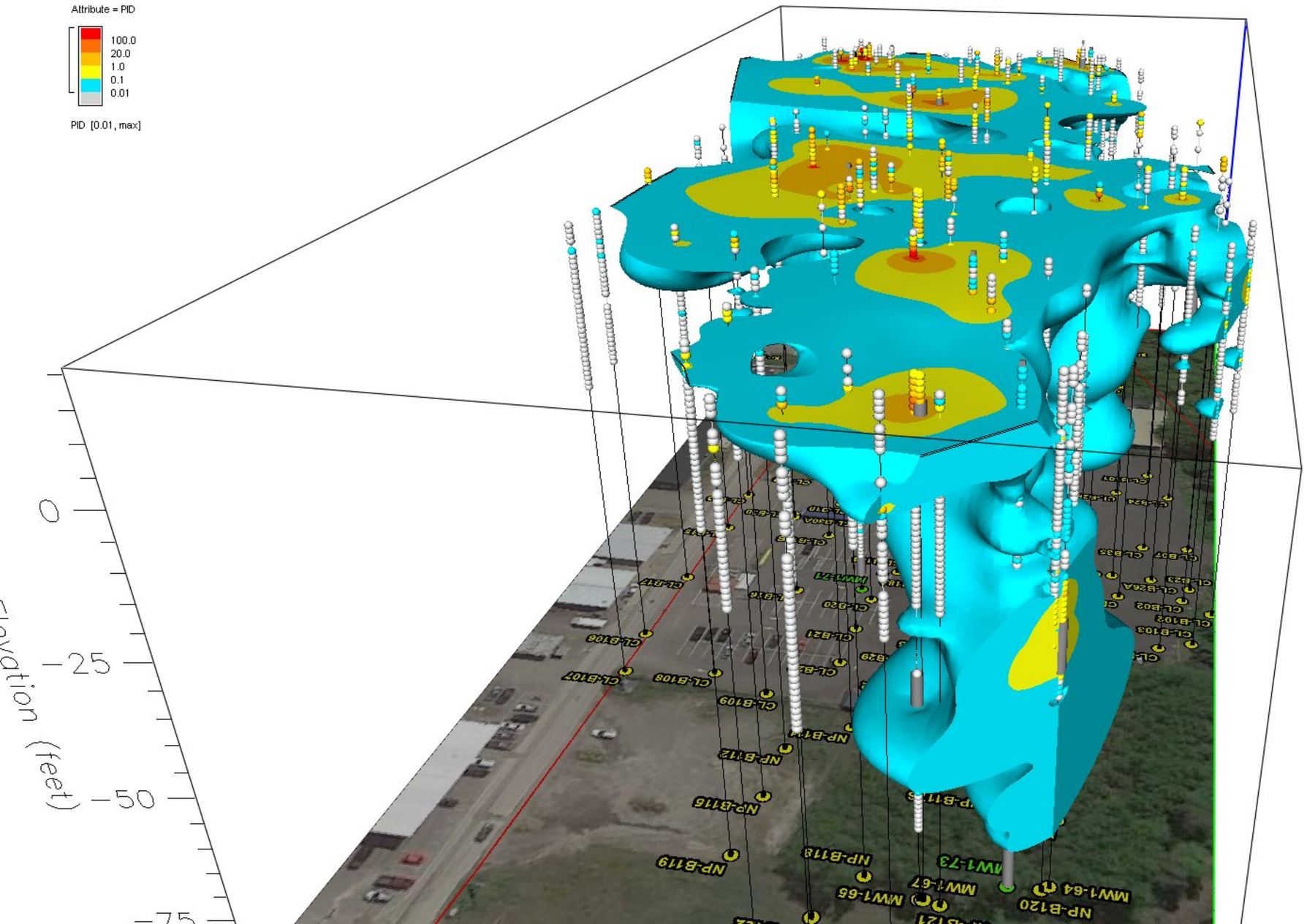
Elevation (feet)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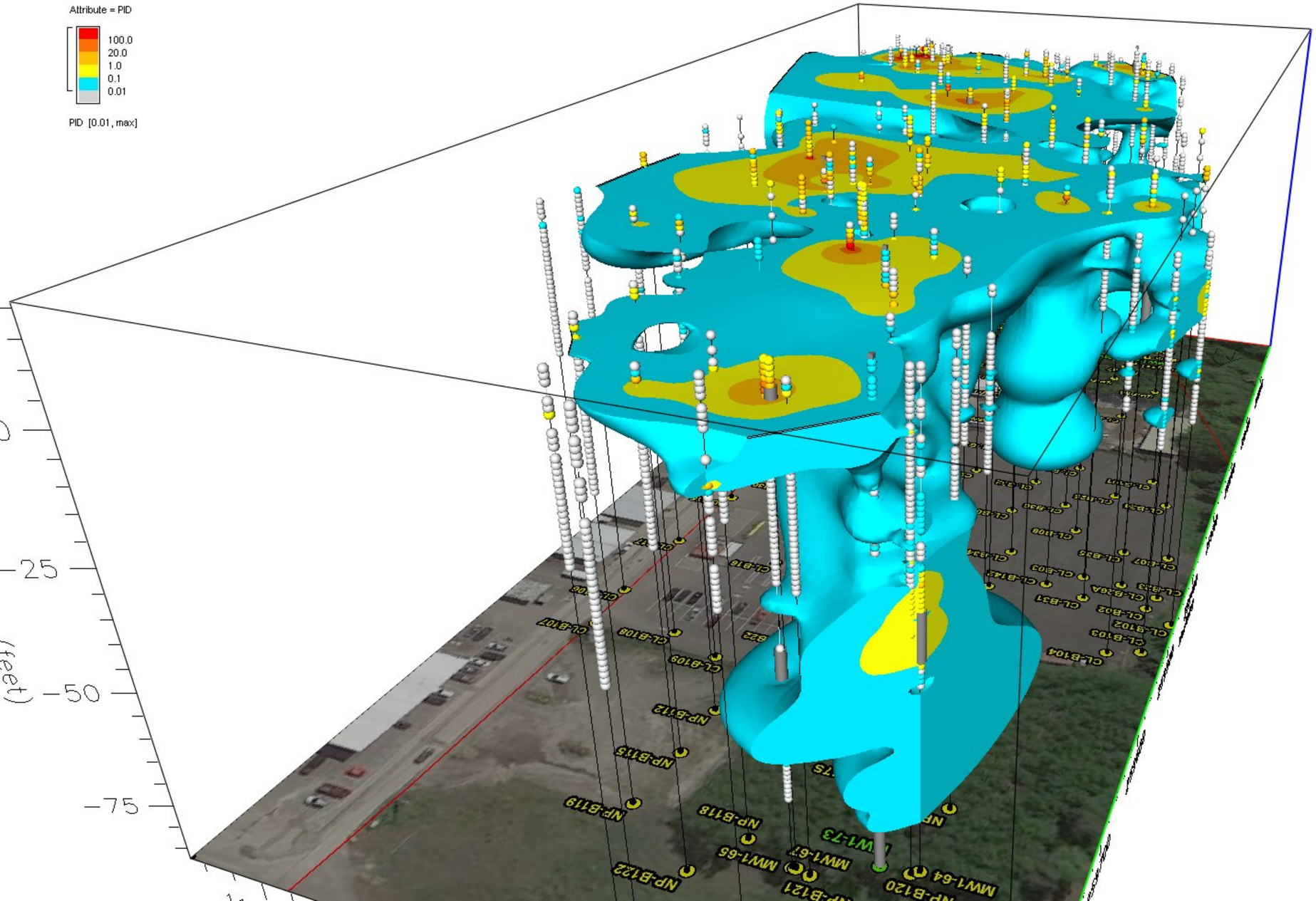
-25
-50
-75
Elevation (feet)
CL-B106
CL-B107
