DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRInfo code (CA725) Current Human Exposures Under Control

Facility Name: Star Anchors and Fasteners, Inc.

Facility Address: Route 32, Mountainville, New York 10953

Facility EPA ID #: NYD001223338

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) 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 EIs 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 ACurrent Human Exposures Under Control® EI

A positive ACurrent Human Exposures Under Control@EI determination (AYE@status code) indicates that there are no Aunacceptable@human exposures to Acontamination@(i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all Acontamination@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 EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The ACurrent Human Exposures Under Control® EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action programs overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

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 soil, groundwater, surface water/sediments, and air, 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 are not available skip to #6 and enter AIN@ (more information needed) status code.				
2.	Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be A contaminated [®] above appropriately protective risk-based Alevels® (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?				
	YesNo?Rationale / Key ContaminantsGroundwaterX				
	If no (for all media) - skip to #6, and enter AYE,@status code after providing or citing appropriate Alevels,@and referencing sufficient supporting documentation demonstrating that these Alevels@are not exceeded.				
	X If yes (for any media) - continue after identifying key contaminants in each Acontaminated@medium, citing appropriate Alevels@(or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.				

¹AContamination@ and Acontaminated@describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based Alevels@(for the media, that identify risks within the acceptable risk range).

]	If unknown	(for any med	a) - skip to #6	and enter AIN@statu	ıs code.
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Rationale and Reference(s):

Site Description and History:

The Star Anchors and Fasteners Site (Site) consists of approximately 37 acres of land in Orange County, located between the NYS Thruway and Woodbury Creek, in the hamlet of Mountainville, Town of Cornwall, New York. The Site location is shown on Figure 1. Historically, the company manufactured metal and plastic fastening devices such as: bolts, nuts, screws, rivets, washers, and expanding anchoring devices. The site was the subject of numerous environmental investigations and remedial activities between 1985 and 1997, including a Phase I Investigation of a former landfill, a RCRA Facility Assessment and several other on-site and off-site investigations. The facility was sold out of bankruptcy in 1997 to Star NewCo. At that time funding was set aside as part of the purchase agreement and as a condition of a Consent Agreement with NYSDEC to complete certain remedial work at the Site. Star NewCo completed most of the specified remedial work, which included contaminated soil and waste removal from several areas of the Site. However, that Owner also filed for bankruptcy later in 1997 and ultimately abandoned the site, leaving many required remediation activities incomplete. The Site was resold in 2004 to the current owner (Cornwall Properties, LLC), who has indicated willingness to work with the DEC to further the site clean-up. The owner completed a vapor intrusion evaluation for the old manufacturing building and a house located on the Site in September 2005.

Key Contaminants and Contaminated Media

Data obtained from quarterly, semi-annual, and annual groundwater monitoring reports, submitted by the original site owner, have been reviewed and evaluated. Historical (pre-1995) soil and groundwater quality data are best summarized in a document titled AComprehensive RCRA Facility Investigation Work Plan@(January, 1995). Additional data, collected during site investigations and soil/waste removal performed under a 1997 Consent Agreement, were submitted in Monthly Progress Reports and other correspondence submitted during the first half of 1997. A Final Engineering Report of the completed remedial work was never submitted, and there has been no follow up groundwater monitoring. Accordingly, this document draws on largely historical data and some conservative assumptions, including that actual current conditions are reasonably expected to have improved.

The most significant contamination is related to wastes and releases associated with the operation of a vapor degreaser and a solvent recovery still at the Site. Waste disposal has occurred at several areas of the Site. The known disposal areas are shown as Solid Waste Management Units (SWMUs) on Figure 2. Key constituents for the Site are most significantly volatile organic contaminants (VOCs), principally Trichloroethylene (TCE) and Trichloroethane (TCA) and breakdown products (Trans-1,2-dichloroethene, vinyl chloride, chloroethane, etc.) as well as petroleum hydrocarbons. Minor levels of heavy metals and localized elevated levels of semi-volatile organics (SVOCs) have also been identified in sub-soils at the Site. The removal efforts of 1997 were incomplete, contaminant source areas remain at the site, and there is

uncontrolled groundwater impact to both the overburden and bedrock aquifers. However, the remaining soil contamination and waste materials are all below the ground surface and do not pose a direct contact exposure risk. Maximum pre-remedial concentrations of key contaminants are given in Table 1. There are no post-remedial data to confirm the actual concentrations remaining in place; however, it is reasonable to assume that current conditions have improved from pre-remedial levels.

