DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: DuPont Belle
Facility Address: 901 West DuPont Avenue, Belle, WV, 25015
Facility EPA ID #: WVD005012851

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 are not available, skip to #8 and enter "IN" (more information needed) status code.

Rationale and Reference(s):

A comprehensive review of groundwater and surface-water data generated for the site was performed to support the EI evaluation. Additional environmental media (soil, sediment, air) were used to evaluate and support the Belle EI 725 determination. As a result of EPA policy change subsequent to the issuance of the EI 750 form (2/5/99), this EI did not evaluate the potential impact from contaminated groundwater discharge on sediments and their associated ecological systems (EPA, 2005). This pathway will be assessed prior to final remedy selection.

BACKGROUND

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 "contaminated" 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 "contamination" 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 RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

REFERENCES

United States Protection Agency (USEPA). 1999. RCRA Corrective Action Environmental Indicator (EI) RCRIS Code 750, Migration of Contaminated Groundwater Under Control. Interim Final. February 5, 1999.

_____. 2005. Environmental Indicators – Frequently Asked Questions, http://www.epa.gov/epaoswer/hazwaste/ca/eis/faqs.htm, updated April 2005.

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 "contaminated."

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

Rationale and Reference(s):

As a conservative measure, drinking-water standards were used to define groundwater "contamination" consistent with the Belle EI 725 determination (DuPont, 2003). However, groundwater is not used for drinking water on-site. Based on the use of these criteria, groundwater in the vicinity of the following areas of the Belle site were identified as contaminated; Plant Area Southwest Seep (AOC-B), Plant Area Former SSS process area (SSS), Plant Area Small Lots Manufacturing (SLM), and in the central valley of the Mountain Area.

PLANT AREA
Plume constituents in groundwater above the drinking water standards at the AOC-B area include benzene, toluene, ethylbenzene, xylene (BTEX), metals, and PAH compounds. Constituents at the SSS Area are BTEX, methylene chloride, and 1,2-dibromoethane (EDB), PAH compounds, and three metals (arsenic, barium and lead). Benzene and chlorobenzene are present in a limited area at the SLM.

MOUNTAIN AREA
The Mountain Area Solid Waste Management Units (SWMUs) are located within Scotts Run Hollow. Scotts Run Hollow is impacted locally with Volatile Organic Compounds (VOCs), bis(2-ethylhexyl)phthalate, and inorganics.

Defineable, site-related, Mountain Area groundwater plumes include bis(2-ethylhexyl)phthalate and seven metals (antimony, cadmium, colbalt, selenium, silver, thalium, and vanadium). Other constituents are detected sporadically and do not constitute definable "plumes". In addition, there are site-related VOC and metals impacts present in the vicinity of the Scotts Run Hollow that co-exist with non site-related regional and naturally occurring groundwater contaminants. Additional discussion of these regionally and naturally occurring groundwater contaminants is presented in Question 3 of this EI.

Additional descriptions of the site groundwater impact are presented in the Belle 725 EI report--DuPont 2003: Environmental Indicator Determination Report Current Human Exposures Under Control (CA 725) for the DuPont Belle Site.

[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).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing 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.

Rationale and Reference(s):

PLANT AREA

As noted in the December 2003 EI 725 Report (DuPont, 2003) and the Phase II RFI Investigation Report (Plant Area) dated May 2003 (DuPont, 2003), there are two main VOC plumes. The two main plumes are associated with AOC B-Southwest Seep and the Former SSS Process Area. Both plumes discharge to the Kanawha River imediately adjacent to the site. Benzene and chlorobenzene in groundwater also are found associated with SLM. Groundwater and surface-water have been sampled at these three areas. The data collected since the 2000 RFI and the Phase II RFI (2003) and The IRM Investigation Report (2003) have shown that the plumes have not increased in size nor have concentrations shown any upward trends. To address the two main plumes, DuPont has implemented a Dual Phase Extraction system to remediate impacted groundwater (and subsurface soil) in AOC-B and the SSS Area. The system was designed to remediate VOC/Semi-VOC (SVOC) impacted groundwater within both of these areas and intercept migrating constituents prior to discharging to the Kanawha River. Additional evaluation of the Plant Area plumes are discussed in Step 4 and Step 5 of this EI.