CL-B108
CL-B109
NP-B112
NP-B116
NP-B119
NP-B118
MW1-65
MW1-67
MW1-73
MW1-64
NP-B120
MW1-71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-50
-75
(feet)
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CL-B108
CL-B109
NP-B112
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NP-B118
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NP-B121
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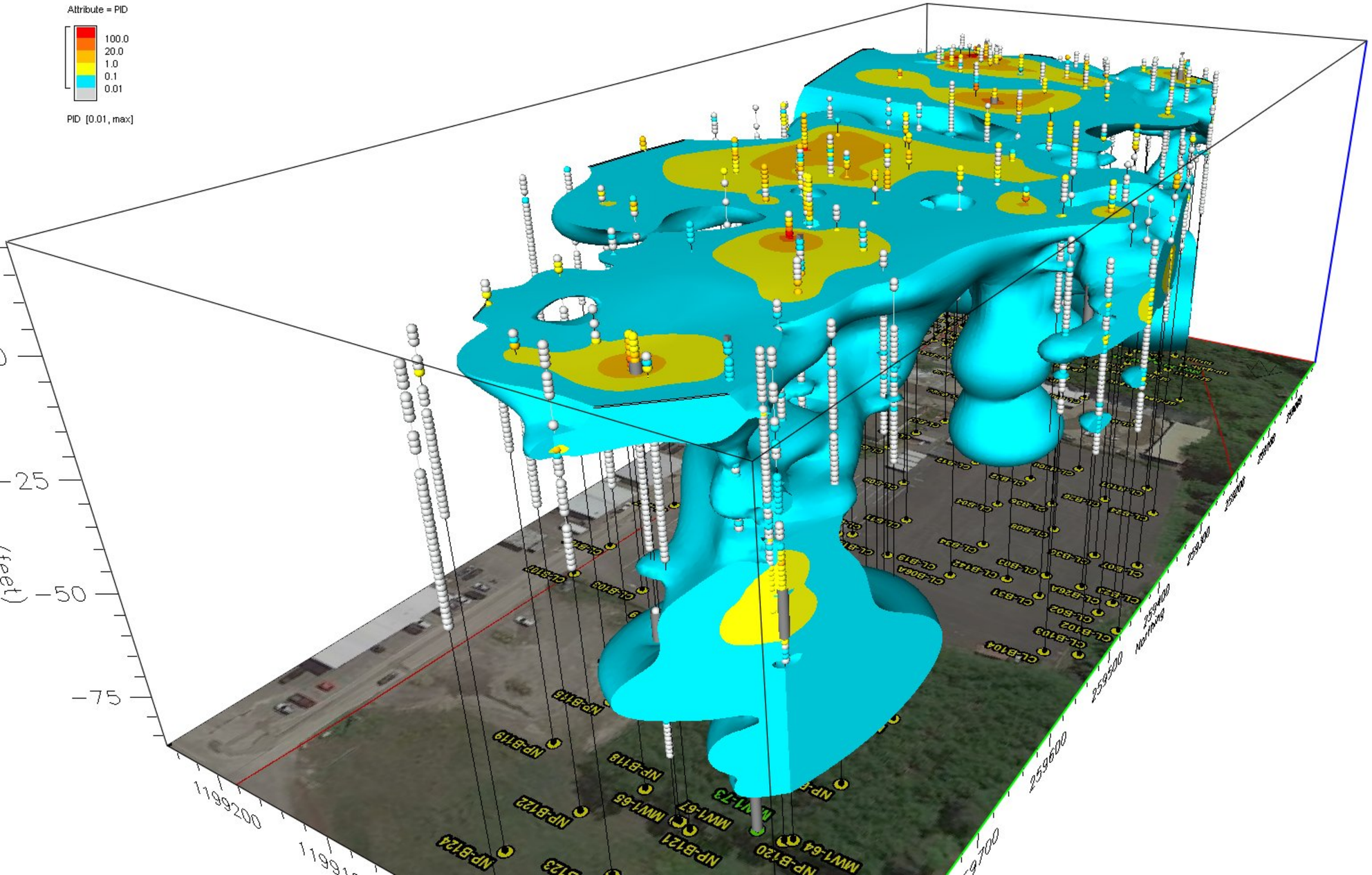
MW1-73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0.1
0.01
PID [0.01, max]
-25
-50
-75
(feet)
1199200
1199100
259600
259700
259800