References: AComprehensive RCRA Facility Investigation Work Plan@(January, 1995)

Table 1
Pre-Remedial Approximate Maximum Contaminant Concentrations

	Total Petroleum Hydrocarbons	Total Volatile Organics
Soils / Waste Materials - Landfill Area - Waste Pile Area - Wastewater Treatment Area	100,000 mg/kg 500 mg/kg 50,000 mg/kg	3000 ug/kg 15 ug/kg 500 ug/kg
- Scrap Metal Area	50,000 mg/kg	50,000 ug/kg
Groundwater - Overburden		
- Landfill Area - Waste Pile Area	750 ug/l NA	4000 ug/l 300 ug/l
- Wastewater Treatment Area - Scrap Metal Area	NA NA	100,000 ug/l NA
- Bedrock	NA	200 ug/l

3. Are there **complete pathways** between **A**contamination@ and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

A Contaminated@ Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreatio	n Food ²
Groundwater	No	No	No	No	No	No	No
Air (indoors)	Yes	Yes	No	No	No	No	No
Soil (surface, e.g., <2 ft)	No	No	No	No	No	No	No
Surface Water	No	No	No	No	No	No	No
Sediment	No	No	No	No	No	No	No
Soil (subsurface e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoors)	No	No	No	No	No	No	No

Instructions for Summary Exposure Pathway Evaluation Table:

- 1. Strike-out specific Media including Human Receptors=spaces for Media which are not Acontaminated@ as identified in #2 above.
- 2. enter Ayes@or Ano@for potential Acompleteness@under each AContaminated@Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential AContaminated@Media - Human Receptor combinations (Pathways) do not have check spaces (A___@). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

	If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter @YE@ status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
X	If yes (pathways are complete for any AContaminated@Media - Human Receptor combination) - continue after providing supporting explanation.
	If unknown (for any AContaminated@Media - Human Receptor combination) - skip to #6 and enter AIN@status code

Rationale and Reference(s):

Groundwater

² Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

The groundwater is primarily contaminated with VOCs and petroleum hydrocarbons, as determined by historical sampling at the site and immediately off-site to the north. Figure 3 shows areas of residual groundwater contamination, as well as soil contamination. Concentrations of VOCs in both the overburden aquifer and bedrock aquifer exceed applicable groundwater and drinking water standards. All surrounding homes and businesses have private or semi-private wells. There is a potential for impact to these surrounding wells, particularly those drawing water from the bedrock aquifer.

Some of the older local wells are dug wells, which take water from the shallow groundwater aquifer. This groundwater zone has been extensively investigated on-site and immediately off-site. It has been shown to discharge to Woodbury Creek along the eastern Site boundary and possibly a short distance to the north. There are no private wells within the overburden groundwater plume which could be impacted.

Of greater importance is the impact to the bedrock aquifer. This is the aquifer tapped by most private water wells in the area surrounding the Site. On-site investigation of this aquifer has not been completed; however, VOC concentrations exceeding groundwater standards have been identified in bedrock wells located at the Site perimeter, and impact most likely extends some distance off-site. Because of the potential risk, the New York State Department of Health has sampled several of the nearby residential wells a number of times over the past 20 years. Fortunately, no site-related contamination has been found. Based upon the continued potential exposure risk posed by the contaminated bedrock aquifer and uncertainties regarding the extent of contamination and direction of migration, the NYSDEC and USEPA, in cooperation with NYSDOH, recently completed a more extensive private well sampling program. This program, conducted from July through September 2005, included sampling of 47 private wells adjacent to and in all directions from the Site. The locations of the sampled private wells are shown on Figure 4. Actual property addresses are not shown in the figure for privacy reasons.

The proximity and distribution of the sampled wells provides very good coverage in all directions from the Site. The most extensive coverage is to the north, which is the presumed direction of groundwater flow. Although the actual direction of groundwater flow in the bedrock aquifer is not known by direct measurement, its presumed direction is based on the local geology and hydrology and geomorphology. Several groundwater consultants who work in this region and scientists at the Orange County Water Authority were consulted, and all concur that regional groundwater flow is most likely in a generally northerly direction. Chemical data from the limited on-site bedrock wells also support this presumed flow direction. Volatile organics have been confirmed in wells that are positioned to the north of source areas known or thought to be in communication with the bedrock aquifer. Coincidentally, the highest density of surrounding private wells is to the north of the Site, with very few wells to the south and none to the southwest. Sampled well depths, to the extent they could be determined, varied considerably, ranging from a few shallow dug wells (<15') to bedrock wells with depths varying from approximately 50 feet to over 450 feet. This range of depths provided extensive vertical coverage.

