9/9/14

Transwestern
Roswell Compressor
Station

ENTERED

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: Roswell Compressor Station
Facility Address: 6381 North Main Street, Roswell, NM 88201
Facility EPA ID #: NMD986676955

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.

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 nearterm 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).

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):

Ground water contamination has occurred at the Roswell Compressor Station as a result of three surface impoundments that stored pipeline condensate from 1960 to 1986. Until approximately 1986, transmission line maintenance waste and certain other wastes were discharged to these surface impoundments, located on the northeast corner of the property (NMED, 1994).

Investigations conducted at this site starting in the early 1990s identified the presence of petroleum hydrocarbons, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals in ground water in the northeastern corner of the compressor station and the adjacent land leased from the State of New Mexico Trust (EC, 2013).

On May 21, 1993 a recovery pump was installed in monitoring well MW-1. In 1993, phase separated hydrocarbon (PSH) recovery pumps were installed in monitoring wells MW-1B, MW-2 and RW-1. Since that time PSH and water have been pumped from these wells and routed to an above ground storage tank. In 1993 skimmers were installed on each recovery pump to reduce the volume of water recovered. Prior to the installation of the skimmers, PSH was detected at 58.5 and 62 feet below ground surface (bgs) (NMED, 1994).

The former surface impoundments were excavated and backfilled with clean soil in 2002. Sidewall samples collected from each impoundment indicated that the excavation successfully removed near surface soils to an acceptable concentration of total petroleum hydrocarbons (TPHs). However, during the investigation soils beneath the former surface impoundments were found to be impacted with petroluem hydrocarbons. Beneath the former surface impoundments, the vertical extent of impacted soils extends from the bottom of the excavation, approximately 10 feet (ft-bgs), to the uppermost aquifer at approximately 60 ft-bgs. Due to the local soil heterogeneities, VOCs have spread along preferential pathways on top of clay lenses at 30 to 40 ft-bgs and migrate downward to the uppermost aquifer (EC, 2014).

In 2002/2003 a soil vapor extraction (SVE) system was installed. The SVE system consisted of nine SVE wells, 37 Multi-Phase Extraction (MPE) wells, associated

[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).

conveyance piping, and two Baker Furnace thermal oxidizer units (EC, 2013). Currenlty, the SVE recovery system consists of nine SVE-only wells and 35 MPE wells.

In late 2003/2004 a 210-barrel aboveground storage tank was introduced into the system to act as a surge tank. The surge tank was installed between the recovery wells and the oil/water separator. Due to clogging issues, the oil/water separator was later removed from the treatment train. In addition, two granulated activiated carbon (GAC) units were installed in series between the air stripper and the irrigation water tank to provide additional treatment of recovered ground water. The modified recovery, treatment, and irrigation system was put into continuous operation on April 15, 2004 (EC, 2013).

Ground Water Cleanup Levels used to evaluate the analytical data for ground water samples collected during the semi-annual sampling events are in accordance with the Stipulated Order (SO, 2013) and are the New Mexico Water Quality Control Commission (NMWQCC) Standard and the U.S. EPA Maximum Contaminant Levels (USEPA MCLs).

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):
The Roswell Compressor Station currently has a remediation system that consists of soil vapor extraction and treatment and groundwater/phase separated hydrocarbon recovery and treatment. The recovery system well network consists of nine SVE wells and 35 MPE wells. In addition, the groundwater is monitored through a network of 29 monitoring wells (28 installed in the Uppermost Aquifer and one installed in the deeper San Andres Formation Aquifer).

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[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.

Ground water depth beneath the Project Area ranges from 30 feet below ground surface (ft-bgs) to 70 ft-bgs. Ground water flows in two directions, to the north of the surface impoundments as well as to the southeast indicating the presence of a complex water-bearing matrix with areas of preferential flow. The ground water gradient for the November 2013 sampling event was 0.014 feet/feet (ft/ft). This was calcuated for the Northern component of ground water flow between monitoring wells (MW) MW-13 and MW-40. A gradient of 0.006 ft/ft was calculated for the Southeastern compount of the ground water flow between MW-16 and MW-35. (Transwestern Pipeline Compnay, 2014).

In 2012 the ground water monitoring events detected VOCs such as: benzene, toluene, xylenes and 1, 1-dichloroethene (1,1-DCE) above the NMWQCC Standards. The 2013 ground water sampling events detected benzene and total xylenes in MW-16 above the NMWQCC and USEPA MCL; MW-39 detected 1,1-DCE above the NMWQCC Standards and US EPA MCL. MW-40, MW-41 and MW-42 to the north of MW-39 did not detect the 1,1-DCE indicating the plume has not reached those nothern most monitoring wells. MW-16 is located to the southeast of the surface impoundments. MW-15, MW-17, MW-21 and MW-3 are placed around MW-16 and did not detect the bezene and total xylenes indicating the plume is contained to the area around MW-16.