MOUNTAIN AREA

Current conditions of the multi-aquifer system indicate that the migration of localized, site-related, contaminated groundwater in the vicinity of Scotts Run Hollow has stabilized and is expected to remain within the area of the existing monitoring network at the site. In addition, results of multiple investigations and information from the Belle area show regional VOC impact also exists at and around the DuPont Mountain Area from naturally occurring hydrocarbons and potentially from the operations associated with oil and gas extraction. In fact, the frequency of detection and concentrations of BTEX in groundwater are greater at areas off-site, than those measured in the central portion of Scotts Run Hollow, near the Mountain Area SWMUs.

Information and investigations that support this EI evaluation and that regional and naturally occurring groundwater contamination is superimposed with localized, site-related groundwater impacts include the following:

- ❑ Review of regional natural resources and occurrence of hydrocarbons

[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.

- ❑ Completion of an environmental forensic study to further characterize the VOC occurrence in groundwater
- ❑ Construction of a groundwater flow model to evaluate off-site groundwater flow pathways and discharge points
- ❑ Historical data assessment of groundwater samples collected over a 15-year period including all environmental programs implemented for the Belle site
- ❑ Installation of four off-site multiport (multiple aquifer) monitoring wells located up to 2 miles from the site
- ❑ Recent quarterly sampling (six calendar quarters) of on-site and off-site wells for stability evaluation

The conclusions from the above listed information and investigations are summarized below.

REGIONAL RESOURSES AND OPERATIONS

The Belle Mountain Area is located within an active gas production field and former oil, coal, and brine production areas. Maps of the area indicate dozens of existing oil and gas wells on and surrounding the DuPont Mountain Area. Literature from the West Virginia Geological Survey (WVGS) documents oil and brine production from rock reservoirs in the Pottsville Sandstones within the Charleston East Quadrangle where the Belle site is located. Former natural brine seeps and gas seeps have been noted on Burning Springs Creek located adjacent (north) of the Mountain Area (Haught, 1968). The Pottsville Sandstones include the lower Kanawha Formation that is immediately below the aquifers monitored at the Belle Mountain Area.

Additional observations from a recent boring drilled at Spring Branch Hollow, located north of the Mountain Area property and within the groundwater study area, showed multiple “oil stains” and oil seeps” beginning at depths 460 feet below the Belle monitored aquifers (Martin Marietta, 2002).

ENVIRONMENTAL FORENSICS STUDY

A groundwater / chemical investigation was conducted to further characterize the VOC burden around the Belle Mountain Area and potential contribution sources of VOCs (see Attachment A). The environmental forensics study included an evaluation of all historic groundwater data and the collection of additional groundwater samples at the Belle Mountain Area for detailed chemical analysis and characterization. A sample of West Virginia crude oil was collected for a detailed characterization of the water soluble fraction (WSF) to be used in the study.

Results of hydrocarbon analysis identified 40 hydrocarbons in the WSF, and 35 of those compounds are also present in groundwater samples from the Belle study area. The five most dominant constituents in groundwater are also the five most dominant constituents in the WSF. These results indicate a source fingerprint of oil and gas production/naturally occurring hydrocarbons. Additional results of the study indicate a suggested source of VOC attributed to the site and/or oil and gas production/natural hydrocarbons. The study noted that the widespread and relatively uniform distribution of VOCs across the study area indicates a diffuse source and not a point source.

The forensics study concluded that overall, results show oil and gas production/natural hydrocarbons should be viewed as a likely source of VOCs in the study area groundwater (Friedman & Bruya, 2005).

