RECORD OF DECISION

HORMIGAS GROUNDWATER CONTAMINATED PLUME SUPERFUND SITE
CAGUAS, PUERTO RICO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
September 2016

393187

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Hormigas Groundwater Contaminated Plume Superfund Site
Caguas, Puerto Rico
PRN000206359

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the selected remedial action for the Hormigas Groundwater Contaminated Plume Superfund Site (Site), located between the municipalities of Caguas and Aguas Buenas in east-central Puerto Rico, which was selected in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. § 9601-9675, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for selecting the remedy. This decision is based on the Administrative Record file for this decision. Refer to Appendix I of Part II – Decision Summary - for a copy of the Administrative Record Index for this decision.

In August 2006 groundwater samples collected by the Puerto Rico Aqueduct and Sewer Authority (PRASA) from the Hormigas public water system exhibited the presence of tetrachloroethene (PCE), a volatile organic compound (VOC), in one public supply well (Eufracia) at 29 micrograms per liter (µg/L). In February 2009, the Eufracia public supply well was ordered closed by the Puerto Rico Department of Health because of PCE concentrations exceeding the Maximum Contaminant Level (MCL) of 5 µg/L. Subsequently, PRASA closed the entire Hormigas public water system as a result of the presence of VOCs. The community is currently served by the Cidra public supply system which is located outside of the impacted area. From 2009 to 2016, the United States Environmental Protection Agency (EPA) conducted several investigations at the Site to determine the nature and extent of the contamination and identify any potential source(s) of contamination.

During the remedial investigation (RI), the VOC contamination in the Eufracia well previously identified in 2006 had dissipated to such a degree that no exceedances of MCLs were noted. Furthermore, no VOC source areas were identified in soils and no residual contaminant plume was found. The EPA RI concluded that the VOCs measured up to 2010 were attributable to a highly localized, short-term release, and that natural processes within the aquifer (e.g., biodegradation and dispersion) caused the VOC residues to decrease while EPA's RI investigation was being performed. Because no site-related contamination was found, EPA has determined that no action is necessary to protect public health or welfare or the environment. The Puerto Rico Environmental Quality Board (EQB) concurs with EPA's recommendation. Refer to Appendix IX of Part II – Decision Summary - for a copy of the concurrence letter.

DESCRIPTION OF THE SELECTED REMEDY

EPA, in consultation with the Puerto Rico Environmental Quality Board ("EQB"), selects the No Action remedy for the Hormigas Groundwater Contamination Site. The basis for this selection is the data collected and reported in the RI and the conclusion set forth in the Human Health Risk Assessment

(HHRA) and the Screening Level Ecological Risk Assessment (SLERA). Data collected during the RI showed that VOC contamination in the Eufracia well identified up to 2010 has dissipated to such a degree that exceedances of MCLs were not identified. Furthermore, no VOC source areas were identified in soils, and no residual contaminant plume was found.

Based on the results of the HHRA, there is no unacceptable risk to human health at the Site and therefore a remedial action is not necessary to protect public health, welfare or the environment from actual or threatened releases of hazardous substances in the groundwater. The results of the SLERA indicate that there is also no potential for adverse effects to ecological receptors from exposure to contaminated soil, sediment or surface water.

DECLARATION OF STATUTORY DETERMINATIONS

Because no there is no unacceptable risk at the Site, EPA has determined that no action is necessary to protect public health or welfare or the environment. A five-year review will not be required.

AUTHORIZING SIGNATURE

In accordance with the requirements of CERCLA and to the extent practicable in the NCP, EPA, in consultation with EQB, has selected the No Action remedy for the Hormigas Groundwater Contaminated Plume Superfund Site.

Walter E. Mugdan, Director
Emergency and Remedial Response Division
EPA - Region 2

September 28, 2016
Date

DECISION SUMMARY

HORMIGAS GROUNDWATER CONTAMINATED PLUME SUPERFUND SITE

CAGUAS, PUERTO RICO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2

SEPTEMBER 2016

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SITE NAME, LOCATION, AND DESCRIPTION

The Hormigas Groundwater Contaminated Plume Superfund Site (Site) is located between the municipalities of Caguas and Aguas Buenas in east-central Puerto Rico within the area of two former public water supply wells, the Hormigas and Eufracia wells (Figure 1 of Appendix VII). Volatile organic compounds (VOCs) were detected above federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs), in the Eufracia public water supply well in 2006. As a result of this contamination, the Eufracia well, and the nearby Hormigas well were closed by the Puerto Rico Aqueduct and Sewer Authority (PRASA). The Eufracia well and the Hormigas well were part of the PRASA Hormigas public water system located in the Cañaboncito and Caguitas wards (in Caguas and Aguas Buenas, respectively).

The Eufracia well (302 feet deep) is located near the intersection of PR Road #785 and Camino Hormigas, along a narrow road south of Camino Hormigas. The Hormigas well (393.5 feet deep) is approximately 1,150 feet south of the Eufracia well at the end of a narrow street west of PR Road #785. According to PRASA, the mean output was 150 gallons per minute (gpm) from the Eufracia well and 100 gpm from the Hormigas well. The public water system was an independent PRASA system serving a population of approximately 5,488 users.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

In August 2006, groundwater samples collected by PRASA from the Hormigas public water system exhibited the presence of tetrachloroethene (PCE) in the Eufracia public supply well at 29 micrograms per liter (µg/L). In February 2009, the Eufracia public supply well was ordered closed by the Puerto Rico Department of Health because PCE concentrations exceeded the MCL of 5 µg/L. Subsequently, PRASA also closed the Hormigas public supply well, thus shutting down the Hormigas water supply system. Currently, the community is served by the Cidra public supply system which is located outside of the impacted area.

The United States Environmental Protection Agency (EPA) added the Hormigas Groundwater Contamination Site to the National Priority List (NPL) on March 10, 2011 because of the chlorinated solvents that were found in groundwater that was used as the drinking water source for the Cañaboncito and Caguitas communities. Chlorinated solvents, also known as VOCs, are classified as site-related contaminants (SRCs) because they were detected in the Eufracia public supply well at elevated levels. EPA funded a remedial investigation (RI) to assess site conditions and evaluate alternatives to the extent necessary to select a remedy.

SCOPE AND ROLE OF RESPONSE ACTION

EPA is addressing the Site comprehensively. EPA's assessment of soil and groundwater at the Site has not identified any areas of soil or groundwater contamination that would pose an unacceptable current or future risk to human health or the environment. The VOCs found in groundwater up to 2010, which were the basis for placing the Site on the NPL, are no longer present at the Site. The RI that EPA conducted at the Site indicates that the VOCs have dissipated, as discussed further below.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the RI, a Community Involvement Plan (CIP) was developed to assess any community concerns about the Site and encourage public participation. As part of the CIP and as required by Superfund regulations, EPA prepared a Proposed Plan for the Site (Appendix I). The Proposed Plan summarized the remedial alternatives and identified EPA's preferred alternative and the rationale for the preferred remedy. On August 20, 2016, EPA made available to the public the Proposed Plan, the RI Report, and the HHRA and the SLERA Reports for the Site. All of these documents, along with other supporting documents, are included in the Administrative Record for the decision, which was made available to the public at the following locations: EPA's Docket Room in New York, New York; Caguas Municipal Government Center, Environmental Affairs Office; Puerto Rico Environmental Quality Board (EQB) Superfund File Room in San Juan, Puerto Rico; and EPA's Caribbean Environmental Protection Division Office in Guaynabo, Puerto Rico. A copy of the Administrative Record Index for the remedy is provided in Appendix II of this ROD.

A notice of the availability of the Proposed Plan, and supporting documentation was published in the Primera Hora newspaper on July 21, 2016 and in the Semana local newspaper on August 21 and July 28, 2016 (Appendix III). In order to facilitate the communication with the community, a Spanish Fact Sheet was prepared and distributed throughout the community (Appendix IV). A public comment period was held from July 20, 2016 to August 19, 2016. A public meeting was held on August 3, 2016 at the El Mirador Community Center in Hormigas from 6:00 pm to 8:00 pm. The purpose of the public meeting was to present the Proposed Plan to the community and provide an opportunity for the public to ask questions and provide comments on the proposed remedial alternatives and EPA's preferred alternative.

Representatives from EPA and EQB attended the August 3, 2016 public meeting, answered questions, and received comments about the remedial investigation activities conducted at the Site and the proposed remedial alternative for the Site. Comments were submitted during the public meeting. Appendix V of this ROD contains the official transcript of the public meeting. In addition, EPA's response to comments received during the public comment period is included in the Responsiveness Summary (Appendix VI).

EPA POTENTIAL SOURCE AREA INVESTIGATION

From 2009 to 2010, EPA conducted a preliminary screening assessment to identify the potential source(s) of contamination in the area (PSA). As part of this investigation, EPA collected two groundwater samples from the Eufracia well and one sample from each of six community supply wells (Villa Vigia, El Paraiso, Los Velazquez, La Sierra 1, La Sierra 2, and La Sierra 3) for Target Compound List/Target Analyte List analyses. Eufracia well water exhibited PCE at 260 and 280 µg/L (microgram per liter), trichloroethene (TCE) at 59 and 60 µg/L, and cis-1,2-dichloroethene (cis-1,2-DCE) at 49 and 50 µg/L. No PCE, TCE, or cis-1,2-DCE were detected in samples from the six community supply wells. No semi-volatile organic compounds (SVOCs) or polychlorinated biphenyls (PCBs) were detected in any wells, and one pesticide was detected in a community supply well. All inorganic analyte detections were at concentrations below MCLs.

In addition, as part of the 2009-2010 investigation, EPA collected soil samples at seven potential source areas. Chlorinated VOCs were not detected at the following six facilities: Taller Pototo, Mariel T-Shirts, San Lorenzo Busline, Country Professional Dry Cleaners, JR Auto Body Collision & Paint, and Taller Gonzalez (Figure 2 of Appendix VII). Samples collected at a dry cleaning business (Narvaez Cleaners), located south of the Site, detected PCE at 19 micrograms per kilogram (µg/kg) in one surface soil sample, but not in other soil samples collected at the facility. Poor housekeeping practices were noted in the rear of the facility, including two empty drums and two full, partially-rusted drums of PCE. TCE and cis-1,2-DCE were not detected in any of the soil samples. As a result of the PSA investigation, the Hormigas Site was proposed to and subsequently listed on the National Priority List, which led to an additional remedial investigation.

EPA REMEDIAL INVESTIGATION

The goal of the RI which was conducted from 2013-2016 was to identify the nature and extent of contamination in Site media by collecting and analyzing samples and then comparing analytical results to federal, commonwealth, and Site-specific screening criteria. Field investigations were conducted to characterize the nature and extent of contamination and to identify other sources of contamination at the Site. Soil, soil gas, groundwater, surface water, and sediment samples were collected and analyzed as part of the investigations. Based on the PSA investigation, four chemicals were identified as Site-related contaminants: PCE, TCE, *cis*-1,2-DCE, and 1,1-dichloroethene (1,1-DCE).

Although these four VOCs were detected in groundwater during the PSA investigation, none of these compounds were detected during the RI sampling at concentrations greater than the screening criteria that were approved by EPA. Groundwater samples were collected from three existing wells: Villa de Oro community supply well, Unnamed Well 1, and Unnamed Well 2 (Figure 3 of Appendix VII). No SRCs were detected in any of the sampled wells. Other compounds were also screened for in the RI to determine if there were other compounds that may be related to releases near the Hormigas supply system. Although other contaminants were detected in the groundwater, based on the evaluation of the Site data, no additional compounds were identified as SRCs.

The groundwater contamination in the Eufracia supply well identified by PRASA and EPA in 2006 through to 2010 was not found to be present during numerous phases of the RI sampling, with the exception of very low concentrations (below the screening criteria) of TCE and cis-1,2-DCE (Table 1 of Appendix VIII) in one sampling event (wireline fracture sampling). Additionally, very low concentrations (below the screening criteria) of PCE and 1,1-DCE (Table 2 of Appendix VIII) were detected in round 3. In summary, contaminants previously detected in the groundwater from 2006 through 2010 at the Site are no longer present at levels above federal MCLs for drinking water.

EPA prepared an RI Report to document the nature and extent of the contamination at the Site. EPA also issued a Baseline Human Health Risk Assessment (HHRA) Report to document the current and future effects of Site contaminants on human health and the environment associated with the contamination that was previously detected at the Site. EPA also conducted a Screening-level Ecological Risk Assessment (SLERA) to evaluate any potential for ecological risks from the presence of Site contaminants in surface water and sediment. A detailed description of the HHRA

and SLERA for this Site is provided in the Summary of Risk Section of this Record of Decision (ROD).

CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) was developed for the Site to integrate the different types of information collected during the RI, including geology, hydrogeology, background, setting, and the fate and transport of contaminants. The CSM was based on the Site-specific geology, hydrogeology, physical and chemical properties of the Site-related contaminants, and the fate and transport of the contaminants, and is summarized below and illustrated in Figure 4 of Appendix VII.

Physical Setting with Respect to Contaminant Migration

The Site geology includes volcanic bedrock and sediments that resulted from the weathering process of the volcanic bedrock. The overburden (residual soils) range from mostly reddish and yellowish brown soft to stiff silty clay to clay and silt. Soils transition with depth to saprolite (yellowish brown very dense sandy silt to silt with rock fragments) to highly fractured saprolite rock, then to highly fractured fine-grained bluish gray volcanic rock, and ultimately a relatively massive volcanic breccia identified at the bottom of boreholes.

