From: Lam, Shelly
To: Strobridge, Daniel M.; Beodray, Frank; Landry, Paul G.
Cc: Lam, Shelly
Subject: FW: Allison Transmission MW-0102-S2 Report
Date: Wednesday, April 16, 2014 11:29:27 AM
Attachments: MW-0102_S2 Data Report_04-11-2014.pdf

Shelly Lam, LPG
Federal On-Scene Coordinator
U.S. EPA
2525 N. Shadeland Avenue, Suite 100
Indianapolis, IN 46219
Office: 317-308-3073
Cell: 317-417-0980

From: Fisher, Sarah [mailto:Sarah.Fisher@arcadis-us.com]
Sent: Wednesday, April 16, 2014 12:17 PM
To: Heller, Donald
Cc: Lam, Shelly; David Favero; 'Marilyn Dedyne, GM'
Subject: RE: Allison Transmission MW-0102-S2 Report

Shelly –

Attached is the data report, minus the analytical reports. Please let me know if you would like to receive the analytical reports as well. They are around 30MB.

Thanks!
Sarah

From: Heller, Donald [mailto:heller.donald@epa.gov]
Sent: Wednesday, April 16, 2014 11:43 AM
To: Fisher, Sarah
Cc: Lam, Shelly; David Favero; 'Marilyn Dedyne, GM'
Subject: Allison Transmission MW-0102-S2 Report

Hello Sarah,

Thank you for the 4-11-14 MW-0102-S2 Area Investigation Report. Would you forward a copy to Shelly Lam?

Thanks!

Don Heller

NOTICE: This e-mail and any files transmitted with it are the property of ARCADIS U.S., Inc. and its affiliates. All rights, including without limitation copyright, are reserved. The proprietary information contained in this e-mail message, and any files transmitted with it, is intended for the use of the recipient(s) named above. If the reader of this e-mail is not the intended recipient, you are hereby notified that you have received this e-mail in error and that any review, distribution or copying of this e-mail or any files transmitted with it is strictly prohibited. If you have received this e-mail in error, please notify the sender immediately and delete the original message and any files transmitted. The unauthorized use of this e-mail or any files transmitted with it is prohibited and disclaimed by ARCADIS U.S., Inc. and its affiliates. Nothing herein is intended to constitute the offering or performance of services where otherwise restricted by law.

ARCADIS U.S., Inc.
132 East Washington Street
Suite 600
Indianapolis
Indiana 46204
Tel 317.231.6500
Fax 317.231.6514

MEMO

To:
Don Heller, USEPA

Copies:
Marilyn Dedyne, General Motors LLC
Sarah Fisher, ARCADIS
Teresa Colson, Allison Transmission
David Favero, Favero Geosciences
Francis Ramacciotti, ENVIRON
Speedway Public Library

From:
Meryl Stuckey
Heather Gastineau-Lyons

Date:
April 11, 2014

ARCADIS Project No.:
IN000473.0020

Subject:

General Motors RCRA Corrective Action at Allison Transmission,
MW-0102-S2 Area Investigation, December 2013-January 2014

Summary of Additional Investigation at MW-0102-S2

As proposed in an email submitted to USEPA on November 15, 2013, and approved via e-mail by USEPA on November 15, 2013, ARCADIS, on behalf of General Motors LLC (GM), performed additional investigation in the vicinity of MW-0102-S2. Five soil borings (SB-51-1302 through SB-51-1306) and three monitoring wells (MW-1305-S2 through MW-1307-S2) were installed between December 2013 and January 2014 (Drawing 1).

Soil Boring Installation

In mid-December 2013, ARCADIS oversaw the advancement of five soil borings (SB-51-1302 through SB-51-1306). ARCADIS contracted Major Drilling Services, LLC to operate a Geoprobe to continuously sample the soil to the desired depth and sample borehole water. The soil borings were continuously logged to depth and screened using a photoionization detector (PID, 11.7ev) at two foot intervals until the till unit was encountered, at approximately 38-47 feet (ft) below ground surface (bgs). Borehole water samples were collected in the lower saturated S2 unit, five feet directly above the till unit. Boring logs are included as Attachment A.

Upon sample collection, borehole water sampling containers were immediately sealed, labeled and placed in an ice-packed cooler that was transported to Pace Analytical Services, Inc. (Pace), located in Indianapolis, Indiana, observing proper chain-of-custody procedures. The borehole water samples were analyzed for volatile organic compounds (VOCs) in accordance with USEPA SW-846 Method 8260.

Monitoring Well Installation

In January 2014, ARCADIS oversaw the installation of three new monitoring wells (MW-1305-S2 through MW-1307-S2). ARCADIS contracted Major Drilling Services, LLC to operate a Minisonic to continuously sample the soil to the desired depth and install the monitoring wells. The soil was screened using a photoionization detector (PID, 11.7ev) at two foot intervals until the till unit was encountered. Boring logs with well construction details are included as Attachment A.

Monitoring wells MW-1305-S2 and MW-1306-S2 were installed in the saturated S2 unit with 15-foot screens. These monitoring wells were installed to provide additional groundwater elevation and groundwater quality data for the newly installed recovery well (RW-1301-S2). MW-1305-S2 tested positive for Sudan IV oleophilic dye at a smear zone with odor at approximately 20 ft bgs, indicating the presence of an LNAPL. This finding is consistent with other investigation performed at this area of the Site, and LNAPL is periodically observed in other monitoring wells in the vicinity of MW-1305-S2. The observed LNAPL is the eastern extent of the diesel fuel impacts associated with AOI-40. Recovery well RW-1301-S2 was installed on November 23, 2013. Details for the recovery well installation are included in the *AOI 51 Plume Extension Recovery Well Installation Report, March 31, 2014*.

Monitoring well MW-1307-S2 was installed with a five foot screen in the lower saturated S2 unit. This monitoring well is located downgradient of the five newly advanced soil borings to confirm groundwater quality at the apparent leading edge of the plume.

After completion of the monitoring well installation, each well was developed using a submersible whale pump to remove any water introduced to the formation during drilling and remove any sediment from the well. The well screen was surged and the well purged using the pump until each well was free of fine material and purge water was clear.

Passive diffusion bag (PDB) samplers were deployed on January 29, 2014. During PDB deployment, the depth to water and total depth were measured in each monitoring well to ensure proper positioning (midpoint of the screen unless otherwise specified) of the PDBs. In monitoring wells MW-1305-S2 and MW-1306-S2, three PDBs were installed to vertically profile the aquifer along the 15-foot well screen (PDBs were placed at 22-24 ft bgs, 26-28 ft bgs and 30.5-32.5 ft bgs). The PDBs were allowed two weeks to equilibrate within the well and were then retrieved for sampling on February 13, 2014. No sample was able to be retrieved from the PDB bag set from 22-24 ft bgs in monitoring well MW-1305-S2. On February 13, 2014, another PDB bag was placed at the 22-24 ft interval in this monitoring well and was later sampled on February 28, 2014.

Upon sample collection, groundwater sampling containers were immediately sealed, labeled and placed in an ice-packed cooler that was transported to Pace, located in Indianapolis, Indiana, observing proper chain-of-custody procedures. The groundwater samples were analyzed for VOCs in accordance with USEPA SW-846 Method 8260.

Summary of Results

On December 19 and 20, 2013, the unvalidated analytical results for soil borings SB-51-1302 through SB-51-1306 were available and summarized in the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report Second Half 2013*. Since then, the data has been validated and the validation memo is provided in Attachment B, along with the analytical results. Validated analytical results do not alter the data or use for the data submitted in the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report Second Half 2013.* Trichloroethene (TCE) was reported as estimated concentrations in SB-51-1303 at 0.002 J mg/L, and in SB-51-1305 at 0.0013 J mg/L, which are both below the maximum contaminant level (MCL) of 0.005 mg/L.

On January 22, 2014, on-site recovery well RW-1301-S2 was sampled and analyzed for VOCs. Cis-1,2-dichloroethene (cis-1,2-DCE), tetrachloroethene (PCE), TCE and vinyl chloride were all detected above their respective MCLs.

Groundwater samples were collected from separate intervals within the two monitoring wells (MW-1305-S2 and MW-1306-S2) installed to provide data to aid in evaluation of the performance of the Plume Extension Groundwater Extraction System and analyzed for VOCs. PCE, TCE, cis-1,2-DCE and vinyl chloride were detected above their respective MCL in one or more intervals sampled from these monitoring wells.

In the groundwater samples collected from monitoring well MW-1306-S2, cis-1,2-DCE, 1,2,4-trichlorobenzene and vinyl chloride were detected at estimated concentrations but below their MCLs.

A groundwater sample was collected from the monitoring well (MW-1307-S2) installed to monitor the downgradient boundary of the plume extension and analyzed for VOCs. The only VOC detected in monitoring well MW-1307-S2 was TCE, at an estimated concentration of 0.0013J mg/L, which is below the MCL.

Select VOCs for many of the locations in the vicinity and downgradient from MW-0102-S2 are presented in Drawing 2 and all laboratory analytical results are provided in Attachment B. The validated analytical reports not included with this memo will be provided in the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report First Half 2014*, forthcoming in July 2014.

3D Model

Geological and chemical data collected during this investigation were used to update the 3D visualization of the area in and around the southern part of Plant 12 (Model Area). The update is intended to provide data visualization to assist in understanding the geologic setting relative to the groundwater and borehole water quality data (PCE, TCE and vinyl chloride) in the Model Area. The update includes all analytical data collected to date, including the unvalidated analytical data from monitoring wells MW-1305-S2 through MW-1307-S2. Screenshots from the Mining Visualization Software (MVS) model are included as Attachment D.

Conclusions

The stratigraphy observed and the analytical results from this investigation are consistent with the information and data presented in the *MW-0102-S2 Investigation Summary* (October 2012) and the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report Second Half 2013* (January 2014). The recent investigation also provides delineation of the plume extension downgradient of MW-1301-S2 to below MCLs.

It is noted that while PCE was released at AOI 51, the furthest downgradient impacts observed are cis-1,2-DCE and TCE. The low levels of TCE at SB-51-1303 (0.002 J), SB-51-1305 (0.0013J mg/L) and MW-1307-S2 (0.0013J mg/L); and only a degradation daughter concentration of cis-1,2-DCE at MW-1206-S2 (0.0031 J mg/L on October 2013) indicate that the TCE observed may have potentially resulted from a different source than the upgradient portion of the plume extension. The upgradient portion of the plume extension exhibits a different constituent signature; samples from investigation locations in the upgradient portion of the plume extension contain PCE and other degradation daughter products, in addition to TCE. One potential source of the TCE could be legacy contamination from residential use of TCE-based septic tank cleaning agents (septic tanks are understood to be present upgradient of these wells).

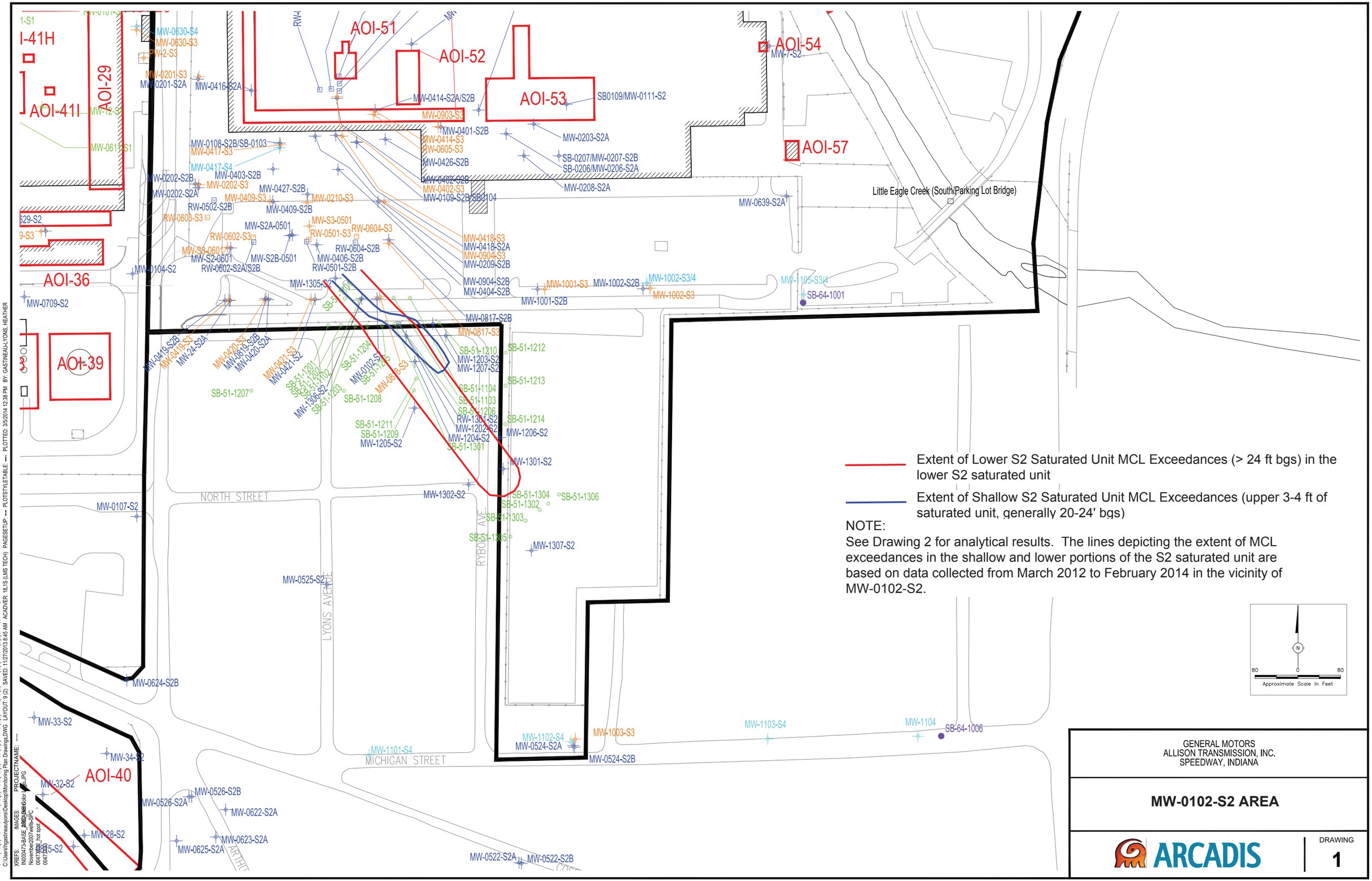
Based on the data and information presented herein and in the previous memos, no additional investigation is proposed for this area at this time.

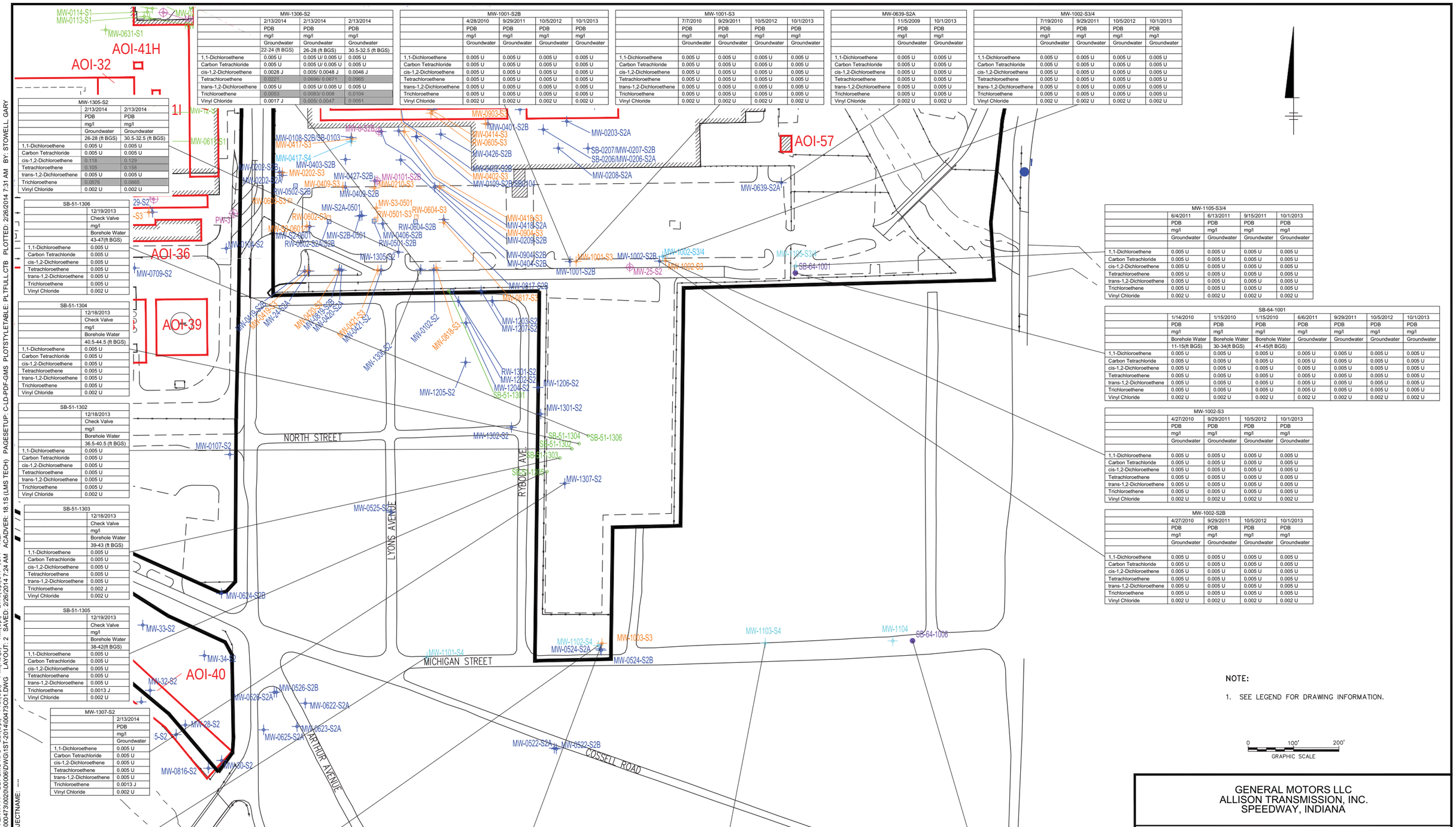
Groundwater samples from monitoring wells MW-1305-S2, MW-1306-S2, and MW-1307-S2 are currently being collected for VOC analysis in April 2014. Additionally, monitoring wells installed during the calendar years of 2012 (MW-1202-S2 through MW-1207-S2) and 2013 (MW-1301-S2 and MW-1302-S2), located in the neighborhood south of MW-0102-S2, are being sampled and analyzed for VOCs in April 2014. These results will be summarized in the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report First Half 2014,* due to USEPA in July 2014. Monitoring wells MW-1301-S2, MW-1302-S2, and MW-1307-S2 will be sampled again during the Fall 2014 monitoring event.

Enclosures:

Drawing 1 – MW-0102-S2 Area
Drawing 2 – Groundwater and Borehole Water VOC Analytical Results – AOI 51 South and Main Plant Perimeter
Attachment A – Boring Log and Monitoring Well Construction Diagrams
Attachment B – Laboratory Analytical Reports (on CD)
Attachment C – Drawing 10 from the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report Second Half 2013,* January 2014
Attachment D – MVS Model Screenshots

DRAWINGS


AOI-51
AOI-52
AOI-53
AOI-54
AOI-57
AOI-29
AOI-41H
AOI-41I
AOI-36
AOI-39
AOI-40
Little Eagle Creek (South Parking Lot Bridge)
NORTH STREET
LYONS AVENUE
RYBOLT AVE.
MICHIGAN STREET
MW-0630-S4
MW-0630-S3
MW-0201-S3
MW-0201-S2A
MW-0416-S2A
MW-0414-S2A/S2B
MW-0903-S3
MW-0401-S2B
MW-0414-S3
MW-0605-S3
MW-0426-S2B
SB0109/MW-0111-S2
MW-0203-S2A
SB-0207/MW-0207-S2B
SB-0206/MW-0206-S2A
MW-0208-S2A
MW-0108-S2B/SB-0103
MW-0417-S3
MW-0417-S4
MW-0403-S2B
MW-0202-S2B
MW-0202-S3
MW-0202-S2A
MW-0427-S2B
MW-0409-S3
MW-0210-S3
MW-0409-S2B
MW-0402-S3
MW-0109-S2B/SB0104
MW-0502-S2B
RW-0608-S3
MW-S3-0501
MW-S2A-0501
RW-0602-S3
RW-0501-S3
RW-0604-S3
MW-S3-0601
MW-S2-0601
MW-S2B-0501
RW-0604-S2B
RW-0406-S2B
RW-0602-S2A/S2B
RW-0501-S2B
MW-0418-S3
MW-0418-S2A
MW-0904-S3
MW-0209-S2B
MW-0904-S2B
MW-0404-S2B
MW-1001-S3
MW-1002-S2B
MW-1002-S3/4
MW-1002-S3
MW-1001-S2B
MW-1105-S3/4
SB-64-1001
MW-0639-S2A
MW-0104-S2
MW-0709-S2
MW-1305-S2
MW-0817-S2B
MW-0817-S3
MW-0419-S2B
MW-0419-S3
MW-24-S2A
MW-0420-S3
MW-0819-S2B
MW-0420-S2A
MW-0421-S3
MW-0421-S2
SB-51-1207
SB-51-1201
SB-51-1202
SB-51-1102
MW-1306-S2
SB-51-1203
SB-51-1208
MW-0102-S2
SB-51-1125
MW-0818-S3
SB-51-1210
MW-1203-S2
MW-1207-S2
SB-51-1212
SB-51-1213
SB-51-1104
SB-51-1103
SB-51-1206
RW-1301-S2
MW-1202-S2
MW-1204-S2
SB-51-1301
SB-51-1214
MW-1206-S2
SB-51-1211
SB-51-1209
MW-1205-S2
MW-1301-S2
MW-1302-S2
SB-51-1304
SB-51-1306
SB-51-1302
SB-51-1303
SB-51-1305
MW-1307-S2
MW-0107-S2
MW-0525-S2
MW-0624-S2B
MW-33-S2
MW-34-S2
MW-32-S2
MW-28-S2
MW-0625-S2
MW-0526-S2A
MW-0526-S2B
MW-0622-S2A
MW-0623-S2A
MW-0625-S2A
MW-1101-S4
MW-1102-S4
MW-0524-S2A
MW-1003-S3
MW-0524-S2B
MW-1103-S4
MW-1104
SB-64-1006
MW-0522-S2A
MW-0522-S2B
Extent of Lower S2 Saturated Unit MCL Exceedances (> 24 ft bgs) in the lower S2 saturated unit
Extent of Shallow S2 Saturated Unit MCL Exceedances (upper 3-4 ft of saturated unit, generally 20-24' bgs)
NOTE:
See Drawing 2 for analytical results. The lines depicting the extent of MCL exceedances in the shallow and lower portions of the S2 saturated unit are based on data collected from March 2012 to February 2014 in the vicinity of MW-0102-S2.
N
80
0
80
Approximate Scale In Feet
GENERAL MOTORS
ALLISON TRANSMISSION, INC.
SPEEDWAY, INDIANA
MW-0102-S2 AREA
ARCADIS
DRAWING
1



MW-1306-S2			
	2/13/2014	2/13/2014	2/13/2014
	PDB	PDB	PDB
	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater
	22-24 (ft BGS)	26-28 (ft BGS)	30.5-32.5 (ft BGS)
1,1-Dichloroethene	0.005 U	0.005 U/ 0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U/ 0.005 U	0.005 U
cis-1,2-Dichloroethene	0.0028 J	0.005/ 0.0048 J	0.0046 J
Tetrachloroethene	0.0221	0.0696/ 0.0671	0.0565
trans-1,2-Dichloroethene	0.005 U	0.005 U/ 0.005 U	0.005 U
Trichloroethene	0.0053	0.0083/ 0.008	0.0104
Vinyl Chloride	0.0017 J	0.005/ 0.0047	0.0051

MW-1001-S2B				
	4/28/2010	9/29/2011	10/5/2012	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-1001-S3				
	7/7/2010	9/29/2011	10/5/2012	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-0639-S2A		
	11/5/2009	10/1/2013
	PDB	PDB
	mg/l	mg/l
	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U

MW-1002-S3/4				
	7/19/2010	9/29/2011	10/5/2012	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-1305-S2		
	2/13/2014	2/13/2014
	PDB	PDB
	mg/l	mg/l
	Groundwater	Groundwater
	26-28 (ft BGS)	30.5-32.5 (ft BGS)
1,1-Dichloroethene	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.118	0.129
Tetrachloroethene	0.105	0.158
trans-1,2-Dichloroethene	0.005 U	0.005 U
Trichloroethene	0.0576	0.0665
Vinyl Chloride	0.002 U	0.002 U

SB-51-1306	
	12/19/2013
	Check Valve
	mg/l
	Borehole Water
	43-47(ft BGS)
1,1-Dichloroethene	0.005 U
Carbon Tetrachloride	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
trans-1,2-Dichloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

SB-51-1304	
	12/18/2013
	Check Valve
	mg/l
	Borehole Water
	40.5-44.5 (ft BGS)
1,1-Dichloroethene	0.005 U
Carbon Tetrachloride	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
trans-1,2-Dichloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

SB-51-1302	
	12/18/2013
	Check Valve
	mg/l
	Borehole Water
	36.5-40.5 (ft BGS)
1,1-Dichloroethene	0.005 U
Carbon Tetrachloride	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
trans-1,2-Dichloroethene	0.005 U
Trichloroethene	0.005 U
Vinyl Chloride	0.002 U

SB-51-1303	
	12/18/2013
	Check Valve
	mg/l
	Borehole Water
	39-43 (ft BGS)
1,1-Dichloroethene	0.005 U
Carbon Tetrachloride	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
trans-1,2-Dichloroethene	0.005 U
Trichloroethene	0.002 J
Vinyl Chloride	0.002 U

SB-51-1305	
	12/19/2013
	Check Valve
	mg/l
	Borehole Water
	38-42(ft BGS)
1,1-Dichloroethene	0.005 U
Carbon Tetrachloride	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
trans-1,2-Dichloroethene	0.005 U
Trichloroethene	0.0013 J
Vinyl Chloride	0.002 U

MW-1307-S2	
	2/13/2014
	PDB
	mg/l
	Groundwater
1,1-Dichloroethene	0.005 U
Carbon Tetrachloride	0.005 U
cis-1,2-Dichloroethene	0.005 U
Tetrachloroethene	0.005 U
trans-1,2-Dichloroethene	0.005 U
Trichloroethene	0.0013 J
Vinyl Chloride	0.002 U

MW-1105-S3/4				
	6/4/2011	6/13/2011	9/15/2011	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

