DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: **Former Star Anchors**
Facility Address: **20 Industrial Drive, Mountainville, NY 10953**
Facility EPA ID #: **NYD001223338**
NYSDEC Site #: **336008**

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contaminated" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   X If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ If data is not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

TRC conducted the **baseline groundwater monitoring event** between January 4 and 6, 2017. Groundwater samples were collected from the seventeen (17) monitoring wells which were developed in December2016. The monitoring wells were gauged for total well depth, depth to water, and if present, depth to light non-aqueous phase liquid (LNAPL). No LNAPL was encountered in any of the wells at the Site. Groundwater was collected via low-flow methods and monitored for water quality parameters. The water quality readings during the sampling event were recorded on low-flow groundwater sampling logs by a TRC project scientist. Groundwater samples were collected following stabilization of the water quality parameters. The samples were placed into laboratory supplied containers, shipped to Alpha Analytical, and analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260C as specified in the RI/FS Work Plan.

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

   X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

   _____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not known or reasonably suspected to be "contaminated."

   _____ If unknown - skip to #8 and enter "IN" status code.

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

Rationale:

The following contaminants were found above their respective ambient water quality criteria:

Monitoring Well ID	VOCs Detected Above Class GA Values Concentrations (ppb)
BR-3	1,1,1-Trichlorethane, 9.0 ppb; 1,1- Dichloroethane 41ppb; Vinyl Chloride, 4.7 ppb, cis-1,2 Dichloroethene, 51ppb
LF-8	Trichloroethene; 18 ppb, cis-1,2 Dichloroethene;18ppb
LF-9	1,1-Dichloroethane; 11ppb; cis-1,2 Dichloroethene 26ppb
LF-10	cis-1,2 Dichloroethene; 6.2 ppb
SMWO-MW-1	1,1-Dichloroethane; 10ppb; Trichloroethene5.1 ppb; Vinyl Chloride; 2.9ppb cis-1,2 Dichloroethene; 22ppb
SMWO-MW-2	1,1,1-Trichlorethane; 51ppb; 1,1- Dichloroethane; 140ppb; cis-1,2-Dichloroethene; 100ppb

References: Baseline Groundwater Sampling Update, Former Star Anchors and Fasteners Site, February 2, 2018

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within Aexisting area of contaminated groundwater[2] as defined by the monitoring locations designated at the time of this determination)?

X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the existing area of groundwater contamination[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the existing area of groundwater contamination[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

[2]"existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

Rationale:

A comparison of groundwater monitoring data between 1996 and 2018 show that levels of volatile organic compounds (VOCs) are either non-detectable (ND) or have decreased significantly:

LF-2 VOCs - ND
LF-3 VOCs - ND
LF-4 VOCs - 539ppb (1996), ND (2018)
LF-8 VOCs - 532ppb (1996), 36ppb (2018)
LF-9 VOCs - 528 ppb (1996), 36ppb (2018)
LF-10 VOCs - 48.7 ppb (1996), 6.2ppb (2018)
LF-11 VOCs - ND

References:

Baseline Groundwater Sampling Update, Former Star Anchors and Fastener Site, February 2, 2018
Groundwater Map, Star Expansion Company by MAC Consultants, dated September 1996

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contaminated" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

Two Wells sampled in proximity (within 100 feet) of Woodbury Creek that show elevated VOCs above ambient groundwater criteria that may have impact Woodbury Creek:

BR-3- 1,1,1-Trichlorethane, 9.0 ppb; 1,1- Dichloroethane 41ppb; Vinyl Chloride, 4.7 ppb, cis-1,2 Dichloroethene, 51ppb (Southwest of Woodbury Creek, See Figure 2)

SMWO-MW-2 - 1,1,1-Trichlorethane; 51ppb; 1,1- Dichloroethane; 140ppb; cis-1,2-Dichloroethene; 100ppb (Northeast of Woodbury Creek,See Figure 2)