259900
260000
Northing
Easting
NP-B116
NP-B119
NP-B118
NP-B122
NP-B124
NP-B123
NP-B121
NP-B120
MW1-73
MW1-67
MW1-66
MW1-64
CL-B107
CL-B108
CL-B104
CL-B103
CL-B102
CL-B502
CL-B31
CL-B92A
CL-B145
CL-B13
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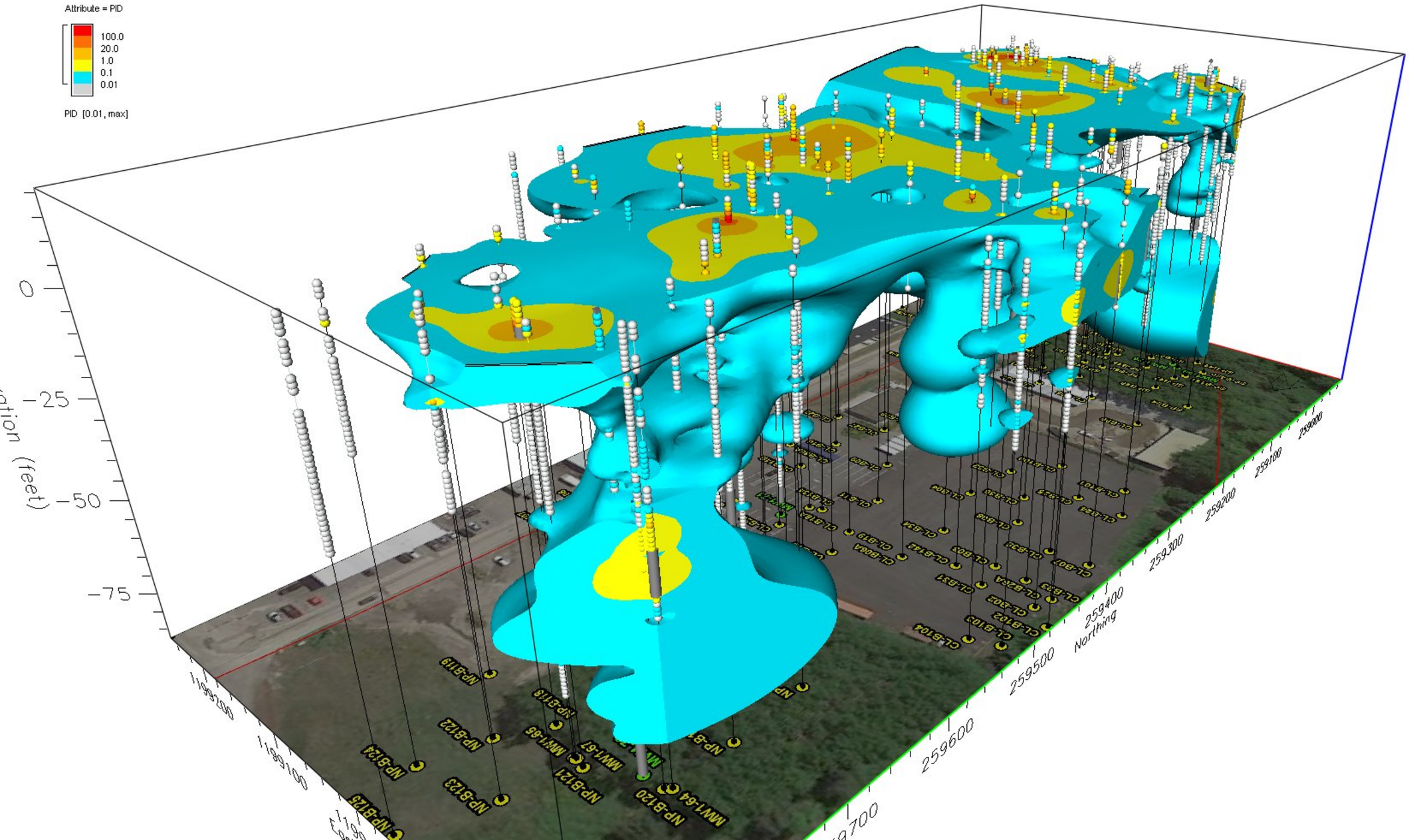
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1199100
1199200
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