SB-64-1001							
	1/14/2010	1/15/2010	1/15/2010	6/6/2011	9/29/2011	10/5/2012	10/1/2013
	PDB	PDB	PDB	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	Borehole Water	Borehole Water	Borehole Water	Groundwater	Groundwater	Groundwater	Groundwater
	11-15(ft BGS)	30-34(ft BGS)	41-45(ft BGS)				
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U

MW-1002-S3				
	4/27/2010	9/29/2011	10/5/2012	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-1002-S2B				
	4/27/2010	9/29/2011	10/5/2012	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-1101-S4			
	6/22/2011	9/14/2011	10/1/2013
	PDB	PDB	PDB
	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U/0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U/0.005 U	0.005 U
cis-1,2-Dichloroethene	0.0067	0.005 U/0.005 U	0.005 U
Tetrachloroethene	0.005 UJ	0.005 U/0.005 U	0.001 J
trans-1,2-Dichloroethene	0.005 U	0.005 U/0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U/0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U/0.002 U	0.002 U

MW-1102-S4			
	6/13/2011	9/15/2011	10/1/2013
	PDB	PDB	PDB
	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U

MW-1003-S3				
	9/29/2011	12/8/2011	10/30/2012	10/1/2013
	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 UJ	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U

MW-1103-S4			
	6/13/2011	9/14/2011	10/1/2013
	PDB	PDB	PDB
	mg/l	mg/l	mg/l
	Groundwater	Groundwater	Groundwater
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U

SB-64-1006						
	1/18/2010	1/18/2010	6/6/2011	9/29/2011	10/30/2012	10/1/2013
	PDB	PDB	PDB	PDB	PDB	PDB
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	Borehole Water	Borehole Water	Groundwater	Groundwater	Groundwater	Groundwater
	20-24(ft BGS)	33-37(ft BGS)				
1,1-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Carbon Tetrachloride	0.005 U	0.005 U	0.005 U	0.005 UJ	0.005 U	0.005 U
cis-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Tetrachloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
trans-1,2-Dichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Trichloroethene	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Vinyl Chloride	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U

NOTE:

1. SEE LEGEND FOR DRAWING INFORMATION.

0 100' 200'
GRAPHIC SCALE

GENERAL MOTORS LLC
ALLISON TRANSMISSION, INC.
SPEEDWAY, INDIANA

GROUNDWATER AND BOREHOLE WATER VOC ANALYTICAL RESULTS - AOI 51 SOUTH AND MAIN PLANT PERIMETER

ARCADIS

DRAWING
2

CITY: SYRACUSE DIV/GROUP: ENV/141 DB: GMS KFS LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF
G:\ENVCAD\SYRACUSE\ACTIN\00473\0020\00006\DWG\1ST-2014\00473C01.DWG LAYOUT: 2 SAVED: 2/26/2014 7:24 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: C-LD-PDF-GMS PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/26/2014 7:31 AM BY: STOWELL, GARY
XREFS: 00473XLD 00473X03 00473X02 IMAGES: PROJECTNAME: ----

ATTACHMENT A: Boring Log and Monitoring Well Construction Diagrams

BORING LOG

BORING LOG: **SB-51-1302**

TOTAL DEPTH (ft): **44.0**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM (Allison Transmission)**	DRILLING CO.:	**Major Drilling**
SITE LOCATION:	**Speedway, IN**	DRILLER:	**Ken Burkhard**
LOGGED BY:	**Luke Martin**	DRILLING METHOD:	**Hand Auger / Direct Push**
DATE STARTED:	**12/17/2013**	**COORDINATES**	
DATE COMPLETED:	**12/17/2013**	NORTHING:	1649240.6
		EASTING:	169241.9
		ELEVATION:	718.83

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		ASPHALT: Asphalt		SB-51-1302-01_GEO		0.0
		FILL: FILL; angular gravel; perched water at approximately 0.5'.		SB-51-1302-02_GEO		0.0
-5		CLAY: CLAY; some sand; little silt; little gravel; high plasticity (no added moisture); coarse sand to granules; angular; moist; brown; perched water in clay.		SB-51-1302-03_GEO		--
				SB-51-1302-04_GEO		--
		SAND and GRAVEL: SAND and GRAVEL; trace silt; silt to very large pebbles; rounded to subangular; poorly sorted; dry; loose; brown to yellowish brown. 5.0-10.0' - No recovery, rock in shoe?. 18.8-19.5' - zone of fine sands, grey to yellowish brown. Top of zone is wet due to perched water at top, bottom of unit is dry. 21.1-22.3' - lens of rounded pebbles. 18.6' - Moist. 22.0' - Wet. 28.9-29.0' - small clay lense.		SB-51-1302-05_GEO		--
-10				SB-51-1302-06_GEO		0.0
				SB-51-1302-07_GEO		0.1
-15				SB-51-1302-08_GEO		0.1
				SB-51-1302-09_GEO		0.2
				SB-51-1302-10_GEO		0.4
-20				SB-51-1302-11_GEO		0.6
				SB-51-1302-12_GEO		0.9
-25				SB-51-1302-13_GEO		0.8
				SB-51-1302-14_GEO		0.8
				SB-51-1302-15_GEO		0.7
-30				SB-51-1302-16_GEO		0.1
				SB-51-1302-17_GEO		0.1
		GRAVEL and SAND: GRAVEL and SAND; silt to very large pebbles; rounded to subangular; poorly sorted; wet; brown.		SB-51-1302-18_GEO		0.1
-35				SB-51-1302-19_GEO		0.0
				SB-51-1302-20_GEO	Negative at 40.5 ft	0.1
-40				SB-51-1302-21_GEO		0.1
		Clay: CLAY and SILT (TILL); low plasticity; trace round granules; dry; very stiff; dark grey.		SB-51-1302-22_GEO		0.0

BORING LOG

BORING LOG: **SB-51-1303**

TOTAL DEPTH (ft): **45.0**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM (Allison Transmission)**	DRILLING CO.:	
SITE LOCATION:	**Speedway, IN**	DRILLER:	**Ken Burkhard**
LOGGED BY:	**Luke Martin**	DRILLING METHOD:	**Hand Auger / Direct Push**
DATE STARTED:	**12/18/2013**	**COORDINATES**	
DATE COMPLETED:	**12/18/2013**	NORTHING:	1649220.3
		EASTING:	169215.7
		ELEVATION:	719.44

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		ASPHALT: Asphalt		SB-51-1303-01_GEO		0.1
		FILL: Fill material; angular gravel		SB-51-1303-02_GEO		0.2
-5		CLAY and SAND: CLAY and SAND; some silt; trace gravel; slightly moist; dark brown; possible fill material. 3.9' - grading to Clay and Silt; some sand		SB-51-1303-03_GEO		0.2
				SB-51-1303-04_GEO		0.2
		SAND and GRAVEL: SAND and GRAVEL; trace silt; silt to very large pebbles; round to subangular gravel; poorlly sorted; dry; loose; yellowish brown. 18.7-19.0' - CLAY and SILT; some sand lenses; brown. 23.4' - moist; brown. 24.0' - Wet.		SB-51-1303-05_GEO		0.2
-10				SB-51-1303-06_GEO		0.1
				SB-51-1303-07_GEO		0.2
-15				SB-51-1303-08_GEO		0.1
				SB-51-1303-09_GEO		0.2
				SB-51-1303-10_GEO		0.3
-20				SB-51-1303-11_GEO		0.2
				SB-51-1303-12_GEO		0.4
-25				SB-51-1303-13_GEO		0.3
		GRAVEL and SAND: GRAVEL and SAND; trace silt; silt to very large pebbles; round to subangular gravel; poorlly sorted; dry; loose; brown.		SB-51-1303-14_GEO		0.4
				SB-51-1303-15_GEO		0.5
-30				SB-51-1303-16_GEO		0.4
				SB-51-1303-17_GEO		0.5
-35				SB-51-1303-18_GEO		0.6
				SB-51-1303-19_GEO		0.5
				SB-51-1303-20_GEO		0.4
-40				SB-51-1303-21_GEO		0.6
		Clay: CLAY and SILT (TILL); low plasticity; trace round gravels; slightly moist; very stiff; grey.		SB-51-1303-22_GEO	Negative at 43.0 ft	0.5
-45				SB-51-1303-23_GEO		0.5

BORING LOG

BORING LOG: **SB-51-1304**

TOTAL DEPTH (ft): **45.0**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM (Allison Transmission)**	DRILLING CO.:	**Major Drilling**
SITE LOCATION:	**Speedway, IN**	DRILLER:	**Ken Burkhard**
LOGGED BY:	**Luke Martin**	DRILLING METHOD:	**Hand Auger / Direct Push**
DATE STARTED:	**12/18/2013**	**COORDINATES**	
DATE COMPLETED:	**12/18/2013**	NORTHING:	1649252.0
		EASTING:	169257.9
		ELEVATION:	718.50

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		ASPHALT: Asphalt		SB-51-1304-01_GEO		0.0
		FILL: FILL; angular gravel.		SB-51-1304-02_GEO		0.2
-5		CLAY and SAND: CLAY and SAND; some silt; trace gravel and pieces of brick; fine sand; slighly moist; dark brown. Possible fill material for lot.		SB-51-1304-03_GEO		0.1
				SB-51-1304-04_GEO		0.3
		SAND and GRAVEL: SAND and GRAVEL; trace silt; silt to very large pebbles; poorly sorted; dry; loose; yellowish brown to grey. 21.9' - Moist; brown; round to subangular gravel. 22.2' - Wet.		SB-51-1304-05_GEO		0.2
-10				SB-51-1304-06_GEO		0.2
				SB-51-1304-07_GEO		0.3
-15				SB-51-1304-08_GEO		0.2
				SB-51-1304-09_GEO		0.2
				SB-51-1304-10_GEO		0.3
-20				SB-51-1304-11_GEO		0.3
				SB-51-1304-12_GEO		0.2
-25				SB-51-1304-13_GEO		0.5
		GRAVEL and SAND: GRAVEL and SAND; silt to large pebbles; round to subangular gravel; poorly sorted; saturated; brown.		SB-51-1304-14_GEO		0.3
				SB-51-1304-15_GEO		0.3
-30				SB-51-1304-16_GEO		0.3
				SB-51-1304-17_GEO		0.4
-35				SB-51-1304-18_GEO		0.4
				SB-51-1304-19_GEO		0.5
				SB-51-1304-20_GEO		0.5
-40				SB-51-1304-21_GEO		0.4
				SB-51-1304-22_GEO	Negative at 44.5 ft	0.4
		TILL: CLAY and SILT (TILL); low plasticity; trace rounded granules; very stiff; slightly moist; greyish brown.		SB-51-1304-23_GEO		0.4
-45						

BORING LOG

BORING LOG: **SB-51-1305**

TOTAL DEPTH (ft): **45.0**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM (Allison Transmission)**	DRILLING CO.:	**Major Drilling**
SITE LOCATION:	**Speedway, IN**	DRILLER:	**Ken Burkhard**
LOGGED BY:	**Luke Martin**	DRILLING METHOD:	**Hand Auger / Direct Push**
DATE STARTED:	**12/19/2013**	**COORDINATES**	
DATE COMPLETED:	**12/19/2013**	NORTHING:	1649190.4
		EASTING:	169186.9
		ELEVATION:	719.92

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		TOPSOIL: TOPSOIL		SB-51-1305-01_GEO		0.1
		CLAY AND SILT: CLAY and SILT; some sand; medium plasticity; clay to fine sand; slightly moist; soft; brown. No added moisture.		SB-51-1305-02_GEO		0.2
-5				SB-51-1305-03_GEO		0.2
				SB-51-1305-04_GEO		0.3
		SAND and GRAVEL: SAND and GRAVEL; trace silts; silt to large pebbles; rounded to subangular pebbles; poorly sorted; dry; loose; brown to yellowish brown. 23.6' - Moist. 24.0' - Wet.		SB-51-1305-05_GEO		0.3
-10				SB-51-1305-06_GEO		0.2
				SB-51-1305-07_GEO		0.2
-15				SB-51-1305-08_GEO		0.3
				SB-51-1305-09_GEO		0.2
				SB-51-1305-10_GEO		0.3
-20				SB-51-1305-11_GEO		0.6
				SB-51-1305-12_GEO		1.0
-25				SB-51-1305-13_GEO		1.2
				SB-51-1305-14_GEO		1.6
		GRAVEL and SAND: GRAVEL and SAND; same as above, but greater gravel content.		SB-51-1305-15_GEO		1.4
-30				SB-51-1305-16_GEO		0.7
				SB-51-1305-17_GEO		1.0
-35				SB-51-1305-18_GEO		1.1
				SB-51-1305-19_GEO		1.3
				SB-51-1305-20_GEO		1.7
-40		SAND: SAND; some gravel; fine sand to medium pebbles; course grain sand dominates; poorly sorted; wet; loose.		SB-51-1305-21_GEO	Negative	1.4
		TILL: CLAY and SILT (TILL); low plasticity; trace rounded gravels; slightly moist; very stiff; dark grey.		SB-51-1305-22_GEO		1.2
-45				SB-51-1305-23_GEO		1.1

BORING LOG

BORING LOG: **SB-51-1306**

TOTAL DEPTH (ft): **50.0**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**GM (Allison Transmission)**	DRILLING CO.:	**Major Drilling**
SITE LOCATION:	**Speedway, IN**	DRILLER:	**Ken Burkhard**
LOGGED BY:	**Luke Martin**	DRILLING METHOD:	**Hand Auger / Direct Push**
DATE STARTED:	**12/19/2013**	**COORDINATES**	
DATE COMPLETED:	**12/19/2013**	NORTHING:	1649269.4
		EASTING:	169278.3
		ELEVATION:	717.86

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	MOISTURE	SAMPLE NUMBER	SUDAN IV	PID (ppm)
0		ASPHALT: Asphalt		SB-51-1306-01_GEO		0.2
		FILL: FILL, angular gravel		SB-51-1306-02_GEO		0.7
-5		CLAY and SAND: CLAY and SAND; some silt; trace gravel; medium plasticity; slightly moist; soft; dark brown.		SB-51-1306-03_GEO		0.9
		SAND and GRAVEL: SAND and GRAVEL; trace silt; silt to large pebbles; poorly sorted; dry; loose; yellowish brown and grey. 7.1' - brown. 21.1' - Moist. 21.9' - Wet.		SB-51-1306-04_GEO		1.4
-10				SB-51-1306-05_GEO		1.2
				SB-51-1306-06_GEO		1.3
				SB-51-1306-07_GEO		0.6
-15				SB-51-1306-08_GEO		0.9
				SB-51-1306-09_GEO		1.1
-20				SB-51-1306-10_GEO		1.5
				SB-51-1306-11_GEO		1.4
				SB-51-1306-12_GEO		1.7
-25				SB-51-1306-13_GEO		1.5
				SB-51-1306-14_GEO		1.6
		GRAVEL and SAND: GRAVEL and SAND; trace silt; same as above, but more gravel than sand.		SB-51-1306-15_GEO		1.6
-30				SB-51-1306-16_GEO		1.4
				SB-51-1306-17_GEO		1.6
-35				SB-51-1306-18_GEO		1.5
				SB-51-1306-19_GEO		1.2
				SB-51-1306-20_GEO		1.2
-40				SB-51-1306-21_GEO		1.4
				SB-51-1306-22_GEO		1.4
-45				SB-51-1306-23_GEO		1.6
		TILL: CLAY and SILT (TILL) encountered, but recovery is all sand and gravel above and below small piece of till. Heaving sands from 35.0 - 50.0'. Unable to blow down past 20.0' due to compaction.		SB-51-1306-24_GEO	Negative at 47.0 ft	1.5
-50				SB-51-1306-25_GEO		1.4

WELL CONSTRUCTION LOG

ARCADIS

WELL NO.: **MW-1305-S2**

TOTAL DEPTH (ft): **35.0**

PROJECT INFORMATION

PROJECT: **GM (Allison Transmission)**

SITE LOCATION: **Speedway, IN**

LOGGED BY: **Wesley Kuhn**

DATE STARTED: **1/20/2014**

DATE COMPLETED: **1/21/2014**

DRILLING INFORMATION

DRILLING CO.: **Major Drilling**

DRILLER: **Wesley Casteel**

DRILLING METHOD: **Hand Auger / Roto Sonic**

COORDINATES:

Northing: **1649673.91**

Easting: **168859.82**

TOC Elevation: **717.79**

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE ID	SUDAN IV	PID (ppm)	WELL CONSTRUCTION DETAILS
0		ASPHALT: Asphalt pad	MW-1305-S2-01_GEO		0.2	Casing: PVC Sch 40 Seal: Bentonite-pellets
		FILL: FILL; gravel road pack; clay; silts; sands; small cobbles	MW-1305-S2-02_GEO		0.2	
		CLAY: CLAY; some silt; high to medium plasticity; trace sand and pebbles; small to very large pebbles; poorly sorted; moist; dark brown (10YR 3/3)	MW-1305-S2-03_GEO		0.3	
5			MW-1305-S2-04_GEO		12.3	
		SAND: SAND; medium to fine grained; well sorted; moist; shell fragments 3.5' - dark grey (10YR 4/1) 4.5' - dark brown (10YR 3/3) 5.0' - yellowish brown (10YR 5/6)	MW-1305-S2-05_GEO		31.9	
			MW-1305-S2-06_GEO		28.0	
10		SAND AND SILT: SAND and SILT; trace clay; trace very large to small pebbles; non-plastic; loose; dry; stiff; yellowish brown (10 YR 5/4)	MW-1305-S2-07_GEO		8.8	
			MW-1305-S2-08_GEO		11.7	
		CLAY: CLAY; high to medium plasticity; trace silt; trace sand and pebbles; tacky; moist; very soft; dark brown (10YR 3/3)	MW-1305-S2-09_GEO		15.1	
15		SAND and GRAVEL: SAND and GRAVEL; fine grained to very large pebbles; angular to rounded pebbles; poorly sorted; loose; dark yellowish brown (10YR 4/6) 20.0' - saturated; wet; smear zone; odor; staining grey; very dark greyish brown (10YR 3/2); coarse grained to very large pebbles 24.5' - trace silts and clays; stiff 25.0' - coarse grained to small cobble 27.8-28.1' - clay; some silt; medium to high plasticity; trace small rounded pebbles; moist; yellowish brown (10YR 5/6)	MW-1305-S2-10_GEO		8.3	Filter Pack: Sand
			MW-1305-S2-11_GEO		101.5	Screen: PVC Sch 40
20			MW-1305-S2-12_GEO	Positive Sudan IV	259.3	
			MW-1305-S2-13_GEO		295.8	
			MW-1305-S2-14_GEO		90.8	
25			MW-1305-S2-15_GEO		8.7	
			MW-1305-S2-16_GEO		25.3	
			MW-1305-S2-17_GEO		9.8	
30			MW-1305-S2-18_GEO		30.8	
		Clay: CLAY (TILL); some silt; no to low plasticity; trace small rounded pebbles; moist to dry; very stiff; yellowish brown (10YR 5/6) 34.2' - color change, dark grey (10YR 4/1) 32.5-33.0' - sand lens; fine to medium grained; well sorted	MW-1305-S2-19_GEO	Negative Sudan IV	11.6	
35			MW-1305-S2-20_GEO		6.4	

WELL CONSTRUCTION LOG

ARCADIS

WELL NO.: **MW-1306-S2**

TOTAL DEPTH (ft): **35.0**

PROJECT INFORMATION

PROJECT: **GM (Allison Transmission)**

SITE LOCATION: **Speedway, IN**

LOGGED BY: **Wesley Kuhn**

DATE STARTED: **1/20/2014**

DATE COMPLETED: **1/20/2014**

DRILLING INFORMATION

DRILLING CO.: **Major Drilling**

DRILLER: **Wesley Casteel**

DRILLING METHOD: **Hand Auger / Roto Sonic**

COORDINATES:

Northing:

Easting:

TOC Elevation:

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE ID	SUDAN IV	PID (ppm)	WELL CONSTRUCTION DETAILS
0		TOPSOIL: TOPSOIL and grass	MW-1306-S2-01_GEO		0.0	Casing: PVC Sch 40 Seal: Bentonite-pellets
		CLAY AND SILT: CLAY and SILT; some sand; poorly sorted; moist; loose; dark yellowish brown (10YR 4/4) 3.0' - increase CLAY content; medium to high plasticity; trace sands and gravels; moist; tacky; soft to medium stiff; dark brown (10YR 3/3) 3.5' - increase gravels; medium to very large pebbles 4.0' - increase sand content 5.0' - small cobble	MW-1306-S2-02_GEO		0.0	
			MW-1306-S2-03_GEO		0.0	
5			MW-1306-S2-04_GEO		0.8	
			MW-1306-S2-05_GEO		1.5	
		SAND and GRAVEL: SAND and GRAVEL; medium grained to small cobbles; poorly sorted; dry to moist; very loose; yellowish brown (10YR 5/6) 18.0' - increase silt content; dry; friable; stiff (clumps) 20.0' - medium grained to very large pebbles; wet; saturated; brown (10YR 5/3) 29.5' - increase silts; medium stiff to stiff; friable	MW-1306-S2-06_GEO		1.2	
10			MW-1306-S2-07_GEO		1.4	
			MW-1306-S2-08_GEO		1.6	
			MW-1306-S2-09_GEO		1.5	
15			MW-1306-S2-10_GEO		12.8	Filter Pack: Sand
			MW-1306-S2-11_GEO		20.1	Screen: PVC Sch 40
20			MW-1306-S2-12_GEO		3.8	
			MW-1306-S2-13_GEO		6.4	
			MW-1306-S2-14_GEO		7.2	
25			MW-1306-S2-15_GEO		16.8	
			MW-1306-S2-16_GEO		5.8	
30			MW-1306-S2-17_GEO		3.9	
		SAND: SAND; fine to medium grained; well sorted; wet; yellowish brown (10YR 5/4)	MW-1306-S2-18_GEO	Negative Sudan IV	1.0	
35		TILL: CLAY (TILL); trace silt; non-plastic; trace rounded medium to very large pebbles; very stiff; friable; dark grey (10YR 4/1)	MW-1306-S2-19_GEO		0.9	

WELL CONSTRUCTION LOG

ARCADIS

WELL NO.: **MW-1307-S2**

TOTAL DEPTH (ft): **42.0**

PROJECT INFORMATION

PROJECT: **GM (Allison Transmission)**

SITE LOCATION: **Speedway, IN**

LOGGED BY: **Tim Porter**

DATE STARTED: **1/22/2014**

DATE COMPLETED: **1/22/2014**

DRILLING INFORMATION

DRILLING CO.: **Major Drilling**

DRILLER: **Wesley Casteel**

DRILLING METHOD: **Hand Auger / Roto Sonic**

COORDINATES:

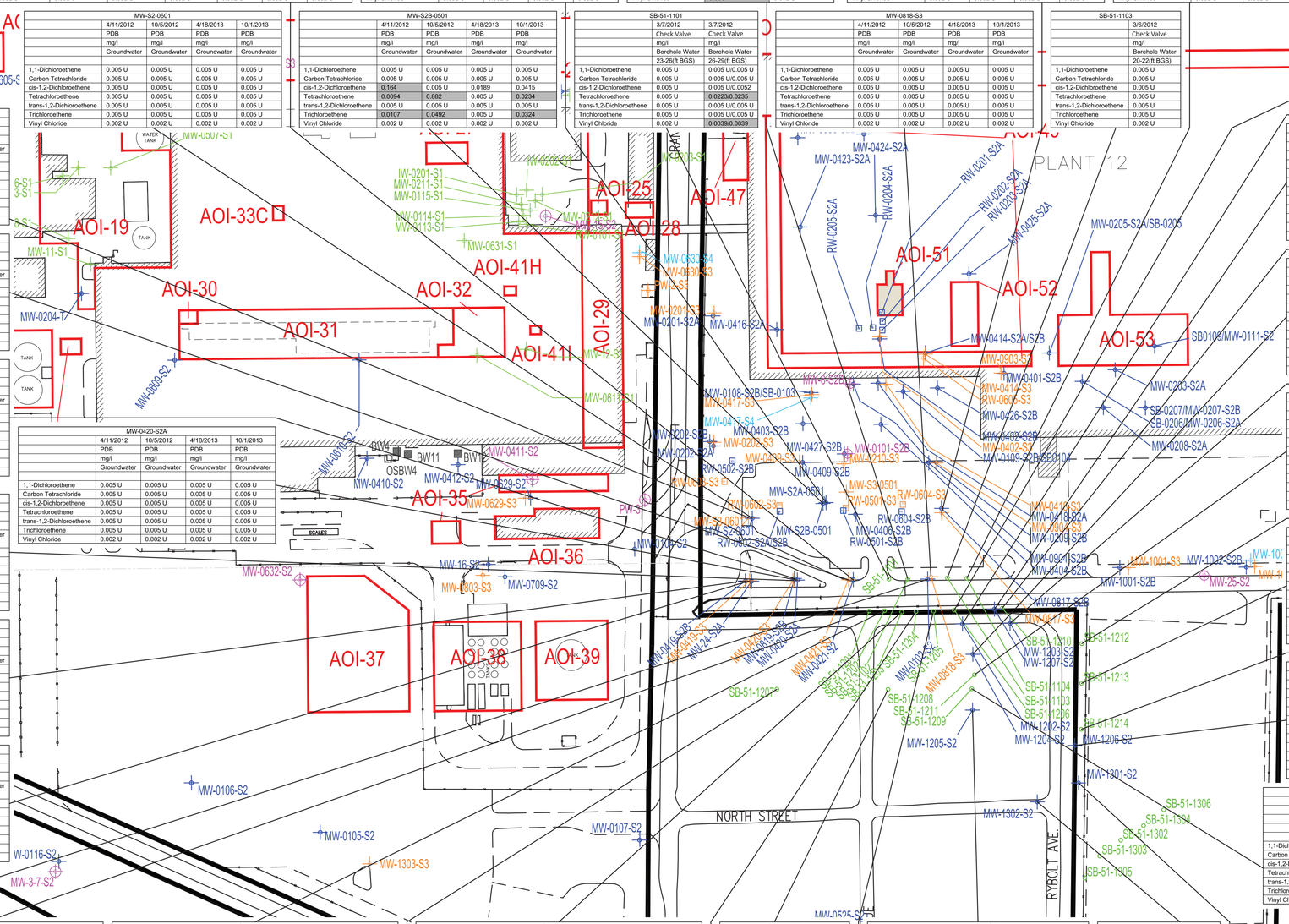
Northing:

Easting:

TOC Elevation:

DEPTH	SOIL SYMBOLS	SOIL DESCRIPTION	SAMPLE ID	SUDAN IV	PID (ppm)	WELL CONSTRUCTION DETAILS
0		ASPHALT: Asphalt pad	MW-1307-S2-01_GEO		0.8	Casing; PVC Sch 40 Seal: Bentonite-pellets
		FILL: FILL	MW-1307-S2-02_GEO		0.3	
		CLAY: CLAY; clay loam; plastic; few gravels; slightly moist; dark yellowish brown (10YR 4/6)	MW-1307-S2-03_GEO		1.0	
5		CLAY and SAND: CLAY and SAND; loamy sand; loose; dry to slightly moist; yellowish brown (10YR 5/4)	MW-1307-S2-04_GEO		2.3	
			MW-1307-S2-05_GEO		1.2	
10		SAND and GRAVEL: SAND and GRAVEL; single grained; non-cohesive; slightly moist; loose; yellowish brown (10YR 5/4) 11.0-12.5' - moist; iron oxidation; yellowish brown (10YR 5/6) 19.5-20.0' - slightly inclusion of silt and clay 20.0' - Sand and Gravel; loose; Wet	MW-1307-S2-06_GEO		0.2	
			MW-1307-S2-07_GEO		0.9	
15			MW-1307-S2-08_GEO		2.7	
			MW-1307-S2-09_GEO		1.0	
			MW-1307-S2-10_GEO		0.7	
20			MW-1307-S2-11_GEO		1.6	
			MW-1307-S2-12_GEO		1.2	
			MW-1307-S2-13_GEO		0.9	
25			MW-1307-S2-14_GEO		1.0	
			MW-1307-S2-15_GEO		0.9	
30			MW-1307-S2-16_GEO		0.9	
			MW-1307-S2-17_GEO		0.7	Filter Pack: Sand
35		SAND: SAND; fine to medium grained; few silts; wet; loose; dark yellowish brown (10YR 4/4) 35.0-38.0' - color change to grey (10YR 5/1)	MW-1307-S2-18_GEO		1.7	Screen: PVC Sch 40
			MW-1307-S2-19_GEO		2.1	
		TILL: CLAY (TILL); clayey silt; few sands and gravels; non-plastic; stiff; grey (10YR 5/1)	MW-1307-S2-20_GEO	Negative Sudan IV	1.2	
40			MW-1307-S2-21_GEO		0.5	

ATTACHMENT C: Drawing 10 from the *Interim Measures Semi-Annual Remediation Status & Groundwater Monitoring Report Second Half 2013*


AOI-33B
MW-0605-S
AOI-19
AOI-33C
AOI-30
AOI-31
AOI-32
AOI-41H
AOI-41
AOI-29
AOI-25
AOI-28
AOI-47
AOI-51
AOI-52
AOI-53
AOI-35
AOI-36
AOI-37
AOI-38
AOI-39
PLANT 12
NORTH STREET
RYBOLT AVE.
TANK
WATER TANK
SCALES
MW-0204-T
MW-11-S1
MW-0698-S2
MW-0632-S2
MW-0106-S2
MW-0105-S2
MW-0107-S2
MW-1303-S3
W-0116-S2
MW-3-S2
MW-0205-S2A/SB-0205
MW-0424-S2A
MW-0423-S2A
RW-0201-S2A
RW-0202-S2A
RW-0203-S2A
RW-0204-S2A
RW-0205-S2A
MW-0425-S2A
MW-0414-S2A/S2B
MW-0903-S2
MW-0401-S2B
MW-0203-S2A
SB-0207/MW-0207-S2B
SB-0206/MW-0206-S2A
MW-0208-S2A
SB0103/MW-0111-S2
MW-0411-S2
MW-0410-S2
MW-0412-S2
MW-0629-S3
MW-0709-S2
MW-16-S2
MW-1001-S2B
MW-1002-S2B
MW-25-S2
SB-51-1212
SB-51-1213
SB-51-1214
SB-51-1306
SB-51-1304
SB-51-1302
SB-51-1303
SB-51-1305
MW-1301-S2
MW-1302-S2
MW-1205-S2
SB-51-1207
SB-51-1208
SB-51-1211
SB-51-1209
SB-51-1204
SB-51-1205
SB-51-1310
MW-1203-S2
MW-1207-S2
SB-51-1104
SB-51-1103
SB-51-1206
MW-1202-S2
MW-1206-S2
MW-0818-S3
MW-0817-S3
MW-0409-S2B
MW-0406-S2B
RW-0501-S2B
RW-0604-S2B
MW-0501-S3
MW-0403-S2B
MW-0427-S2B
MW-0101-S2B
MW-0416-S2A
MW-0108-S2B/SB-0103
MW-0417-S3
MW-0417-S4
MW-0202-S3
MW-0201-S2B
MW-0201-S2A
MW-0202-S2A
MW-0409-S3
RW-0502-S2B
RW-0502-S3
MW-0602-S3
MW-0601-S3
MW-S2-0601
MW-S2-0501
MW-S2A-0501
MW-S2B-0501
MW-0631-S1
MW-0630-S4
MW-0630-S3
MW-0201-S3
MW-0201-S2A
MW-0611-S1
MW-0114-S1
MW-0113-S1
MW-0115-S1
MW-0211-S1
MW-0201-S1
MW-0202-S1
MW-0101-S1
MW-0102-S1
MW-0103-S1
MW-0104-S1
MW-0105-S1
MW-0106-S1
MW-0107-S1
MW-0108-S1
MW-0109-S1
MW-0110-S1
MW-0111-S1
MW-0112-S1
MW-0113-S1
MW-0114-S1
MW-0115-S1
MW-0116-S1
MW-0117-S1
MW-0118-S1
MW-0119-S1
MW-0120-S1
MW-0121-S1
MW-0122-S1
MW-0123-S1
MW-0124-S1
MW-0125-S1
MW-0126-S1
MW-0127-S1
MW-0128-S1
MW-0129-S1
MW-0130-S1
MW-0131-S1
MW-0132-S1
MW-0133-S1
MW-0134-S1
MW-0135-S1
MW-0136-S1
MW-0137-S1
MW-0138-S1
MW-0139-S1
MW-0140-S1

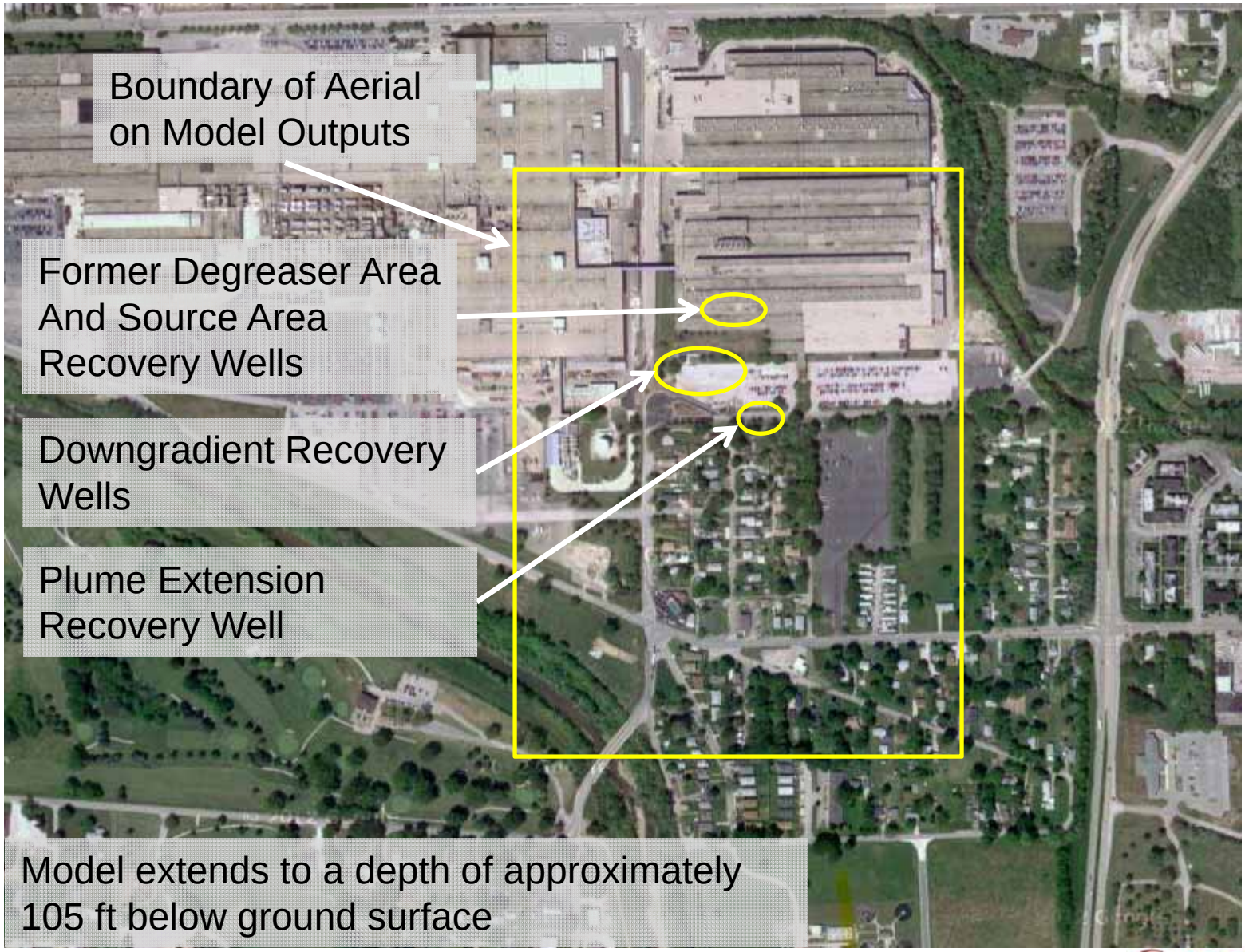
ATTACHMENT D: MVS MODEL SCREENSHOTS

Geologic and Contaminant Modeling

General Motors LLC
at Allison Transmission
Southern Portion of Plant 12

Updated March 19, 2014

Model Area



ARCADIS

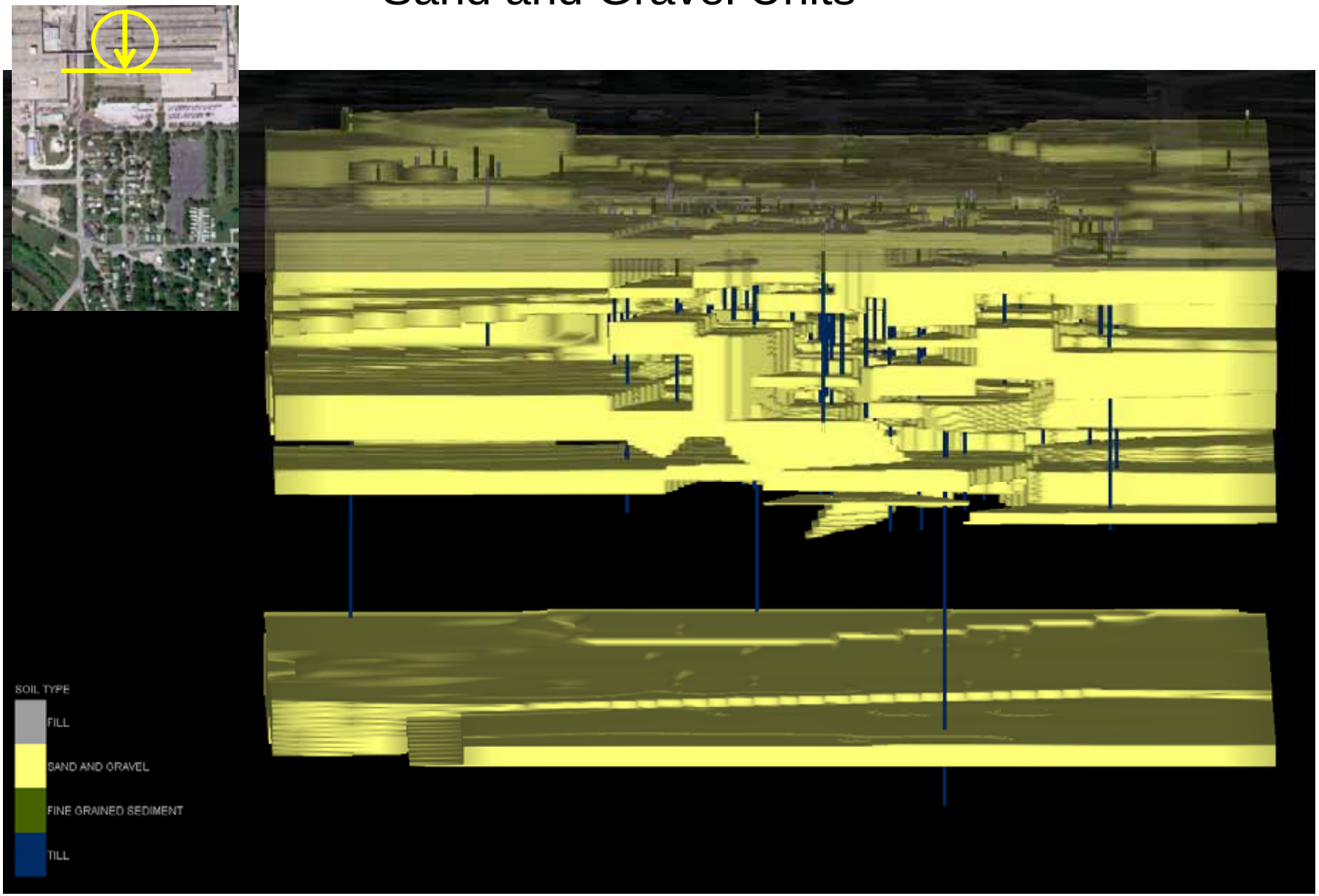
General Model Information

- Model prepared using Mining Visualization Software (MVS).
- Geologic model includes soil borings, monitoring wells, piezometers and recovery wells installed in the subject area through 2014.
- Chemistry model includes groundwater and borehole water analytical data.

ARCADIS

View Indicator

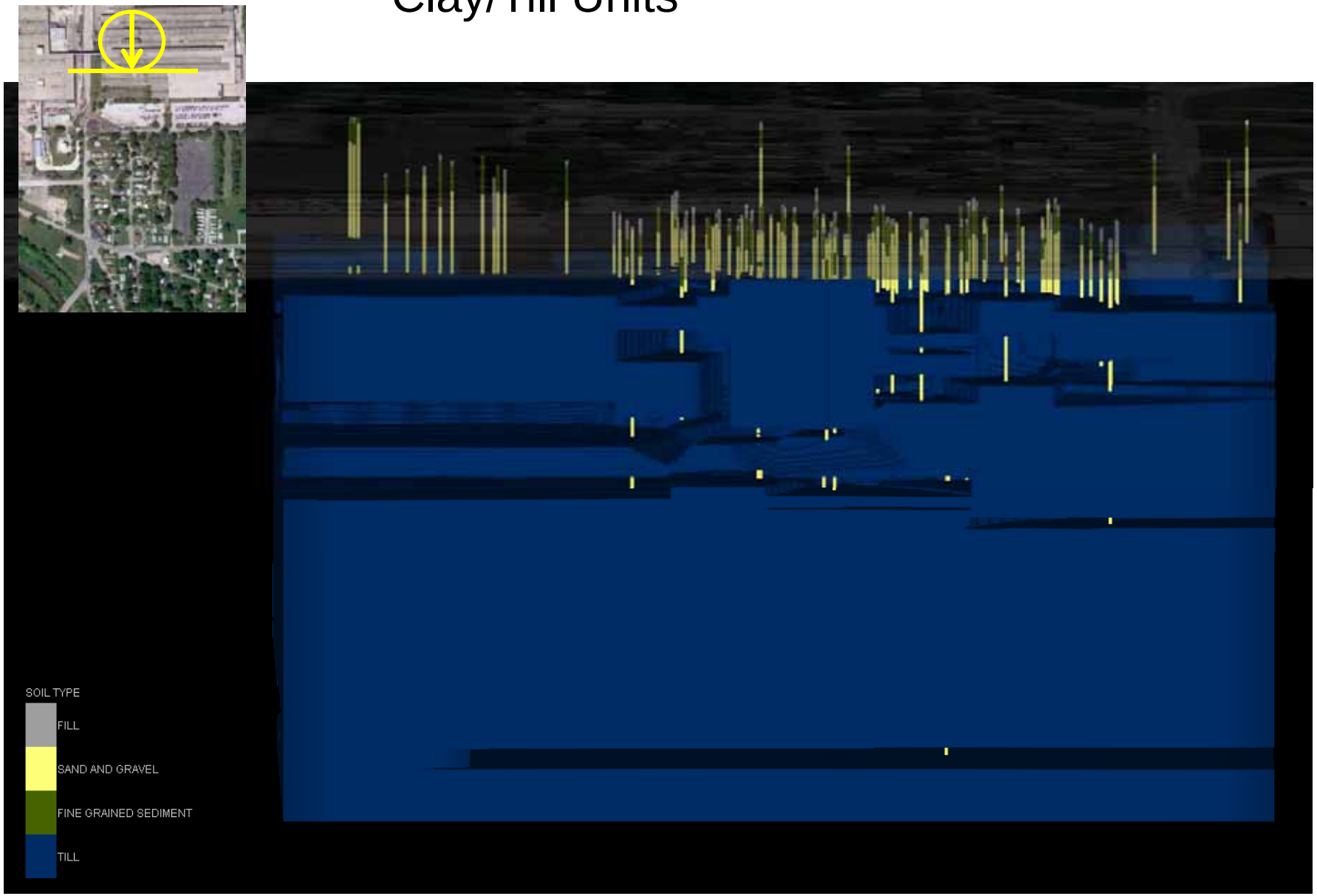
Sand and Gravel Units



Note: Each soil boring and/or monitoring well location used to generate the model is shown with the appropriate lithology (see symbols above)

View Indicator

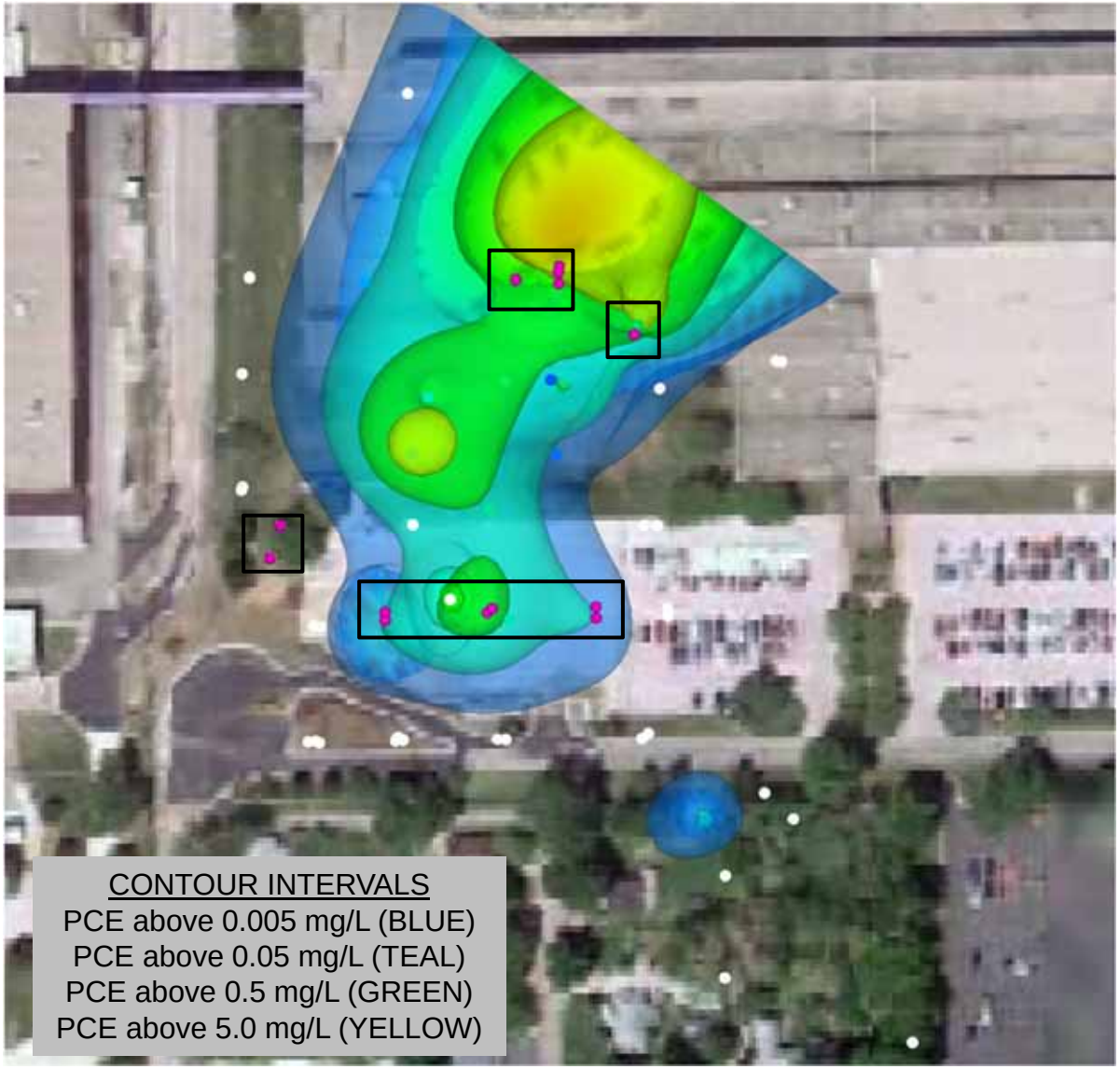
Clay/Till Units



Note: Each soil boring and/or monitoring well location used to generate the model is shown with the appropriate lithology (see symbols above)

OCTOBER 2012 PCE CONCENTRATIONS IN GROUNDWATER

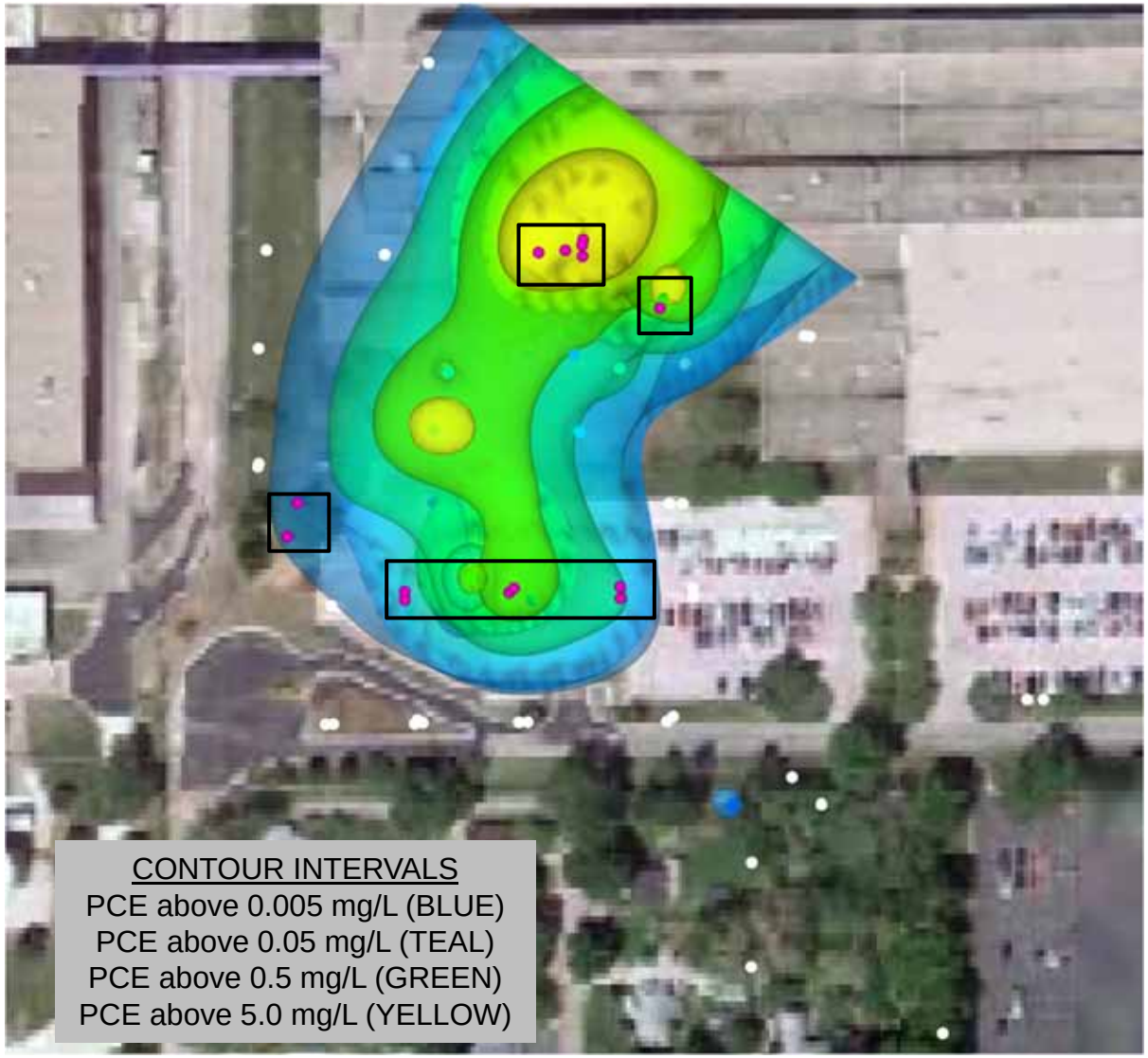
(View from above showing entire depth of model)



NOTE: Recovery wells shown as magenta dot. The model is updated showing only October 2012 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER-NOVEMBER 2013 PCE CONCENTRATIONS IN GROUNDWATER

