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Report No. 05946-008
March 18, 2005

Mr. Vince Rorick
VCP Division, MC-221
Texas Commission on Environmental Quality
P. O. Box 13087
Austin, Texas 78711-3087

Re: **Affected Property Assessment Report**
San Antonio Housing Swift Site
1901 South San Marcos Street
San Antonio (Bexar County), Texas
VCP No. 190

Dear Mr. Rorick:

On behalf of the San Antonio Housing Authority, ENSR Corporation is submitting the *Affected Property Assessment Report* for the above referenced site.

If you have any questions about this report, please contact us at (713) 520-9900 or Mr. Oscar Cervantes at (210) 220-3281.

Sincerely,

STATE OF TEXAS
ERIN J. TRAIL
93000
LICENSED
PROFESSIONAL ENGINEER

Erin. J. Trail, P.E.
Project Manager

Roger K. Green, P.E.
Sr. Project Manager

cc: Oscar Cervantes, SAHA

Groundwater Assessment Associated Information: Attachments 6A, 6B and Appendix 5	APAR Worksheet 6.0 Page 1 of 7	
	ID No. VCP No. 190	Report date: February 24, 2005

Complete this worksheet for each groundwater-bearing unit assessed.
Affected Property Name(s)/No(s).: SAHA Swift Site/1 List all affected properties to which this applies

Summarize the nature and extent of COCs in groundwater at the affected property.

Groundwater COCs found at the affected property are polycyclic aromatic hydrocarbons (PAHs) typically associated with coal combustion products. PAH concentrations above PCLs are present only at the former MW-3 location. PAHs are not found above PCLs in the remaining wells at the site.

Investigation Approach

Name(s) of Groundwater-Bearing Unit(s): Uppermost Permeable Groundwater-Bearing Zone
List all groundwater-bearing units to which this information applies

Discuss how the groundwater assessment requirements for on-site and if necessary off-site properties have been satisfied. Include the rationale for the selection of groundwater field screening and/or sampling locations in terms of both the placement of monitor wells and the sampling depth. Discuss how the location and construction of the wells provides for the optimum observation of COCs based on the physical and chemical properties of the COCs, migration pathways, the type and location of potential or affected receptors, and on the site-specific hydrogeologic conditions. If screening was conducted and no samples were collected, explain how the screening results justified the decision to not collect samples. Illustrate the monitor well locations on the maps in Attachments 2A and 6B and the monitor well construction details in Attachment 2E.

The objective of assessment activities was to advance site closure in accordance with VCP and TRRP requirements. Borings were advanced to assess geologic conditions and collecting and analyzing groundwater samples to characterize the nature and extent of affected media. The monitor wells were located at key locations to evaluate groundwater impacts from the coal ash landfill and to ensure that COCs were not migrating off-site.

Each monitor well boring was advanced until the Navarro Formation was encountered. The Navarro Formation is considered a confining layer since it is composed of clay and marls which have a very low permeability.

If DNAPLs or LNAPLs are potentially present based on field evidence or COC concentration, are the wells screened in an optimal manner to detect the NAPLs? If no, explain why not: ___ Yes ___ No

Not applicable - NAPLS are not present based on field evidence and COC concentrations.

Was the sampling depth and interval appropriate for the COCs and the geologic/hydrogeologic conditions? X Yes ___ No
If no, explain why not:

Investigation Methods

Name(s) of Groundwater-Bearing Unit(s): Uppermost Permeable Groundwater-Bearing Zone
List all groundwater-bearing units to which this information applies

Identify and describe the investigation method(s) used (drilling, hand auger, push probe, etc) if not included in Worksheet 5.0. Discuss the site-specific reasons for choosing the method(s) and explain any atypical procedures or any problems encountered.

A total of 10 permanent monitoring wells were installed at the affected property. The borings for the monitor wells were advanced with a hollow stem auger. The borings were terminated at the upper contact with the underlying Navarro Formation, which is composed of hard, silty clay. The completion depths and screened intervals were determined in the field by an ENSR geologist based on the soil sample descriptions. The well screens were placed from the base of the borehole up to a depth between 3 and 10 feet bgs. All monitoring wells were constructed to allow monitoring of the uppermost permeable water bearing unit.