The Eufracia well is within a well-defined watershed formed by the mountainous topography of the area. Groundwater in the watershed is recharged by rainfall. Septic systems or leaking drinking water pipes may also contribute to groundwater recharge. The upper boundary of the Eufracia watershed is created by a regional drainage divide (the other side of the divide discharges runoff and groundwater into the Caguas valley). Locally, a smaller drainage divide forms a boundary between the Eufracia and Hormigas watersheds, although both discharge into the unnamed stream that is a tributary of the Rio Cagüitas.

The groundwater flow near the Eufracia well was evaluated based on water levels from the three deep bedrock multiport wells (Eufracia well, MW-1D, and MW-2D), two saprolite wells (MW-1S and MW-2S), and three staff gauges installed in the unnamed stream shown in Figure 5 of Appendix VII. Groundwater flow in the saprolite is mainly within the weathered fractures, which have considerable transmissivity. Open fracture zones in the deeper bedrock also transmit water but to a lesser extent.

Water levels in the saprolite monitoring wells and the stream near the Eufracia well indicate that flow in the saprolite is generally similar to the topographic gradient, from upland areas toward discharge points at the unnamed stream. The borehole geophysical data indicate that water also flows along the predominant east-west strike direction and the north-south dip of fractures.

Vertical groundwater head gradients measured at ports in one monitoring well (MW-1D) and Eufracia multiport wells indicate downward flow gradients. The water level measured indicates that groundwater moves downward from the saprolite into the bedrock and upward through vertical head gradients from the bedrock through the saprolite to the stream. This further demonstrates that groundwater discharges to the unnamed stream in some locations.

When the Eufracia well was actively pumping, prior to 2009, the groundwater flow regime was different than the present regime since it was influenced by pumping. Pumping likely drew much of the watershed groundwater toward the Eufracia well and may have limited the amount of groundwater discharging to the unnamed stream at the bottom of the watershed. Under current conditions (no pumping), groundwater in the watershed flows west-southwest toward the unnamed stream as defined by the several water elevations measured in different monitoring wells, multi-port wells, and unnamed stream staff gauges.

Contaminant Source Areas

Since any groundwater withdrawn from the Eufracia well originates in the well-defined watershed, source(s) of contamination must also have been within the watershed. Soil and groundwater screening sampling in the vicinity of the Eufracia well did not detect SRCs. PCE was detected below the limit of quantitation (10 nanograms (ng)) but above the limit of detection in one passive soil gas sample (SG-15) at 7 J ng/sampler. This location was at the residence located directly upgradient of the Eufracia well. Additional samples strategically placed around this sample yielded no other SRC detections.

The lack of SRC detections in soil samples, groundwater screening samples, or continuing detections in the Eufracia well indicate that no continuing source of contamination is present and impacting Site groundwater.

Expected Fate and Transport of Site Contaminants

Since no contamination was detected above the screening criteria and no continuing source of SRC contamination was identified during the RI, transport pathways of historical contamination at the Site could not be determined. However, it is worth noting that there is strong evidence that reductive microbial degradation of SRCs has occurred in the past, and that pockets of reducing geochemistry and significant organic carbon are present in the Eufracia well. Biodegradation (aided by dilution and dispersion and abiotic degradation) likely contributed to the decrease and absence in SRC concentrations at the Eufracia well.

Receptors

A number of potential receptors were identified for evaluation in the HHRA under current and future land use scenarios, including: recreational users of the unnamed stream (exposure to surface water and sediment); residents (exposure to surface soil and groundwater); and construction workers (exposure to surface and subsurface soil). No contamination was detected above screening criteria in environmental media at the Site, and thus no receptors are impacted.

SITE OVERVIEW

Topography and Drainage

The Site is located in the mountainous region of east-central Puerto Rico. The Eufracia well is at

an elevation of 1,480 feet above mean sea level and is within the unnamed stream watershed that is a tributary of the Rio Cagüitas. Surface drainage from the Site flows northwest into the unnamed stream. The Rio Cagüitas, north of the Site, flows east through the Caguas valley and discharges into the Rio Grande de Loiza.

Geology

The area of investigation lies within the central tectonic block of Puerto Rico, which is bounded mostly by west-northwest-trending fault zones with large left-lateral displacement and occasionally considerable vertical displacement. The geology of the area consists of lower Cretaceous volcanic deposits belonging to Formation J (Kj) and Torrecilla Breccia (Ktb), and blocks from Aguas Buenas Limestone (Kta) are displaced by faults.

Approximately 1,300 feet west of the Eufracia well, a north-northeast trending fault separates Formation J from limestone blocks of the Aguas Buenas Limestone and other younger volcanic deposits from the Torrecilla Breccia. Approximately 0.5 mile north of the Eufracia well, an east-west trending fault separates Formation J from the Torrecilla Breccia Formation. Approximately 0.7 mile east of the Eufracia well, a north-south trending fault occurs in Formation J.

The geologic unit exposed and underlying the study area includes:

- Formation J, Kj (lower Cretaceous) - Predominantly volcanic breccias interlayered with tuff, occasional lava flows, siltstone, and sandstone layers.

As a result of the proximity of the fault zones to the ground surface and the Hormigas supply wells, it is presumed that the deposits in the Site's subsurface may be fractured and may include intrusions from nearby geologic formations.

Hydrogeology

The hydrogeological terrain in the study area consists mainly of fractured and faulted volcaniclastic rocks with minor sandstone and siltstone deposits. The main aquifer in the vicinity of the Eufracia well is in the saprolite within weathered fractures, which have considerable transmissivity. The saprolite is a heterogeneous unit overlying the bedrock consisting of soils and weathered rock fragments. Open fracture zones in the volcanic bedrock also transmit water but to a lesser extent. The saprolite aquifer and fractured bedrock aquifer are connected. According to the U.S Geological Survey, the study area is assumed at some point to be hydraulically connected toward the east to the Caguas alluvial valley.

The depth to groundwater in the area is highly variable, ranging from about 7 feet to approximately 40 feet below ground surface (bgs). Estimated groundwater flow in the drainage basins that compose this hydrogeologic terrain ranges from 115,000 to 259,000 gallons per day per square mile, which is equivalent to effective recharge rates ranging from three to five inches per year.

Groundwater flow in the saprolite is expected to move downward from upland areas toward the stream channels in response to hydraulic gradients that follow topographic gradients. Groundwater

flow in the saprolitic bedrock is mainly along fractures that are inferred to be similar to those in the underlying un-weathered bedrock. These weathered fractures have considerable transmissivity based on yields that were observed during well drilling of MW-1S and MW-2S as shown in Figure 5 of Appendix VII. During Round 3 water level measurements, the level observed in MW-1S (1489.36 feet above mean sea level (amsl)) was 0.84 foot higher than the uppermost monitor zone (P1 zone) at the multiport Eufracia well (1488.52 feet amsl). The water level in the Eufracia P1 zone was about 7.46 feet higher than at MW-2S (1481.06 feet amsl) adjacent to the stream, and the water level at MW-2S was 0.56 foot higher than that in the stream at nearby staff gauge 2 (1480.5 feet amsl).

These water levels in the shallow bedrock and the stream near the Eufracia well indicate that flow in the shallow bedrock is generally similar to the topographic gradient, with water from upland areas moving along the predominant east-west strike direction and the north-south dip of fractures toward the Eufracia well and then along strike and dip planes toward discharge points at the stream. The water levels in the monitoring zones at monitoring well MW-1 area show a downward hydraulic gradient with 4.4 feet difference between the shallow zone (MW-1S) and the deepest (MW-1D-P5) zone, which is expected at this upland setting. As noted below, however, the deep bedrock zones at the monitoring well MW-1D have limited transmissivity, and water levels may not be in equilibrium with active groundwater flow. The water levels in the six monitoring zones at the Eufracia well also show a downward hydraulic gradient but with a difference of only 0.28 foot between the upper (P1) zone and the deepest (P6) zone, which reflects the significant number of high-angle fractures in the Eufracia borehole. In contrast, water levels at monitoring well MW-2 show an upward hydraulic gradient with a 0.23 foot difference between the deepest zone (P3) and the shallow (MW-2S) zone, indicating that groundwater at the monitoring well MW-2 location near the stream is likely moving upward toward discharge points in and near the unnamed stream channel.

Groundwater flow direction in the bedrock appears to be west/southwest from the Eufracia well toward MW-2D, with a 7.2 foot drop in water level over the 222 feet horizontal separation between these wells. Groundwater flow in the deep bedrock could not be evaluated between the Eufracia well and MW-1D since water level observations in the five monitoring zones at MW-1D have limited transmissivity and water levels may not be in equilibrium with active groundwater flow.

Net recharge to the groundwater aquifer within the study area is from infiltration of rainfall on the land surface, excluding water losses as a result of evaporation, transpiration, and direct (overland) runoff to stream channels. The weathered and open fractures in the shallow saprolitic zones and bedrock provide pathways for groundwater discharge as seepage and springs flow along stream channels. For a long-term annual water budget, net recharge to the aquifer is assumed by the principle of mass balance to be equal to groundwater discharge (base flow) to streams if there is no net change over time in aquifer storage.

Cultural Resources

A Cultural Resource Survey was performed during the RI for the Site to assess the archaeological sensitivity in the area of potential effects (APE). The entirety of the APE possesses low sensitivity for archeological resources. No previously recorded archeological sites are documented within or

in a 2-kilometer radius of the APE, the slopes range from 20 to 60 percent, and the valley bottom within the APE is poorly drained and possesses low sensitivity. The APE is situated far from any historic roads or structures, indicating a low sensitivity for historic period archeological resources. Pedestrian reconnaissance yielded no evidence of rock outcrops that may contain petroglyphs and no evidence of possible prehistoric or historic features. No further archeological survey is recommended based on the low likelihood of the existence or survival of intact archeological resources within the APE.

Sampling Strategy

The nature and extent of contamination in Site media was assessed during the RI by collecting and analyzing samples and then comparing analytical results to federal, Commonwealth, and Site-specific screening criteria. Soil, soil gas, groundwater, surface water and sediment samples were collected and analyzed as part of the investigations. Field investigations were conducted to characterize the nature and extent of contamination and to identify possible sources of contamination at the Site. Four chemicals were identified as SRCs as a result of the PSA investigation: PCE, TCE, cis-1,2-DCE and 1,1-DCE. These four VOCs were detected in groundwater. However, none of these VOCs were detected during RI sampling at concentrations greater than the screening criteria that were approved by EPA.

As part of the RI, surface and subsurface soil samples were collected at selected locations in the vicinity of the Eufracia well to identify the PSA of contamination (Figure 6 of Appendix VII). A total of 55 environmental samples and three duplicates were collected from 12 locations within the drainage and topographic lows to identify potential sources of contamination and contaminant transport pathways. Passive soil gas samplers were placed near residences northwest, north and east of the Eufracia well as shown in Figure 7 of Appendix VII. Samples were collected to identify PSAs, transport pathways, and potential groundwater contamination areas below the sampled locations.

Groundwater samples were collected from three existing wells: Villa de Oro community supply well, Unnamed Well 1, and Unnamed Well 2 (Figure 3 of Appendix VII). Eleven groundwater screening samples were also collected along the drainages in the vicinity of the Eufracia supply well at PSA soil boring locations where groundwater was encountered (Figure 8 of Appendix VII). Groundwater screening samples were collected to provide initial screening-level data for groundwater profiles to support selection of the locations and depths of permanent monitoring wells and to identify PSAs.

Two multiport wells (MW-1D and MW-2D) in the bedrock and two single screen shallow monitoring wells (MW-1S and MW-2S) in the saprolite (weathered bedrock) were also drilled as part of the RI (Figure 5 of Appendix VII). The two saprolite monitoring wells were drilled to a depth of 77 feet bgs (MW-1S) and 47 feet bgs (MW-2S) into the first water bearing zone encountered in the shallow weathered rock. The two bedrock monitoring wells were drilled to a depth of 329 (MW-1D) and 300 feet bgs (MW-2D), respectively. Five monitoring ports were installed in MW-1D and 3 in MW-2D.

Four rounds of groundwater samples were collected during the RI. Round 1, conducted in February 2015, and Round 2, conducted in April 2015, included samples from one active community supply well (Villa de Oro), Unnamed Well 1, Unnamed Well 2, the Hormigas well, and the Eufracia well (which has six monitoring ports). These samples were analyzed for Target Compound List (TCL) VOCs only). Round 3 sampling conducted in April 2016 included analysis for TCL SVOCs, TAL metals, PCBs and pesticides in addition to TCL VOCs of samples from 3 multiport wells (Eufracia, MW-1D, and MW-2D with a total of 13 ports), 1 active community well (Villa de Oro), and 2 saprolite wells (MW-1S and MW-2S). Round 4 groundwater samples collected in May 2016 were analyzed for TCL SVOCs, TAL metals, and TCL VOCs. Groundwater samples were collected from three multiport wells (Eufracia, MW-1D, and MW-2D with a total of 13 ports), 1 active community well (Villa de Oro), and 2 saprolite wells (MW-1S and MW-2S).

The results of these sampling events are discussed below.

Soil Sampling Results

- No SRCs above the screening criteria were detected in any of the 55 soil samples collected from 12 borings within drainages and topographic lows near the Eufracia well.

Summary of Soil Gas Screening

- Soil gas samplers were placed in the vicinity of PSAs, primarily near residences northwest, north, and east of the Eufracia supply well.
    - At one location, PCE was detected at 7 J nanograms (ng)/sampler from a sampler placed in a residence yard.
    - Additional samplers were placed nearby, but no other SRCs were detected.

Summary of Groundwater Contamination

- Samples collected from three existing wells:
    - No SRCs were detected in any of the sampled wells.
- Groundwater screening samples:
    - No SRCs were detected in any of the samples.
- Groundwater samples from fracture zones:
    - TCE was detected in the Eufracia well in three of seven fractures tested. The highest detection of TCE was 0.92 µg/L at the bottom of the borehole at 255 feet bgs. The other two detections were 0.73 (239 feet bgs) and 0.33 J µg/L (224 feet bgs); all detections were below the screening criterion of 5 µg/L.