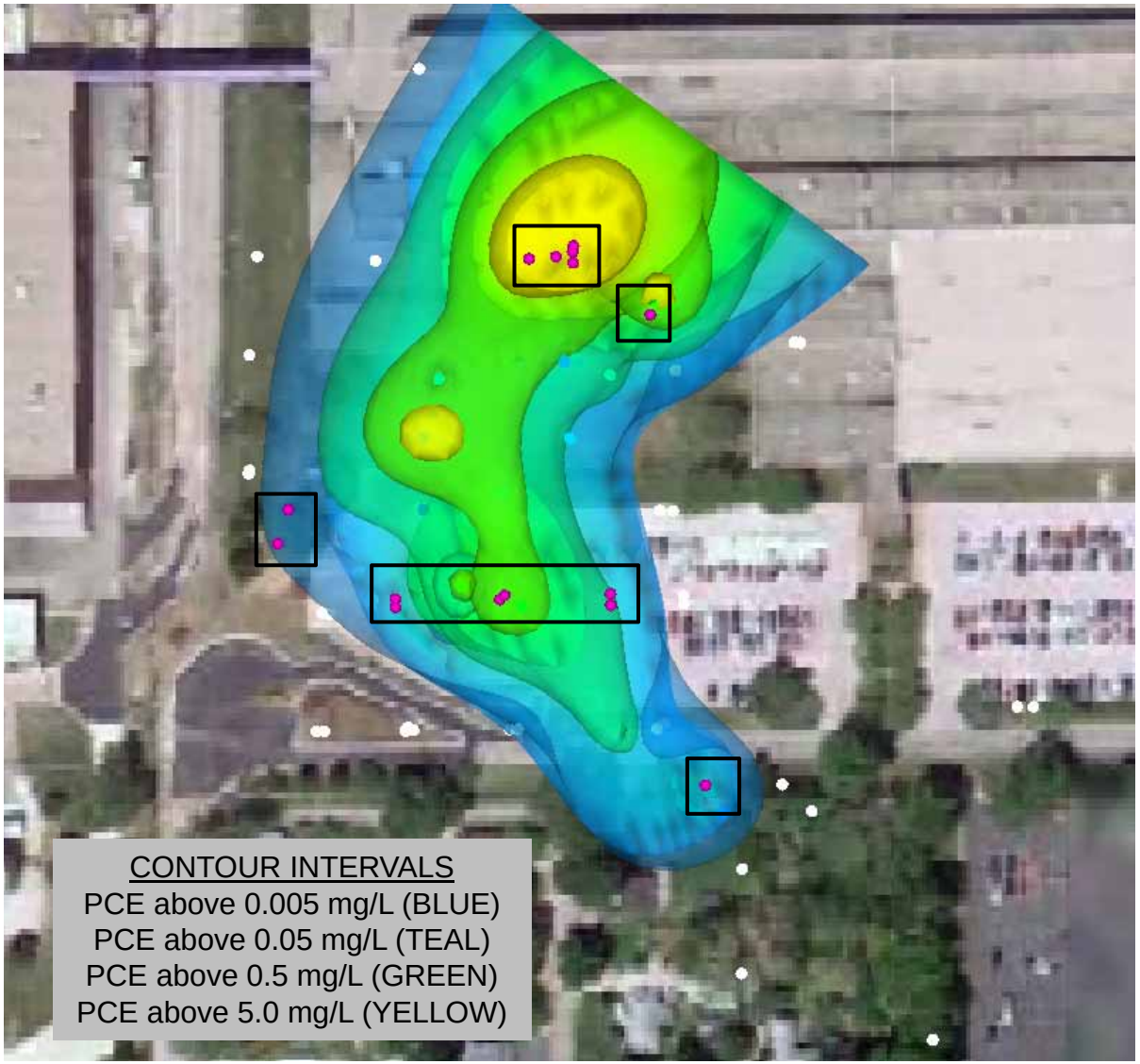
(View from above showing entire depth of model)



NOTE: Recovery wells shown as magenta dot.• The model is updated showing only October –November 2013 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2013 - JANUARY 2014 PCE CONCENTRATIONS IN GROUNDWATER

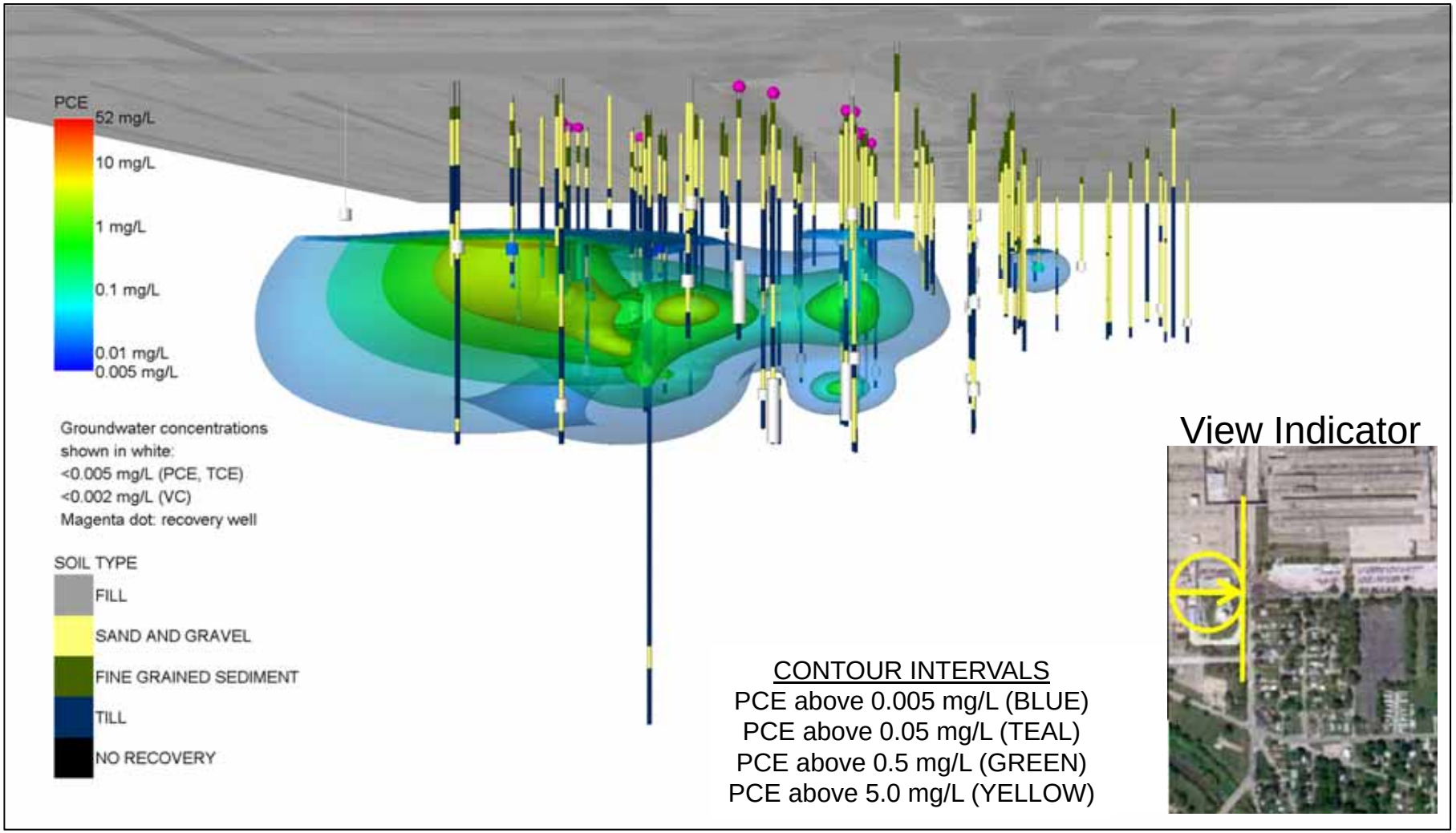
(View from above showing entire depth of model)



NOTE: Recovery wells shown as magenta dot. The model is updated showing only October 2013–January 2014 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2012 PCE CONCENTRATIONS IN GROUNDWATER

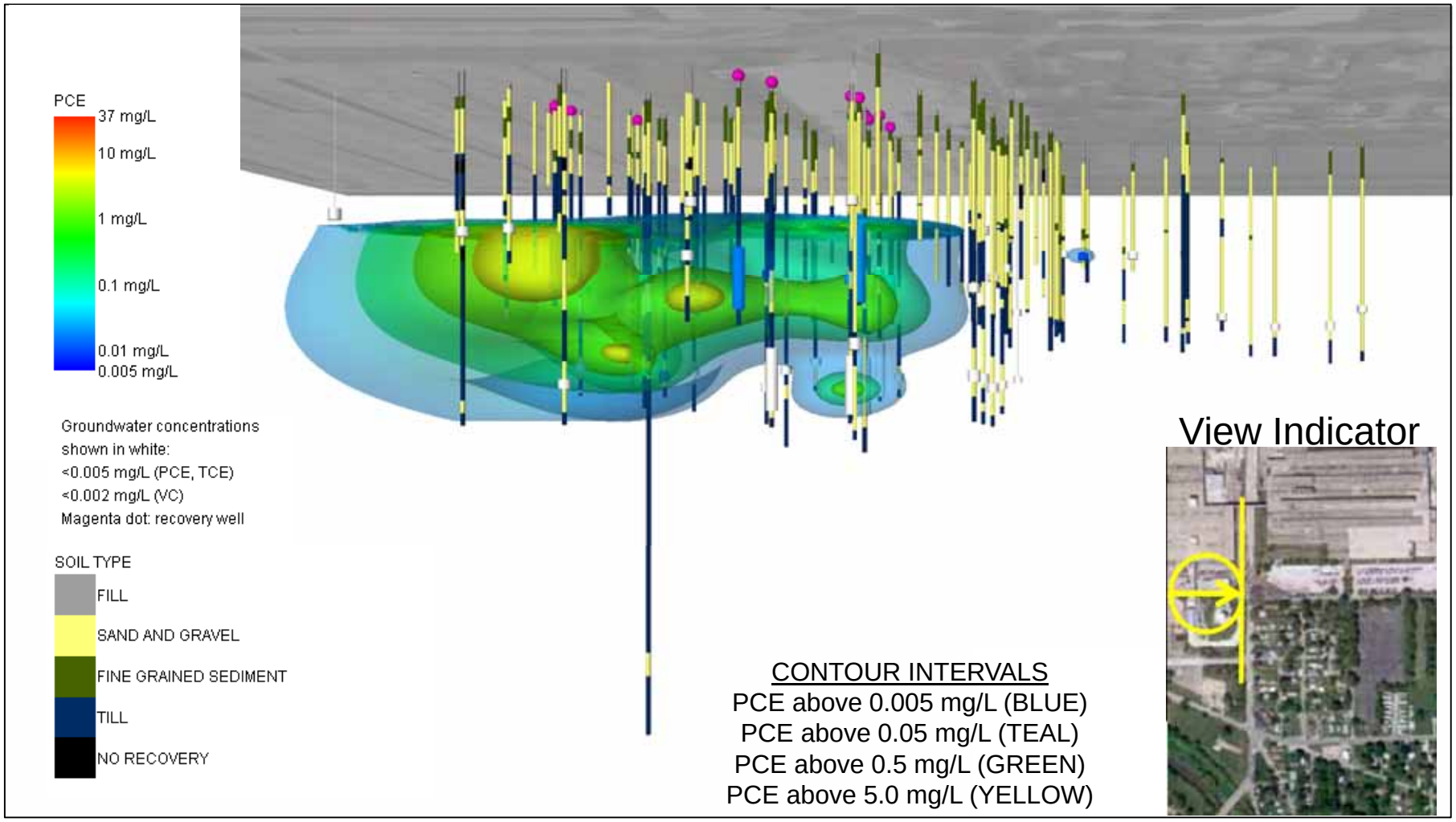
(Looking west to east, from below)



NOTES: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October 2012 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER-NOVEMBER 2013 PCE CONCENTRATIONS IN GROUNDWATER

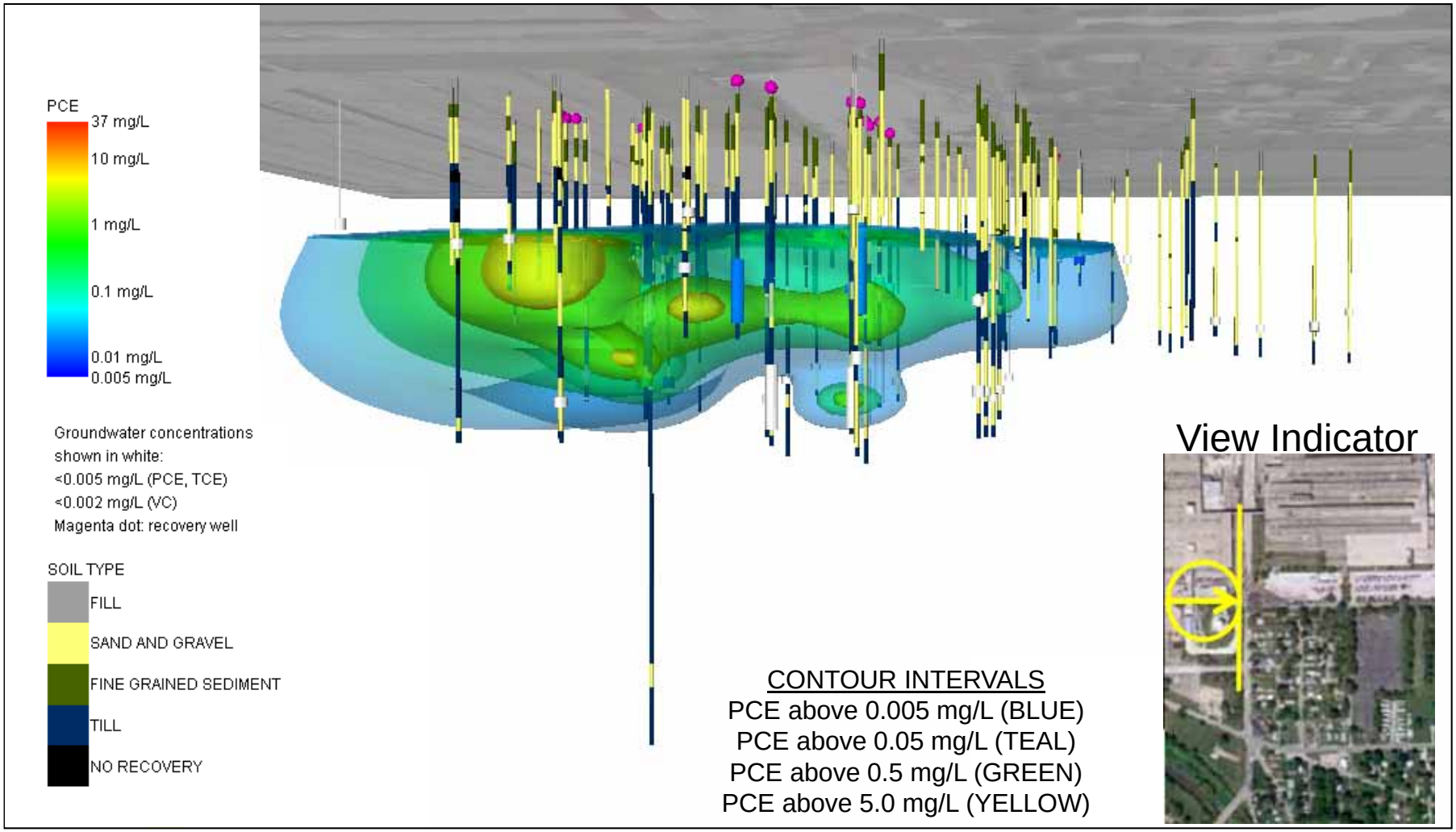
(Looking west to east, from below)



NOTES: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October – November 2013 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2013 - JANUARY 2014 PCE CONCENTRATIONS IN GROUNDWATER

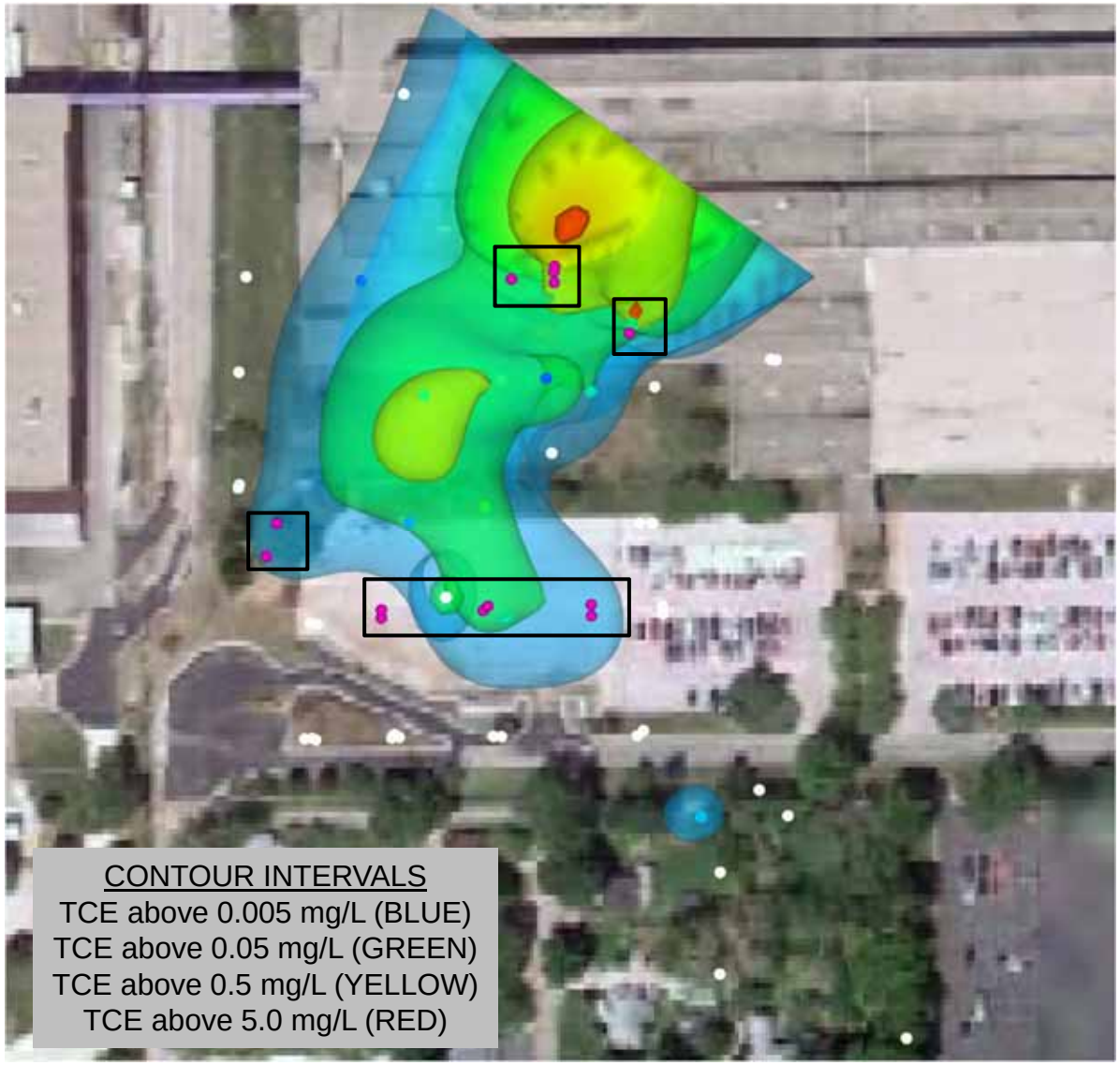
(Looking west to east, from below)



NOTES: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October 2013–January 2014 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2012 TCE CONCENTRATIONS IN GROUNDWATER

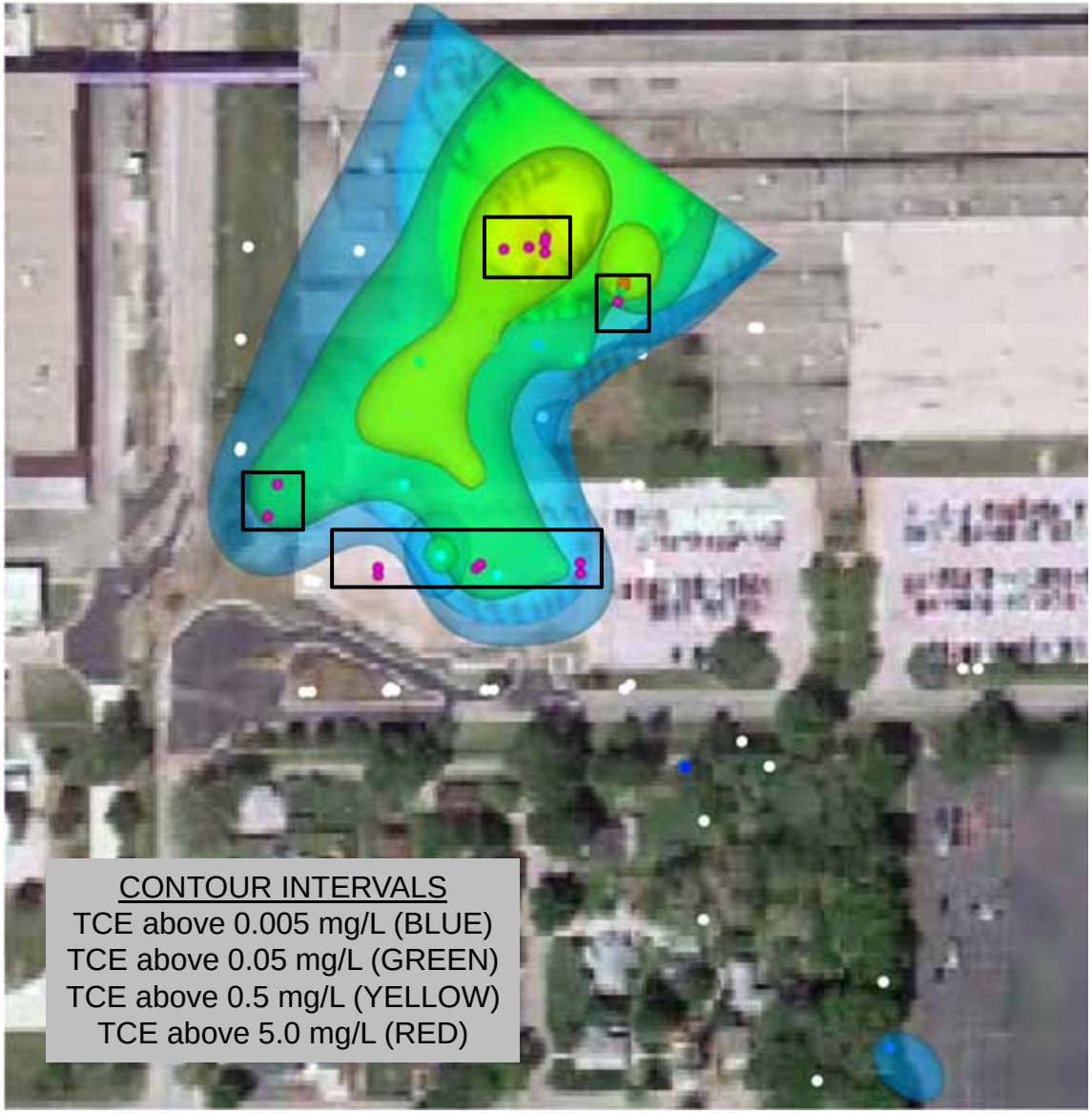
(View from above showing entire depth of model)



NOTE: Recovery wells shown as magenta dot. The model is updated showing only October 2012 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER-NOVEMBER 2013 TCE CONCENTRATIONS IN GROUNDWATER

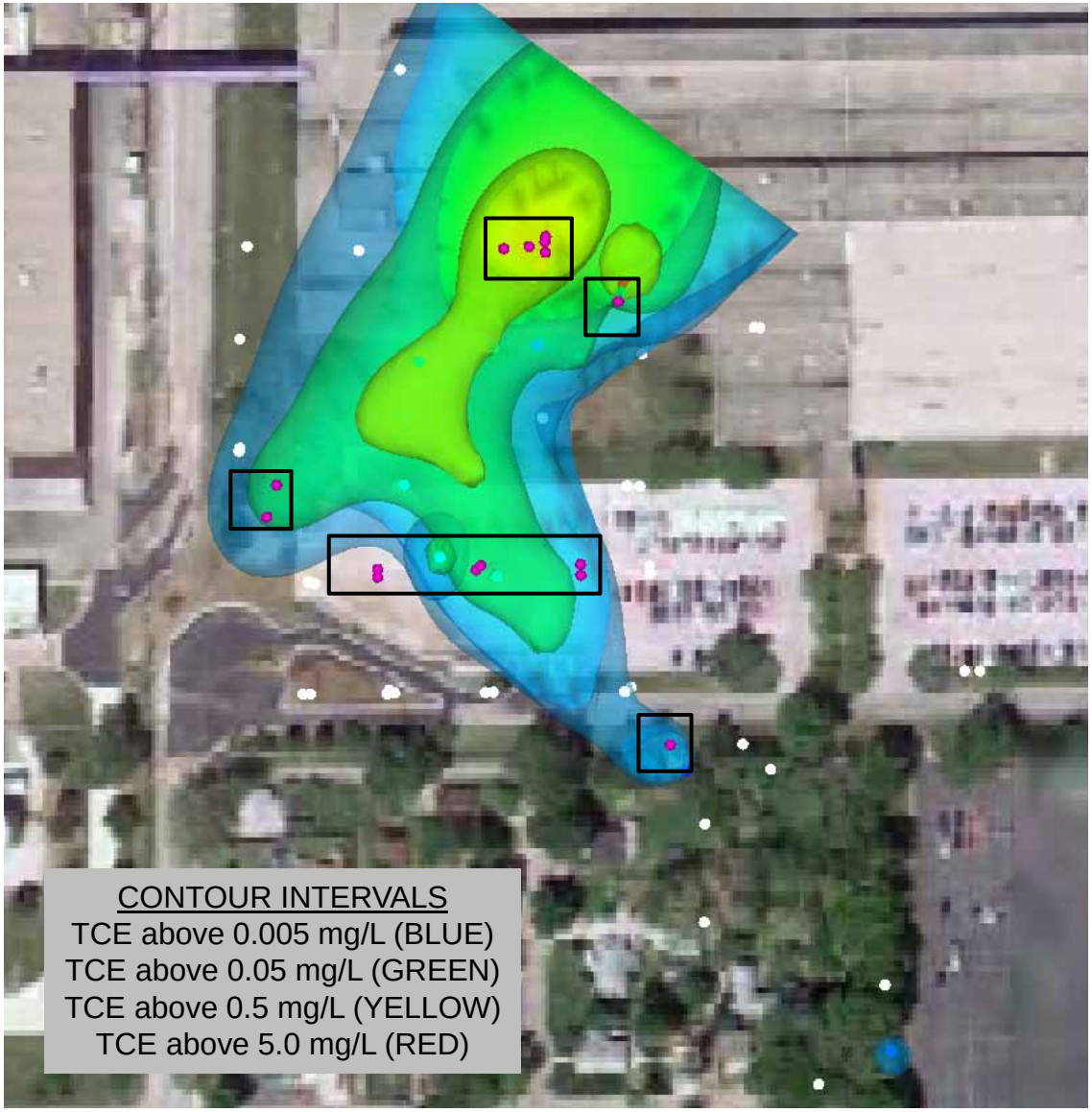
(View from above showing entire depth of model)



NOTE: Recovery wells shown as magenta dot. The model is updated showing only October – November 2013 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2013 - JANUARY 2014 TCE CONCENTRATIONS IN GROUNDWATER