All of the monitoring wells were constructed with two inch inside diameter, flush threaded Schedule 40 PVC pipe. Each well contained a 15 to 20 foot section of 0.010 inch, factory slotted pipe and a two to seven foot section of riser. The borehole annulus around each screened section was filled with clean, graded silica sand to a maximum of two feet above the screened interval. A two foot thick bentonite seal was placed and hydrated above the sand interval and the remaining space filled to within two feet of the surface with cement grout mixture. Each well was completed at grade with a 4 ft. x4 ft. concrete pad, locking cap, and water-tight manhole cover.

Describe the monitor well development procedures.

Each of the monitoring wells were developed by the bail and purge method after completion of drilling operations using a disposable Teflon bailer. The wells were developed to remove fine particles from the well screen, the sand pack, and the surrounding formation. A minimum of ten well volumes of water was removed from each well.

Provide a brief summary of the well purging method(s) used for this project. Give a general description of the methodology. Don't include data in this section; these data may be included in Attachment 6A. Describe the water quality stabilization parameters (pH, temperature, etc.), the purge rate and/or amount purged, and a description of the purging devices. If a dedicated purging device was not used for each well, describe the decontamination procedures. If water wells were also sampled, include a discussion of how these wells were purged if different from the monitor wells. If necessary, include a copy of the standard operating procedures for sampling and purging in Appendix 13. Include documentation of purge water disposition in Appendices 6, 7, and 8.

For samples collected prior to 2004, a minimum of 3 well volumes were purged prior to sampling the groundwater in each well. In 2004, each well was purged utilizing a low-flow sampling technique. The pump intake was located about half-way into the screened interval. Groundwater was purged at a rate between 0.1 and 0.4 liters per minute until measurements of temperature, pH, turbidity, dissolved oxygen, ORP, and conductivity stabilized. Purge water was containerized and stored for off-site disposal. Dedicated bailers/tubing was used to purge and sample each well.

Provide a brief summary of the sampling method(s) used, the method of sample collection and preservation, and sample handling procedures. Discuss the site-specific reasons for choosing the sample collection and handling methods and explain any atypical procedures or any problems encountered. If a dedicated sampling device was not used for each well, describe the decontamination procedures.

Prior to 2004, groundwater samples were collected from each monitoring well with a disposable bailer. Groundwater samples collected during 2004 were collected using a peristaltic pump and dedicated tubing. Samples were collected into the appropriate laboratory-preserved containers. Samples containers were then labeled with the sample location, the time and date of sample collection, and the sampler's initials. Immediately after sample collection and labeling, the sample containers were wrapped in protective bubble wrap and placed in a cooler containing ice to maintain the samples at temperatures at 4° C. The samples were then shipped to an environmental testing laboratory following standard chain-of-custody requirements.

Field QA/QC

Date(s) of field work events to which these answers apply: 1/7/1995 – 8/9/2004
If other field events require different answers, repeat the section or question and specify the date(s) of the event.

Was the presence of NAPLs measured prior to purging and sampling? ____ Yes X No
If yes, describe the measurement tool and the procedure used to measure NAPL. If no, provide justification for not measuring NAPL.

Based on plant operations and raw materials, NAPL was not anticipated to be present. Analytical results confirmed that NAPL is not present at any of the wells.

Was the field measurement equipment properly calibrated? X Yes ____ No
Were the field measurements documented in the field logbook? X Yes ____ No
Describe the types of equipment used and the frequency and procedures for calibration.

Field equipment used during the sampling activities consisted of an electric water level indicator and water quality field parameters (i.e. pH, conductivity, turbidity, and dissolved oxygen). Field equipment was calibrated and operated according to the manufacturer's operations manual for each particular meter. Field equipment was calibrated every morning during the field investigation prior to the start of each day's activities. Periodic checks of the calibration were made throughout the day to assess accuracy of the readings.