- Cis-1,2-DCE was detected in the Eufracia well in the same fractures as TCE was found. The maximum concentration of 1.7 µg/L was also at the deepest sample at 255 feet bgs. This VOC was also detected at 239 and 224 feet bgs with concentrations of 1.4 and 0.65 µg/L, respectively. All three detections at Eufracia were below the screening criterion of 70 µg/L.

- PCE and 1,1-DCE were not detected in any of the samples from the Eufracia well.

- No SRCs were detected during the fracture bedrock sampling at the Hormigas well or at the bedrock multiport wells (MW-1D and MW-2D).

- Rounds of Groundwater Samples:

  - No SRCs were detected in any of the samples collected during Round 1 of monitoring well sampling event.

  - No SRCs were detected in any of the samples collected during the Round 2 monitoring well sampling event. This event included the same wells as Round 1.

  - No SRCs above the screening criteria were detected in any of the samples collected during Round 3 monitoring well sampling event. PCE was detected at 0.27 J µg/L in MW-1D (port 2 depth: 139.5 - 146.5 feet bgs) and 1,1-DCE was detected at 0.21 J µg/L in MW-1S at 72 feet bgs (0.25 J µg/L in the duplicate sample).

  - No SRCs above the screening critera were detected in samples collected during Round 4 monitoring well sampling event. This event included the same wells as Round 3. PCE was detected at 0.5 µg/L in MW-1D-P2 (139.5 - 146.5 feet bgs).

  - One metal, manganese, was detected above screening criteria in two samples during the Round 3 monitoring well sampling event and in three samples in the Round 4 monitoring well sampling event. Low concentrations of non-SRC VOCs, SVOCs, pesticides, other metals, and cyanide were detected sporadically below screening criteria during the Round 3 monitoring well sampling event. During the Round 4 monitoring well sampling event, low concentrations of non-SRC VOCs, SVOCs and other metals, were detected sporadically and below screening criteria. Groundwater samples collected during the Round 4 monitoring well sampling event were not analyzed for pesticides, PCBs and cyanide.

<u>Summary of Surface Water/Sediment Contamination</u>

- No SRCs were detected in surface water at the unnamed stream or discharge coming from the Eufracia well area.

- No SRCs were detected in sediment samples collected along the unnamed stream.

Summary of Remedial Investigation

The VOC contamination in the Eufracia well identified up to 2009 has dissipated to such a degree that exceedances of MCLs were not identified during the RI; furthermore, no VOC source areas were identified in soils, and no residual contaminant plume was found. The RI supports the theory that the VOCs identified up to 2009 were attributable to a highly localized short-term release, and that natural processes within the aquifer (e.g., biodegradation and dispersion) have caused the VOC residues to decrease while EPA's RI studies were being performed.

SUMMARY OF SITE RISKS

As part of the RI, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment and an ecological risk assessment. It provides the basis for selection of the no action remedy. The risks and hazards for the Site was presented in the baseline risk assessment and will be summarized in this section.

HUMAN HEALTH RISK ASSESSMENT

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Hazard Identification – uses the analytical data collected to identify the contaminants of potential concern (COPC) at a site for each medium, with consideration of a number of factors explained below; Exposure Assessment - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed; Toxicity Assessment - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and Risk Characterization - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the National Contingency Plan as an excess lifetime cancer risk greater than 1 x 10-4 – 1 x 10-6, an excess of lifetime cancer risk greater than 1 x 10-6 (i.e., point of departure) combined with site-specific circumstances, or a Hazard Index greater than 1.0; contaminants at these concentrations are considered chemicals of concern (COCs) and are typically those that will require remediation at a site. Also included in this section is a discussion of the uncertainties associated with these risks.

HAZARD IDENTIFICATION

In this step, the COPCs in each medium were identified based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations, mobility, persistence, and bioaccumulation. The risk assessment focused on surface soil, subsurface soil, surface water, sediment, and groundwater contaminants related to the Hormigas Groundwater

Contamination Site which may pose significant risk to human health. Based on the analytical information that was collected to determine the nature and extent of contamination, EPA did not find the presence of Site-related VOCs in any media (i.e., surface and subsurface soil, surface water, sediment or groundwater) at concentrations of potential concern.

A comprehensive list of all COPCs that were investigated can be found in the HHRA, entitled Final Human Health Risk Assessment Report – Hormigas Groundwater Contaminated Plume Site - July 2016. This document is available in the Administrative Record file. There were no COPCs detected in surface and subsurface soil, surface water, sediment or groundwater.

Exposure Assessment

Consistent with Superfund policy and guidance, the HHRA is a baseline human health risk assessment and therefore assumes no remediation or institutional controls to mitigate or remove hazardous substance releases. Cancer risks and noncancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at a site. The RME is defined as the highest exposure that is reasonably expected to occur at a site. For those contaminants for which the risk or hazard exceeded the acceptable levels, the central tendency estimate, or the average exposure, was also evaluated.

The Site is currently zoned for residential use with some agricultural use, and the Site is currently connected to the Cidra public water supply. In addition, the unnamed stream may be used for recreational activities. It is expected that future use will be similar to the current use. The HHRA evaluated potential risks to populations associated with both current and potential future land uses.

Exposure pathways were identified for each potentially exposed population and each potential exposure scenario for exposure to surface soil, subsurface soil, surface water, sediment, and groundwater. Exposure pathways assessed in the HHRA are presented in Table 3 of Appendix VIII and included current exposure to residents (adults and children) and recreators and future exposure to residents (adults and children, construction workers and recreators, through incidental ingestion, dermal contact, and inhalation from contaminated media at the Site. However, since there were not COPCs identified in the surface and subsurface soil, surface water or sediment, these pathways were not included in the quantitative assessment of risk and only exposure to groundwater was evaluated quantitatively, which resulted in risks and hazards that were below or within EPA's acceptable ranges. Typically, exposures are evaluated using a statistical estimate of the exposure point concentration, which is usually an upper-bound estimate of the average concentration for each contaminant, but in some cases may be the maximum detected concentration. A comprehensive list of the exposure point concentrations for all COPCs can be found in the HHRA.

TOXICITY ASSESSMENT

Under current EPA guidelines, the likelihood of carcinogenic risks and noncancer hazards as a result of exposure to site chemicals are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the site-related chemicals would be additive. Thus, cancer and noncancer risks associated with exposures to individual COPCs were summed to indicate the

potential risks and hazards associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Toxicity data for the human health risk assessment were provided by the Integrated Risk Information System (IRIS) database, the Provisional Peer Reviewed Toxicity Database, or another source that is identified as an appropriate reference for toxicity values consistent with EPA's directive on toxicity values. There are no toxicity values presented in the ROD because no chemicals were identified as COCs. The toxicity information for all COPCs is presented in the HHRA.

RISK CHARACTERIZATION

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and benchmark comparison levels of intake (reference doses, reference concentrations). Reference doses (RfDs) and reference concentrations (RfCs) are estimates of daily exposure levels for humans (including sensitive individuals) which are thought to be safe over a lifetime of exposure. The estimated intake of chemicals identified in environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) is compared to the RfD or the RfC to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds within a particular medium that impacts a particular receptor population.

The HQ for oral and dermal exposures is calculated as below. The HQ for inhalation exposures is calculated using a similar model that incorporates the RfC, rather than the RfD.

HQ = Intake/RfD

Where: HQ = hazard quotient
Intake = estimated intake for a chemical (mg/kg-day)
RfD = reference dose (mg/kg-day)

The intake and the RfD will represent the same exposure period (i.e., chronic, subchronic, or acute).

As previously stated, the HI is calculated by summing the HQs for all chemicals for likely exposure scenarios for a specific population. An HI greater than 1.0 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures, with the potential for health effects increasing as the HI increases. When the HI calculated for all chemicals for a specific population exceeds 1.0, separate HI values are then calculated for those chemicals which are known to act on the same target organ. These discrete HI values are then compared to the acceptable limit of 1.0 to evaluate the potential for noncancer health effects on a specific target organ. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

The HI for noncancer effects is less than the acceptable noncancer hazard index of 1 for exposure to groundwater. Thus there are no COCs identified for groundwater, or for the other media

evaluated in the screening phase (i.e., surface and subsurface soil, surface water and sediment).

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen, using the cancer slope factor (SF) for oral and dermal exposures and the inhalation unit risk (IUR) for inhalation exposures. Excess lifetime cancer risk for oral and dermal exposures is calculated from the following equation, while the equation for inhalation exposures uses the IUR, rather than the SF:

Risk = LADD x SF

Where: Risk = a unitless probability (1×10^{-6}) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

These risks are probabilities that are usually expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the assessment. Again, as stated in the National Contingency Plan, the point of departure is 10^{-6} and the acceptable risk range for site-related exposure is 10^{-4} to 10^{-6}.

As noted, the estimated cancer risks are below or within EPA's acceptable risk range for all media and receptor populations that were evaluated. Thus there are no COCs identified for groundwater, or for the other media evaluated in the screening phase (i.e., surface and subsurface soil, surface water and sediment).

UNCERTAINTIES

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental data
- environmental parameter assumptions
- toxicity data
- risk characterization

Two of the primary sources of uncertainty identified in the HHRA were associated with exposure parameters and toxicological data. Uncertainty in exposure parameters was related to many of the parameters being associated with default values since site-specific values were not available. This would provide a conservative estimate of potential risk and hazards.

Another important source of uncertainty was toxicological data. The toxicity factors used in the quantitative evaluation of potential risks and hazards were primarily selected from the IRIS. For many chemicals, there is a lack of appropriate information on effects in humans (i.e., epidemiologic studies). Therefore, animal studies are generally used to develop toxicity values in human health risk assessments, which may under- or over-estimate potential risks and hazards.

More specific information concerning uncertainty in the health risks is presented in the baseline human health risk assessment report. Based on the results of the human health risk assessment, no remedial action is necessary to protect the environment from actual or threatened releases of hazardous substances.

ECOLOGICAL RISK ASSESSMENT

A SLERA assessment was conducted to evaluate the potential for ecological risks from the presence contaminants in surface soil. The SLERA focused on evaluating the potential for impacts to sensitive ecological receptors to site-related constituents of concern through exposure to surface soil on the Site, and surface water and sediment from the unnamed stream. Surface soil, surface water and sediment concentrations were compared to ecological screening values as an indicator of the potential for adverse effects to ecological receptors. A complete summary of all exposure scenarios can be found in the SLERA.

Surface Soil: There were no chemicals detected in the surface or subsurface soil that exceeded the screening criteria for ecological receptors, therefore all hazard index values were less than the acceptable value of 1. There were no COCs selected for surface or subsurface soil.

Surface Water: There were no chemicals detected in the surface water that exceeded the screening criteria for ecological receptors, therefore all hazard index values were less than the acceptable value of 1. There were no COCs selected for surface water.

Sediment: There was one chemical, acetone, detected in the sediment that exceeded the screening criteria for ecological receptors. Acetone is not considered to be a site-related contaminant, and more importantly, acetone is often a laboratory contaminant. For these reasons, acetone is not considered a COC. Thus, there were no COCs selected for sediment.

Based on the results of the ecological risk assessment, no remedial action is necessary to protect the environment from actual or threatened releases of hazardous substances.

RISK ASSESSMENT SUMMARY

In summary, volatile organic compounds, specifically trichloroethene, tetrachloroethene cis-1,2-dichloroethene and 1,1-dichloroethene, associated with the site were not found to result in unacceptable risks or hazards for human health or ecological receptors. There were no COCs identified in any media that was evaluated (i.e., surface and subsurface soil, surface water, sediment and groundwater). Based on the results of the risk assessments, the no action remedy selected in this Record of Decision is appropriate.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Site was released for public comment on July 20, 2016, and the public comment period ran from that date through August 19, 2016. Upon review of the comments received, EPA has determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, are necessary.

RESPONSIVENESS SUMMARY

No written comments on the Proposed Plan were received during the public comment period. EPA's responses to verbal comments received during the public meeting is included in the Responsiveness Summary (Appendix VI).

APPENDIX I

PROPOSED PLAN
Hormigas Groundwater Contaminated Plume Superfund Site

Superfund Program Proposed Plan

Hormigas Groundwater Contaminated Plume Superfund Site

Caguas, Puerto Rico
July 2016

EPA Region 2

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the preferred action for the Hormigas Groundwater Contaminated Plume Superfund site (the Site) in Caguas, Puerto Rico, with the rationale for this preference. This document was developed by the U.S. Environmental Protection Agency (EPA), the lead agency for Site activities, in consultation with the Puerto Rico Environmental Quality Board (PREQB), the support agency. EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, commonly known as Superfund), 42 U.S.C. § 9617(a), and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

EPA added the Hormigas Groundwater Contaminated Plume Site to the National Priorities List (NPL) on March 10, 2011 because chlorinated solvents were found in a drinking water supply well. The nature and extent of the contamination at the Site summarized in this document are described in detail in the Remedial Investigation (RI) report. EPA is addressing the Site comprehensively through this Proposed Plan.