GROUNDWATER MODEL

A groundwater flow model was developed for the Belle site aquifers including the surrounding area of 36 square miles on the east side of the Kanawha River. Conclusions of the model indicated the following:

- ❑ The primary groundwater migration pathway from the Mountain Area SWMUs is within the lower portion of the A Zone aquifer through the center of Scotts Run Hollow and the Plant Area.
- ❑ The distribution of detected constituents in monitoring wells within the Mountain Area (on-site and off-site) is contrary to the predictions of the groundwater model.
- ❑ It is unlikely that any realistic modeling (assuming the central point source for contaminants) will predict VOC impacts to aquifers as observed in new off-site wells.

MOUNTAIN AREA GROUNDWATER DATA

A comprehensive review of groundwater data generated for the site was performed to support the EI evaluation. Data to evaluate the Mountain Area impact, stabilization, and potential migration of contaminated groundwater were viewed on posting maps, graphs, and data tables.

Results of quarterly groundwater sampling, which has been in place since 1992, support the premise that the on-site plumes are stable. VOCs were monitored in 2004-2005 for 6 quarters at selected on-site and off-site Mountain Area (Westbay) wells to determine if concentrations were fluctuating. Analytical results indicate stability of the VOCs. The groundwater data for those constituents that were determined to be present as plumes were viewed on post maps to help understand the distribution. Constituents detected (from entire site database) within the site bedrock aquifers were plotted with the maximum value represented (or non-detect if never detected). Two main patterns developed from observation of the post maps of all (plume) constituents. One pattern indicates a localized impact within Scotts Run Hollow. The other pattern describes a widespread area of impact (including and beyond the boundary of the site).

Attachment B provides the plotted data of three compounds representing the distribution of a localized impact emanating from Scotts Run Hollow proximate to the Mountain Area waste units. These plots (antimony, cadmium, and sulfide) displayed in the five bedrock aquifers closely match the distribution as predicted by flow modeling. Attachment C provides the plotted data of three compounds representing the distribution of compounds with a widespread plume and no discernable point source pattern. The observations of these constituents (acetone, benzene, and toluene) and others in the database portray a relatively uniform distribution and some of the highest concentrations observed (mostly in the lower zones) furthest away from the site.

SUMMARY

The chemical distribution and other lines of evidence indicate Mountain Area groundwater contamination exceeding the applicable criteria is due to impacts of oil and gas production/naturally occurring hydrocarbons. It is probable that there are site-related impacts of these same constituents in Scotts Run Hollow (as observed in the data), but not in excess of the regional concentrations.

The groundwater and surface-water monitoring programs will continue to be used to evaluate changes to current conditions as well as to confirm plume stability.

REFERENCES

Friedman & Bruya, Inc. 2005. Evaluation of the VOC Burden in Ground Water in the Vicinity of the Mountain Westbay Study Area, Belle, West Virginia (Attachment A). September 2005.

DuPont. 2005. RFI Phase II –Mountain Area Sampling Results, DuPont Belle Plant, Belle, West Virginia. April 2005

____. 2004. Technical Memorandum, Belle Groundwater Model for DuPont Belle Plant, Belle, WV. 2004.

____. 2003. Phase II RFI Investigation Report – Plant Area, DuPont Belle Plant, Belle, West Virginia. May 2003

_____. 2003. DuPont Belle Plant, RCRA Facility Investigation, Mountain Area, Off-site Groundwater Sampling Summary. July 2003.

_____. 2003: Environmental Indicator Determination Report Current Human Exposures Under Control (CA 725) DuPont Belle Site.

_____. 2002. Phase I RFI Summary of Analytical Results. DuPont Belle Plant, Belle, West Virginia. April 2002.

_____. 2000. Phase I RFI Work Plan, DuPont Belle Plant, Belle, West Virginia. February 2000.

_____. 1999. Current Conditions Report for the DuPont Belle Plant. Belle, West Virginia. February 1999.

Haught, Oscar L. 1968. West Virginia Geological Survey. Bulletin 34, Geology of the Charleston Area. 1968.

Marietta, Martin. 2002. Core H1-02- Malden District, Kanawha County, West Virginia. 2002.