The private wells were sampled for volatile organic contaminants (VOCs). VOCs were chosen as the best indicator parameters to determine if releases from the Site were causing off-site impact. VOCs are the predominant chemicals in the site groundwater, are highly mobile, detectible at low concentrations, and are unlikely to be found from sources unrelated to the Site.

There were some very low levels of VOCs detected in a few wells. This is to be expected in the results from any broad sampling program. Detected compounds included benzene, chloromethane, toluene and MTBE; however, assessment of these data, relative to Site chemistry, suggests that these detections are not related to releases at the Site. There were no detections of any other VOCs which could be reasonably tied to releases at the Site. Additionally, the concentrations of all detected parameters were below applicable groundwater and drinking water standards, and were found at concentrations of 1 part-per-billion or less. Consequently, it has

been determined that there are no current human exposures to impacted groundwater from the Site. Follow up private well sampling and additional groundwater characterization for this Site are recommended to be sure that conditions do not change in the future.

References: NYSDEC and USEPA Private Well Sampling (Aug.- Sept 2005) - Laboratory Data Reports

Surface Water

There have been a few documented historical releases of cyanide, which impacted surface water (Woodbury Creek) to the extent of significant fish kills. Though significant, these releases have not had any residual effect. VOCs also discharge to the creek via groundwater. The actual flux of contaminants is relatively low, although it has not been positively determined. Sampling of the creek has been done at multiple locations and on several occasions, with no measurable impact detected. There are no contaminated surface soils at the site to contaminate surface run off. Accordingly, under current conditions, it is expected that impact to surface water is very limited and immeasurable.

Air (indoor)

EPAss Office of Solid Waste and Emergency Response (OSWER) issued ADraft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils@in November 2002. Among the exposure scenarios discussed in this draft guidance, EPA addressed vapor intrusion into non-residential buildings, including those in occupational settings that may be regulated by the Occupational Health and Safety Administration (OSHA). Specifically, in the Introduction of the Draft Guidance, under Section I.D. (AWhat Is The Scope of The Guidance?@), OSWER states that AOSHA and EPA have generally agreed that OSHA will take the lead in addressing occupational exposures@, and that AYEPA does not expect this guidance to be used for settings that are primarily occupational.@ OSWER reaffirmed this position in a fact sheet titled AVapor Intrusion and RCRA Corrective Action Environmental Indicators (EI),@issued June 2003.

However, at this time, OSWER is reevaluating the guidance for the vapor intrusion to indoor air pathway in occupational settings. The matter is currently under internal review. OSWER plans to issue updated recommendations on when and how the Draft Guidance should be used.

For purposes of this Human Exposures Under Control EI determination, EPA Region 2 is deferring the determination of whether an unacceptable exposure to human health exists from the vapor intrusion to indoor air pathway in the on-site occupational setting at the Star Expansion Company Site. Once new draft guidance is issued by OSWER, EPA Region 2 expects to recommend that the vapor intrusion to indoor air pathway be reevaluated at the Star Expansion Company Site to determine if this pathway poses an unacceptable risk to human health in the occupational setting. This deferral applies only to the vapor intrusion to indoor air pathway in the on-site occupational setting exposure scenario.

Site Specific Indoor Air Data and Assessment

There are no adjacent off-site homes or businesses located over any known groundwater plume from the Site. This is based on past site investigations of the shallow groundwater plume and is further supported by the results of the 2005 private well sampling initiative. It is reasonable to conclude that there are no off-site indoor air impacts from soil gas vapor intrusion.

In mid-2005 it was learned that the former manufacturing building was being put back into use. A site visit in July verified that a sizeable workforce was working within the building. It was also determined that people were living in the one on-site residence (shown on **Figures 2. 3 and 5**).

The residence is located approximately 200 feet away from a remaining significant source area (Scrap Metal Area), which is contaminated with petroleum hydrocarbons and VOCs. Shallow groundwater flows in the opposite direction from the residence; however groundwater flow in the bedrock is believed to be in the general direction of the house. Consequently, while there are no available data which show it, it was determined that there was some possibility of VOC contaminated groundwater flowing beneath the house. To address this possibility in a conservative manner, samples of indoor air and sub-slab soil gas were collected at the house in September 2005.