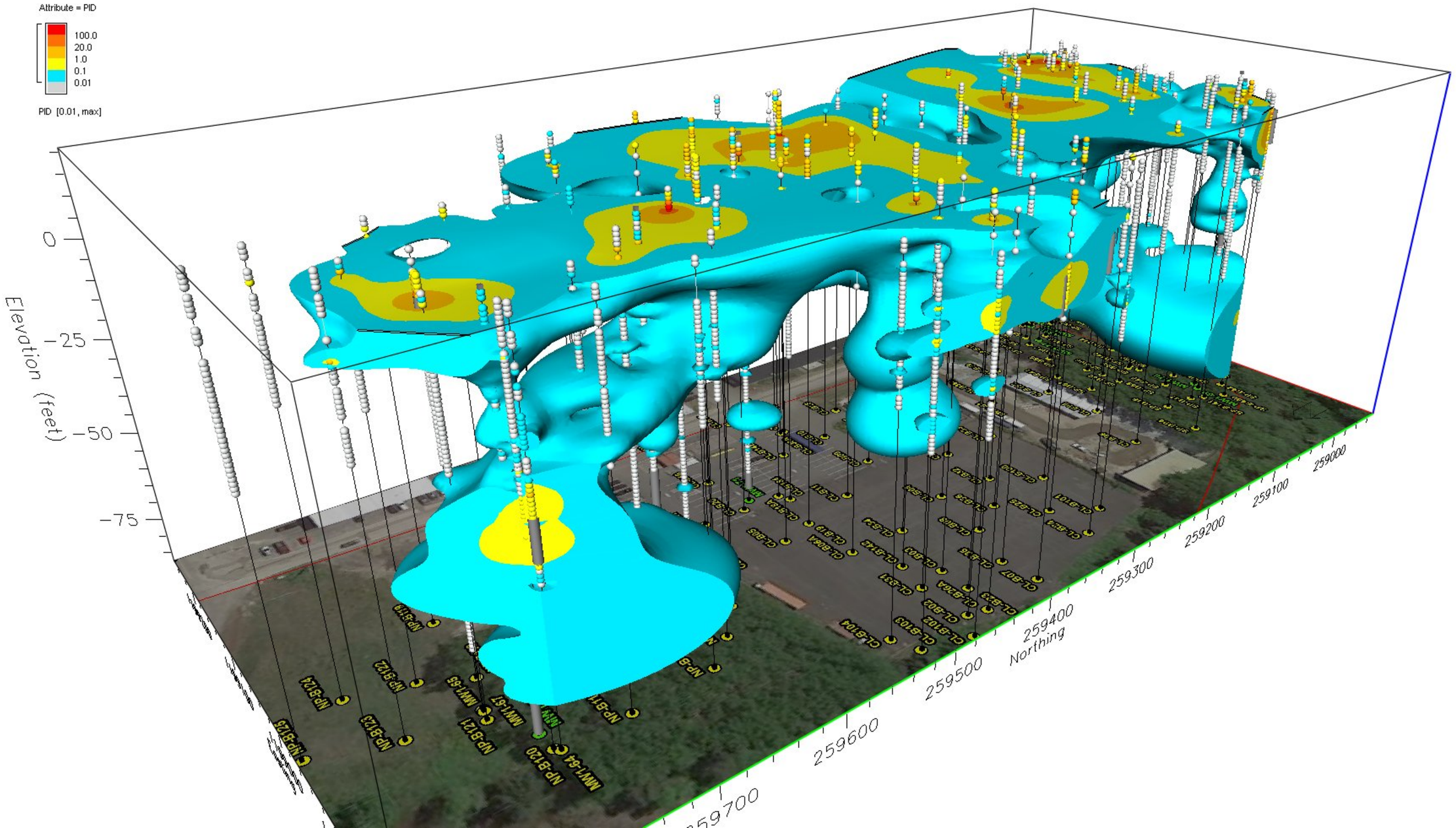
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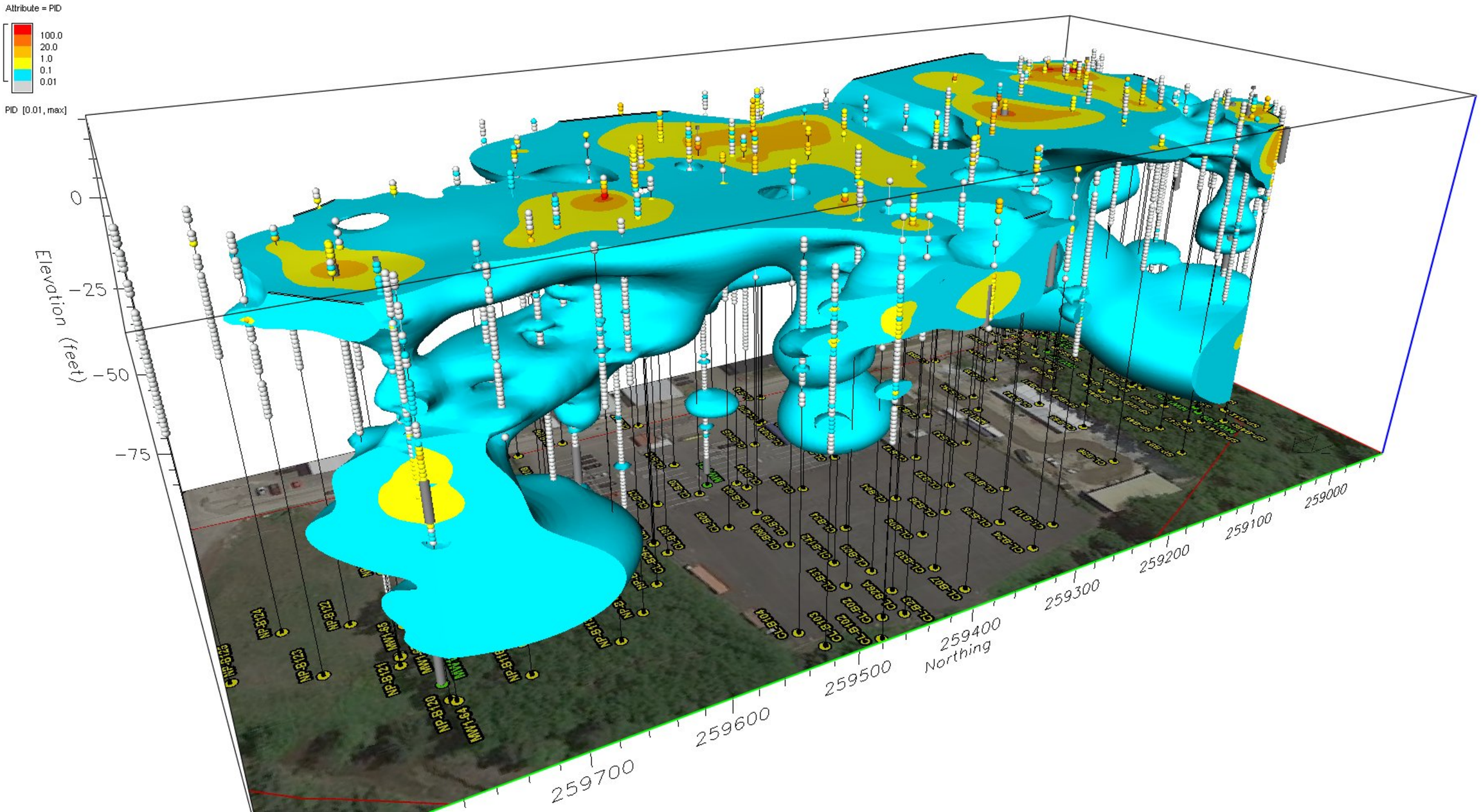
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