However, the following five wells are also approximately 100 feet from Woodbury Creek and did not have detections above the ambient groundwater criteria: LF-9M, LF-9D, LF-11S, LF-11D, and LF-12

References:

EI – (CA725); October 2005

Baseline Groundwater Sampling Update, Former Star Anchors and Fastener Site, February 2, 2018

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

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__X__ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale:

The detections noted in response to question 4 above, are generally below 10 times the applicable ambient water criteria standard. Accordingly, the VOC Flux to Woodbury Creek is relatively low from surface soils and groundwater wells in proximity to the Creek, therefore it is expected that impacts to the surface water, sediments and eco-system is very limited and immeasurable at this time. However, surface water sampling has been requested this summer (2018) to confirm that there are no significant impacts to Woodbury Creek.

References:

[3]As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

EI – (CA725); October 2005
RI/FS Work Plan dated October 19, 2016
Baseline Groundwater Sampling Update, Former Star Anchors and Fastener Site, February 2, 2018

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

___ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site=s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

____ If no - (the discharge of "contaminated" groundwater cannot be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

____ If unknown - skip to 8 and enter "IN" status code.

Rationale: N/A

[4]Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5]The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

References:
RI/FS Work Plan dated October 19, 2016
Baseline Groundwater Sampling Update, Former Star Anchors and Fastener Site, February 2, 2018

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the Aexisting area of contaminated groundwater?

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale:

The ongoing remedial program including Site Management will include continued groundwater monitoring.

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

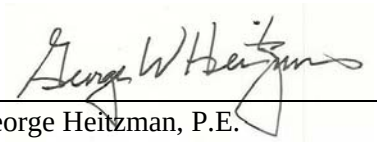
__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Former Star Anchors, EPA ID, NYD001223338, located at20 Industrial Drive, Mountainville, NY 10953.** Specifically, this determination indicates that the migration of known or reasonably suspected to be "contaminated" groundwater is under control, and that monitoring will be conducted, as necessary, to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by:  Date: 8/9/18