Preliminary evaluation of soil vapor and indoor air data for the on-site residence using NYSDOH's Decision Matrix 2, indicates that this structure will require monitoring for potential vapor intrusion (i.e., 1,1,1-TCA in soil vapor at 100 micrograms per cubic meter). With the exception of styrene and 1,2,4-trimethylbenzene, all the chemicals tested for are within typical indoor air background conditions. Since styrene and 1,2,4-trimethylbenzene are not site related contaminants, it appears that their presence in the indoor air may be the result of products stored and used in the house. Common household products that may contain styrene include wood-filler products, throw rugs, rubber and epoxy adhesives, and cigarette smoke. Common household products that may contain 1,2,4-trimethylbenzene include automotive repair products such as carburetor cleaner, spray paint and lacquer products, and sealants. Some of these products were present in the house basement at the time of sampling. However, without a completed product inventory and the data from the outdoor ambient air sample, these conclusions are meant to be preliminary and are subject to change pending new information. Current exposure is determined to be under control at the on-site residence; however, additional monitoring will be performed which will include additional indoor air sampling during the 2005-2006 heating season.

Sampling data from Monitoring Well (MW-3), located adjacent to the manufacturing building, showed the presence of a few hundred parts-per-billion of VOCs when last sampled in the mid-1990s. The source of this VOC contamination is not known. There is historical documentation of a release of VOCs to a storm sewer line that runs along the side of the building near this well, and reports of workers going into the line with absorbants to clean up residual solvents in the pipe joints. This is a likely source of the observed solvent levels in MW-3. Since groundwater flows away from the building in this area, releases of VOCs from the sewer line would not have migrated under the building. However, it is also possible that the source of observed VOCs in Well MW-3 is related to past waste handling or solvent storage activities within the building. Consequently, as a conservative measure, the owner has recently (September 14-15, 2005) collected indoor air and sub-slab soil gas samples at three locations within the building where solvents could have been spilled. (Sampling locations are shown on Figure 5). The results from this sampling are not yet available. As an additional conservative step, three additional sampling points have been determined for installation of test borings within and near the building. Data collected from these borings will add to the subslab vapor data already collected, and aid in determining if there are any impacts to soil or groundwater beneath the building. This work is scheduled to begin on October 31, 2005. At the present time there is no known VOC contamination of groundwater beneath the manufacturing building.

Surface Soil (e.g. < 2 ft.) and Subsurface Soil (e.g. > 2 feet):

Comparison of all available soils data to Recommended Soil Cleanup Objective values presented in TAGM 4046 Determination of Soil Cleanup Objectives and Cleanup Levels shows several parameters which exceeded the TAGM value at the Scrap Metal Area SWMU, and in residual soils at the Wastewater Treatment Area SWMU. These soils are at depths greater than 2 feet or, in the case of the Scrap Metal Area, are covered by an concrete/asphalt roadway and pad. Additional investigation and remediation of these areas are necessary, but they do not currently pose a direct human exposure risk.

The Site is listed on the State Inactive Hazardous Waste Site Registry (State Superfund) as a Class 2 Site. Notification of any excavation or substantial change of use that could potentially increase the likelihood of human exposure to hazardous wastes is required. A Health and Safety plan from any contractor hired to perform work at the site would be required where appropriate. The Health and Safety plans will address exposure to soils for maintenance and construction workers and for site excavation work. The site is not currently used for recreation or food production.

References: Residential Air Sampling Results, Air Toxics Ltd. September 30, 2005.

4	Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be Asignificant [®] (i.e., potentially Aunacceptable® because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable Alevels® (used to identify the Acontamination®); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable Alevels®) could result in greater than acceptable risks)?					
	<u>X</u>	If no (exposures can not be reasonably expected to be significant (i.e., potentially Aunacceptable@) for any complete exposure pathway) - skip to #6 and enter AYE@ status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to Acontamination@(identified in #3) are not expected to be Asignificant.@				
		If yes (exposures could be reasonably expected to be Asignificant@(i.e., potentially Aunacceptable@) for any complete exposure pathway) - continue after providing a description (of each potentially Aunacceptable@exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to Acontamination@(identified in #3) are not expected to be Asignificant.@				
		If unknown (for any complete pathway) - skip to #6 and enter AIN@status code				
	Rationale and	Reference(s):				

³ If there is any question on whether the identified exposures are Asignificant@(i.e., potentially Aunacceptable@) consult a human health Risk Assessment specialist with appropriate education, training and experience.