Were the groundwater samples filtered? ____ Yes X No
If yes, specify pore size and type of filter and justify the use of filtering.

Were samples preserved in accordance with EPA SW-846 or other appropriate methods? X Yes ____ No
If samples were not preserved, provide justification for no preservation.

Is the field logbook available upon request? ____ Yes X No If no, provide justification.

Groundwater sampling worksheets were used to record sampling activities.

Are the monitor wells in good condition? X Yes ____ No
If no, specify which well(s) and the specific problem. If actions to fix the problem(s) have not been taken, include these measures in the Conclusions and Recommendations portion of the Executive Summary.

Nature and Extent

Name(s) of Groundwater-Bearing Unit(s): Uppermost Permeable Groundwater-Bearing Zone
List all groundwater-bearing units to which this information applies

Have COCs been detected in the groundwater-bearing unit? X Yes ___ No

Was the lateral extent of the COCs defined to the required assessment level? X Yes ___ No
If no, explain:

Depict the affected groundwater and the PCLE zone on the cross sections in Attachment 2F and on the maps in Attachment 6B.
Does the affected groundwater extend beyond the on-site property boundary? ___ Yes X No ___ Unknown

Discuss any modifications made to the affected groundwater assessment in light of §350.51(a) when there are existing physical controls that will be used in a Remedy Standard B response action.
Not applicable

Has LNAPL been detected? ___ Yes X No
If yes, and abatement measures have been conducted, provide details in the Chronology.

Has the extent of the LNAPL plume been defined? ___ Yes ___ No
If no, explain why not:

LNAPL approximate extent length (ft): _____ width (ft): _____ apparent thickness (ft): _____
Specify well ID number and maximum thickness: _____
Does the LNAPL extend beyond the on-site property boundary? ___ Yes ___ No ___ Unknown

Is DNAPL present? ___ Yes, measured ___ Yes, suspected based on dissolved concentrations
X No, and not suspected based on dissolved concentrations
If yes, and abatement measures have been conducted, provide details in the Chronology.

Has the extent of the DNAPL been defined? ___ Yes ___ No
If no, explain why not:

DNAPL approximate extent length (ft): _____ width (ft): _____ apparent thickness (ft): _____
Specify well ID number and maximum thickness: _____
Does the DNAPL extend beyond the on-site property boundary? ___ Yes ___ No ___ Unknown

Aesthetics

Do any of the COCs present an aesthetics problem or violate §350.74(i) criteria? If yes, describe and indicate if COC concentrations will need to be addressed to below the human health and ecological PCLs.
No.

Assessment Levels

Use this page to help identify the applicable horizontal and vertical assessment levels for each COC in each groundwater-bearing unit. If the affected property passed the Tier 1 Ecological Exclusion Criteria, you do not need to determine ecological PCLs. Even if the exclusion criteria were not passed, you may not need to establish ecological PCLs for groundwater. **This page does not need to be submitted with your report.**

Groundwater-bearing unit _____ Determine the assessment level for each groundwater-bearing unit.

COC: _____ Determine the assessment level for each COC.

On-Site and Off-Site Horizontal Assessment Level*			
Class 1 or 2 Groundwater Pathways		**Class 3 Groundwater Pathways**	
Lowest of:	PCL (mg/L)	Lowest of:	PCL (mg/L)
Tier 1 $^{GW}GW_{Ing}$ (residential)		Tier 1 $^{GW}GW_{Class3}$ (residential)	
Tier 1 $^{Air}GW_{Inh\text{-}V}$ (residential)		Tier 1 $^{Air}GW_{Inh\text{-}V}$ (residential)	
^{SW}GW and ^{Sed}GW		^{SW}GW and ^{Sed}GW	
Tier 2 Ecological PCL		Tier 2 Ecological PCL	
Tier 3 Ecological PCL		Tier 3 Ecological PCL	
Other (specify)		Other (specify)	