Salvatore F. Priore, P.E.
Project Manager, Remedial Bureau C

Director:  Date: 8/9/18

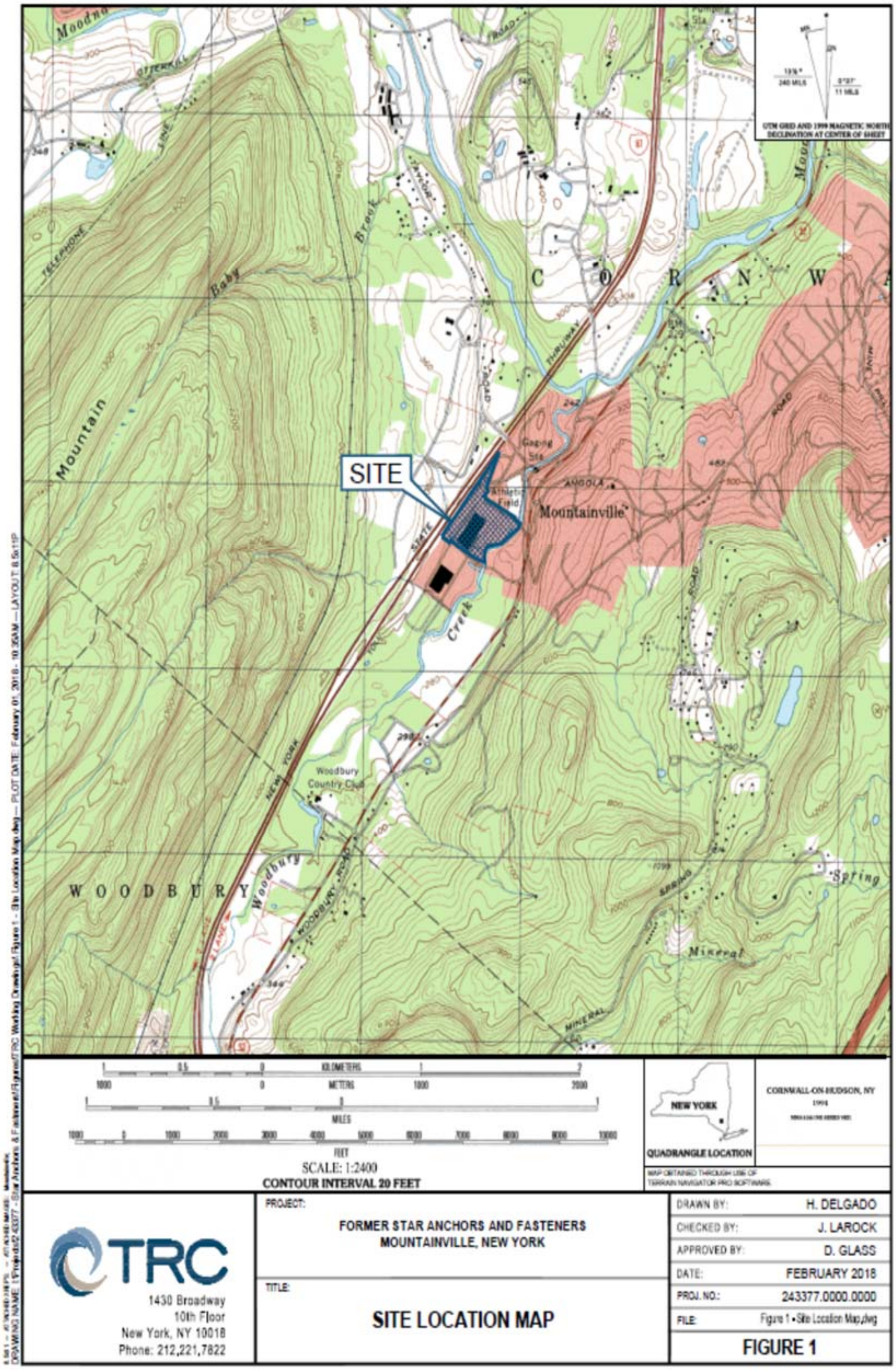
George Heitzman, P.E.
Bureau Director, Remedial Bureau C

Locations where References may be found:

New York State Department of Environmental Conservation, Central Office
Division of Environmental Remediation
625 Broadway 11th Floor
Albany, New York 12233-7014

Contact, telephone number and e-mail:

Salvatore F. Priore, P.E.
Phone: (518) 402-9665
E-mail: salvatore.priore@dec.ny.gov


SITE
Mountainville
Woodbury Country Club
Mountain
Baby Brook
Creek
Woodbury
C O R N W A
W O O D B U R Y
Mineral
Spring
KILOMETERS
METERS
MILES
FEET
SCALE: 1:2400
CONTOUR INTERVAL 20 FEET
NEW YORK
QUADRANGLE LOCATION
CORNWALL-ON-HUDSON, NY
1994
MAP OBTAINED THROUGH USE OF TERRAIN NAVIGATOR PRO SOFTWARE
TRC
1430 Broadway
10th Floor
New York, NY 10018
Phone: 212.221.7822
PROJECT:
FORMER STAR ANCHORS AND FASTENERS
MOUNTAINVILLE, NEW YORK
TITLE:
SITE LOCATION MAP
DRAWN BY: H. DELGADO
CHECKED BY: J. LAROCK
APPROVED BY: D. GLASS
DATE: FEBRUARY 2018
PROJ. NO.: 243377.0000.0000
FILE: Figure 1 - Site Location Map.dwg
FIGURE 1