EPA's assessment of soil and groundwater at the Site has not identified any areas of soil or groundwater contamination that would pose an unacceptable current or future risk to human health or the environment. The volatile organic compounds (VOCs) found in groundwater prior to 2009 were the basis for placing the Site on the NPL; however, EPA's RI studies indicate that the VOCs have dissipated, for reasons discussed

MARK YOUR CALENDAR

PUBLIC MEETING
August 3, 2016 at 6:00 pm
Centro Comunal El Mirador
PR 785 Km 3.5
Hormigas Sector
Cañaboncito Ward, Caguas, Puerto Rico

PUBLIC COMMENT PERIOD
July 20, 2016-August 19, 2016

INFORMATION REPOSITORIES
The administrative record file, which contains copies of the Proposed Plan and supporting documentation, is available at the following locations:

Municipio Autónomo de Caguas
Centro de Gobierno Municipal – Angel Rivera Rodríguez
Oficina de Asuntos Ambientales
Calle José Padial Esquina
Ave. José Mercado, Piso 1
Caguas, PR 00726
(787) 653-8833 ext. 1717
Hours: Monday – Friday 7:30am a 4:30 pm

U.S. Environmental Protection Agency
City View Plaza II- Suite 7000
#48 PR-165 Km. 1.2
Guaynabo, PR 00968-8069
(787) 977-5865
Hours: Monday – Friday 9:00 am to 5:00 pm
By appointment.

Puerto Rico Environmental Quality Board
Emergency Response and Superfund Program
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León, San Juan, PR
(787) 767-8181 ext. 3207
Hours: Monday – Friday 9:00 am to 3:00 pm
By appointment.

below. Therefore, EPA is recommending taking no action at the Site.

This Proposed Plan summarizes information that can be found in greater detail in several reports, which are included in the Administrative Record, many of which collectively comprise the Remedial Investigation for the Site. EPA and the PREQB encourage the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted.

COMMUNITY ROLE IN SELECTION PROCESS

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, this Proposed Plan has been made available to the public for a 30-day public comment period, which begins with the issuance of this Proposed Plan and concludes on August 19, 2016.

EPA is providing information regarding the investigation of the Site to the public through a public meeting and the availability of documents at public repositories, which contain the administrative record file. EPA encourages the public to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted at the Site.

The public meeting to be held during the comment period is to provide information regarding the Site investigations, and EPA's no action recommendation, as well as to receive public comments. Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of a Record of Decision (ROD), the document that formalizes the selection of the remedy for a site.

Written comments on this Proposed Plan should be addressed to:

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SITE BACKGROUND

Site Description

The Site is located in the municipalities of Caguas and Aguas Buenas in east-central Puerto Rico within the area of two former public water supply wells, the Hormigas and Eufracia wells (Figure 1). VOCs were detected above federal drinking water standards, called Maximum Contaminant Levels (MCLs), in the public water supply well, identified as Eufracia public supply well in 2006. As a results of this contamination the Eufracia well and a nearby public supply well named Hormigas were closed by the Puerto Rico Aqueduct and Sewer Authority (PRASA). The Eufracia well and the Hormigas well were associated with the PRASA Hormigas public water system located in the Cañaboncito and Caguitas wards (in Caguas and Aguas Buenas, respectively) west of state road PR-785.

The Eufracia well (302 feet deep) is located near the intersection of PR-785 and Camino Hormigas, along a narrow road south of Camino Hormigas. The Hormigas well (393.5 feet deep) is approximately 1,150 feet south of the Eufracia well at the end of a narrow street west of PR-785. According to PRASA, the mean output was 150 gallons per minute (gpm) from the Eufracia well and 100 gpm from the Hormigas well. The system was an independent PRASA system serving a population of approximately 5,488 users.

Site History

In August 2006 groundwater samples collected by PRASA from the Hormigas public water system exhibited the presence of

tetrachloroethene (PCE) in the Eufracia public supply well at 29 micrograms per liter (µg/L).

In February 2009, the Eufracia public supply well was ordered closed by the Puerto Rico Department of Health because of PCE concentrations exceeding the MCL of 5 µg/L. In response, PRASA also closed the Hormigas public water system. The Cidra public supply system located outside of the impacted area supplies water to residents that were formerly served by the PRASA Hormigas public water system.

EPA added the Hormigas Groundwater Contamination Site to the NPL on March 10, 2011, because of the chlorinated solvents that were found in groundwater that was the source of drinking water for local residents. Chlorinated solvents, also known as VOCs, are classified as site-related contaminants (SRCs) because they were detected in the Eufracia public supply well at elevated levels. Other compounds were also screened for in the investigation to determine if there were other compounds that may be related to releases near the Hormigas supply system. Although other contaminants were detected in the groundwater, based on the evaluation of the site data, only four chlorinated solvents were identified as SRCs.

Topography and Drainage

The Site is located in the mountainous region of east-central Puerto Rico. The Eufracia well is at an elevation of 1,480 feet above mean sea level and is within the unnamed stream watershed that is a tributary of the Rio Cagüitas. Surface drainage from the Site flows northwest into the unnamed stream. The Rio Cagüitas, north of the Site, flows east through the Caguas valley and discharges into the Rio Grande de Loiza.

Geology

The area of investigation lies within the central tectonic block of Puerto Rico, which is bounded mostly by west-northwest-trending fault zones with large left-lateral displacement and occasionally considerable vertical displacement. The geology of the area consists of lower Cretaceous volcanic deposits belonging to Formation J (Kj) and Torrecilla Breccia (Ktb), and blocks from Aguas Buenas Limestone (Kta) displaced by faults.

Approximately 1,300 feet west of the Eufracia well, a north-northeast trending fault separates Formation J from limestone blocks of the Aguas Buenas Limestone and other younger volcanic deposits from the Torrecilla Breccia. Approximately 0.5 mile north of the Eufracia well, an east-west trending fault separates Formation J from the Torrecilla Breccia Formation. Approximately 0.7 mile east of the Eufracia well, a north-south trending fault occurs in Formation J.

The geologic unit exposed and underlying the study area includes:

- Formation J, Kj (lower Cretaceous) - Predominantly volcanic breccias interlayered with tuff, occasional lava flows, siltstone, and sandstone layers.

As a result of the proximity of the fault zones to the ground surface and the Hormigas supply wells, it is presumed that the deposits in the Site's subsurface may be fractured and may include intrusions from nearby geologic formations.

Hydrogeology

The hydrogeological terrain in the study area consists mainly of fractured and faulted volcaniclastic rocks with minor sandstone and siltstone deposits. The main aquifer in the vicinity of the Eufracia well is in the saprolite within weathered fractures, which have considerable transmissivity. The saprolite is a heterogeneous unit overlying the bedrock consisting of soils and weathered rock fragments. Open fracture zones in the volcanic bedrock also transmit water but to a lesser extent. The saprolite

aquifer and fractured bedrock aquifer are connected.

According to the U.S Geological Survey the study area is assumed at some point to be hydraulically connected toward the east to the Caguas alluvial valley.

The depth to groundwater in the area is highly variable, ranging from about 7 feet to approximately 40 feet below ground surface (bgs). Estimated groundwater flow in the drainage basins that compose this hydrogeologic terrain ranges from 115,000 to 259,000 gallons per day per square mile (gal/d-mi^2), which is equivalent to effective recharge rates ranging from 3 to 5 inches per year.

Population and Land Use

According to the 2010 census, the municipality of Caguas is comprised of 58.6 square miles with a population of 142,893. The population of Cañaboncito and Caguitas wards is 27,464 and 6,664 people, respectively. The primary land use in the vicinity of the Site is residential with light agricultural and commercial activity.

Ecology

The ecological reconnaissance conducted at the Site in 2013 focused on areas with habitat suitable for supporting ecological communities that may potentially be exposed to SRCs, including aquatic and riparian habitats of the unnamed stream. Areas evaluated during the ecological reconnaissance were situated within the immediate vicinity of the Hormigas and Eufracia wells, and within the stream corridor and riparian zone of the east branch of the unnamed stream. Reaches observed extended from the stream's headwaters near the Hormigas well, downstream where it transitions into a wet meadow and finally to a high gradient stream with rocky waterfalls.

The unnamed stream in the vicinity of the Hormigas well can be classified as a low gradient stream that flows through a well-defined channel in a heavily vegetated, forested floodplain/wetland. The toe of the slope of an adjacent hillside forms the left bank, while the right bank is less defined and slowly extends up slope forming the base of the floodplain. At the time of the field effort, little discernible flow was observed, and what appeared to be a heavy iron precipitate covered the streambed and gave the water a turbid, deep orange-brown color.

Riparian and terrestrial habitats within this reach of the unnamed stream are densely forested. Tree canopy ranges from 90% to 100%; however, there are some openings in the immediate areas of water falls along bedrock outcrops where large trees are unable to establish. Various tree species are present including Bulletwood (*Manilkara bidentata*) and trumpet tree. Several species of ferns are present including cinnamon fern (*Osmundastrum cinnamomeum*), along with vines such as arrowhead vine and philodendron, and various species of shrubs.

While the United States Fish and Wildlife Service records indicate the Site area is within the range of the Puerto Rican plain pigeon (*Patagioenas inornata*) and Puerto Rican boa (*Epicrates inornatus*). Further evaluation indicates that no suitable habitat is present within the Site boundaries for these species.

The Puerto Rico Department of Natural and Environmental Resources has indicated that the Site is within the boundaries of the Aguas Buenas Caves and Caverns System Natural Reserve karst protected areas. The reserve contains locations that support three critically listed species: Parnell's mustached bat (*Pteronotus parnellii portoricensis*), big brown bat (*Eptesicus fuscus wetmorei*), and web-footed coquí (*Eleutherodactylus karlschmidti*). However, no known occurrences within the Site boundaries were noted.

EARLY SITE INVESTIGATIONS

Site Discovery Initiative 2009 to 2010

From 2009 to 2010 EPA collected two groundwater samples from the Eufracia well and one sample from each of six community supply

wells (Villa Vigia, El Paraiso, Los Velazquez, La Sierra 1, La Sierra 2, and La Sierra 3) for Target Compound List/Target Analyte List analyses. Eufracia well water exhibited PCE (at 260 and 280 µg/L), trichloroethene (TCE) (at 59 and 60 µg/L), and *cis*-1,2-dichloroethene (*cis*-1,2-DCE) (at 49 and 50 µg/L). No PCE, TCE, or *cis*-1,2-DCE were detected in samples from the six community supply wells. No semi-volatile organic compounds (SVOCs) or polychlorinated biphenyls (PCBs) were detected in any wells, and one pesticide was detected in a community supply well. All inorganic analyte detections were at concentrations below MCLs.

In addition, as part of the 2009-2010 Site Discovery Initiative EPA collected soil samples at seven potential source areas. No chlorinated VOCs were detected at the following six facilities: Taller Pototo, Mariel T-Shirts, San Lorenzo Busline, Country Professional Dry Cleaners, JR Auto Body Collision & Paint, and Taller Gonzalez. At Narvaez Cleaners, a dry cleaning business located south of the Site, poor housekeeping practices were noted in the rear of the facility, including two empty drums and two full, partially-rusted drums of PCE. PCE was detected at 19 micrograms per kilogram (µg/kg) in one surface soil sample, but not in other soil samples collected at the facility. TCE and cis-1,2-DCE were not detected in any of the soil samples.

NATURE AND EXTENT OF CONTAMINATION

The nature and extent of contamination in Site media was assessed during the RI by collecting and analyzing samples and then comparing analytical results to federal, Commonwealth, and Site-specific screening criteria. Field investigations were conducted to characterize the nature and extent of contamination and to identify possible sources of contamination at the Site. Soil, groundwater, surface water, and sediment samples were collected and analyzed as part of the investigations.

Four chemicals were identified as SRCs: PCE, TCE, *cis*-1,2-DCE and 1,1-dichloroethene (1,1-DCE). These four VOCs were detected in groundwater. However, none of these VOCs were detected during RI sampling at concentrations greater than the screening criteria that were approved by EPA. Groundwater samples were collected from three existing wells: Villa de Oro community supply well, Unnamed Well 1, and Unnamed Well 2. No SRCs were detected in any of the sampled wells.

The groundwater contamination in the Eufracia supply well identified by PRASA and EPA in 2006 and 2009, respectively, was not found to be present during numerous phases of RI sampling, with the exception of very low concentrations (below the screening criteria) of TCE and *cis*-1,2-DCE in one sampling event (wireline fracture sampling). Additionally, very low concentrations (below the screening criteria) of PCE were detected in Rounds 3 and 4, and 1,1-DCE in Round 3. . Therefore, no plume has been identified and the original contamination is no longer present at the Site.

The results of the sampling events are discussed below:

Summary of Soil Contamination

- No SRCs above the screening criteria were detected in any of the 55 soil samples collected from 12 borings within drainages and topographic lows near the Eufracia well.

Summary of Groundwater Contamination

- Groundwater samples were collected from three existing wells: Villa de Oro community supply well, Unnamed Well 1 and Unnamed Well 2. No SRCs were detected in any of these sampled wells.
- Eleven groundwater screening samples were collected from the 12 soil borings that were completed. No SRCs were detected in any of the samples.