On-Site and Off-Site Vertical Assessment Level*			
Class 1 or 2 Groundwater Pathways		**Class 3 Groundwater Pathways**	
Lowest of:	PCL (mg/L)	Lowest of:	PCL (mg/L)
Tier 1 $^{GW}GW_{Ing}$ (residential)		Tier 1 $^{GW}GW_{Class3}$ (residential)	
Tier 1 $^{Air}GW_{Inh\text{-}V}$ (residential)		Tier 1 $^{Air}GW_{Inh\text{-}V}$ (residential)	
^{SW}GW and ^{Sed}GW		^{SW}GW and ^{Sed}GW	
Tier 2 Ecological PCL		Tier 2 Ecological PCL	
Tier 3 Ecological PCL		Tier 3 Ecological PCL	
Other (specify)		Other (specify)	

* All delineation requirements also include the following:
- The higher of background or the MQL/SQL if greater than the others.
- The PCL for any other applicable exposure pathway

Groundwater Assessment Associated Information: Attachments 6A, 6B and Appendix 5	APAR Worksheet 6.0 Page 6 of 7	
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Assessment Levels

Use this table to indicate the assessment level used to delineate the affected property for each COC. Specify the horizontal and vertical groundwater assessment levels. Include maps in Attachment 2A illustrating the affected property defined by the assessment level.

Date of the Tier 1 PCL tables used in the determination of assessment levels: _____

Groundwater-bearing unit(s): Uppermost Permeable Groundwater-Bearing Zone
List all groundwater-bearing units to which this information applies. If the assessment levels vary by groundwater-bearing unit, repeat this table for each groundwater-bearing unit as needed.
Groundwater classification: Class 1

COC	Source area size (acres)	$^{GW}GW_{Ing}$ or $^{GW}GW_{Class3}$ (mg/L)	$^{Air}GW_{Inh-V}$ (mg/L)	$^{SW}GW^{1}$ (mg/L)	Ecological PCL[1]		Other Pathways[1]		Horizontal assessment level		Maximum groundwater concentration (mg/L)	Vertical assessment level	
					(mg/L)	Tier	(mg/L)	name	Concentration (mg/L)	Exposure pathway [3]		Concentration (mg/L)	Exposure pathway[2]
Benzo(a)anthracene	0.5	0.0028	3,438.7						0.0028		0.0038	0.0028	$^{GW}GW_{Ing}$
Benzo(a)pyrene	0.5	0.0002	651.4						0.0002		0.00338	0.0002	$^{GW}GW_{Ing}$

[1] Specify this PCL when applicable.
[2] Specify the exposure pathway associated with the vertical assessment level.
[3] Specify the exposure pathway associated with the horizontal assessment level.

Non-Default Affected Property Parameters

Complete the next two tables if the values for any parameters used to calculate PCLs are site-specific and/or different than those listed in rule or guidance. **All non-default parameters must be supported by documentation and explanation. Values listed are not valid unless fully substantiated.** Note that site-specific values cannot be used to determine Tier 1 PCLs. Tier 2 calculations must use TNRCC-provided equations. Include the supporting documentation and any calculations in Appendix 4.

COC-Specific Affected Property Parameters

COC	Cross sectional area of air emissions source A (m^2)	Length of air emissions source parallel to wind direction L (m)

Affected Property Parameters

Term	Affected Property Parameters	Tier 1 Defaults	Value Used for Tier 2/3[1]
GW pH	Measured groundwater pH	NA	
σ_y	Transverse air dispersion coefficient (m) (dispersion estimates based on the Pasquill-Gifford system adopted by U.S. Public Health Service, Turner, 1970, *EPA Workbook of Atmospheric Dispersion Estimates*; see Cooper & Alley, 1994, *Air Pollution Control*)	NA	
σ_z	Vertical air dispersion coefficient (m) (dispersion estimates based on the Pasquill-Gifford system adopted by U.S. Public Health Service, Turner, 1970, *EPA Workbook of Atmospheric Dispersion Estimates*; see Cooper & Alley, 1994, *Air Pollution Control*)	NA	
Q	Air volumetric flow through mixing zone (m^3/s)	NA	

[1] Provide detailed information in Appendix 4 how each parameter was determined. Values are not valid unless fully substantiated.