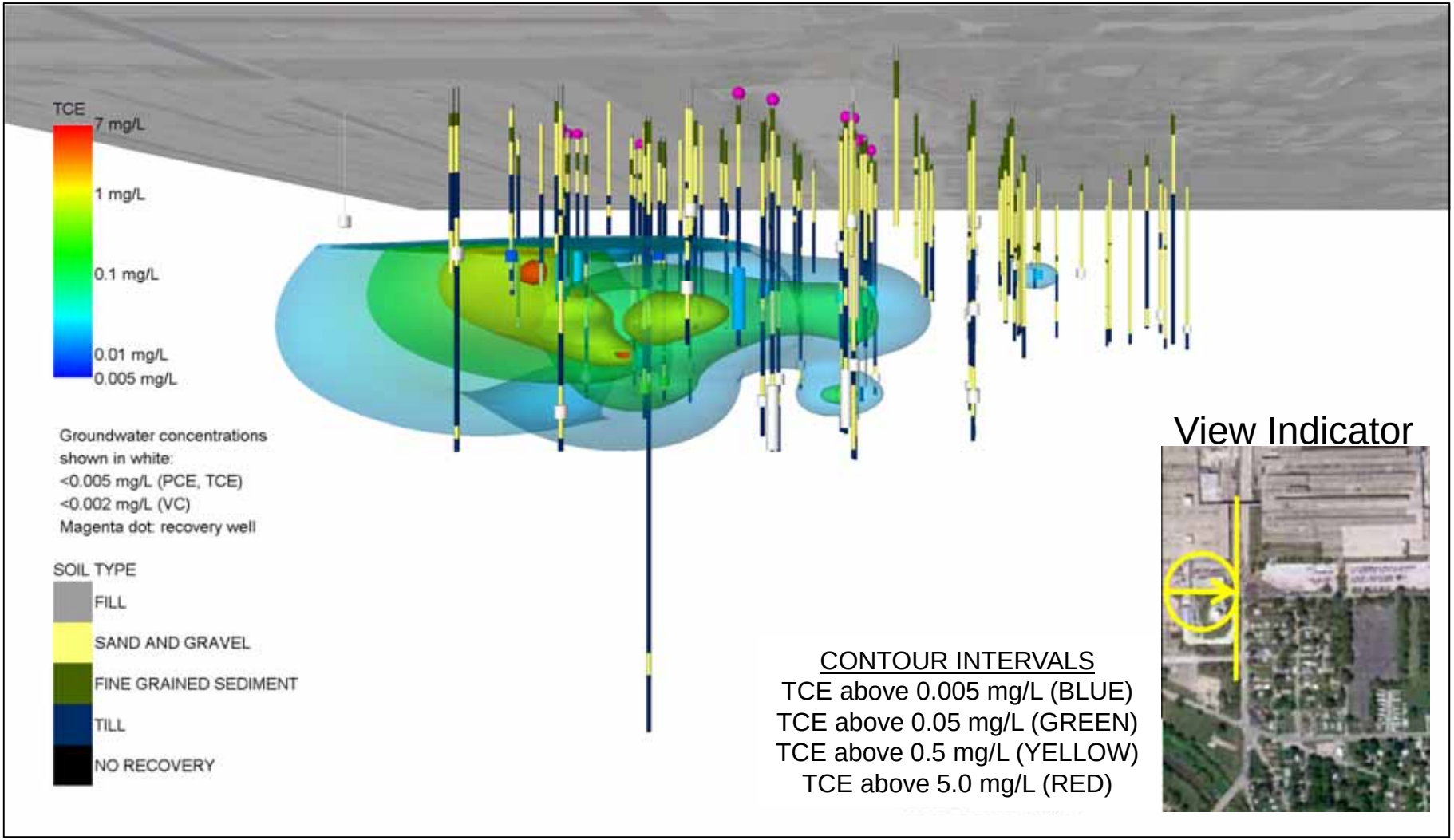
(View from above showing entire depth of model)



NOTE: Recovery wells shown as magenta dot. The model is updated showing only October 2013–January 2014 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2012 TCE CONCENTRATIONS IN GROUNDWATER

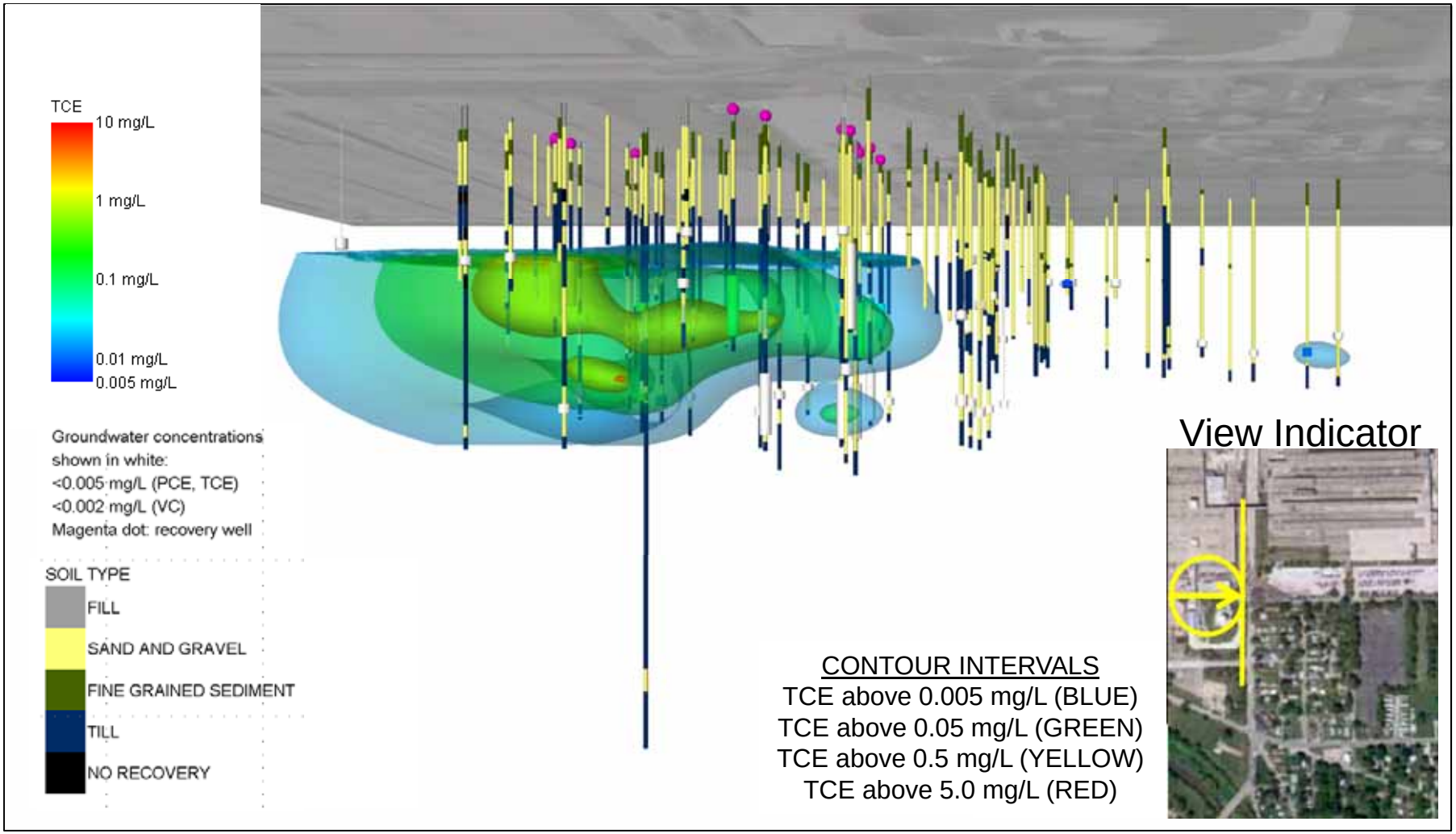
(Looking west to east, from below)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for TCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October 2012 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER-NOVEMBER 2013 TCE CONCENTRATIONS IN GROUNDWATER

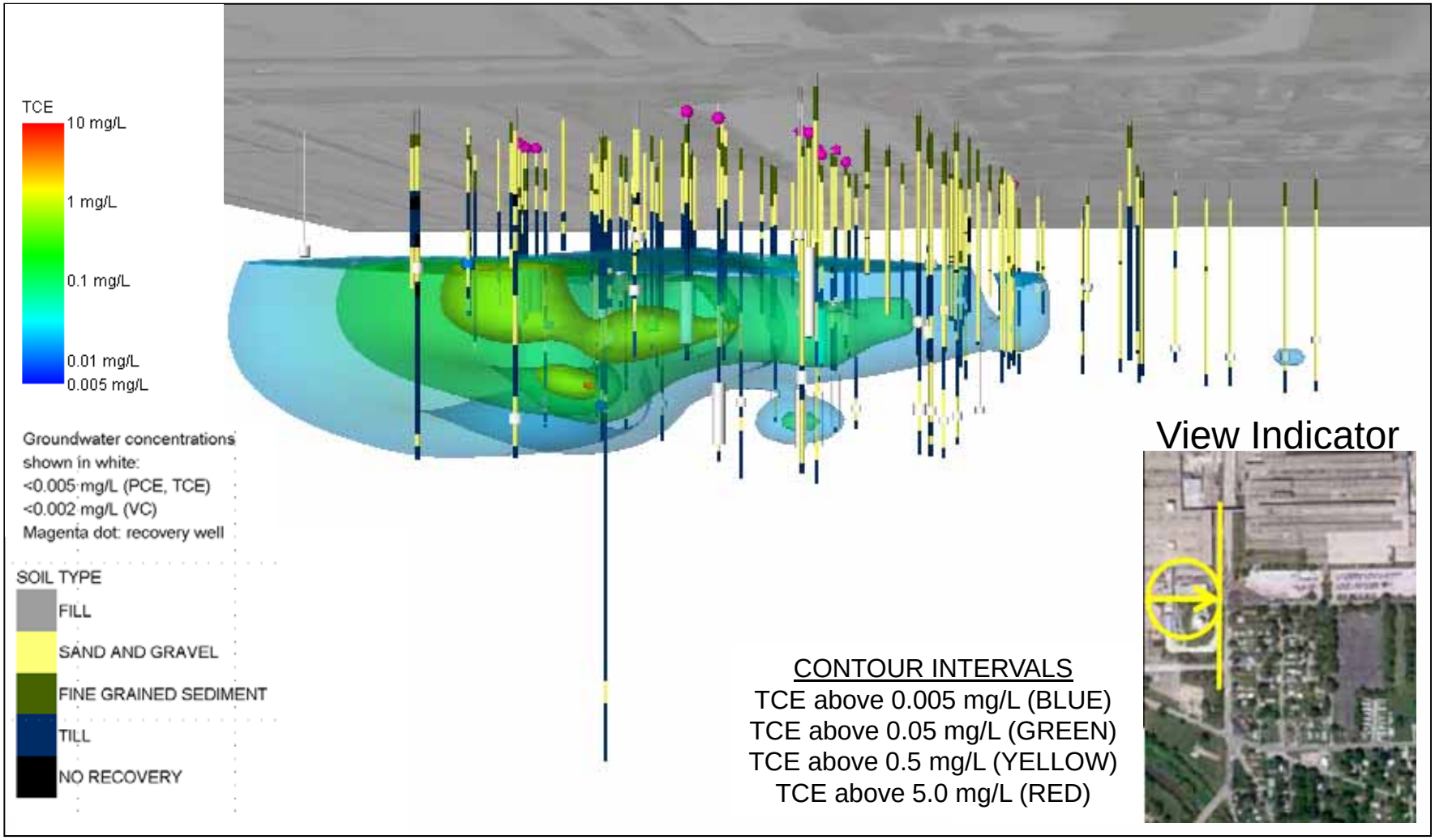
(Looking west to east, from below)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for TCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October – November 2013 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2013 - JANUARY 2014 TCE CONCENTRATIONS IN GROUNDWATER

(Looking west to east, from below)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for TCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October 2013–January 2014 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2012 VC CONCENTRATIONS IN GROUNDWATER

(View from above showing entire depth of model)

NOTE: Recovery wells shown as magenta dot. The model is updated showing only October 2012 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER-NOVEMBER 2013 VC CONCENTRATIONS IN GROUNDWATER

(View from above showing entire depth of model)

NOTE: Recovery wells shown as magenta dot. The model is updated showing only October – November 2013 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

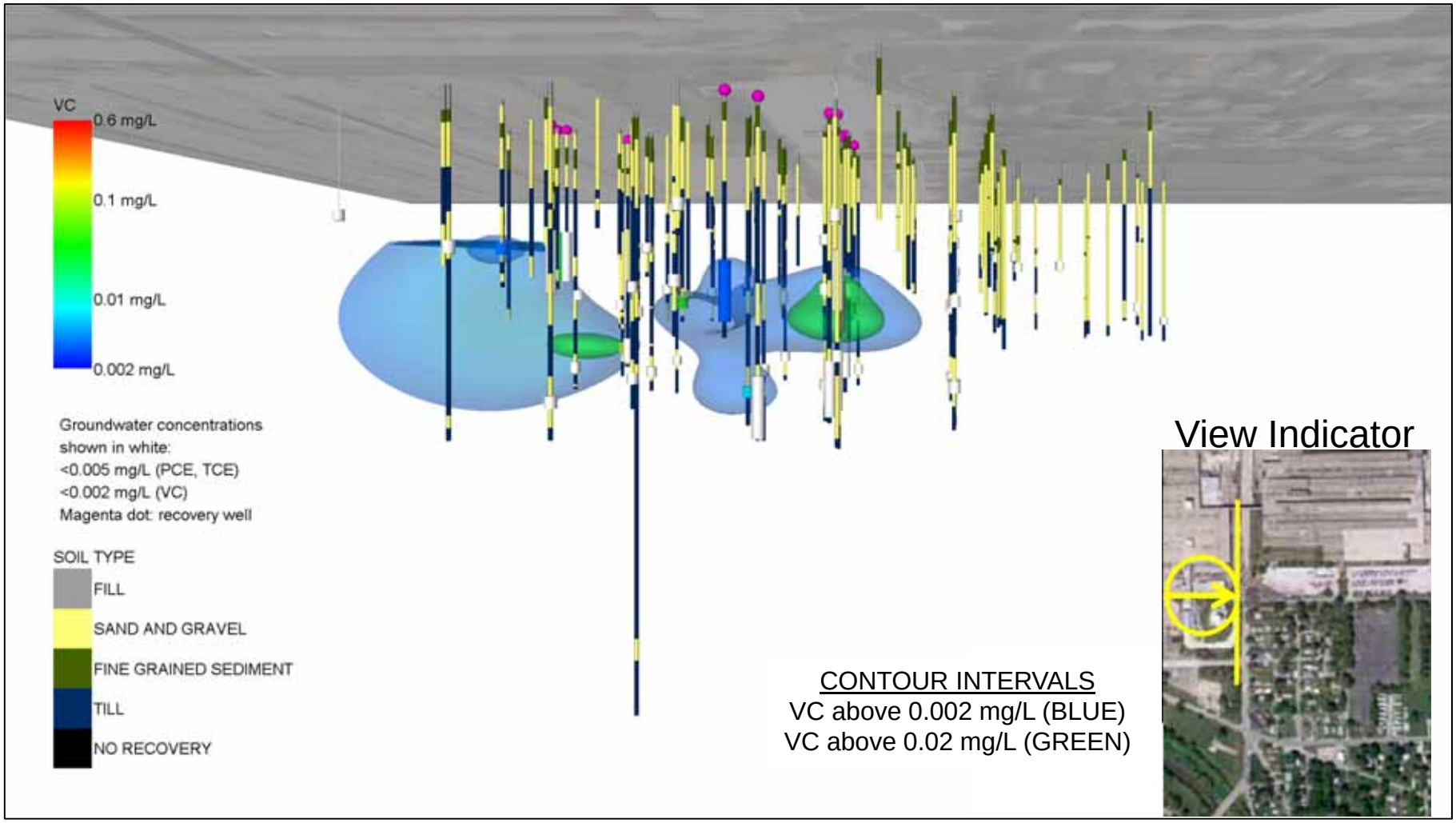
OCTOBER 2013 - JANUARY 2014 VC CONCENTRATIONS IN GROUNDWATER

(View from above showing entire depth of model)

NOTE: Recovery wells shown as magenta dot. The model is updated showing only October 2013–January 2014 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2012 VC CONCENTRATIONS IN GROUNDWATER

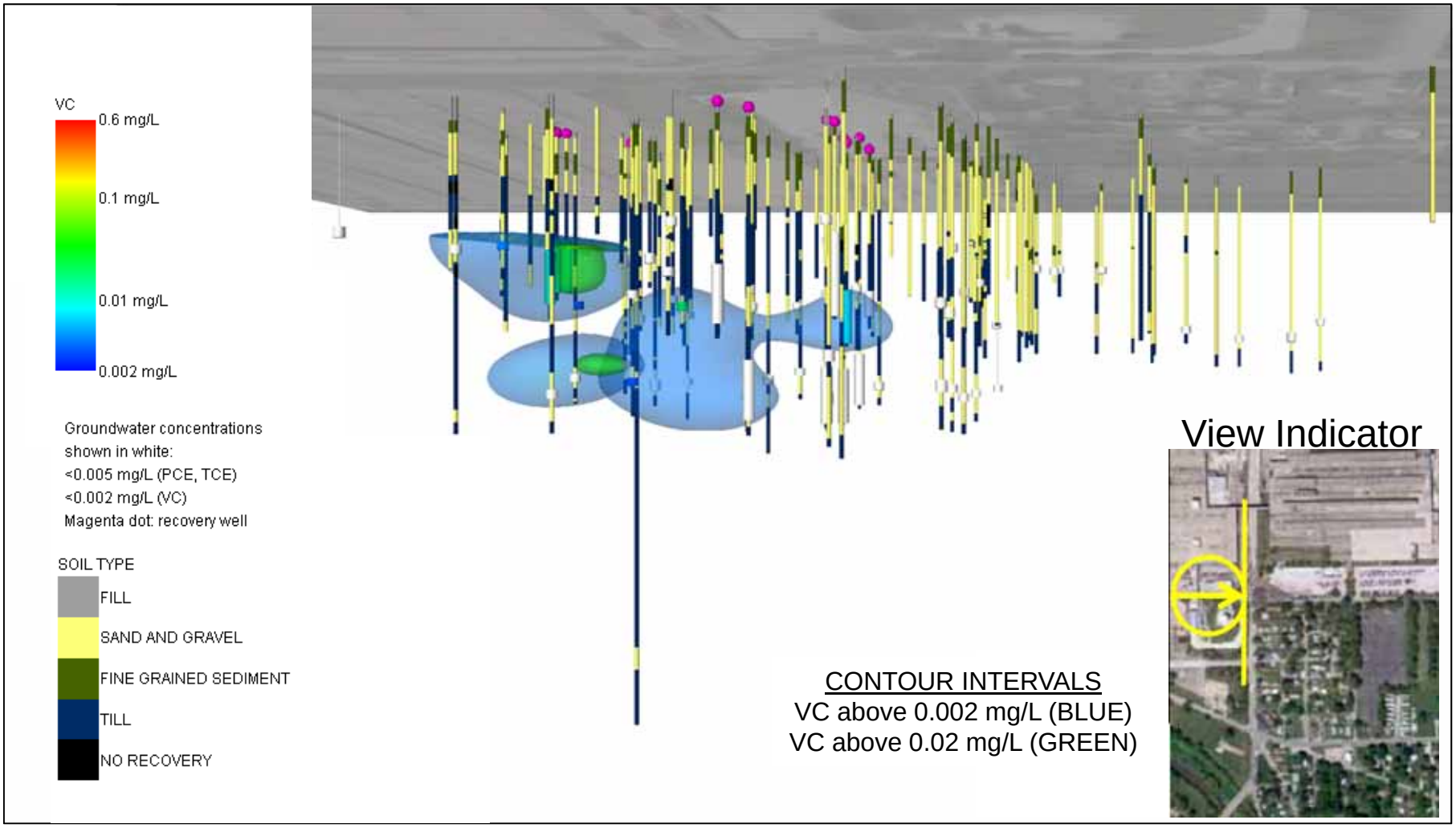
(Looking west to east, from below)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for VC are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October 2012 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER-NOVEMBER 2013 VC CONCENTRATIONS IN GROUNDWATER

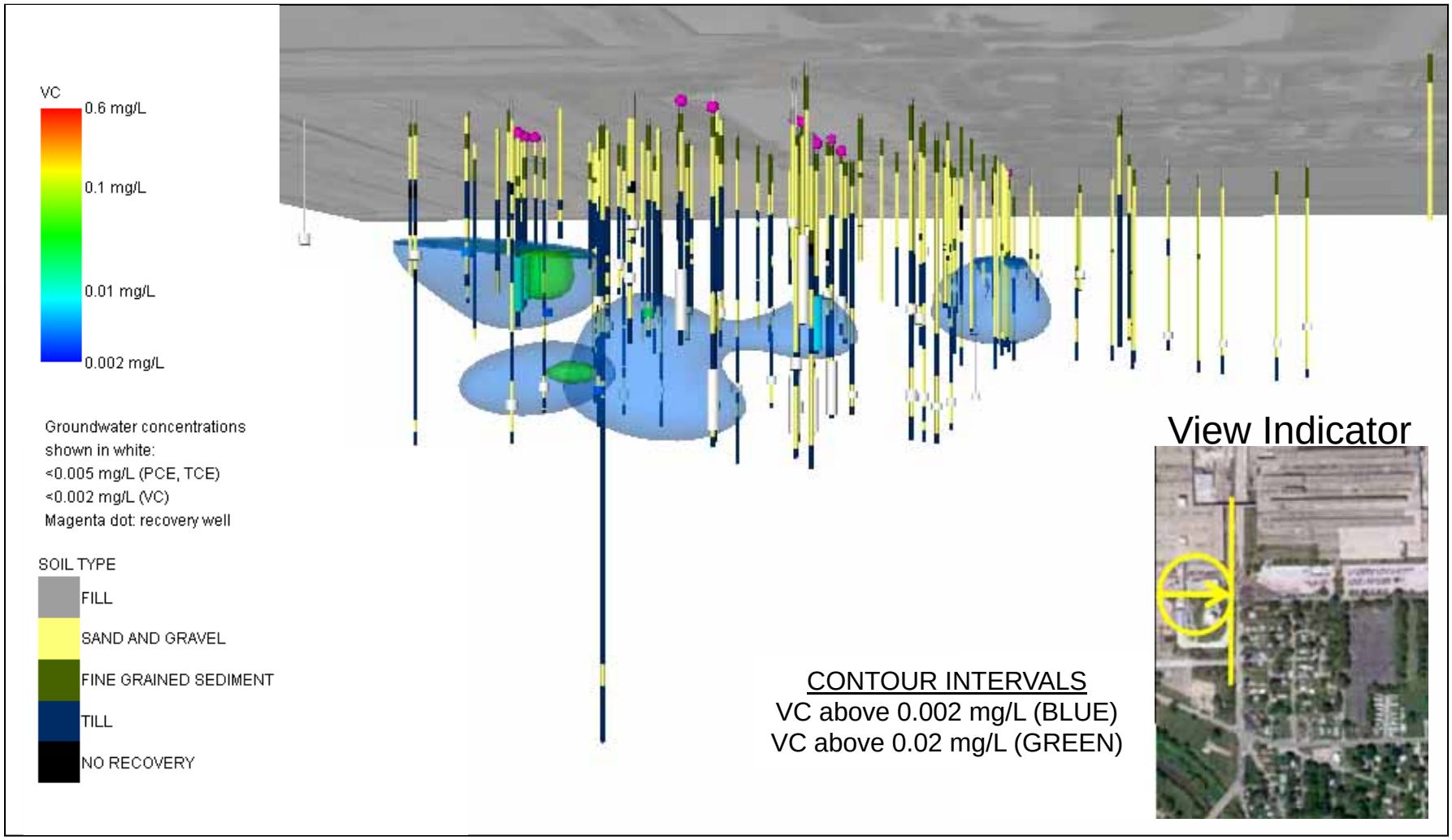
(Looking west to east, from below)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for VC are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October – November 2013 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

OCTOBER 2013 - JANUARY 2014 VC CONCENTRATIONS IN GROUNDWATER

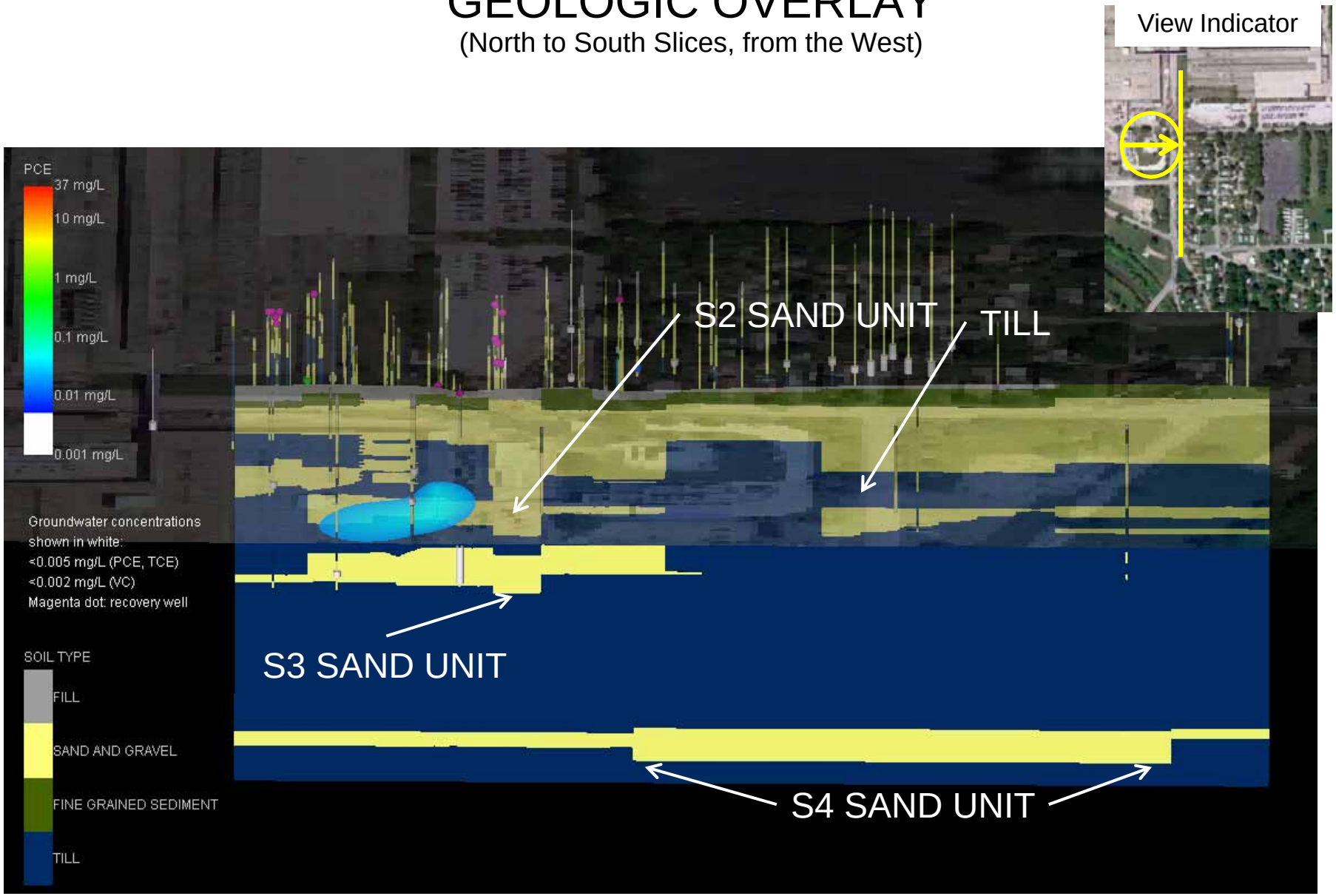
(Looking west to east, from below)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). Additionally, in each case where groundwater analytical results for VC are below detection limits, 'white' intervals are illustrated in the appropriate sample interval. The model is updated showing only October 2013–January 2014 groundwater analytical data from monitoring and recovery wells (the most recent data for this time period is used for wells sampled more than once).