- Groundwater samples were collected from fracture zones identified during the geophysical testing in the open bedrock boreholes before they were completed as multiport monitoring wells. The fracture zone SRC results were used to determine the sample port locations in each bedrock monitoring well.
- TCE was detected in the Eufracia well in three of seven fractures tested. The highest detection of TCE was 0.92 µg/L at the bottom of the borehole at 255 feet bgs. The other two detections were 0.73 (239 feet bgs) and 0.33 J µg/L (224 feet bgs); all detections were below the screening criterion of 5 µg/L.
- *Cis*-1,2-DCE was detected in the Eufracia well in the same fractures as TCE was found. The maximum concentration of 1.7 µg/L was also at the deepest sample at 255 feet bgs. This VOC was also detected at 239 and 224 feet bgs with concentrations of 1.4 and 0.65 µg/L, respectively. All three detections at Eufracia were below the screening criterion of 70 µg/L.
- PCE and 1,1-DCE were not detected in any of the samples from the Eufracia well.
- No SRCs were detected during the fracture bedrock sampling at the Hormigas well or at the bedrock multiport wells (MW-1D and MW-2D).
- No SRCs were detected in any of the samples collected during Round 1 of monitoring well sampling event. The following wells were sampled: Villa de Oro well (active community supply well), Unnamed well 1, Unnamed well 2, Hormigas well, and Eufracia well.
- No SRCs were detected in any of the samples collected during the Round 2 monitoring well sampling event. This event included the same wells as Round 1.
- No SRCs above the screening criteria were detected in any of the samples collected during Round 3 monitoring well sampling event. This event included the following wells: 3 multiport wells (Eufracia, MW-1D, and MW-2D with a total of 13 ports), Villa Oro (active community well), and 2 saprolite wells (MW-1S and MW-2S). PCE was detected at 0.27 J µg/L in MW-1D (port 2 depth: 139.5 – 146.5 feet bgs) and 1,1-DCE was detected at 0.21 J µg/L in MW-1S at 72 feet bgs (0.25 J µg/L in the duplicate sample).
- No SRCs above the screening critera were detected in samples collected during Round 4 monitoring well sampling event. This event included the same wells as Round 3. PCE was detected at 0.5 µg/L in MW-1D-P2 (139.5 – 146.5 feet bgs).
- One metal, manganese, was detected above screening criteria in two samples during the Round 3 monitoring well sampling event and in three samples in the Round 4 monitoring well sampling event. Low concentrations of non-SRC VOCs, SVOCs, pesticides, other metals, and cyanide were detected sporadically below screening criteria during the Round 3 monitoring well sampling event. During the Round 4 monitoring well sampling event, low concentrations of non-SRC VOCs, SVOCs and other metals, were detected sporadically and below screening criteria. Groundwater samples collected during the Round 4 monitoring well sampling event were not analyzed for pesticides, PCBs and cyanide.

Summary of Surface Water/Sediment Contamination

- No SRCs were detected in surface water at the unnamed stream or discharge coming from the Eufracia well area.
- No SRCs were detected in sediment samples collected along the unnamed stream.

WHAT IS RISK AND HOW IS IT CALCULATED?

Human Health Risk Assessment:
A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk;" or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one-in-ten-thousand to an one-in-a-million excess cancer risk. For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a threshold (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site and are referred to as Chemicals of Concern in the final remedial decision or Record of Decision.

Summary of the Remedial Investigation

The VOC contamination in the Eufracia well identified prior to 2009 has dissipated to such a degree that exceedances of MCLs were not identified during the RI; furthermore, no VOC source areas were identified in soils, and no residual contaminant plume was found. The RI supports the theory that the VOCs measured prior to 2009 were attributable to a highly localized short-term release, and that natural processes within the aquifer (*e.g.*, biodegradation and dispersion) have caused the VOC residues to decrease while EPA's RI studies were being performed.

SUMMARY OF SITE RISKS

The purpose of the risk assessment is to identify potential cancer risks and non-cancer health hazards at site assuming that no further remedial action is taken. A baseline human health risk assessment was performed to evaluate current and future cancer risks and non-cancer health hazards based on the results of the Remedial Investigation.

A screening-level ecological risk assessment (SLERA) was also conducted to assess the risk posed to ecological receptors as a result of site-related contamination.

Human Health Risk Assessment

As part of the RI, a baseline human health risk assessment was conducted to estimate the risks and hazards associated with the current and future effects of contaminants on human health and the environment. A baseline human health risk assessment is an analysis of the potential adverse human health effects caused by hazardous-substance exposure in the absence of any actions to control or mitigate these under current and future land uses.

A four-step human health risk assessment process was used for assessing Site-related cancer risks and non-cancer health hazards. The four-step process is comprised of: Hazard Identification of Chemicals of Potential Concern

(COPCs), Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box entitled "What is Risk and How is it Calculated").

The baseline human health risk assessment began with selecting COPCs in the various media (i.e., soil, surface water, sediment and groundwater) that could potentially cause adverse health effects in exposed populations. The current and future land use scenarios included the following exposure pathways and populations:

- Residents (adult/child): current and future ingestion, dermal contact and inhalation of vapors from residential use of surface soil and untreated groundwater.
- Recreational Users (adolescent): current and future ingestion and dermal contact from recreation exposure to sediment and surface water from the creek.
- Construction Workers (adult): future ingestion, dermal contact and inhalation of vapors from exposure to surface and subsurface soil during construction activities.

In this assessment, exposure point concentrations were estimated using either the maximum detected concentration of a contaminant or the 95% upper-confidence limit of the average concentration. Chronic daily intakes were calculated based on the reasonable maximum exposure (RME), which is the highest exposure reasonably anticipated to occur at the Site. The RME is intended to estimate a conservative exposure scenario that is still within the range of possible exposures. Central tendency exposure assumptions, which represent typical average exposures, were also developed. A complete summary of all exposure scenarios can be found in the baseline human health risk assessment.

Surface and Subsurface Soil

Risks and hazards were evaluated for the potential current and future exposure to surface soil. The populations of interest included current and future residential adults and children and future construction workers. None of the detected concentrations exceeded soil screening values; therefore, no quantitative risk was calculated. As a result, all cancer risks were below the EPA acceptable range and all of the non-cancer hazards were below the EPA acceptable value of 1. There were no compounds identified as Chemicals of Concern (COCs) in the surface or subsurface soil.

Sediment and Surface Water

Risks and hazards were evaluated for the potential future exposure to sediment and surface water. The populations of interest included current and future adolescent recreational users. None of the detected concentrations exceeded sediment or surface water screening values; therefore, no quantitative risk was calculated. As a result, all cancer risks were below the EPA acceptable range and all of the non-cancer hazards were below the EPA acceptable value of 1. There were no compounds identified as COCs in the sediment or surface water.

Groundwater

Risks and hazards were evaluated for the potential future exposure to groundwater. The populations of interest included current and future adult and child residents (Table 1). The total cancer risk estimates for exposure to groundwater was at the upper bound of the risk range (2×10^{-4}). The risk was primarily associated with arsenic and chromium, two non-site related compounds. The total non-cancer hazard for exposure to groundwater (3) was above the EPA acceptable value of 1. This is due primarily to eight metals (antimony, arsenic, barium, chromium, cobalt, cyanide, iron and manganese) that are not site-related. However, the hazard index for specific target organs were all below the acceptable HI of 1. Therefore, there were no compounds identified as COCs in the groundwater.

Additionally, lead in groundwater was evaluated and all detected lead concentrations were below the Puerto Rico Water Quality Standard for Class SG groundwater.

Table 1. Summary of hazards and risks associated with groundwater.

Receptor	Hazard Index*	Cancer Risk*
Residential adult/child – current/future	**3**	**$2.0x10^{-4}$**
*The cancer risk and HI were above the acceptable cancer risk range and hazard index. However all of the elevated values were due to compounds that were not site-related. Therefore, there were no compounds identified as COCs in the groundwater.		

Ecological Risk Assessment

A SLERA was conducted to evaluate the potential for ecological risks from the presence contaminants in soil, sediment and surface water. The SLERA focused on evaluating the potential for impacts to sensitive ecological receptors to Site-related constituents of concern through exposure to soil, sediment and surface water at the Site. Concentrations in the media listed above were compared to ecological screening values as an indicator of the potential for adverse effects to ecological receptors. A complete summary of all exposure scenarios can be found in the SLERA.

There is not a potential for adverse effects to ecological receptors (invertebrates, reptiles, amphibians, birds, and mammals) from exposure to contaminated soil, sediment or surface water. The screening criteria for all chemicals in all media were below the acceptable hazard index of 1. There were no COCs identified for ecological receptors.

Risk Assessment Summary

Based on the results of the human health risk assessment, there is no unacceptable risk to human health at the Site and therefore a remedial action is not necessary to protect public health, welfare and the environment from actual or threatened releases of hazardous substances in the groundwater.

Based on the results of the ecological risk assessment, there is no unacceptable ecological risk at the Site and therefore a remedial action is not necessary to protect the ecological receptors from actual or threatened releases of hazardous substances.

CONCLUSION

Based on the data collected and reported in the RI and the conclusion of the human health risk assessment and the SLERA, the Site does not need to be remediated. Therefore, no remedial action is necessary for the Site.

Commonwealth/Support Agency Acceptance

The PREQB agrees with the preferred action in this Proposed Plan.

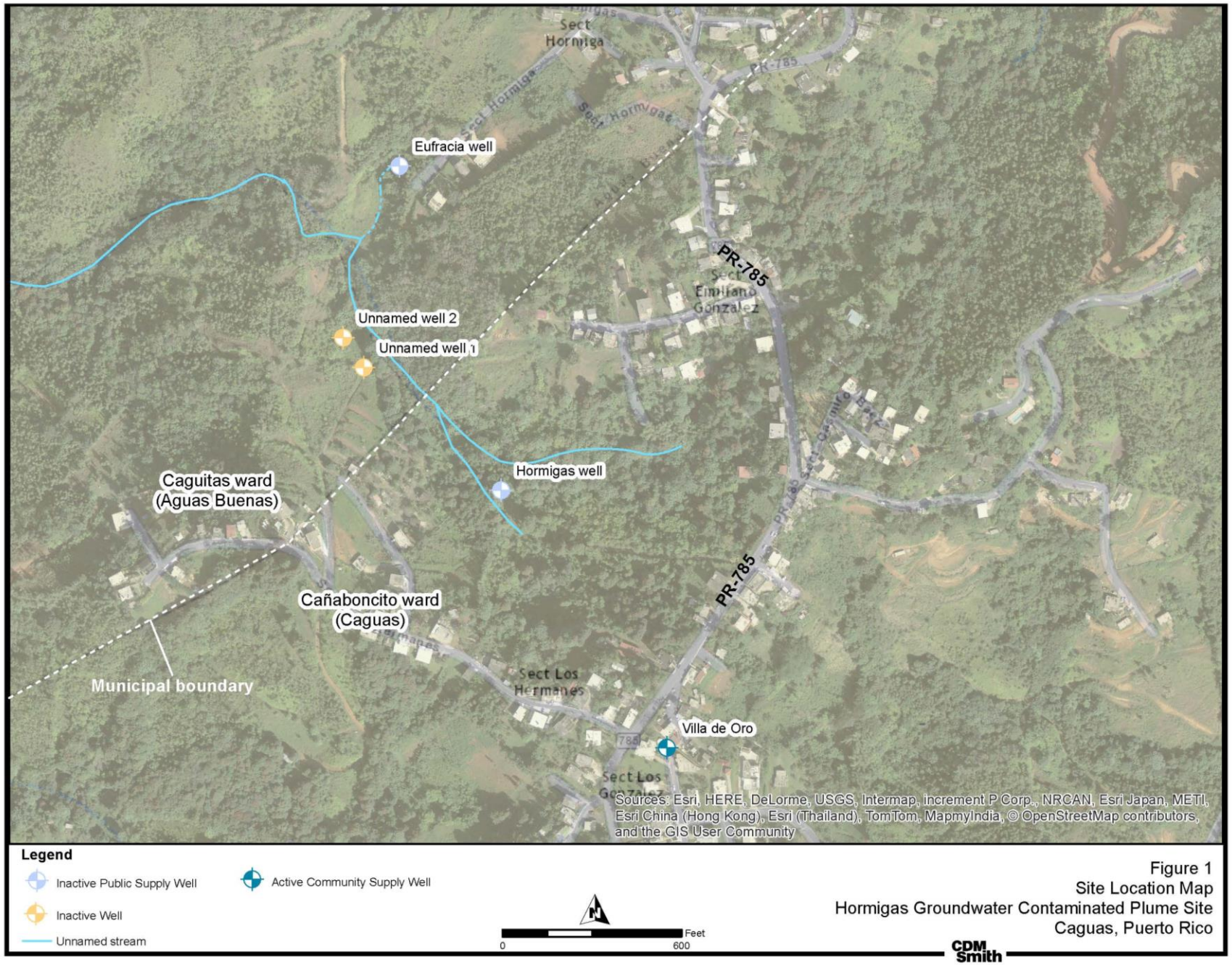

Figure 1
Site Location Map
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

APPENDIX II
Administrative Record Index
Hormigas Groundwater Contaminated Plume Superfund Site

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

07/25/2016 **REGION ID: 02**

Site Name: HORMIGAS GROUND WATER PLUME
CERCLIS ID: PRN000206359
OUID: 01
SSID: A241
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
395953	7/25/2016	ADMINISTRATIVE RECORD INDEX FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	1	ARI / Administrative Record Index		R02: (US ENVIRONMENTAL PROTECTION AGENCY)
395989	12/5/2012	FINAL REMEDIAL INVESTIGATION / FEASIBILITY STUDY WORK PLAN FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	113	WP / Work Plan		R02: (CDM SMITH)
395991	6/10/2016	FINAL SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT TECHNICAL MEMORANDUM FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	29	MEMO / Memorandum		R02: (CDM SMITH)
393228	6/30/2016	PUERTO RICO ENVIRONMENTAL QUALITY BOARD'S CONCURRENCE ON THE PROPOSED PLAN FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	2	LTR / Letter	R02: Torres, Ramon (US ENVIRONMENTAL PROTECTION AGENCY)	R02: Peebles, Juan (PR ENVIRONMENTAL QUALITY BOARD)
395988	7/1/2016	FINAL HUMAN HEALTH RISK ASSESSMENT REPORT FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	123	RPT / Report		R02: (CDM SMITH)
395990	7/14/2016	FINAL REMEDIAL INVESTIGATION REPORT FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	689	RPT / Report		R02: (CDM SMITH)
395992	7/15/2016	FINAL COMMUNITY ENGAGEMENT PLAN FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	44	WP / Work Plan		R02: (CDM SMITH)
396004	7/19/2016	PROPOSED PLAN FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	10	WP / Work Plan		R02: (US ENVIRONMENTAL PROTECTION AGENCY)
396012	7/19/2016	PROPOSED PLAN (SPANISH VERSION) FOR OU1 FOR THE HORMIGAS GROUND WATER CONTAMINATED PLUME SITE	9	WP / Work Plan		R02: (US ENVIRONMENTAL PROTECTION AGENCY)

APPENDIX III
Hormigas Groundwater Contaminated Plume Superfund Site

PUBLIC NOTICE

La Agencia Federal de Protección Ambiental
Anuncia el Plan Propuesto y Periodo de Comentarios
Para el Lugar de Contaminación de Agua Subterránea de Hormigas
Caguas, Puerto Rico

La Agencia Federal de Protección Ambiental (EPA por sus siglas en inglés) en colaboración con la Junta de Calidad Ambiental de Puerto Rico, anuncia el comienzo de un período de treinta (30) días de comentario público sobre el Plan Propuesto para el lugar conocido como Lugar de Contaminación de Agua Subterránea de Hormigas, localizado en el municipio de Caguas, Puerto Rico. El Plan Propuesto describe la acción preferida de la EPA y la razón para esta recomendación. Antes de finalizar este proceso, la EPA tomará en consideración comentarios escritos y verbales recibidos sobre la acción preferida presentada en el Plan Propuesto. Todos los comentarios deben ser recibidos en o antes del 19 de agosto de 2016. La EPA proveerá un resumen de todos los comentarios y sus respuestas en el Récord de Decisión para este Lugar.