United States Protection Agency (USEPA). 1999. RCRA Corrective Action Environmental Indicator (EI) RCRIS Code 750, Migration of Contaminated Groundwater Under Control. Interim Final. February 5, 1999.

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 "contamination" does not enter surface-water bodies.

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

Rationale and Reference(s):

As discussed in Step 2 and Step 3, there are two main VOC plumes that could discharge to the Kanawha River (AOC-B and SSS). An additional (low priority) plume may also discharge to the river from SLM. DuPont has implemented a Dual Phase Extraction system to remediate impacted groundwater (and subsurface soil) in AOC-B and the SSS Area of the Belle Main Plant. The system was designed to remediate VOC/SVOC impacted groundwater within both of these areas by intercepting and treating constituents prior to discharging to the Kanawha River.

Both groundwater and surface-water have been sampled to monitor these plumes. Because the current effectiveness of the system to eliminate discharge has not been verified, the EI question is further evaluated (entered as yes above). With the exception of PAH compounds and one dissolved arsenic detection, no constituents have exceeded the surface-water screening levels in the Kanawha River.

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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_____ 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.

__X__ 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 and Reference(s):

A groundwater treatment system (dual phase extraction system) is currently operating at the AOC B and the SSS Process Area to prevent the significant discharge of contaminated groundwater into surface-water. However groundwater sampled adjacent to the Kanawha River (prior to the installation and operation of the dual phase extraction system) would indicate discharge of contaminated groundwater into surface-water.

As noted in the Belle EI Determination Report for CA 725, the Kanawha River is not used as a drinking-water source in the Charleston area. The screening criteria used for determining significance of the groundwater discharge are the West Virginia Ambient Water Quality Criteria (WVAWQC) for protection of human health assuming no use as a public water supply and Aquatic Life Chronic. If these criteria are not available the National Recommended Water Quality Criteria (WQC) were applied.

A discussion of groundwater results follows. However, it is important to note that surface-water at 17 locations was sampled for VOCs, Polynuclear Aromatic Hydrocarbons (PAHs), and arsenic. With the exception of PAHs and one arsenic sample, none of these constituents have exceeded AWQC and/or WQC. Groundwater data screened against surface-water criteria (Phase I and Phase II RFI) are summarized in Attachment D in this document. Table D-1 through D-4 present data screened against human health criteria. Tables D-5 and D-6, present data screened against aqauatic life criteria. Surface–water results were presented in the Kanawha River Water Sampling Report that was submitted to EPA in December 2003.

The evaluation of groundwater discharging to surface-water was made by using sample data from wells that are located adjacent to the Kanawha River.

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

Current groundwater results from the AOC B show detections of benzene and arsenic that are significantly over the AWQC (human health criteria). The groundwater sampled from wells within the SSS Process Area detected benzene and methylene chloride at concentrations that exceeded significantly the AWQC and Federal WQC respectively. Eight PAH compounds exceeded the AWQC at the SSS area. Arsenic exceeded the Federal WQC at the SSS area as well. VOCs, PAHs, and arsenic were further evaluated by calculating river flux and mass loading and by surface-water sampling in the Kanawha River.

Organic, constituents in groundwater samples from the SLM did not exceed the surface-water screening criteria, however, constituents identified in the groundwater (migration) screening were further evaluated in surface-water samples from the Kanawha River adjacent to the SLM. Discharge of organic constituents is not considered significant. Similarly, the discharge of several inorganic compounds are not considered significant since they are less than 100 times the surface-water screening standards. Further, none of these constituents have been measured in surface-water above their respective water quality standards.

6. Can the **discharge** of "contaminated" groundwater into surface-water be shown to be **"currently acceptabl**e" (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])?

X 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 can not be shown to be **"currently acceptabl**e") - 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 and Reference(s):

As previously stated, the groundwater treatment system (dual phase extraction system) currently operating at the AOC B and the SSS Process Area is preventing the significant discharge of contaminated groundwater into surface-water. However, until results of the remedial efforts are verified, the screening of groundwater and surface-water are used to evaluate the acceptable discharge of contaminated groundwater into surface-water based on results prior to the implementation of the dual phase system.