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

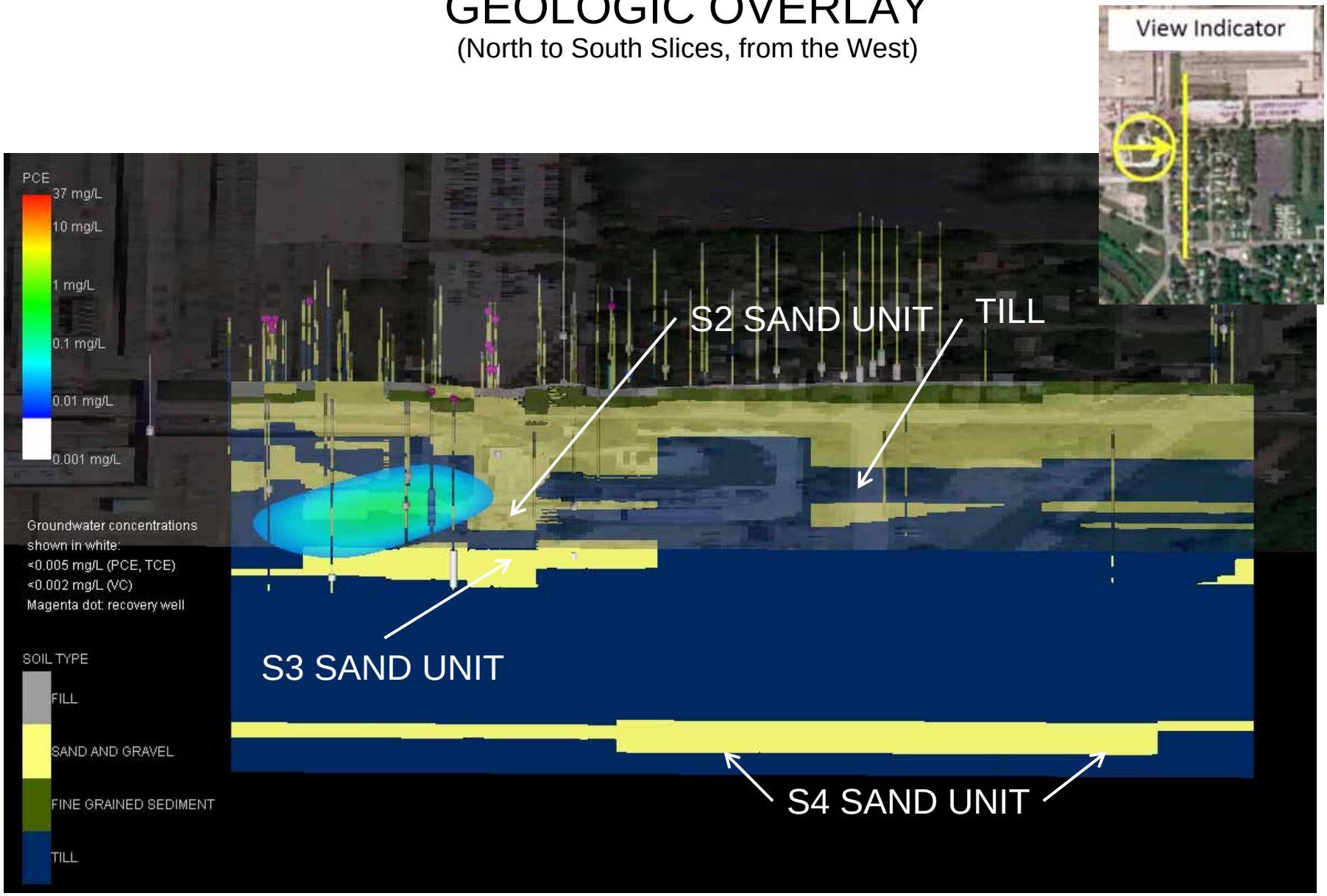
(North to South Slices, from the West)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

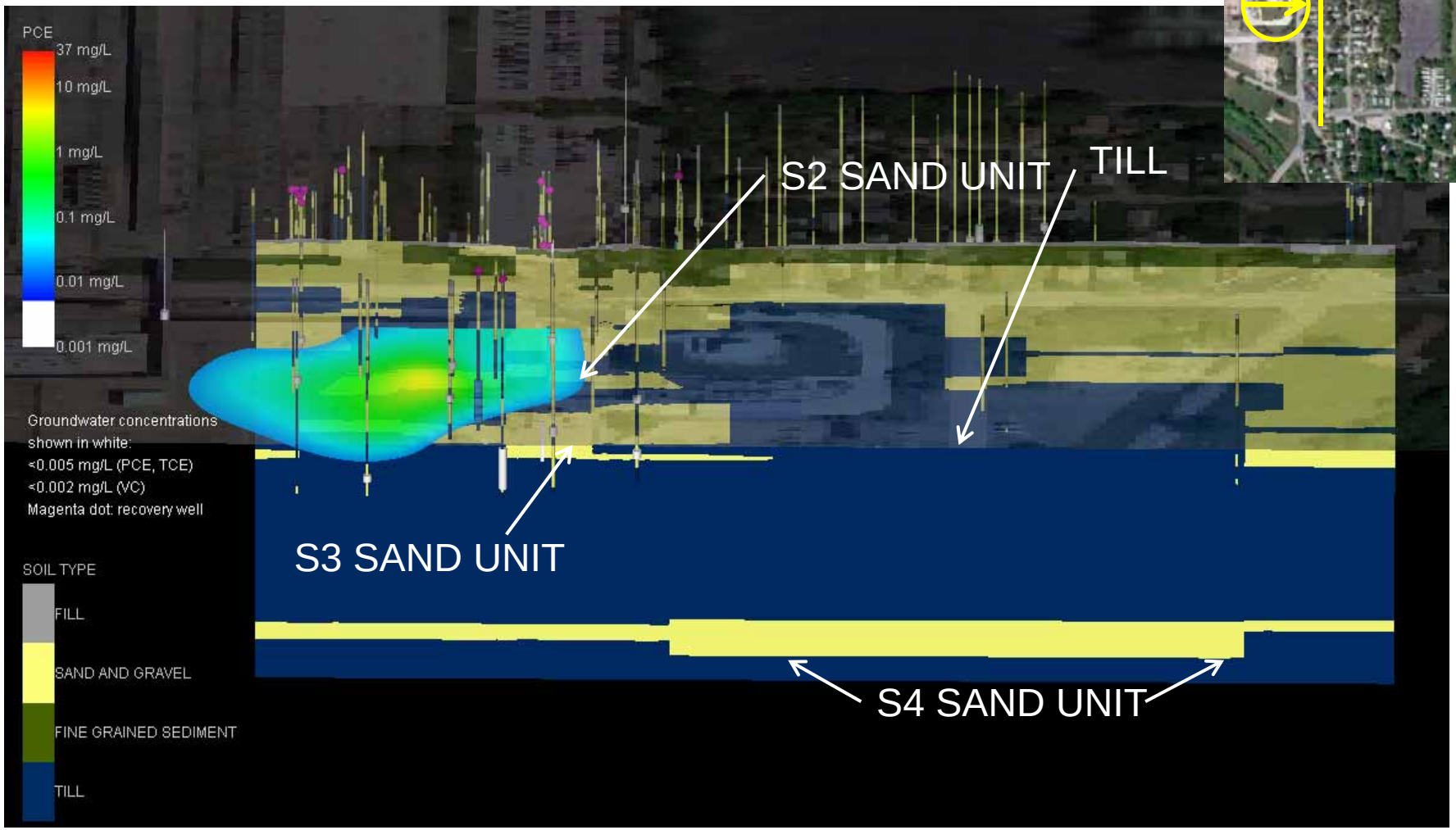
(North to South Slices, from the West)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

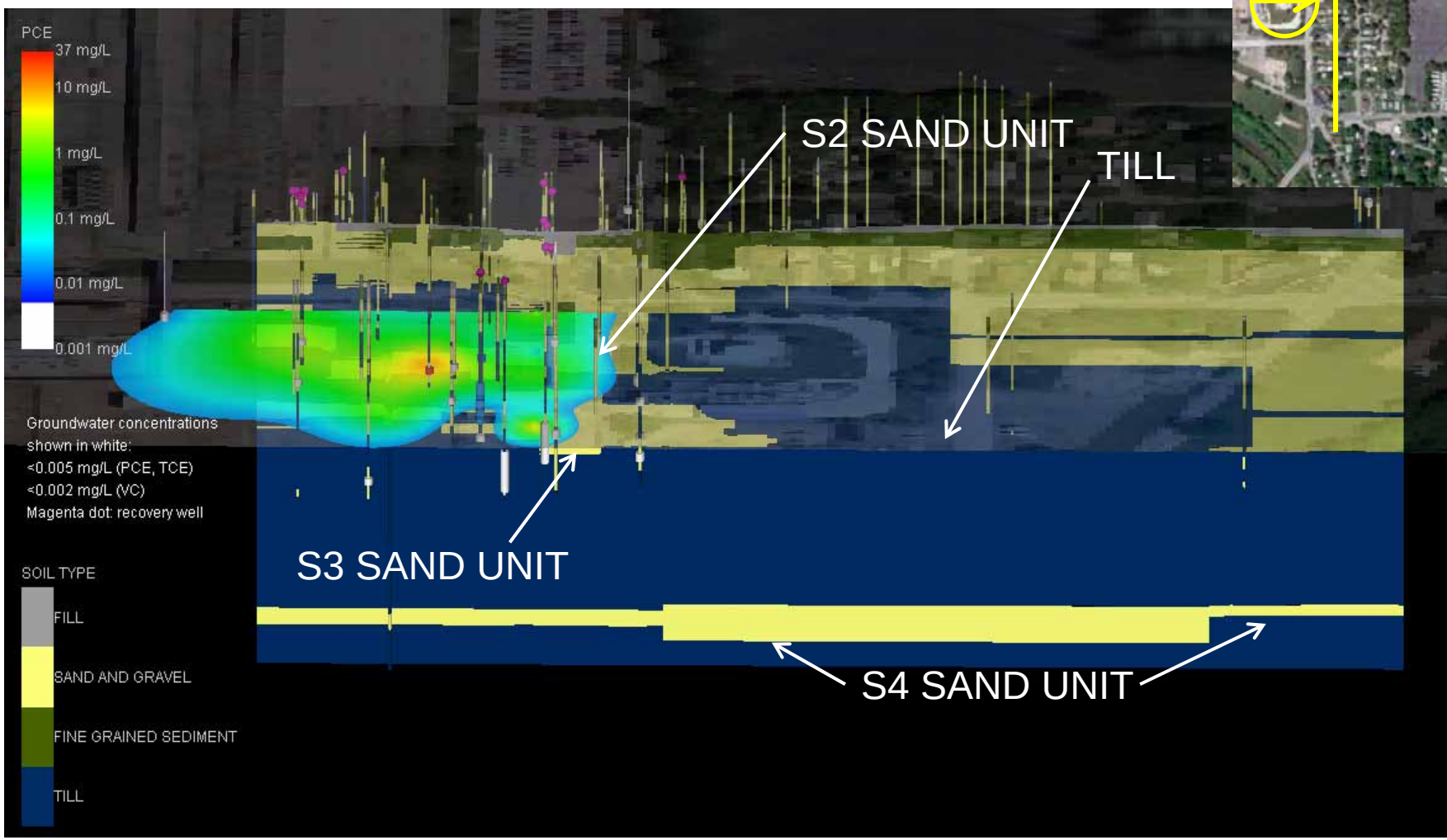
(North to South Slices, from the West)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

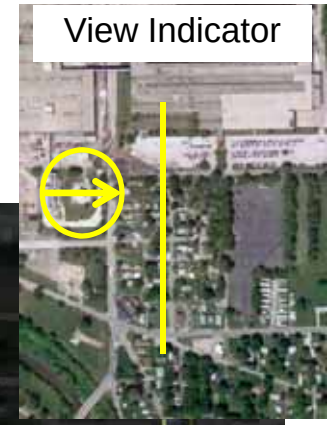
(North to South Slices, from the West)

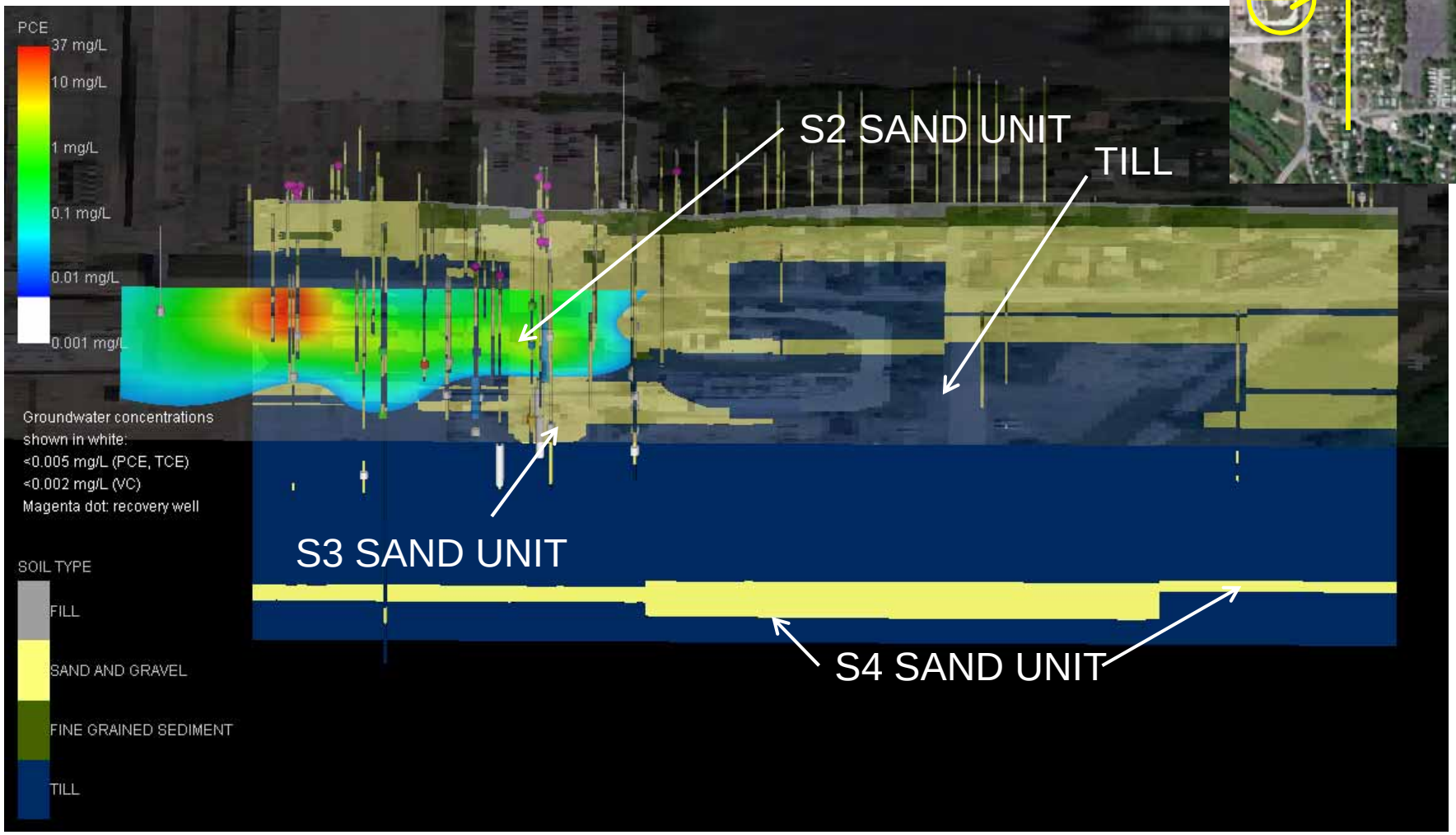


NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(North to South Slices, from the West)

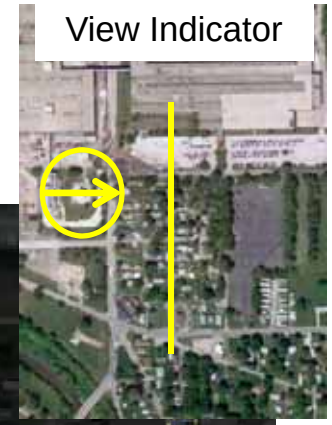


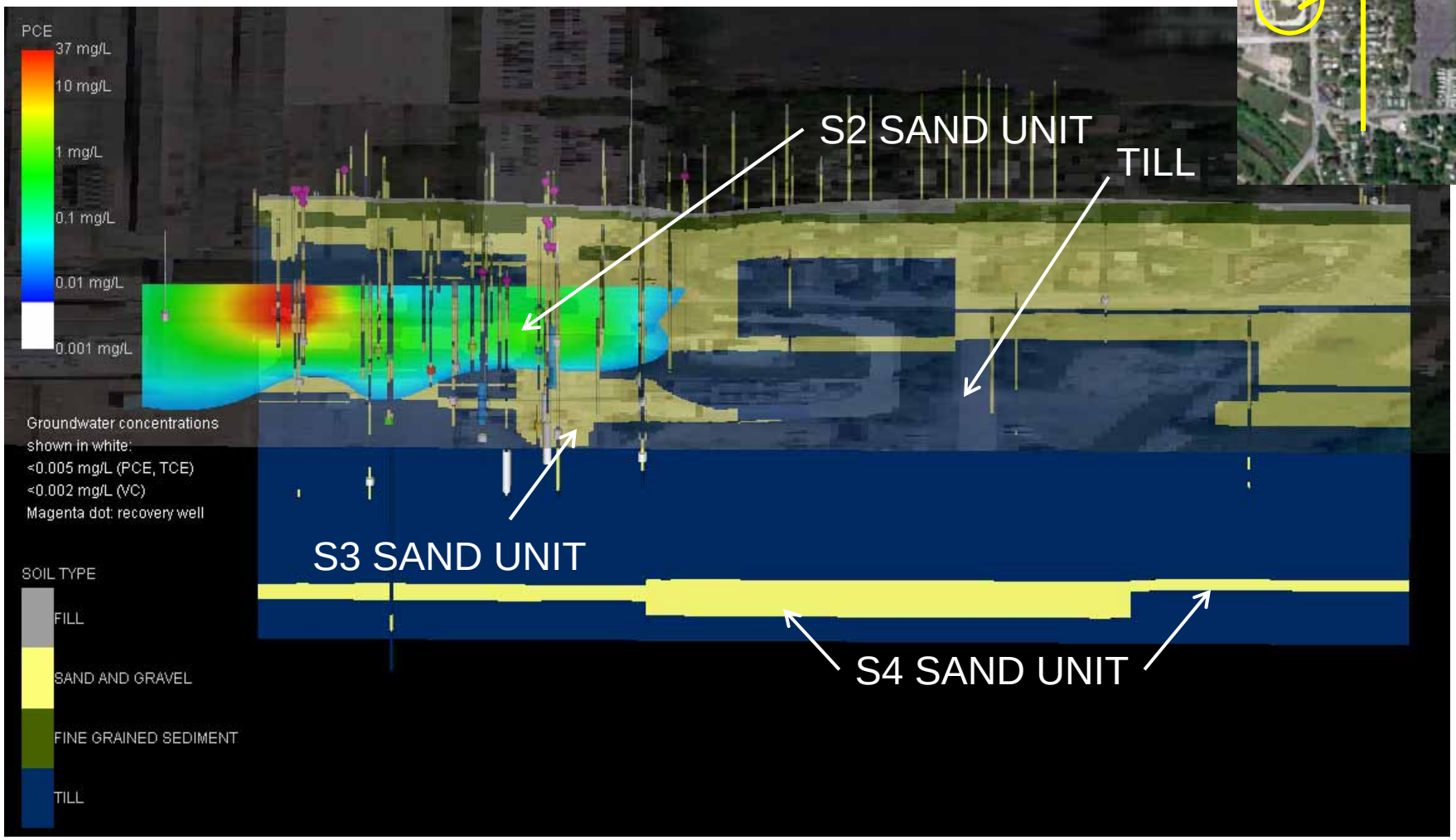


NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(North to South Slices, from the West)

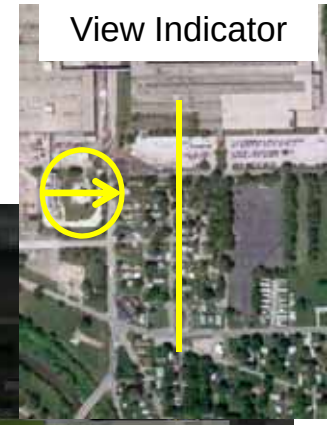


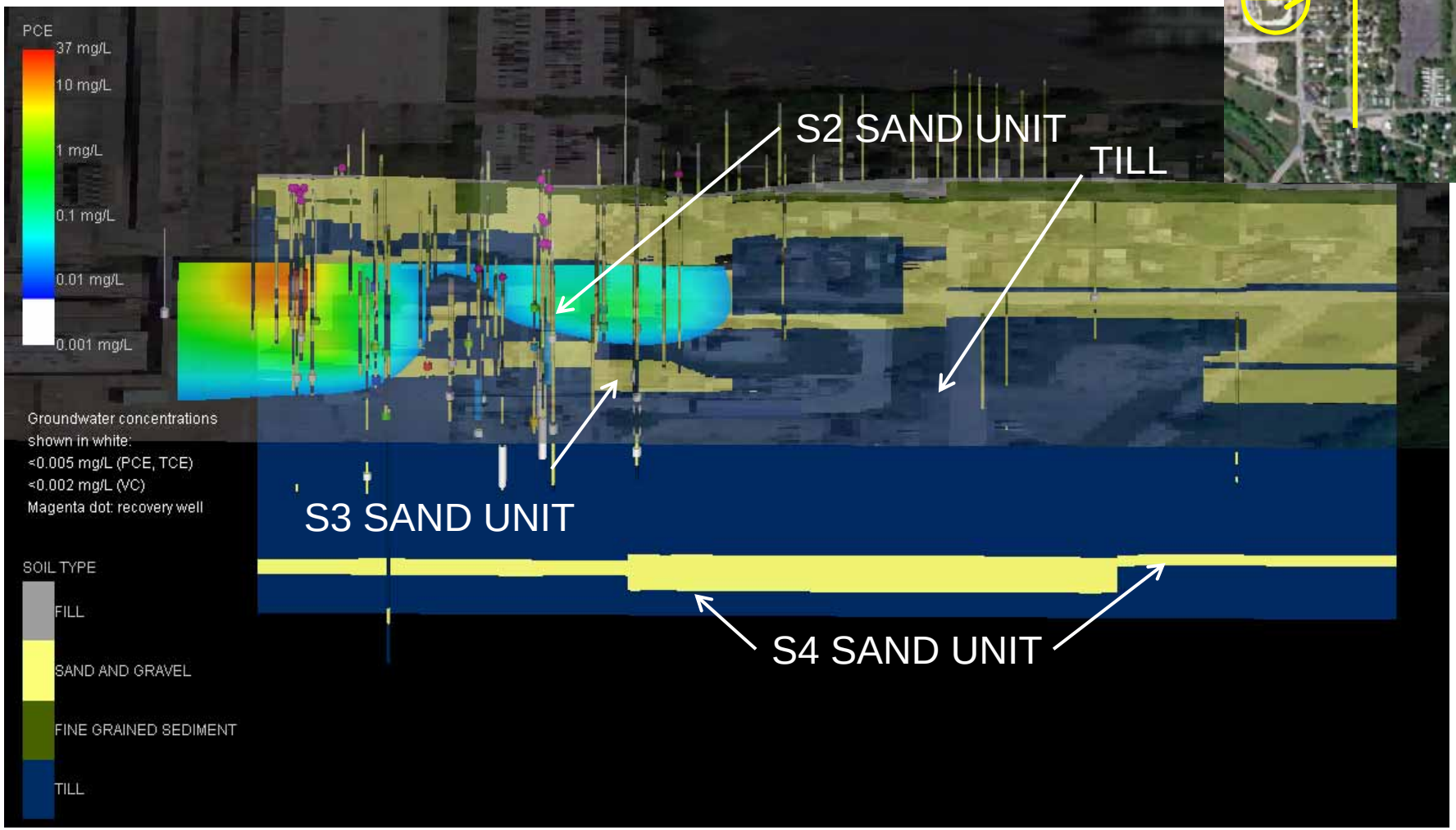


NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(North to South Slices, from the West)