La EPA llevará a cabo una reunión pública el miércoles 3 de agosto del 2016, de 6:00 pm a 8:00 pm en el Centro Comunal El Mirador localizado en la carretera 785 en el kilómetro 3.5 del sector Hormigas, Caguas, Puerto Rico. El propósito de esta reunión es informarle a la comunidad sobre los hallazgos, conclusiones y recomendaciones de la investigación remedial realizada en el Lugar. Además, se discutirá la acción preferida de la EPA para el Lugar. Durante esta reunión pública, la EPA contestará preguntas o comentarios que los participantes puedan tener con relación a la investigación realizada y la acción preferida propuesta por la EPA.

Las copias del Plan Propuesto y otros documentos relacionados al lugar están disponibles en los siguientes repositorios de información:

Municipio Autónomo de Caguas
Centro de Gobierno Municipal – Angel Rivera Rodríguez
Oficina de Asuntos Ambientales
Calle José Padial Esquina
Ave. José Mercado, Piso 1
Caguas, PR 00726
(787) 653-8833 ext. 1717
Horario: Lunes – Viernes 7:30am a 4:30 pm

Agencia Federal de Protección Ambiental, Región 2
División de Protección Ambiental del Caribe
City View Plaza II- Suite 7000
48 RD, 165 Km. 1.2
Guaynabo, PR 00968-8069
Fax: (787) 289-7104 (787) 977-5869
Horario: Lunes - Viernes, 9:00 a.m. a 4:30 p.m.
Por cita

Puerto Rico Environmental Quality Board
Emergency Response and Superfund Program
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
(787)767-8181 ext 3207
Horario: Lunes – Viernes 9:00am a 3:00 pm
Por cita

U.S. Environmental Protection Agency, Region 2
290 Broadway, 18th floor
New York, New York 10007-1866
(212) 637-4308
Horario: Lunes -Viernes, 9:00 a.m. a 3:30 p.m.
Por cita

Para más información, favor llamar a Adalberto Bosque PhD, MBA al (787) 977-5825. Comentarios escritos del Plan Propuesto deben ser enviados a:

Adalberto Bosque PhD, MBA
Gerente de Proyectos
U.S Environmental Protection Agency, Region 2
División de Protección Ambiental del Caribe
City View Plaza II- Suite 7000
48 RD, 165 Km. 1.2 Guaynabo, PR 00968-8069
Fax: (787) 289-7104
Internet: bosque.adalberto@epa.gov

AVISO PÚBLICO

SOLICITUD DE PROPUESTAS DE SERVICIOS PROFESIONALES

La sección 24 CFR 85.36 © (1) del Código de Regulaciones Federales, le requiere al Gobierno Municipal Autónomo de Trujillo Alto la publicación de este aviso para recibir propuestas de servicios profesionales para la prestación de servicios en los siguientes departamentos u oficinas:

Departamento de Desarrollo Cultural y Turismo:
- Maestro(a) de baile
- Maestro(a) de música
- Maestro(a) de teatro
- Maestro(a) de artes plásticas
- Maestro(a) de artesanías

Oficina de Asuntos de la Juventud:
- Maestro(a) para tutorías
- Maestro(a) de tecnología

Los individuos que deseen presentar sus propuestas de servicios profesionales deberán radicarlas dentro de los próximos quince (15) días calendario, a partir de la fecha de publicación de este aviso. Las ofertas económicas deberán presentarse a base de un estipendio mensual por hora, extendido a un plazo de doce (12) meses.

Las personas interesadas en someter propuestas deben enviar las mismas por correo, con atención al Sr. Jorge E. Díaz, a la siguiente dirección:

Gobierno Municipal Autónomo de Trujillo Alto
P.O. Box 1869
Trujillo Alto, P.R. 00977

De tener alguna pregunta al respecto, favor de comunicarse a la Oficina de Asuntos de la Juventud al teléfono (787) 761-0172 ext. 3154 o a la Oficina de Desarrollo Cultural y Turismo extensión 3101.

Pierluisi honra a veterano que sirvió en la guerra de Corea y formó parte del grupo 'Los Borinqueneers'

A sus 89 años, el veterano Jorge L. Pérez Pérez fue finalmente honrado con múltiples medallas y condecoraciones por su trayectoria en el servicio militar, incluyendo como "Borinqueneer", tras las gestiones realizadas por la oficina del Comisionado Residente, Pedro Pierluisi.

Por años, su familia intentó recuperar el expediente militar de Pérez, el cual fue destruido en un fuego en St. Louis, Misuri.

Pérez sirvió en la guerra de Corea hasta marzo del 1953 y luego brindó servicios en la Reserva del Ejército de Estados Unidos hasta el 1956.

Además, fue parte del Regimiento 65 de Infantería, mejor conocido como, Los Borinqueneers.

"Cuando la familia de Pérez se comunicó a mi oficina enseguida nos dimos a la tarea de ayudarlos para poder hacerle justicia a don Jorge. Nuestro personal del área de Veteranos comenzó las gestiones para que se le otorgaran las medallas y condecoraciones correspondientes. Es lamentable que hayan tenido que pasar más de 60 años para que este gran puertorriqueño, a sus 89 años acabados de cumplir, pueda ser reconocido frente a sus hijos, amigos y familiares. Por eso nos sentimos orgullosos de haber colaborado en este esfuerzo y honrar el servicio de ese gran veterano de guerra quien hoy carga seis condecoraciones en su pecho con mucha honra", afirmó Pierluisi.

Entre los reconocimientos otorgados a Pérez se destaca: la Medalla de Corazón Púrpura, la cual es otorgada a los miembros de las Fuerzas Armadas de los Estados Unidos que son heridos en combate por manos del enemigo. Don Jorge fue herido en combate en su pierna izquierda el 17 de septiembre de 1952.

También se le hizo entrega de la Medalla de Servicio Nacional, la cual es otorgada a militares de los Estados Unidos que sirvieron honorablemente durante un periodo de tiempo designado y declarado como una emergencia nacional. De igual forma, recibió la Medalla de Servicio en Corea, que es la medalla principal por participación en la Guerra de Corea y se concede a militares que ofrecieron servicio en la República de corea entre el 27 de junio de 1950 a julio de 1954. Otra de las medallas que recibió fue la del Servicio de las Naciones Unidas en Corea, que se otorga por servicio en el extranjero y por su apoyo al Comando de las Naciones Unidas entre el 27 de junio de 1950 a julio de 1954. En cuanto a la Placa de Infantería de Combate, se otorga a los soldados que sirvieron en unidades de infantería durante el tiempo de guerra y participaron en combate.

Finalmente, don Jorge recibió la Medalla de Oro del Congreso de Estados Unidos al Regimiento 65 de Infantería, con la cual se les rinde tributo a todos los soldados pertenecientes al grupo denominado, Los Borinqueneers. Esta medalla es el resultado de una resolución presentada ante el Congreso por el Comisionado Residente, Pedro Pierluisi, y el congresista de Florida Bill Posey.

APPENDIX IV
Hormigas Groundwater Contaminated Plume Superfund Site
Spanish Fact Sheet

Lugar de Superfondo de Contaminación del Agua Subterránea de Hormigas

Caguas, Puerto Rico
Julio 2016

EPA Región 2

PARA OBTENER MÁS INFORMACIÓN

Participación de la Comunidad
Participación del público es esencial para el éxito del Programa de Superfondo de la EPA. Si usted tiene alguna pregunta acerca de las actividades en el Lugar de Superfondo de Contaminación de Aguas Subterráneas de Hormigas, póngase en contacto con:

Dr. Adalberto Bosque, EPA Gerente de Proyectos, (787) 977-5825, bosque.adalberto@epa.gov , o con Brenda Reyes, Coordinadora de Participación con la Comunidad de la EPA al (787) 977-5869, reyes.brenda@epa.gov .

Superfondo
Para obtener información sobre el proceso de Superfondo, visite el sitio web de la EPA en www.epa.gov/superfund.

Depósitos de información
El depósito de información contiene documentos relacionados con el Lugar, disponibles para la revisión del público en las siguientes ubicaciones:

Biblioteca Municipal
Municipio Autónomo de Caguas
Centro de Gobierno Municipal – Angel Rivera Rodríguez
Oficina de Asuntos Ambientales
Calle José Padial Esquina
Ave. José Mercado, Piso 1
Caguas, PR 00726
(787) 653-8833 ext. 1717
Horario: Lunes – Viernes 7:30am a 4:30 pm

USEPA Región II
Centro de Expedientes del Superfondo
290 Broadway, piso 18
Nueva York, NY 10007-1866
Lunes a viernes de 9:00 AM a 5:00 PM
(212) 637-4308

Agencia Federal de Protección Ambiental
División de Protección Ambiental del Caribe
City View Plaza II, Suite 7000
#48 PR-165 km 1.2
Guaynabo, Puerto Rico 00968-8069
Lunes a viernes de 9:00 AM a 4:30 PM
Brenda Reyes, (787) 977-5869

Reunión Pública
Centro Comunal El Mirador
PR 785 Km 3.5, Sector Hormigas
Caguas, Puerto Rico 00726
Fecha: 3 de agosto de 2016
Hora: 6:00 PM

Hoja Informativa
PROGRAMA DE SUPERFONDO

Lugar de Superfondo de Contaminación del Agua Subterránea de Hormigas

Caguas, Puerto Rico
Julio 2016

Esta hoja informativa explica la acción preferida para el Lugar de Contaminación del Agua Subterránea en Hormigas (el Lugar) en Caguas, Puerto Rico. Este documento fue desarrollado por la Agencia de Protección Ambiental (EPA, por sus siglas en inglés), el organismo coordinador de las actividades del Lugar, en consulta con la Junta de Calidad Ambiental de Puerto Rico (JCA), la agencia de apoyo. La EPA publica este Plan Propuesto como parte de sus responsabilidades de participación pública bajo la Sección 117 (a) de Respuesta Ambiental Comprensiva, Ley de Compensación y Responsabilidad, 42 USC § 9617 (a) (CERCLA, comúnmente conocido como el programa de Superfondo) y las Secciones 300.430 (f) y 300.435 (c) del Plan de Contingencia Nacional por la Contaminación de Petróleo y las Sustancias Peligrosas (National Contingency Plan, NCP, por sus siglas en inglés).

La EPA añadió el Lugar a la Lista de Prioridades Nacionales (NPL, por sus siglas en inglés) el 10 de marzo del 2011 por detecciones de compuestos orgánicos volátiles (VOC, por sus siglas en inglés) en un pozo de suministro de agua potable. La naturaleza y el alcance de la contaminación en el Lugar, y las alternativas de remediación que se resumen en este documento se describen en detalle en el reporte de Investigación de Remediación (RI, por sus siglas en inglés). La EPA está atendiendo el Lugar de una forma abarcadora en este Plan Propuesto.

La evaluación de la EPA no ha identificado áreas de contaminación del suelo o del agua subterránea que puedan representar un riesgo actual o futuro inaceptable para la salud humana o el medio ambiente. Los VOCs que se encontraron en el agua subterránea en al 2009 fueron la razón para incluir el

Lugar en el NPL; sin embargo, la investigación remedial llevada por la EPA indica que los compuestos orgánicos volátiles se han disipado, por las razones que serán discutidas a continuación. Por tal razón, la EPA recomienda no tomar ninguna acción en el Lugar.

El Plan Propuesto resume la información que se puede encontrar con mayor detalle en varios informes, que se incluyen en el expediente administrativo, muchos de las cuales forman colectivamente la Investigación de Remediación para el Lugar. La EPA y la JCA exhortan al público a revisar estos documentos para obtener un conocimiento más completo del Lugar y de las actividades bajo el programa de Superfondo que se han realizado.

ROL DE LA COMUNIDAD EN EL PROCESO DE SELECCIÓN

La EPA solicita el insumo del público para asegurar que las preocupaciones de la comunidad sean consideradas en la selección de un remedio efectivo para cada Lugar de Superfondo. Para ello, el Plan Propuesto ha sido puesto a la disposición del público por un período de comentarios de 30 días que comienza con la emisión del Plan Propuesto y concluye el 19 de agosto del 2016.

La EPA estará proporcionando información sobre la investigación y limpieza del Lugar al público a través de una reunión pública y estableciendo depósitos de información, que contienen el expediente administrativo. La EPA exhorta al público a obtener información sobre el lugar y sobre las actividades de Superfondo que se han realizado en el mismo.