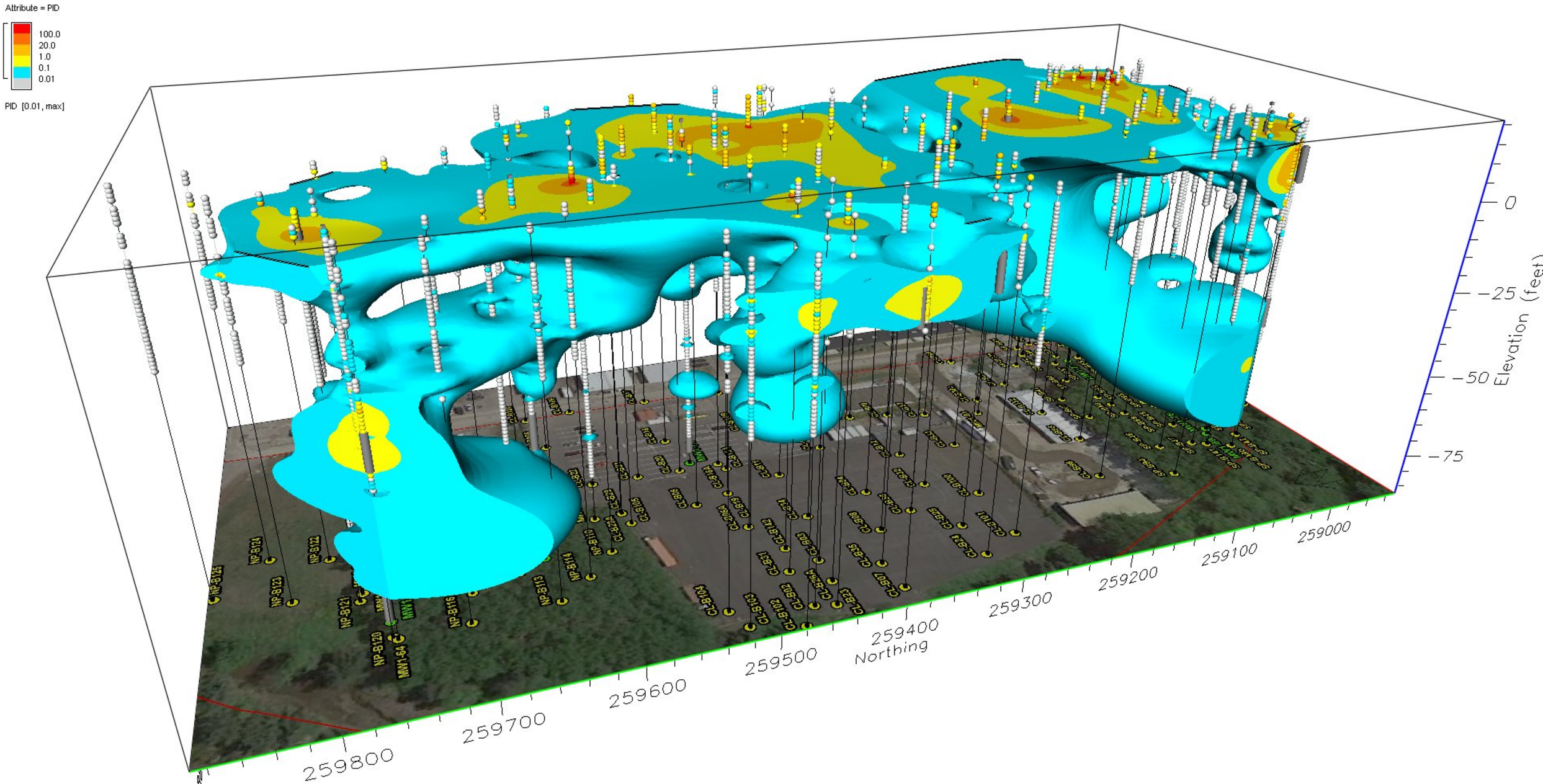
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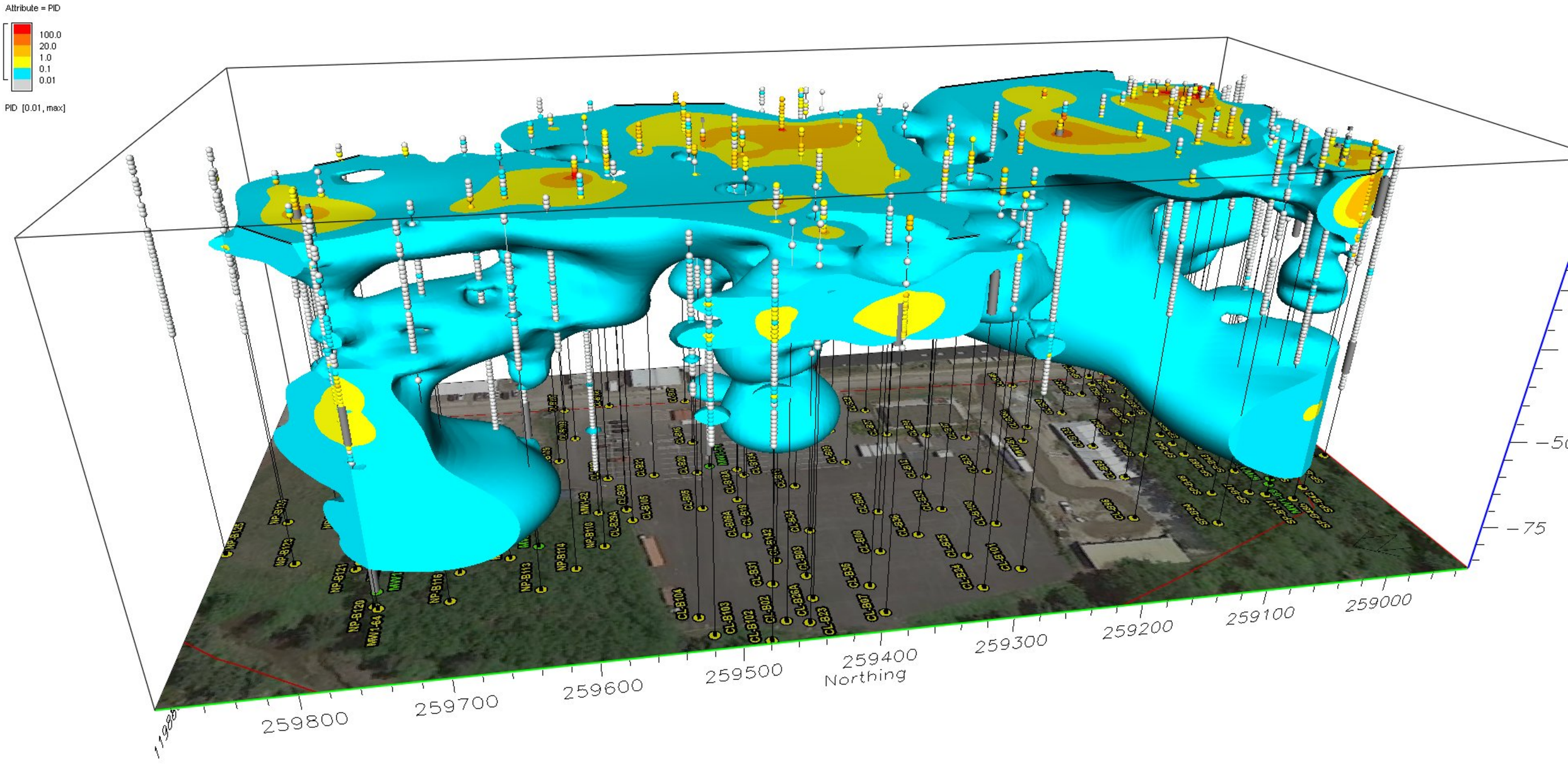
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