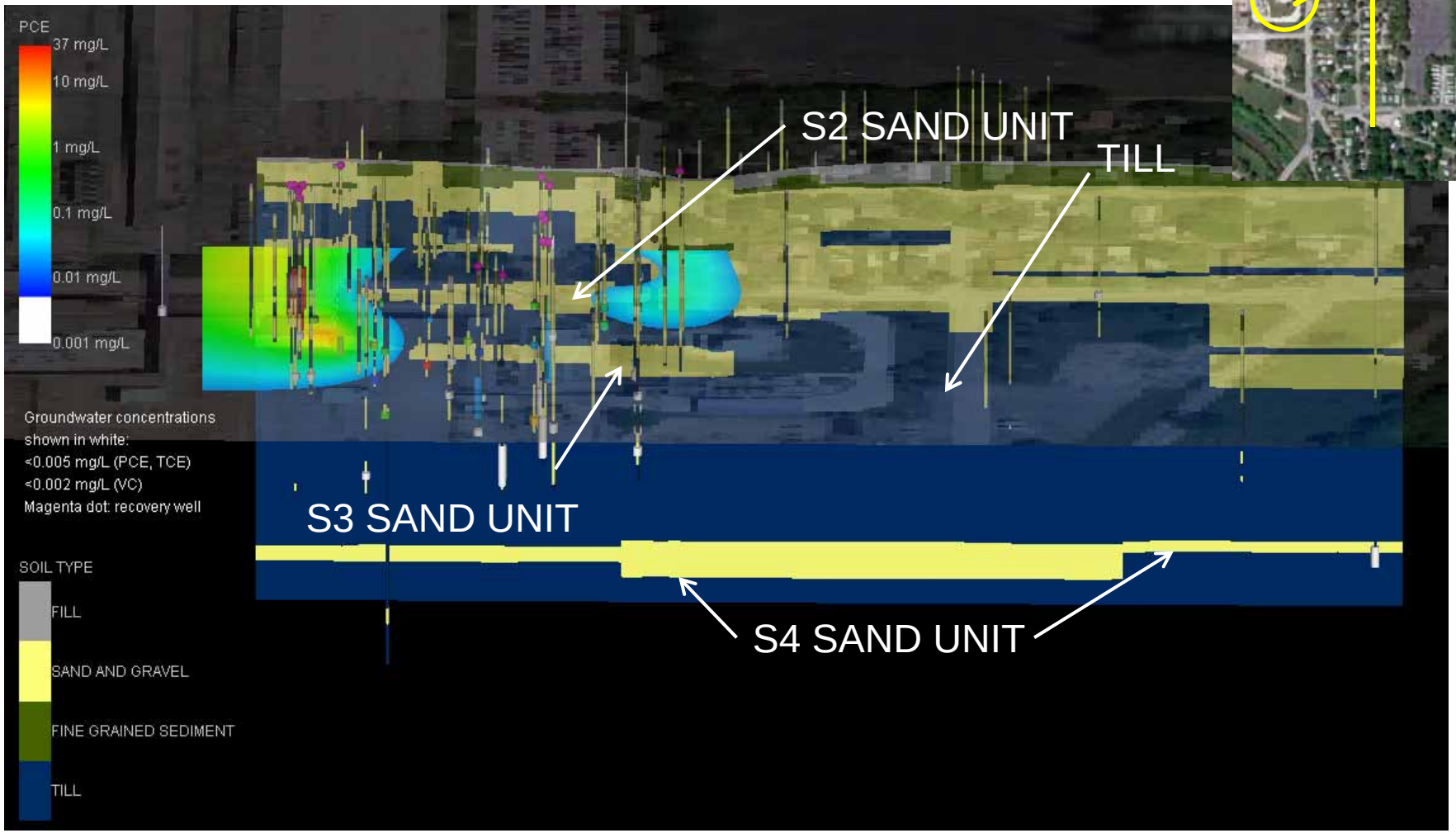




NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

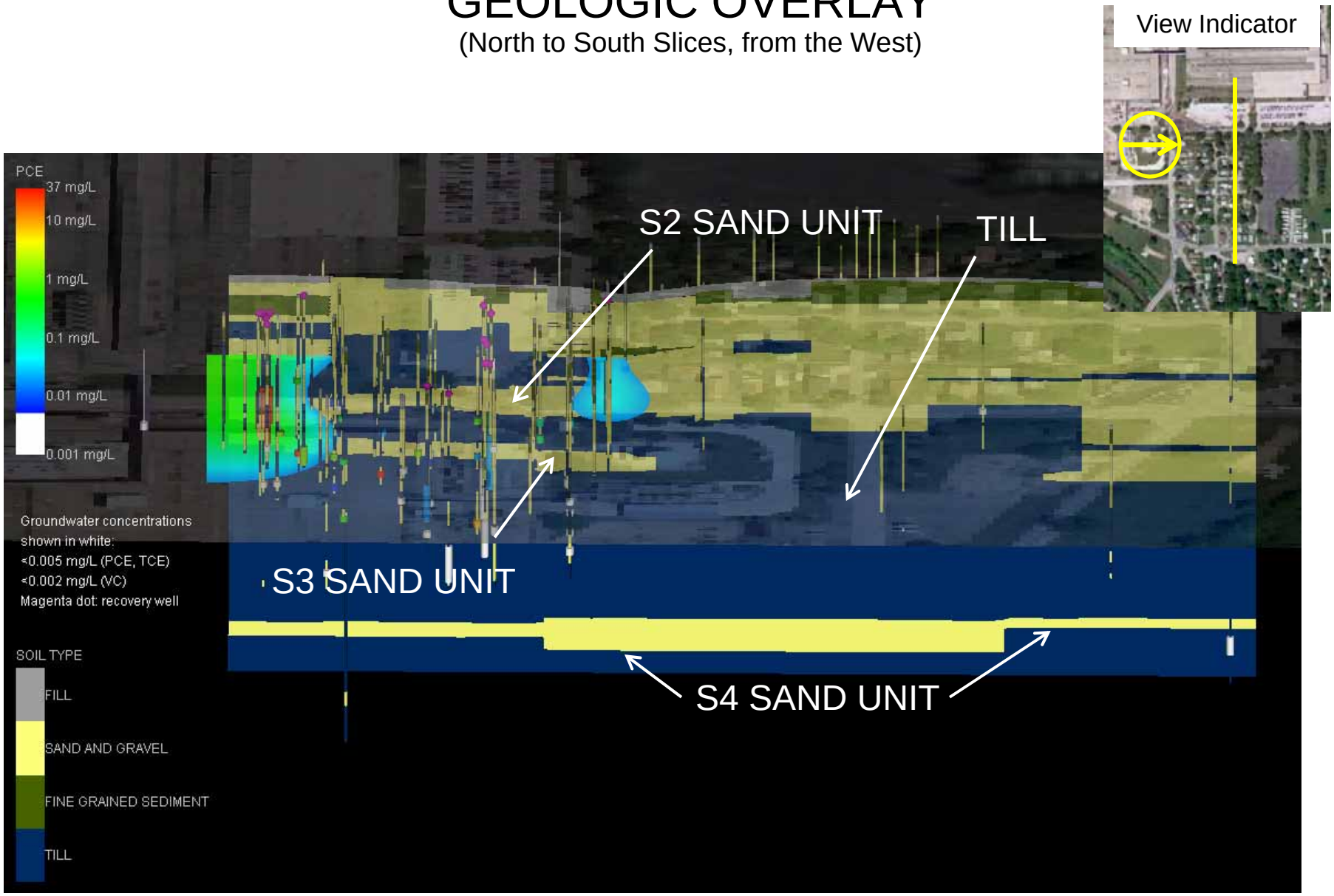
(North to South Slices, from the West)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

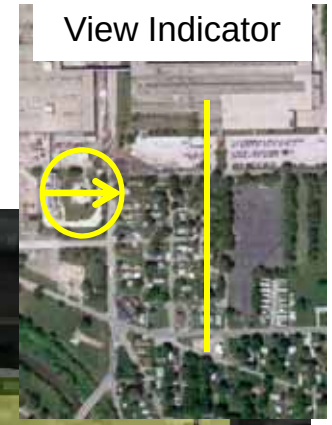
(North to South Slices, from the West)

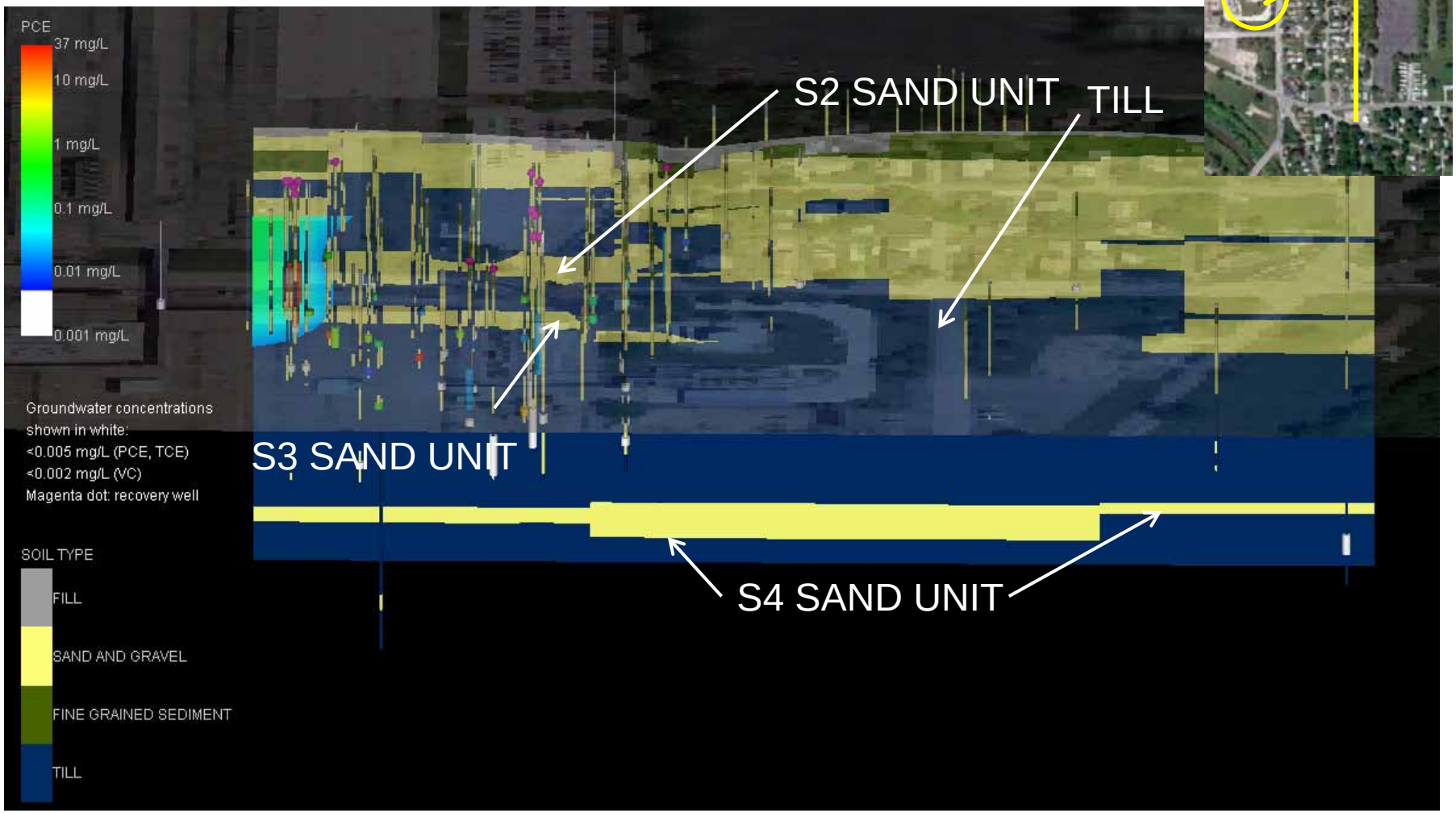


NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(North to South Slices, from the West)

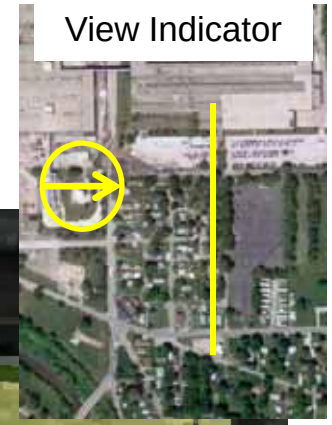


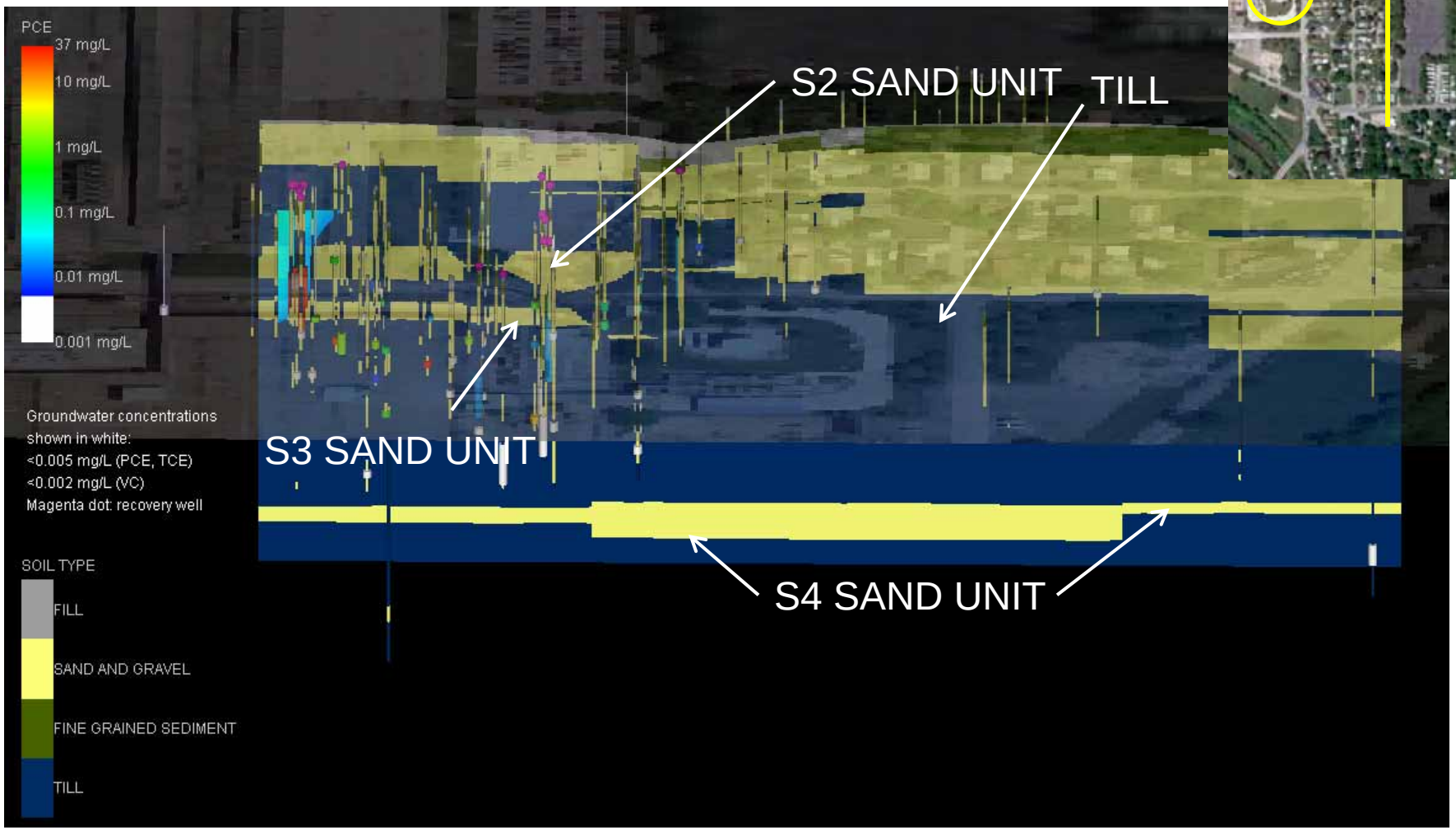


NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(North to South Slices, from the West)

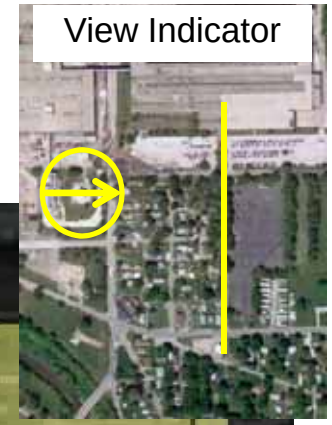


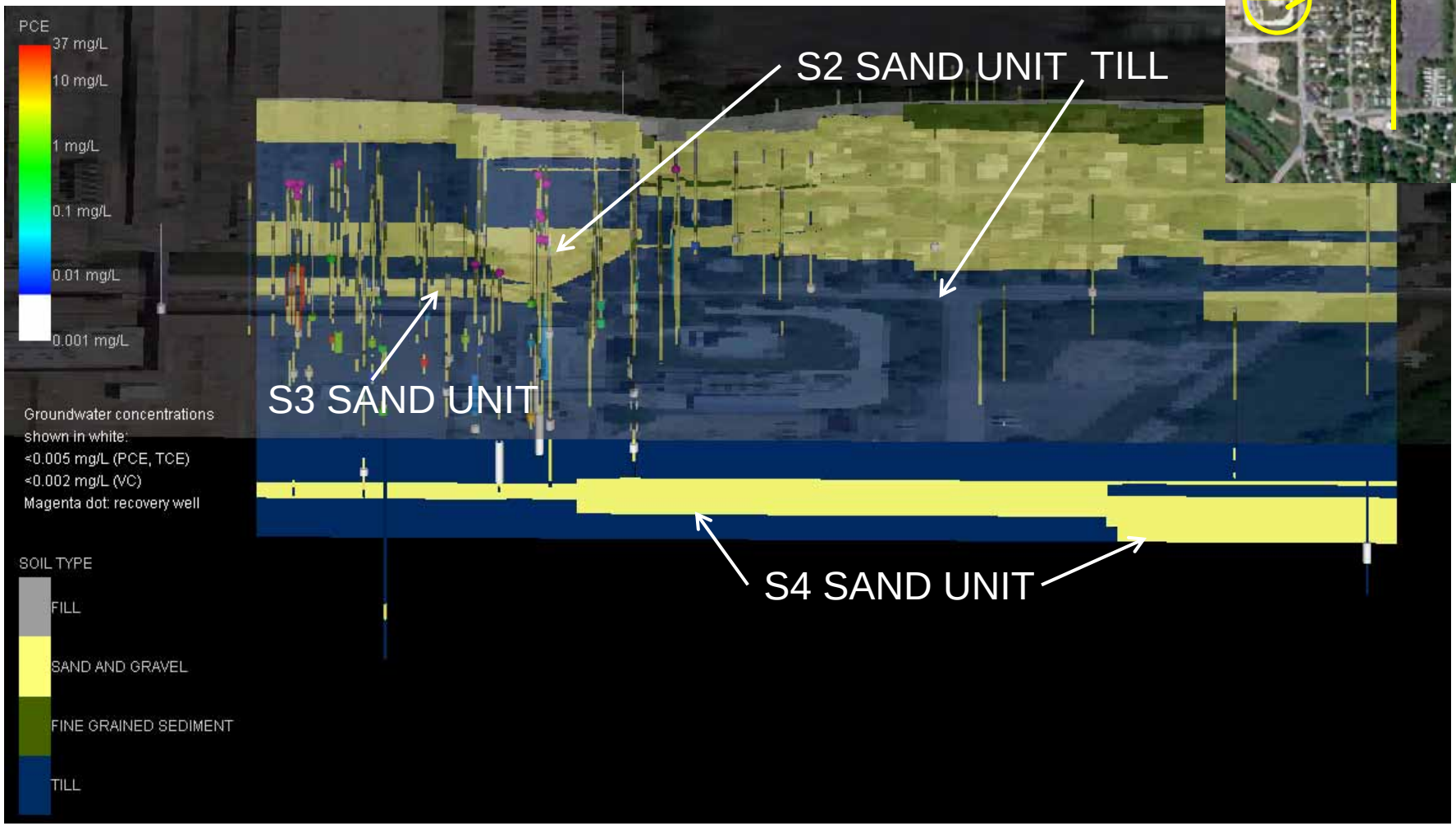


NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(North to South Slices, from the West)

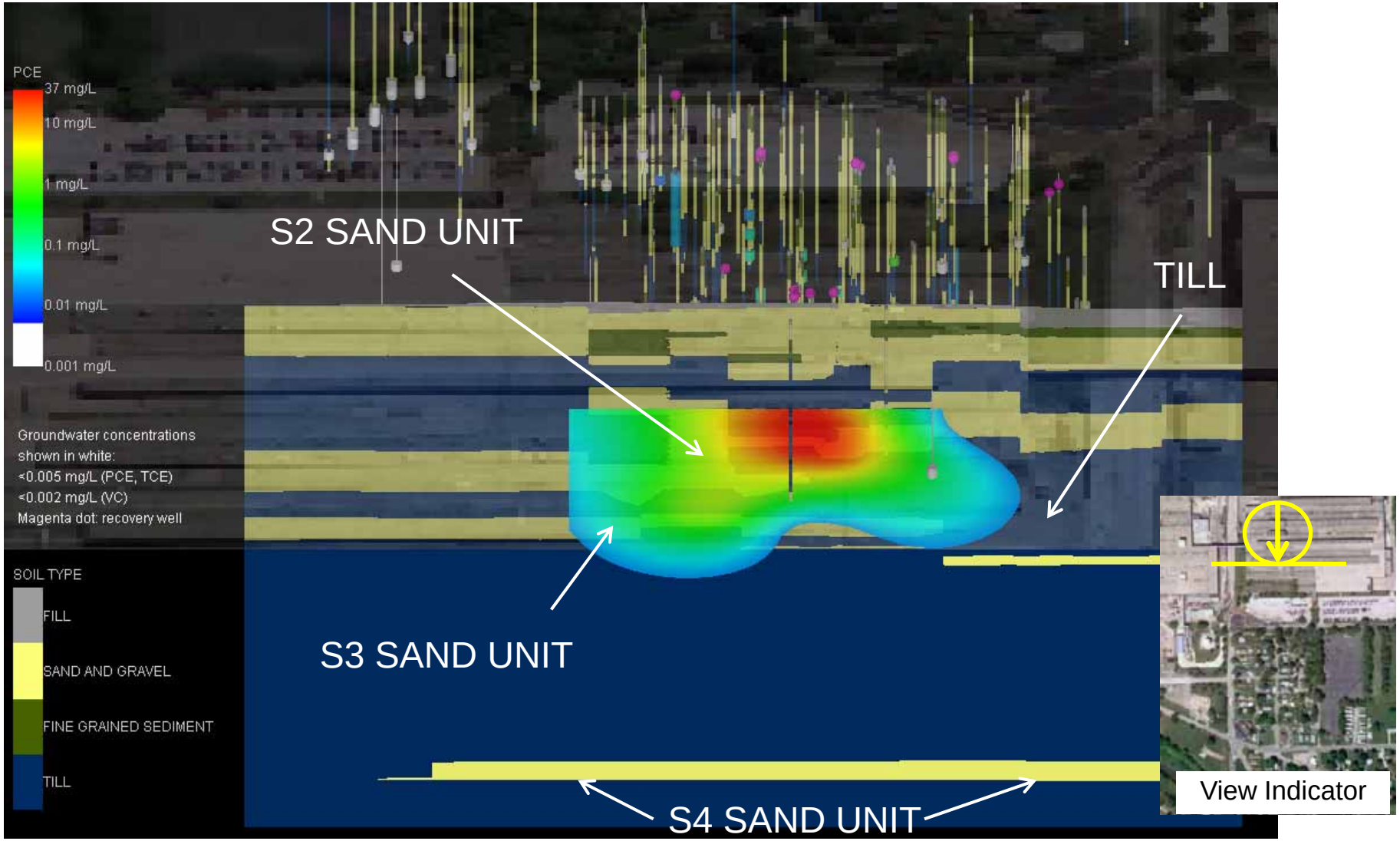




NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

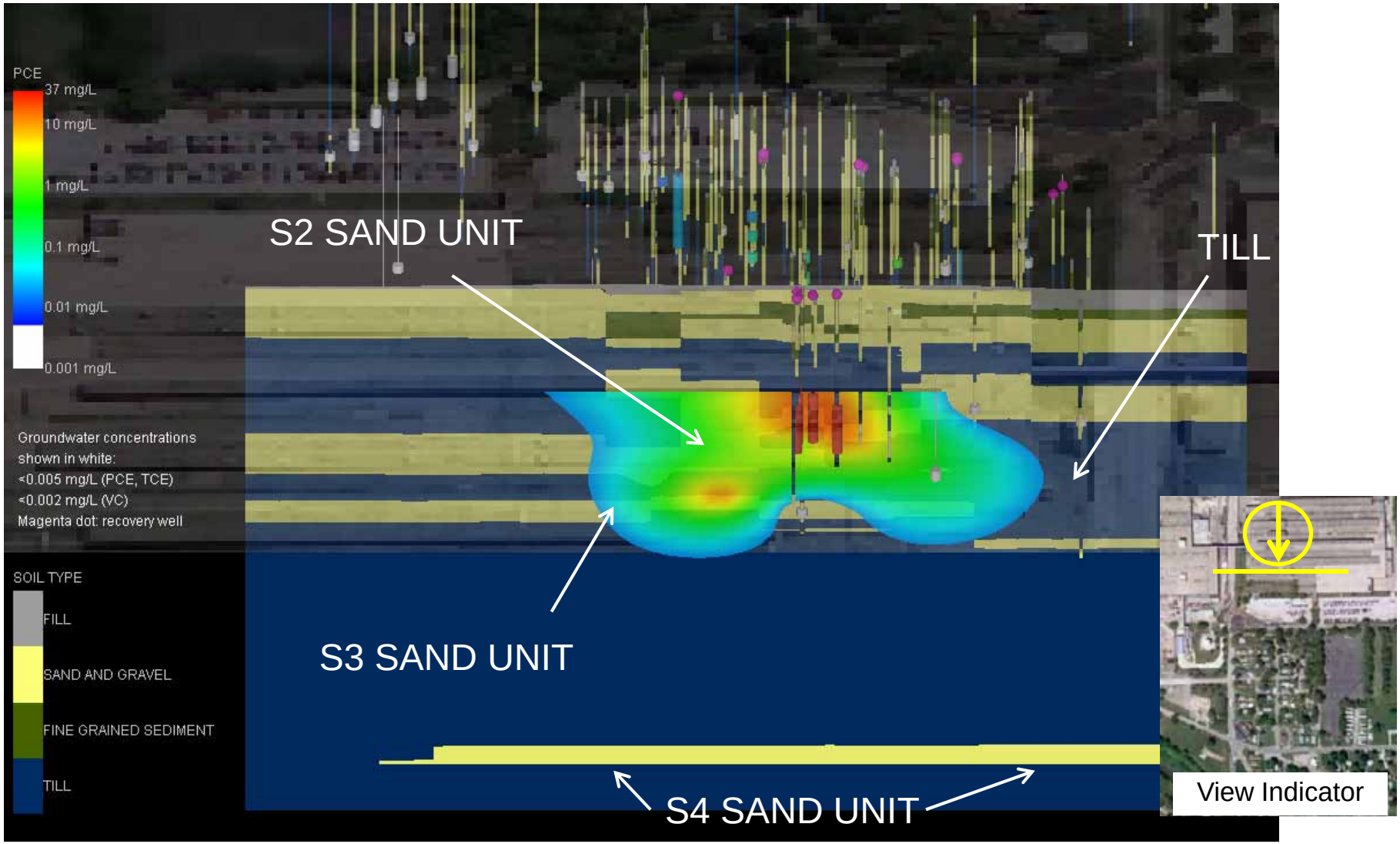
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