The average thickness of PSH was 1.75 feet, with a maximum of 6.14 feet. The data also indicates that only one SVE well exhibits PSH. The areal distribution of PSH in the Uppermost Aquifer as measured in the 2013 monitoring events shows that PSH was reduced by almost 50% since 2003 (EC, 2014).

Available analytical data for benzene, toluene, xylenes, ethylbenzene (BTEX) and 1,1-DCE for the 1997-2013 period was evaluated to assess overall plume area difference and stability. The results indicated that a reduction in the benzene plume footprint and the plume stability analysis resulted in the identification of a decreasing trend for the benzene plume. Similary, the evaluation of the BTEX plume indicated a decreasing trend as well. The 1,1-DCE plume has remeained localized within the northern portion of the project area (EC, 2014).

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):
Ground water is produced from both the shallow water table aquifer (alluvium) and a deeper artesian aquifer commonly called the Roswell Artesian Aquifer. Both aquifers are rechared along surface exposures on the slopes to the west and are believed to discharge to the Pecos River (River) at the eastern margin of the basin (DBS&A, 1994).

Contaimanted ground water is unlikely to reach the River due to the distance from the project area. In addition, the the plume is being contained by the corrective action treatment train operations.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentrations 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)?

   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 concentrations 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 judgment/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 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):

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

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]s 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 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 and Reference(s):

[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.

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):

Transwestern Pipeline Company has and continues to conduct facility wide semi-annual ground water monitoring in accordance with the terms of a New Mexico Environment Department (NMED) Stipulated Order (SO) that governs corrective action activities conducted within the Project Area at the Roswell Compressor Station in conjunction with the New Mexico Oil Conservation Division (NMOCD).

Transwestern Pipeline Company continues corrective action activites through a remediation system that consists of soil vapor extraction and treatment, and groundwater/phase separated hydrocarbon recovery and treatment. The recovery system well network consists of nine SVE wells and 35 MPE wells. In addition, the groundwater is monitored through a network of 29 monitoring wells (28 installed in the Uppermost Aquifer and one installed in the deeper San Andres Formation Aquifer). These wells are monitored on a semi-annual basis in accordance with the Amended Investigation Work Plan and Ground Water Monitoring Plan, 2013. Ground water monitoring reports are submitted to NMED and NMOCD on an annual basis.

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 Roswell Compressor Station facility, EPA ID # NMD98676955, located at 6381 North Main St., Roswell, NM 88201. 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) [signature] Date 9/9/14
(print) Victoria Baca
(title) ESS-O

Supervisor (signature) [signature] Date 9/9/14
(print) David Cobrain
(title) Program Manager
(EPA Region or State) New Mexico

Locations where References may be found:
See attached list

Contact telephone and e-mail numbers

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References:

CES 1999. *Phase IV Assessment Report, Ground Water Monitoring Report, & Phase V Assessment Work Plan for Roswell Compressor Station No. 9,* Cypress Engineering Services, Inc., June 1999.

CES 2001. *Work Plan for Excavation and Removal of Affected Soil in the Former Surface Impoundment Areas,* Section 3.3, Cypress Engineering Services, Inc., October 2001.

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CES 2013. *Report of 2013 Groundwater Remediation Activities, Transwestern Pipeline Company, Roswell Station Remediation Site, Roswell, New Mexico,* Cypress Engineering Services, March 2013.

DBS&A 1994. *Closure Plan for Roswell Compressor Station Surface Impoundments, Roswell, New Mexico,* Daniel B. Stephens & Associates, Inc., May 1994.

DBS&A 1995. *Phase I Soil and Groundwater Assessment for Roswell Compress Station No. 9, Surface Impoundments, Roswell, New Mexico,* Daniel B. Stephens & Associates, Inc., October 1997.

DBS&A 1996. *Phase III Soil and Groundwater Assessment for Roswell Compress Station No. 9, Surface Impoundments, Roswell, New Mexico,* Daniel B. Stephens & Associates, Inc., November 1995.

EC 2013. *Amended Investigation Work Plan and Groundwater Monitoring Plan, Roswell Compressor Station No. 9, Roswell, New Mexico,* EarthCon Consultants, Inc., March 2013.

EC 2014. *Report of 2013 Groundwater Remediation Activities, Former Surface Impoundments, Transwestern Compressor Station No. 9 (Roswell Compressor Station), Roswell, Chaves County, New Mexico,* EarthCon Consultants, Inc., March 2014.

NMED 1994. *Eron-Transwestern Pipeline Company, Roswell Compressor Station No. 9, Roswell, New Mexico,* New Mexico Environment Department, Hazardous Waste and Radioactive Materials Bureau, September 1994.

NMED 2013. *Stipulated Final Order, Roswell Compressor Station, Transwestern Pipeline Company, LLC, Chavez County New Mexico*, New Mexico Environment Department, Hazardous Waste Bureau, March 2013.