5	Can the Asignific	Can the Asignificant@exposures (identified in #4) be shown to be within acceptable limits?				
		If yes (all Asignificant@exposures have been shown to be within acceptable limits) - continue and enter AYE@after summarizing and referencing documentation justifying why all Asignificant@exposures to Acontamination@are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).				
		If no (there are current exposures that can be reasonably expected to be Aunacceptable@)- continue and enter ANO@ status code after providing a description of each potentially Aunacceptable@exposure.				
		If unknown (for any potentially Aunacceptable@exposure) - continue and enter AIN@ status code				
	Rationale and	Reference(s):				

6.	Check the appropriate RCRAINFO status codes for the Current Human Exposures Under						
	Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and						
		- · · · · · · · · · · · · · · · · · · ·	propriate supporting documentation as well				
	as a map of the	•	2				
	us a map or an	o raciney).					
	<u>X</u>	a review of the information contained Exposures@are expected to be AUnde EPA ID # NYD001223338, located a under current and reasonably expecte	res Under Control@has been verified. Based on d in this EI Determination, \(\mathbb{A}\)Current Human er Control@at the Star Expansion Company Site, at Route 32, Mountainville, New York 10953 ed conditions. This determination will be recomes aware of significant changes at the				
		NO - ACurrent Human Exposures@are NOT AUnder Control.@					
		IN - More information is needed t	o make a determination.				
EPA Pr	oject Manager:		Date:				
	, c	Rachel Chaput					
		New York Section					
		USEPA Region 2					
	Supervisor:		Date:				
	•	James Reidy, Chief					
		RCRA Program Branch - NY Section					
		USEPA Region 2					
	Supervisor:	Original Signed by:	Date: September 30, 2005				
		Adoph Everett, Chief					
		RCRA Program Branch					
		USEPA Region 2					
	Director:	or: Date:					
		Walter Mudgan,					
		Division of Environmental Planning and	d Protection				
		USEPA Region 2					
	Locations where	e References may be found:					
	New Y	ork State Department of Environmental Co	onservation, Central Office				
		on of Solid and Hazardous Materials					
	625 Br	oadway 9 ^h Floor					
	Albany, New York 12233-7252						
	Contact, telephone number and e-mail						
	NYSDI	FC					

NYSDEC Gary Casper (518) 402-8594 gdcasper@gw.dec.state.ny.us

USEPA

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

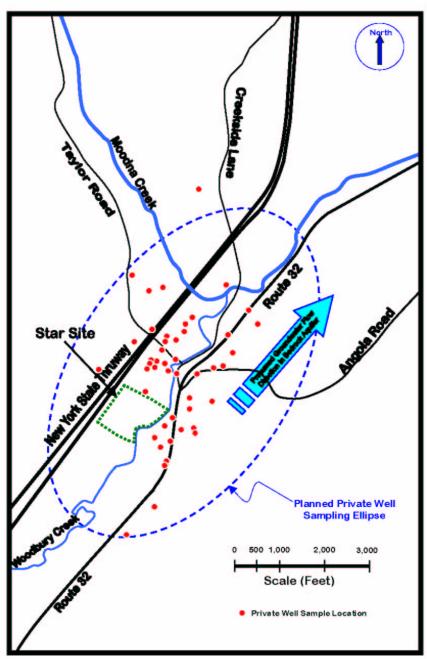


Figure 4
Private Well Sampling Locations

Star Expansion Site – Mountainville, New York EPA ID# NYD001223338

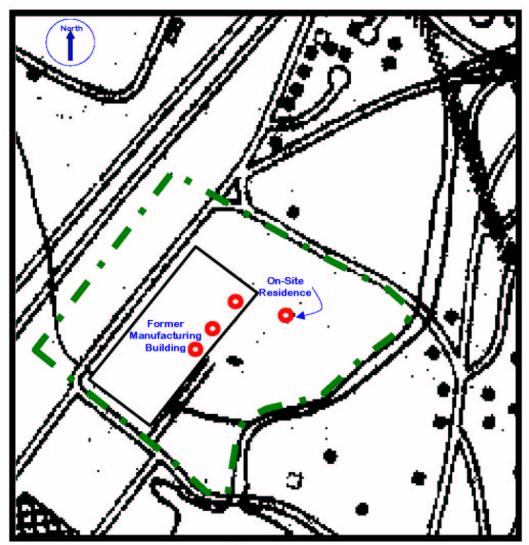


Figure 5 Indoor and Sub-slab Vapor Sampling Points Star Expansion Site – Mountainville, New York

EPA ID# NYD001223338

Indoor and Sub-Slab Sample Co-Locations