La reunión pública a celebrarse durante el periodo de comentarios proporcionará información sobre las investigaciones completadas en el Lugar yla alternativa de no acción de la EPA. así como para recibir comentarios del público. Los comentarios recibidos en la reunión pública, así como los comentarios escritos recibidos, serán documentados en la sección “Resumen de Respuestas” del Registro de Decisión (ROD, por sus siglas en inglés), el documento que formaliza la selección del remedio para el Lugar.

Los comentarios escritos sobre este Plan Propuesto deberán dirigirse a:

Adalberto Bosque, PhD, MBA
Gerente de Proyectos Remediales
Agencia de Protección Ambiental de EE.UU.
City View Plaza II - Suite 7000
48 RD, a 165 Km. 1.2
Guaynabo, PR 00968-8069
Teléfono: (787) 977-5825
Fax: (787) 289-7104
E-mail: bosquer.adalberto@epa.gov

ANTECEDENTES DEL LUGAR

Descripción Del Lugar

El Lugar se encuentra entre los municipios de Caguas y Aguas Buenas en el este-centro de Puerto Rico dentro del área de dos antiguos pozos de abastecimiento público de agua, los pozos Hormigas y Eufracia (Figura 1). VOCs fueron detectados por encima de los estándares federales de agua potable, llamados niveles máximos de contaminación (MCL, por sus siglas en inglés), en el pozo público de suministro de agua, identificado como pozo Eufracia en el año 2006. Como resultado de la contaminación, el pozo Eufracia y el pozo Hormigas fueron desactivados por la Autoridad de Acueductos y Alcantarillados de Puerto Rico (AAA). El pozo Eufracia y el pozo Hormigas formaban el sistema público de agua Hormigas de la AAA ubicado entre los barrios Cañaboncito y Cagüitas (en los municipios de Caguas y Aguas Buenas, respectivamente) al oeste de la carretera estatal PR-785.

El pozo Eufracia (302 pies de profundidad) se encuentra cerca de la intersección de la PR-785 y el Camino Hormigas, a lo largo de una estrecha carretera al sur del Camino Hormigas. El pozo Hormigas (393.5 pies de profundidad) se encuentra a una distancia de aproximadamente 1,150 pies al sur del pozo Eufracia también al final de una calle estrecha al oeste de la PR-785. De acuerdo con la AAA, la la extracción media era de 150 galones por minuto (gpm) para el pozo Eufracia y 100 gpm para el pozo Hormigas. El sistema era un sistema de AAA independiente que servía a una población de aproximadamente 5,488 usuarios.

Historia del Lugar

En agosto del 2006 la AAA tomó muestras de agua subterránea del sistema público de Hormigas las cuales reflejaron la presencia de tetracloroetileno (PCE) en el pozo Eufracia a una concentración de 29 microgramos por litro (µg/L).

En febrero del 2009, el Departamento de Salud de Puerto Rico ordenó el cierre del pozo de suministro público Eufracia por las detecciones de PCE dado a que las concentraciones encontradas excedían el MCL de 5 µg/L para este contaminante. En respuesta, la AAA también cerró el sistema público de agua Hormigas. El sistema público de suministro de Cidra situado fuera del área impactada abastece de agua a los residentes que anteriormente fueron

abastecidos por el sistema público de agua de Hormigas de la AAA.

La EPA añadió el Lugar a la NPL el 10 de marzo del 2011 por detecciones de VOCs en el agua subterránea que era la fuente de agua potable para los residentes. Los solventes clorinados, también conocidos como VOCs, se identificaron como los contaminantes relacionados al Lugar (SRC, por sus siglas en inglés), ya que se detectaron a niveles elevados en el pozo de suministro público llamado Eufracia. Otros compuestos también fueron evaluados durante la investigación para determinar si había otros compuestos que pudieran estar relacionados con otros derrames cerca del área del sistema de suministro público de Hormigas. Aunque otros contaminantes se detectaron en el agua subterránea, basándose en la evaluación de los datos del Lugar, sólo cuatro disolventes clorados fueron identificados como SRC.

Topografía y Drenaje Superficial

El Lugar está ubicado en la región montañosa del centro-este de Puerto Rico. El pozo Eufracia se encuentra a una altura de 1,480 pies sobre el nivel del mar y se encuentra también dentro de la cuenca de la quebrada sin nombre que es un afluente del Río Cagüitas. El drenaje superficial del Lugar es hacia el noroeste, hacia la quebrada sin nombre. El Río Cagüitas, al norte del Lugar, fluye hacia el este a través del valle de Caguas y desemboca en el Río Grande de Loíza.

Geología

El área de investigación se encuentra dentro del bloque tectónico central de Puerto Rico, que está limitada principalmente por zonas de fallas con rumbo al oeste-noroeste con gran desplazamiento lateral izquierdo y en ocasiones considerable desplazamiento vertical. La geología de la zona se compone de depósitos volcánicos del Cretácico inferior pertenecientes a la Formación J (Kj) y Torrecilla Brecha (Ktb), y los bloques de piedra caliza de Aguas Buenas (KTA) desplazados por fallas.

Aproximadamente a 1,300 pies al oeste del pozo Eufracia, una falla con rumbo al norte-noreste separa la Formación J de los bloques de piedra caliza de Aguas Buenas y otros depósitos volcánicos más jóvenes de la Torrecilla Brecha. Aproximadamente 0.5 millas al norte del pozo Eufracia, una falla con rumbo al este-oeste separa la Formación J de la Formación Torrecilla Brecha. Aproximadamente 0.7 millas al este del pozo Eufracia, otra falla con rumbo al norte-sur existe en la formación J.

La unidad geológica expuesta y que subyace en el área de estudio incluye:

- Formación J, kj (Cretácico inferior) - Predominantemente de brechas volcánicas intercalada en toba volcánica, flujos de lava ocasionales, roca sedimentaria, y capas de arenisca.

Como resultado de la proximidad de las zonas de falla a la superficie del suelo y los pozos de abastecimiento de Hormigas, se presume que los depósitos en el subsuelo del Lugar puedan estar fracturados y puedan incluir intrusiones de formaciones geológicas cercanas.

Hidrogeología

El terreno hidrogeológico en el área de estudio se compone principalmente de rocas volcaniclásticas fracturadas y falladas con depósitos de piedra arenisca y limolita en menor proporción. El acuífero principal en el área del pozo Eufracia se encuentra en la saprolita, en la zona descompuesta y fracturada la cual posee una transmisividad considerable. La saprolita es una unidad heterogénea que cubre el lecho de roca que consiste de suelos y de fragmentos de roca degradada. Las zonas de fracturas abiertas en el lecho de roca volcánica también transmiten agua, pero en menor medida. El acuífero de la saprolita y el acuífero del lecho de roca fracturada están conectados.

De acuerdo con el Servicio Geológico de Estados Unidos, el área de estudio debe estar en algún momento conectada hidráulicamente hacia el este hasta el valle aluvial de Caguas.

La profundidad de las aguas subterráneas en la zona es muy variable, desde aproximadamente unos 7 pies a 40 pies por debajo de la superficie del suelo (bgs, por sus siglas en inglés). El flujo de agua subterránea estimada en las cuencas de drenaje que componen este terreno hidrogeológico se encuentra entre 115,000 a 259,000 galones por día por milla cuadrada (gal /d-mi^2), lo que equivale a las tasas de recarga efectiva que van de 3 a 5 pulgadas por año.

Población y Uso

De acuerdo con el censo del 2010, el municipio de Caguas se compone de 58.6 millas cuadradas con una población de 142,893. La población de Cañaboncito y Cagüitas es de 27,464 y 6.664 personas, respectivamente. El uso primario del suelo en las proximidades del Lugar es residencial con actividad agrícola y comercial en menor proporción.

Ecología

El reconocimiento ecológico realizado en el Lugar en el 2013 se centró en áreas con hábitat adecuado para apoyar a las comunidades ecológicas que potencialmente pudieran estar expuestos a SRCs, entre ellas los hábitats acuáticos y ribereños de la quebrada sin nombre. Las áreas evaluadas durante el reconocimiento ecológico están situadas dentro de las inmediaciones de los pozos Hormigas y Eufracia, y dentro del corredor de flujo y la zona ribereña de la rama oriental de la quebrada sin nombre. Los cursos observados se extendían desde la cabecera del arroyo cerca del pozo Hormigas, aguas abajo donde se convierte en un prado húmedo y, finalmente en una corriente de alto gradiente con cascadas rocosas.

La quebrada sin nombre cerca del pozo Hormigas bien puede ser clasificada como una corriente de bajo gradiente que fluye a través de un canal bien definido entre vegetación densa, planicie boscosa/humedal. El pie de una colina adyacente forma la orilla izquierda, mientras que la orilla derecha es menos definida y poco a poco se extiende hasta la pendiente que forma la base de la llanura de inundación. En el momento del reconocimiento de campo, se observó poco flujo perceptible, y lo que parecía ser un precipitado de hierro que cubría el lecho del río y le daba al agua un color naranja-marrón turbio, en el fondo.

Los hábitats ribereños y terrestres dentro de este curso de la quebrada sin nombre están densamente cubiertos de bosques. La cubierta de árboles varía de 90% a 100%; sin embargo, hay algunas aperturas en las áreas inmediatas a cascadas a lo largo de los afloramientos de roca madre donde árboles grandes son incapaces de establecerse. Varias especies de árboles están presentes incluyendo Bulletwood (*Manilkara Bidentata*) y el árbol de trompeta. Varias especies de helechos están presentes incluyendo helecho canela (Osmundastrum cinnamomeum), junto con las vides, como la vid y el filodendro punta de flecha, y varias especies de arbustos.

Mientras que los registros del Servicio de Pesca y Vida Silvestre de los Estados Unidos indican que el área del Lugar se encuentra dentro del territorio de la paloma sabanera de Puerto Rico (*Patagioenas inornata*) y la boa de Puerto Rico (*Epicrates inornatus*). Una evaluación más profunda indica que no existe un hábitat adecuado dentro de los límites del Lugar para estas especies.

El Departamento de Recursos Naturales y Ambientales de Puerto Rico ha indicado que el Lugar está dentro de los límites de las Cuevas de Aguas Buenas y el área protegida de las Cavernas del Sistema Natural Kárstico. La reserva contiene sitios que sustentan tres especies enumeradas en estado crítico: Murciélago bigotudo (*Pteronotus parnellii portoricensis),* murciélago marrón grande (*Eptesicus fuscus wetmorei*), y coquí palmípedas (*Eleutherodactylus karlschmidti*). Sin embargo, no se observaron dichas especies dentro de los límites del Lugar.

INVESTIGACIONES INICIALES DEL LUGAR

Iniciativa de Descubrimiento del Lugar del 2009 al 2010

Entre el 2009 al 2010 la EPA tomó dos muestras de agua subterránea del pozo Eufracia y una muestra de cada uno de los seis pozos de abastecimiento de la comunidad (Villa Vigia, El Paraiso, Los Velázquez, La Sierra 1, La Sierra 2, y La Sierra 3) para la "Target Compound List/Target Analyte List analyses". El pozo de agua Eufracia tuvo detecciones de PCE (a 260 y 280 µg/L), tricloroetileno (TCE) (a 59 y 60 µg/L), y cis-1,2-dicloroetileno (cis-1,2-DCE) (a 49 y 50 mg/L). No se detectó PCE, TCE, o cis-1,2-DCE en las muestras tomadas en los seis pozos de abastecimiento de la comunidad. Tampoco se detectaron compuestos orgánicos semivolátiles (SVOCs) o bifenilos policlorados (PCB) en los pozos, sólo se detectó un plaguicida en un pozo de suministro de la comunidad. Todas las detecciones de analitos inorgánicos se encontraban en concentraciones por debajo de los MCL.

Además, como parte de la Iniciativa de Descubrimiento del Lugar, la EPA tomó muestras de suelo en siete áreas de potenciales fuentes. No se detectaron compuestos orgánicos volátiles clorados en las siguientes seis instalaciones: Taller pototo, Mariel T-Shirts, San Lorenzo Busline, County Professional Dry Cleaners, JR Auto Body Collision & Paint y Taller Gonzalez. En Narvaez Dry Cleaners, una tintorería ubicada al sur del Lugar, se observaron prácticas pobres de limpieza en la parte posterior de la instalación, incluyendo dos drones vacíos y dos drones llenos de PCE, parcialmente oxidados. Se detectó PCE a 19 microgramos por kilogramo (µg/kg) en la muestra de suelo de superficie, pero no en otras muestras de suelo recogidas en la instalación. TCE y cis-1,2-DCE no se detectaron en ninguna de las muestras de suelo.

NATURALEZA Y ALCANCE DE LA CONTAMINACIÓN

La naturaleza y el alcance de la contaminación del Lugar en los distintos medios se evaluaron durante el RI mediante la toma y análisis de las muestras y luego comparando los resultados analíticos a las leyes federales, estatales y criterios de detección

específicos del Lugar. Las investigaciones de campo se llevaron a cabo para caracterizar la naturaleza y el alcance de la contaminación y para identificar posibles fuentes de contaminación en el Lugar. Suelos, agua subterránea, aguas superficiales y sedimentos fueron los medios muestreados y analizados como parte de las investigaciones.

Cuatro productos químicos fueron identificados como SRCs: PCE, TCE, cis-1,2-DCE y 1,1-dicloroetileno (1,1-DCE). Estos cuatro VOCs se detectaron en el agua subterránea. Sin embargo, no se detectó ninguno de estos compuestos orgánicos volátiles durante el muestreo en la RI a concentraciones superiores a los criterios de detección aprobados por la EPA. Muestras de agua subterránea fueron tomadas de tres pozos existentes: Villa de Oro (pozo de suministro comunitario), Pozo sin nombre 1, y Pozo sin nombre 2. No SRCs fueron detectados en cualquiera de los pozos muestreados.