A dilution ratio was calculated for groundwater to surface-water interaction near the Kanawha River at the areas where there are potential significant discharge of contaminants (AOC B and SSS Process Area). Estimated river concentrations are determined with the dilution ratio applied to the known concentrations detected in groundwater. None of the exceeded site-related constituents (as determined in groundwater) will exceed criteria with the application of the flux calculation. Therefore, the current discharge of benzene and PAHs are acceptable for EI purposes.

Surface-water sampling was conducted in the Kanawha River in June 2003. Surface-water results were compared to the WVAWQC or the WQC if a criterion was not available in the WVAWQC. The criteria are considered protective of human health from potential adverse effects that may result from the

[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.

consumption of fish. The EPA considers the risk range of 1×10^{-4} to 1×10^{-6} to be acceptable for the evaluation of carcinogens. Data evaluated for this pathway included the surface-water sampled at the Mountain Area and in the Kanawha River.

Surface-water from two streams in the Mountain Area, Simmons Creek, and upper Burning Springs was sampled in the Mountain Area. Surface-water was analyzed for Appendix IX VOCs, SVOCs, pesticides/herbicides, PCBs, and metals. No constituents exceeded screening criteria in these surface-water samples.

River water samples were collected at 17 locations in the Kanawha River near the Plant Area and were analyzed for VOCs, PAH compounds, and arsenic (depending on location) in the river samples. There were no VOCs detected in Kanawha River water samples above the screening criteria. PAHs were detected in two Kanawha River water samples above the screening criteria based on the most conservative risk factor (10^{-6}), and the maximum concentration of a PAH compound measured was 0.12 ug/L. However the PAHs concentration measured do not exceed the criteria at the mid-point of the EPA's acceptable risk range (10^{-5}). Based on the recent sampling event, the Kanawha River has not been impacted above appropriately protective risk-based (10^{-5}) screening concentrations by PAHs from SWMUs at the Belle plant.

Total arsenic exceeded screening criteria in six samples. Dissolved arsenic was detected in only one sample. The detection of total arsenic in a sample without dissolved arsenic being measured indicates that turbidity may be an issue. The samples were collected during a period of high flow of the Kanawha River, which also supports the likelihood that turbidity is the cause of the total arsenic exceedances. The overall distribution of detected arsenic and association with turbidity suggest that arsenic exceedances are likely due to elevated background arsenic in sediment and not associated with groundwater discharging to the river. Sample results for VOCs and dissolved arsenic did not exceed the applicable surface-water criteria (DuPont, 2003).

Based on the above evidence, the current discharge of the VOC and PAH plumes are acceptable for EI purposes. The treatment of the Southwest Seep and SSS source area is expected to continue to reduce constituent concentrations in groundwater discharging to the Kanawha River. The current on-site and off-site groundwater monitoring programs as well as the surface-water monitoring program will continue to evaluate changes to current conditions.

REFERENCES

DuPont, 2003: Environmental Indicator Determination Report Current Human Exposures Under Control (CA 725) DuPont Belle Site.

____. 2003. Kanawha River Sampling Investigation, DuPont Belle Plant, Belle, West Virginia. December 2003.

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 "existing 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 and Reference(s):

DuPont will develop a monitoring program that will include groundwater, surface-water, and newly installed off-site wells.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

8. Check the appropriate RCRIS 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 DuPont Belle Site, EPA ID # WVD005012851, located at 901 West DuPont Avenue, Belle, WV 25015. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted 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 (signature) /s/ Date 9/22/05

(print)

(title)

Supervisor (signature) /s/ Date 9/22/05

(print)

(title)

(EPA Region or State)

Locations where References may be found:

EPA Region 3, RCRA Fileroom, 11th Floor
1650 Arch Street
Philadelphia, PA 19103

DuPont Corporate Remediation Group
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Willmington, DE 19805

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