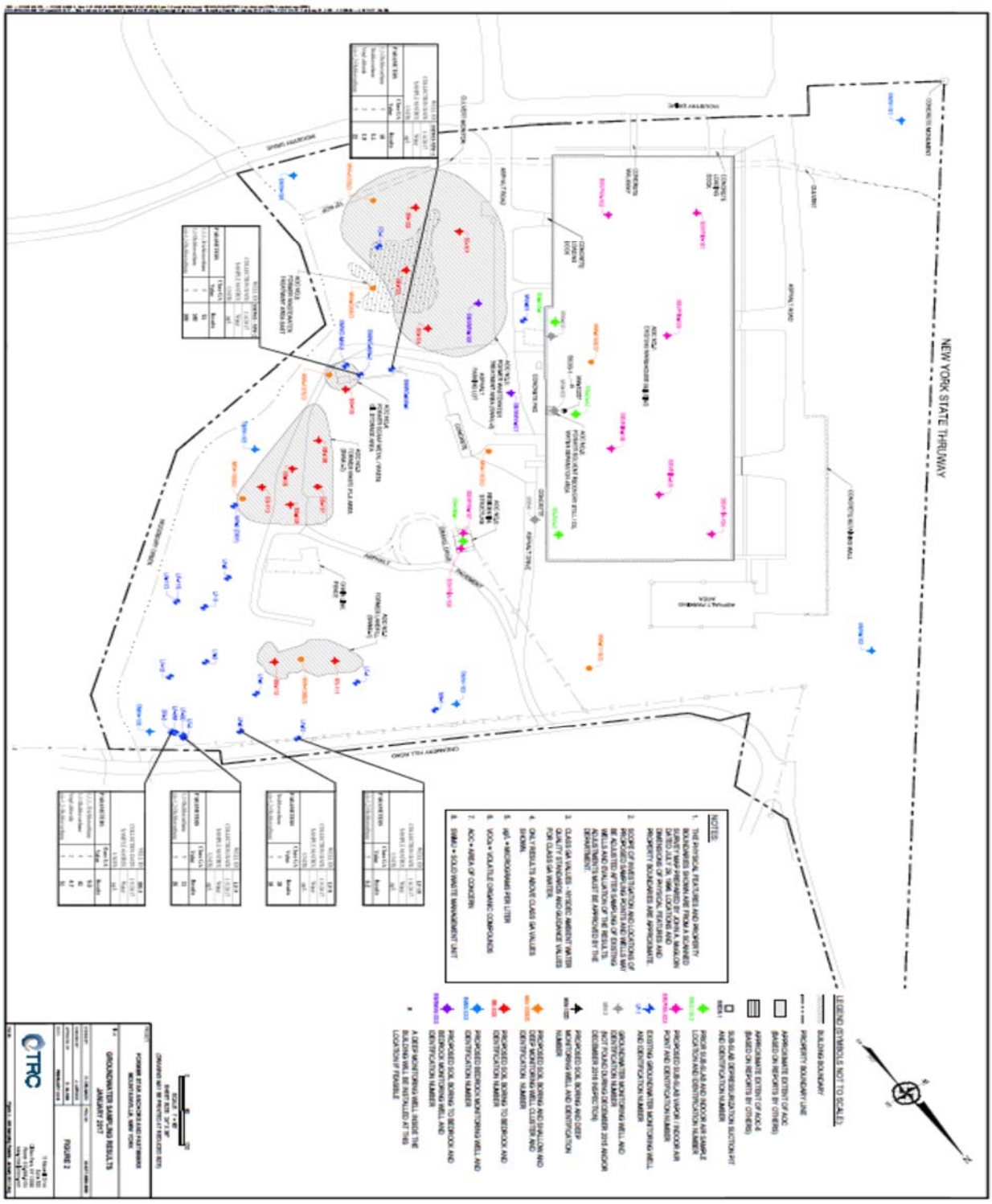

NEW YORK STATE THRUWAY
LEGEND (SYMBOLS NOT TO SCALE)
NOTES
GROUNDWATER SAMPLING RESULTS
JANUARY 2017
FIGURE 2

Figure 2