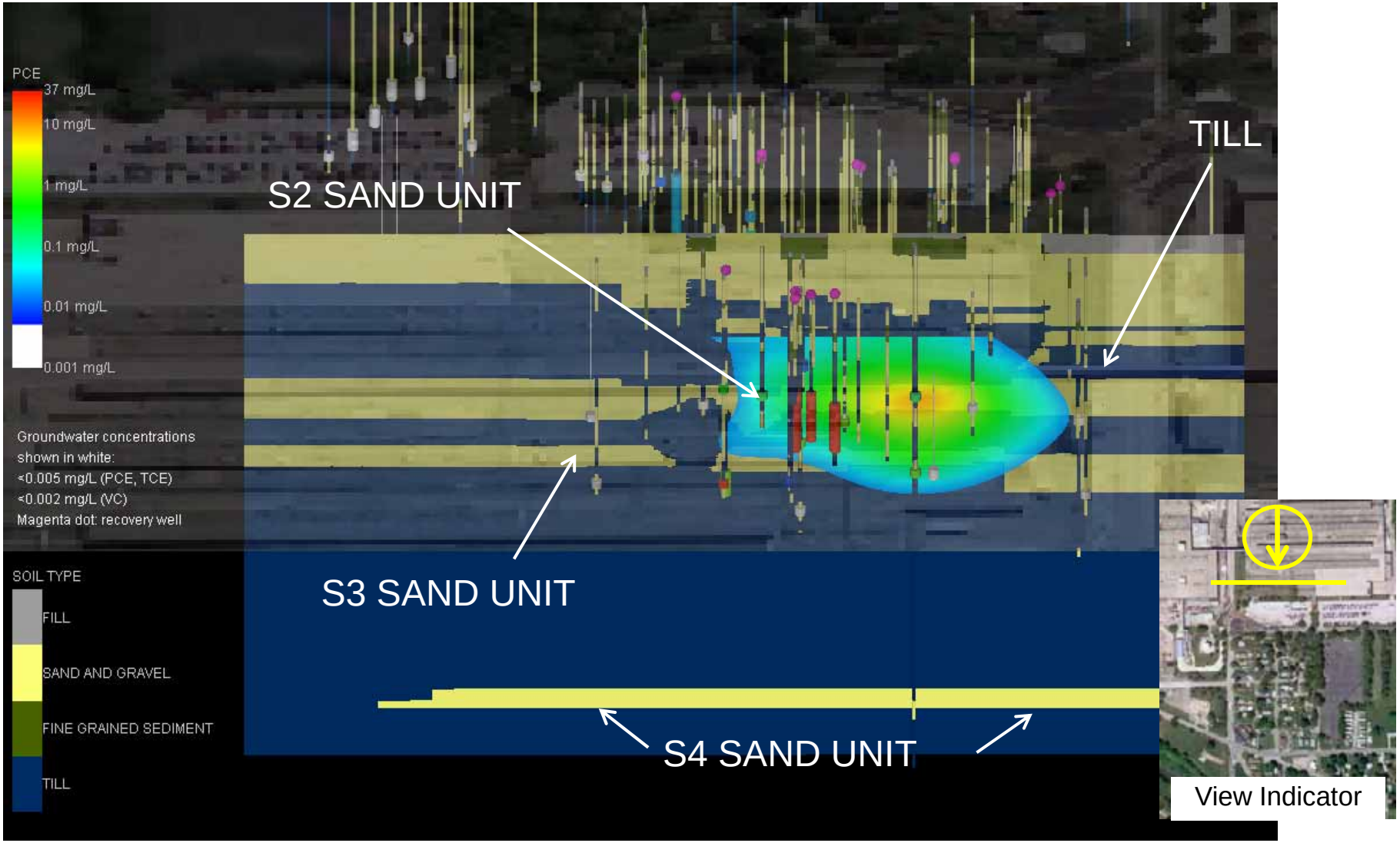
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

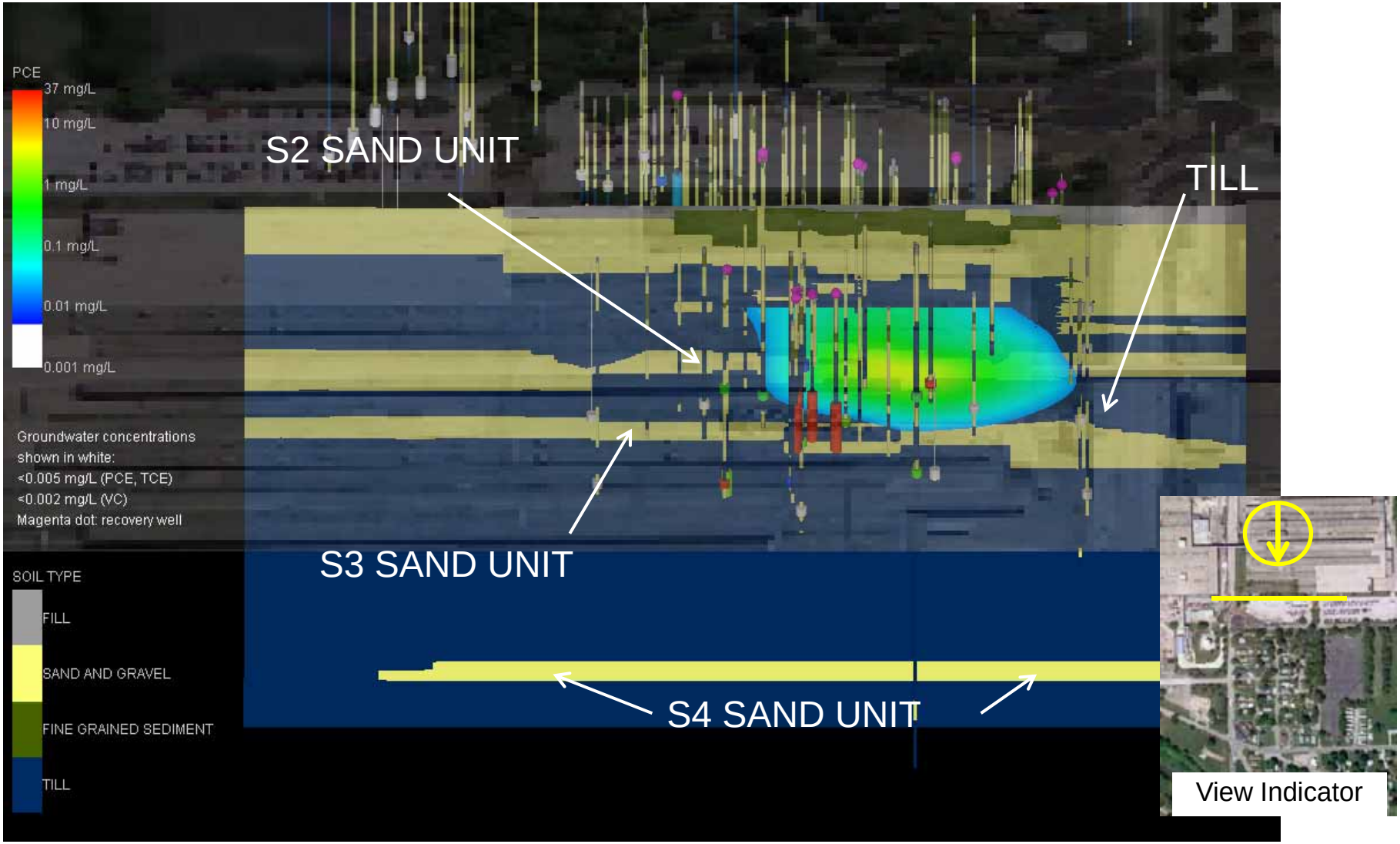
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

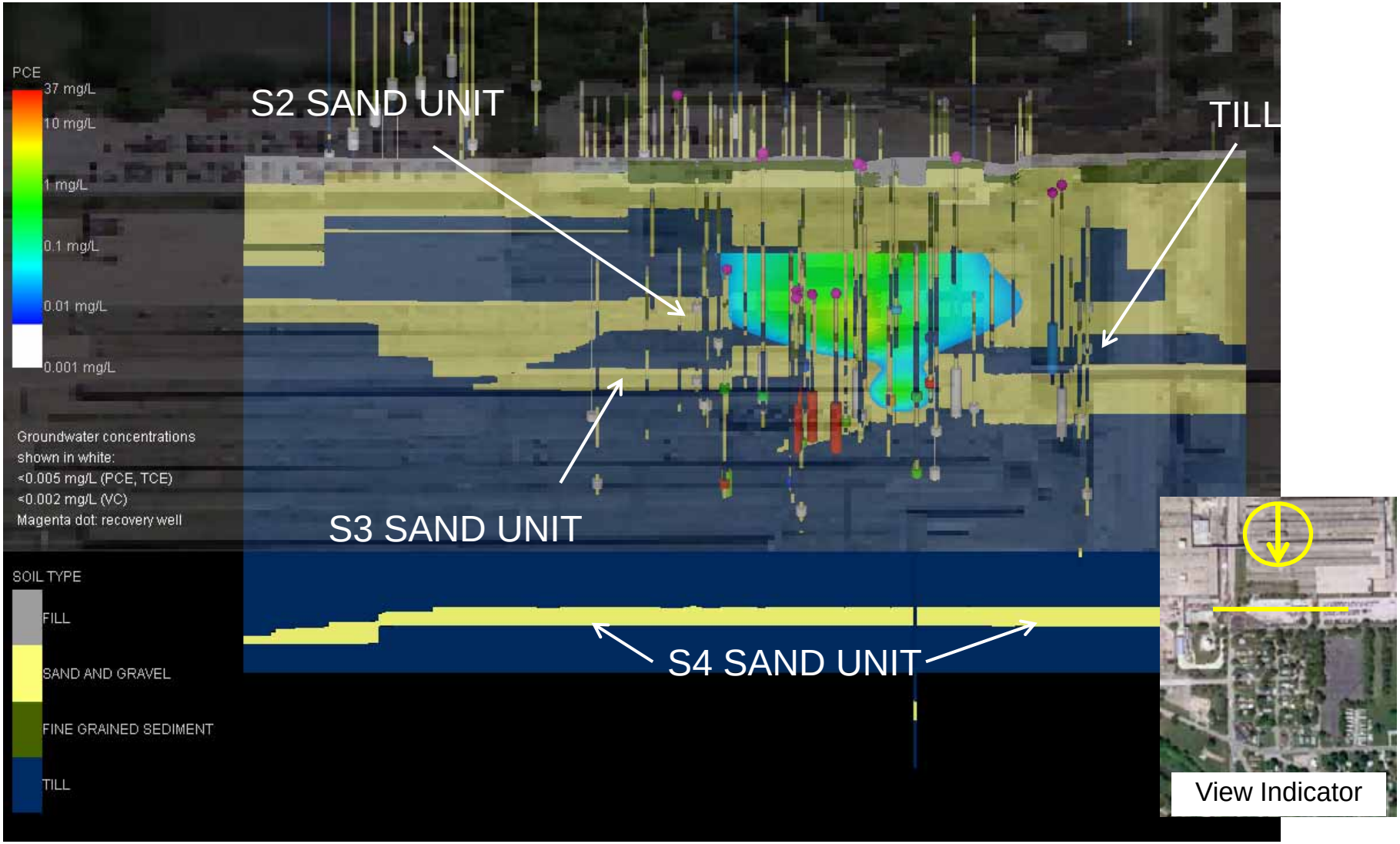
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

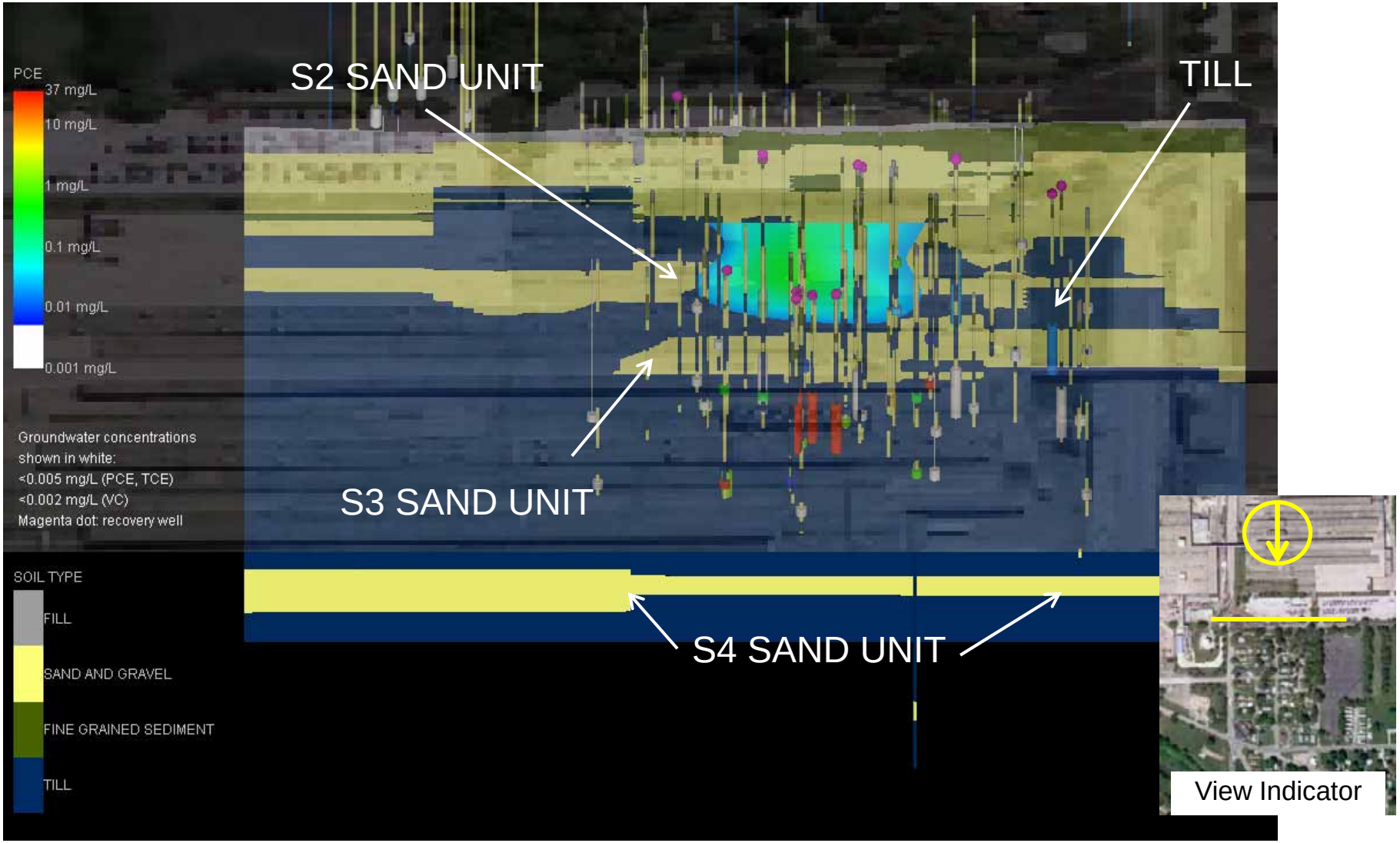
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

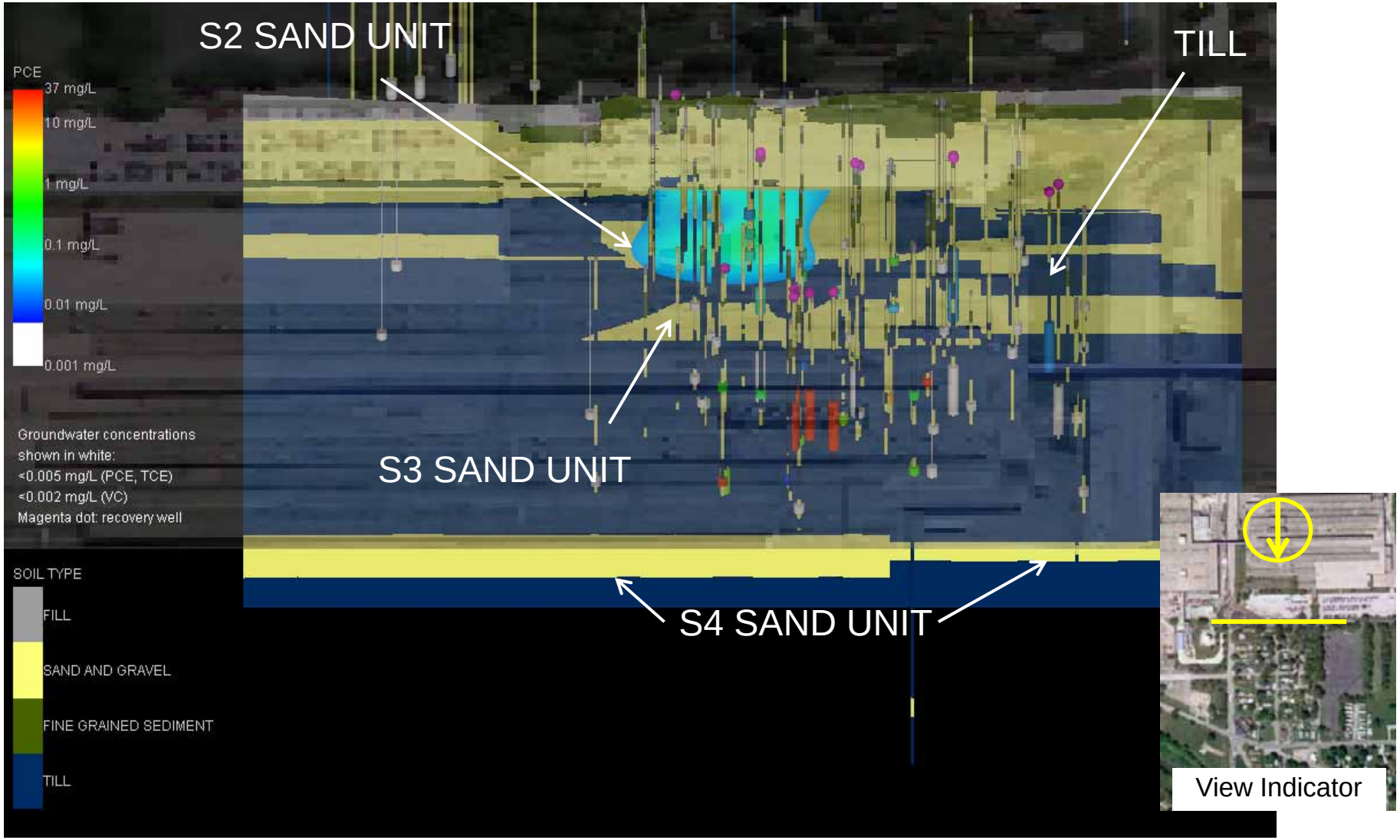
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

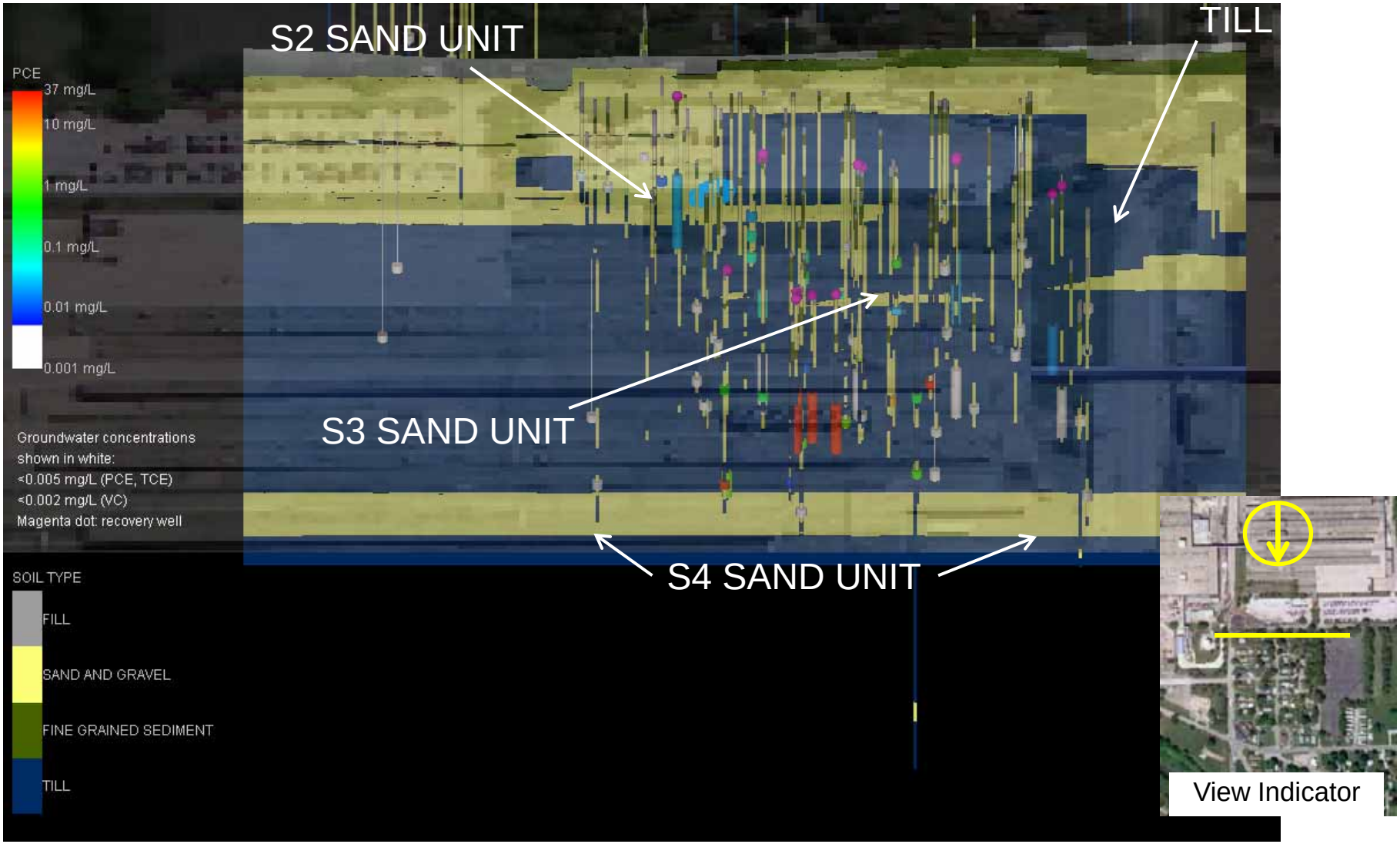
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

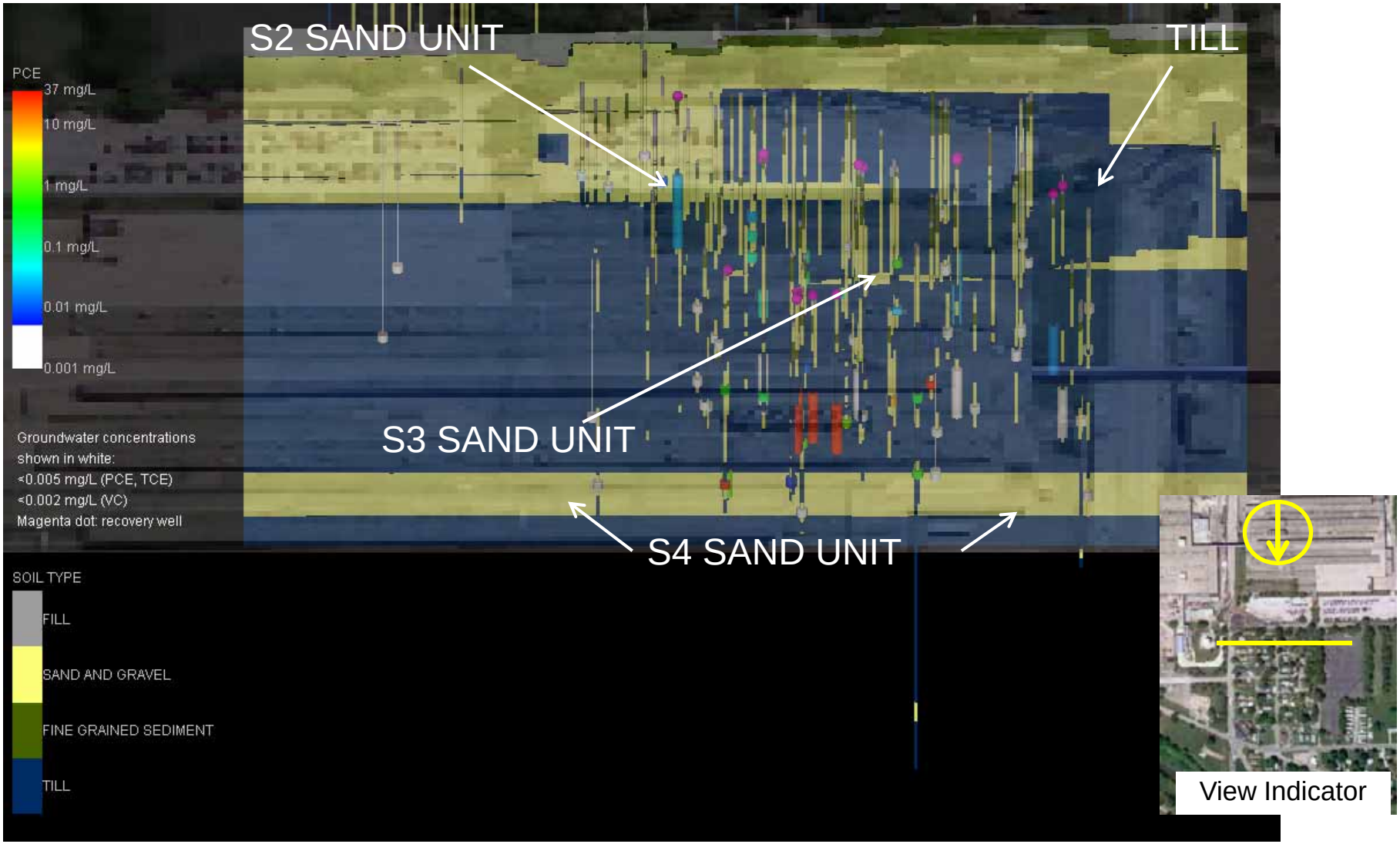
(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.

PCE CONCENTRATIONS IN GROUNDWATER WITH GEOLOGIC OVERLAY

(West to East Slices, from the North)



NOTE: Each soil boring and/or monitoring well location used to generate the model is shown above with the appropriate lithology (see symbols above). PCE plume data comes from October 2013-January 2014 GW analytical results. Additionally, in each case where soil and or borehole/groundwater analytical results for PCE are below detection limits, 'white' intervals are illustrated in the appropriate sample interval.