La contaminación del agua subterránea en el pozo de suministro público Eufracia identificado por la AAA y por la EPA en 2006 y 2009, respectivamente, no fue encontrada durante numerosas fases de muestreo en el RI, con la excepción de concentraciones muy bajas (por debajo de los criterios de detección) del TCE y cis 1,2-DCE en un evento de muestreo (muestreo de selección en zonas fracturas). Además, la detección de concentraciones muy bajas (por debajo de los criterios de detección) de PCE en las Rondas de muestreo 3 y 4, y 1,1-DCE detectado solo en la Ronda 3. Por lo tanto, ningún plumacho ha sido identificado y la contaminación original ya no está presente en el Lugar.

Discusión de Resultados de Eventos Anteriores

Resumen de Contaminación de Suelos

- No se detectaron SRC por encima de los criterios de detección en las 55 muestras de suelo tomadas en 12 perforaciones dentro de los drenajes y bajos topográficos cerca del pozo Eufracia.

Resumen de Contaminación de Agua Subterránea

- Muestras de agua subterránea se tomaron de tres pozos existentes: Villa de Oro (pozo de suministro comunitario), pozos Sin nombre 1 y 2. No SRCs se detectaron en ninguno de estos pozos muestreados.

- Once muestras de selección de agua subterránea fueron colectadas de 12 perforaciones en el suelo. No se detectaron SRC en ninguna de las muestras.

- Muestras de agua subterránea fueron tomadas en las zonas de roca fracturada durante las pruebas geofísicas en los pozos abiertos en roca antes de que se completaran como pozos de monitoreo multipuerto. Los resultados de SRC de la zona de fractura se utilizaron para determinar las ubicaciones de los puertos para los pozos de monitoreo multipuerto.

- TCE se detectó en el pozo Eufracia en tres de las siete fracturas muestreadas. La detección de TCE más alta fue de 0.92 µg /L en la parte inferior del pozo de monitoreo a unos 255 pies bgs. Las otras dos detecciones fueron de 0.73 (239 pies bgs) y 0.33 J µg /L (224 pies bgs); todas las detecciones estaban por debajo del criterio de detección de 5 µg /L.

- Cis-1,2-DCE se detectó en el pozo Eufracia en las mismas fracturas donde se encontró TCE. La concentración máxima de 1.7 µg /L fue detectada también en la muestra más profunda a 255 pies bgs. Este VOC también se detectó a 239 y 224 pies por debajo de la superficie con concentraciones de 1.4 y 0.65 µg/L, respectivamente. Las tres detecciones del pozo Eufracia estaban por debajo del criterio de selección de 70 µg/L.

- PCE y 1,1-DCE no se detectaron en ninguna de las muestras tomadas en el pozo Eufracia.

- No se detectaron SRCs durante el muestreo de fracturas de rocas en el pozo Hormigas o en los pozos lecho de roca multipuerto (MW-1D y 2D-MW).

- No se detectaron SRCs en ninguna de las muestras tomadas de los pozos durante la Ronda 1 del evento de muestreo. Durante este evento se tomaron muestras de los siguientes pozos: Villa de Oro (pozo de suministro comunitario activo), Pozo sin nombre 1, Pozo sin nombre 2, pozo Hormigas, y pozo Eufracia.

- No se detectaron SRCs en ninguna de las muestras tomadas de los pozos durante la Ronda 2 del evento de muestreo. Este evento incluyó el muestreo de los mismos pozos que los de la Ronda1.

- No se detectaron SRCs por encima de los criterios de detección en cualquiera de las muestras tomadas durante la Ronda 3 de

muestreo de pozos. Este evento incluyó los siguientes pozos: 3 pozos multipuerto (Eufracia, MW-1D, y MW-2D para un total de 13 puertos), Villa Oro (pozo de suministro comunitario), y 2 pozos instalados en la saprolita (MW -1S y MW -2S). Se detectó PCE a 0.27 J µg/L en el pozo multipuerto MW-1D (puerto 2 a una profundidad de 139.5 a 146.5 pies bgs) y 1,1- DCE se ha detectado a 0.21 J µg/L en MW -1S a 72 pies bgs (0.25 J µg/L en la muestra por duplicado).

- No se detectaron SRCs por encima del criterio de detección en las muestras colectadas durante la Ronda 4 del evento de muestreo. Este evento contó con los mismos pozos que se muestrearon durante la Ronda 3. Se detectó PCE a 0.5 µg/L en MW-1D-P2 (139.5 – 146.5 pies bgs).

- Un metal, manganeso, fue detectado por encima de los criterios de detección en dos muestras durante la Ronda 3 de muestreo de pozos de monitoreo y en tres muestras en la Ronda 4. VOCs, SVOCs, plaguicidas no considerados como SRCs se detectaron en concentraciones bajas; metales y cianuro se detectaron de forma esporádica por debajo de los criterios de selección en la Ronda 3 del evento de muestreo de pozos. Durante la Ronda 4, bajas concentraciones de compuestos orgánicos volátiles no SRCs, SVOCs y otros metales, se detectaron esporádicamente y por debajo de los criterios de detección. Muestras de agua subterránea tomadas durante la Ronda 4 de muestreo de pozos no se analizaron para plaguicidas, PCB o cianuro.

Resumen de Contaminación de Sedimentos y Agua Superficial

- No se detectaron SRCs en aguas superficiales en la quebrada sin nombre o en las escorrentías procedentes de la zona del pozo Eufracia.

- No se detectaron SRCs en las muestras de sedimento tomadas a lo largo de la quebrada sin nombre.

Resumen de la Investigación Remedial

La contaminación de VOCs en el pozo Eufracia identificada en el año 2009 se ha disipado a tal grado que no se superaron los MCL durante el RI; por otra parte, no se identificaron áreas de origen de VOC en los suelos, y no se encontró un plumacho de contaminación residual. El RI apoya la teoría de que los compuestos orgánicos volátiles encontrados anteriormente en el 2009 eran atribuibles a una liberación a corto plazo muy localizada, y que los procesos naturales dentro del acuífero (por ejemplo, biodegradación y dispersión) han provocado que los residuos de VOCs disminuyeran mientras los estudios del RI de la EPA estaban siendo realizados.

Resumen de Riesgos

El propósito de la evaluación del riesgo es determinar los posibles riesgos de cáncer y riesgos para la salud no cancerígenos del Lugar suponiendo que no se tomen medidas de remediación. Una evaluación de riesgo para la salud humana se realizó para evaluar los riesgos de cáncer actuales y futuros y los riesgos para la salud no cancerígenos en base a los resultados de la investigación de remediación.

Una evaluación de riesgo ecológico a nivel de detección (SLERA, por sus siglas en inglés) también se llevó a cabo para evaluar el riesgo que supone para los receptores ecológicos como resultado de la contaminación relacionada al Lugar.

Evaluación de Riesgos de Salud Humano

Como parte del RI, se llevó a cabo una evaluación inicial de riesgos de salud humana para estimar los riesgos y peligros asociados con los efectos actuales y futuros de los contaminantes sobre la salud humana y el medio ambiente. Una evaluación inicial de riesgos a la salud humana es un análisis de los posibles efectos adversos para la salud causados por la exposición de sustancias peligrosas en ausencia de cualquier acción para controlar o mitigar estas exposiciones en virtud de los usos actuales y futuros del terreno.

Una evaluación de cuatro pasos de riesgos a la salud humana fue usada para evaluar los riesgos de cáncer y peligros a la salud no cancerígenos. El proceso de cuatro pasos está compuesto por: Identificación de Peligro de los Químicos de Potencial Preocupación (COPCs, por sus siglas en inglés), Evaluación de Exposición, Evaluación de Toxicidad y Caracterización de Riesgo.

La evaluación de referencia de los riesgos de salud humana comenzó seleccionando los COPCs en los medios (por ejemplo, suelos, agua de superficie, sedimento y agua subterránea) que pudieran causar efectos adversos a la salud en poblaciones expuestas. Los escenarios actuales y futuros de uso de terreno incluyeron los siguientes medios de exposición y poblaciones:

- Residentes (niño/adulto): ingestión futura, contacto dermal e inhalación de vapores de la

superficie del suelo y las aguas subterráneas sin tratar por uso residencial.

- Los usuarios recreativos (adolescentes): ingestión actual y futura, y contacto dérmico por exposición recreativa al sedimento y al agua de superficie de la quebrada.

- Trabajadores de la Construcción (adultos): ingestión futura, contacto dérmico e inhalación de los vapores producidos por exposición a la superficie y al subsuelo durante las actividades de construcción.

En esta evaluación de riesgo a la salud humana, las concentraciones de los puntos de exposición fueron estimadas usando ya sea el máximo de concentración detectado de un contaminante o el 95% de límite de seguridad de la concentración promedio. Las ingestas diarias crónicas se calcularon basadas en la exposición máxima razonable (RME, por sus siglas en inglés), la cual es la mayor exposición razonablemente anticipada que se espera que ocurra en el Lugar. El RME está diseñado para estimar un escenario conservador de exposición que esté aun en el rango de posibles exposiciones. Se desarrollaron además suposiciones de exposición de tendencia central. Un resumen completo de todos los escenarios de exposición puede ser encontrado en el reporte de la evaluación de riesgos de salud del Lugar.

Suelo de Superficie y Subsuelo

El riesgo y los peligros fueron evaluados para la exposición actual y futura a suelo superficial. Las poblaciones de interés incluyeron adultos y niños residentes actuales y futuros, y futuros trabajadores de la construcción. Ninguna de las concentraciones detectadas supero los valores de detección de suelo; Por lo tanto, no se calculó el riesgo cuantitativo. Como resultado, todos los riesgos de cáncer fueron por debajo del rango aceptable de la EPA y todos los peligros no cancerígenos estaban por debajo del valor aceptable de 1 establecido por la EPA. No hubo compuestos identificados como sustancias químicas de preocupación (COCs, por sus siglas en inglés) en la superficie del suelo o del subsuelo.

Agua Subterránea

Los riesgos y peligros fueron evaluados para determinar el potencial de una futura exposición a las aguas subterráneas. Las poblaciones de interés incluyeron a los residentes adultos y niños actuales y futuros, (Tabla 1). El riesgo de cáncer estimado del total de exposición al agua subterránea se encontraba en el límite superior del rango de riesgo (2×10^{-4}). El riesgo se asoció principalmente con arsénico y cromo, dos compuestos no relacionados con el Lugar. El riesgo no cancerígenos total por la exposición a las aguas subterráneas (3) a fue superior al valor aceptable de 1 establecido por la EPA. Esto se debe principalmente a ocho metales (antimonio, arsénico, bario, cromo, cobalto, cianuro, hierro y manganeso) que no son relacionados al Lugar. Sin embargo, el índice de riesgo para órganos específicos fueron todas por debajo del HI aceptable de 1. Por lo tanto, no hubo compuestos identificados como COCs en el agua subterránea.

Además, se evaluó el plomo en el agua subterránea y todas las concentraciones de plomo detectados estaban por debajo de la norma de calidad del agua subterránea para Puerto Rico para la Clase SG.

Tabla 1. Resumen de riesgos asociados al agua subterránea

Receptor	Índice de Riesgo	Riesgo de Cancer
Residente adulto/niño – actual/futuro	3	2.0×10^{-4}

* El riesgo de cáncer y HI estaban por encima del índice de rango de riesgo de cáncer y el índice de riesgo. Sin embargo, todos los valores elevados se deben a compuestos que no estaban relacionados con el Lugar. Por lo tanto, no hubo compuestos identificados como COCs en el agua subterránea.

Evaluación de Riesgo Ecológico

Una Evaluación de Riesgo Ecológico (SLERA, por sus siglas en inglés) se llevó a cabo para evaluar el potencial de riesgos ecológicos de la presencia de contaminantes en el suelo de superficie. El SLERA se enfocó en evaluar el potencial de impactos a receptores ecológicos sensibles de constituyentes de riesgo relacionados al lugar por medio de la exposición al suelo, sedimento y agua de superficie en el Lugar. Las concentraciones fueron comparadas a los valores de revisión como un indicador del potencial para efectos adversos a receptores ecológicos. Un resumen completo de todos los escenarios de exposición puede encontrarse en el SLERA.

No hay un potencial de efectos adversos a los receptores ecológicos (invertebrados, reptiles, anfibios, aves y mamíferos) por la exposición a suelos contaminados, sedimentos o aguas superficiales. Los criterios de selección para todos los compuestos químicos en todos los medios estaban por debajo del índice de riesgo aceptable de 1. No hubo COCs identificados para los receptores ecológicos.

Resumen de Evaluación de Riesgo

En base a los resultados de la evaluación del riesgo para la salud humana, no hay ningún riesgo inaceptable para la salud humana en el Lugar y por lo tanto una acción correctiva no es necesaria para proteger la salud pública, el bienestar y el medio ambiente de posibles derrames de sustancias peligrosas en el actuales o en el futuro en el agua subterránea.

En base a los resultados de la evaluación de riesgo ecológico, no hay riesgo ecológico inaceptable en el Lugar y por lo tanto una acción correctiva no es necesario para proteger los receptores ecológicos de posibles derrames o amenaza de derrame de sustancias peligrosas.

Conclusiones

En base a los datos recopilados y publicados en el RI, y la conclusión de la evaluación de riesgo para la salud humana y el SLERA, el Lugar no necesita ser remediado. Por lo tanto, ninguna acción correctiva es necesaria para este Lugar.

Estado Libre Asociado de Puerto Rico / Agencia de Apoyo

La JCA está de acuerdo con la acción preferida incluida en el Plan Propuesto.

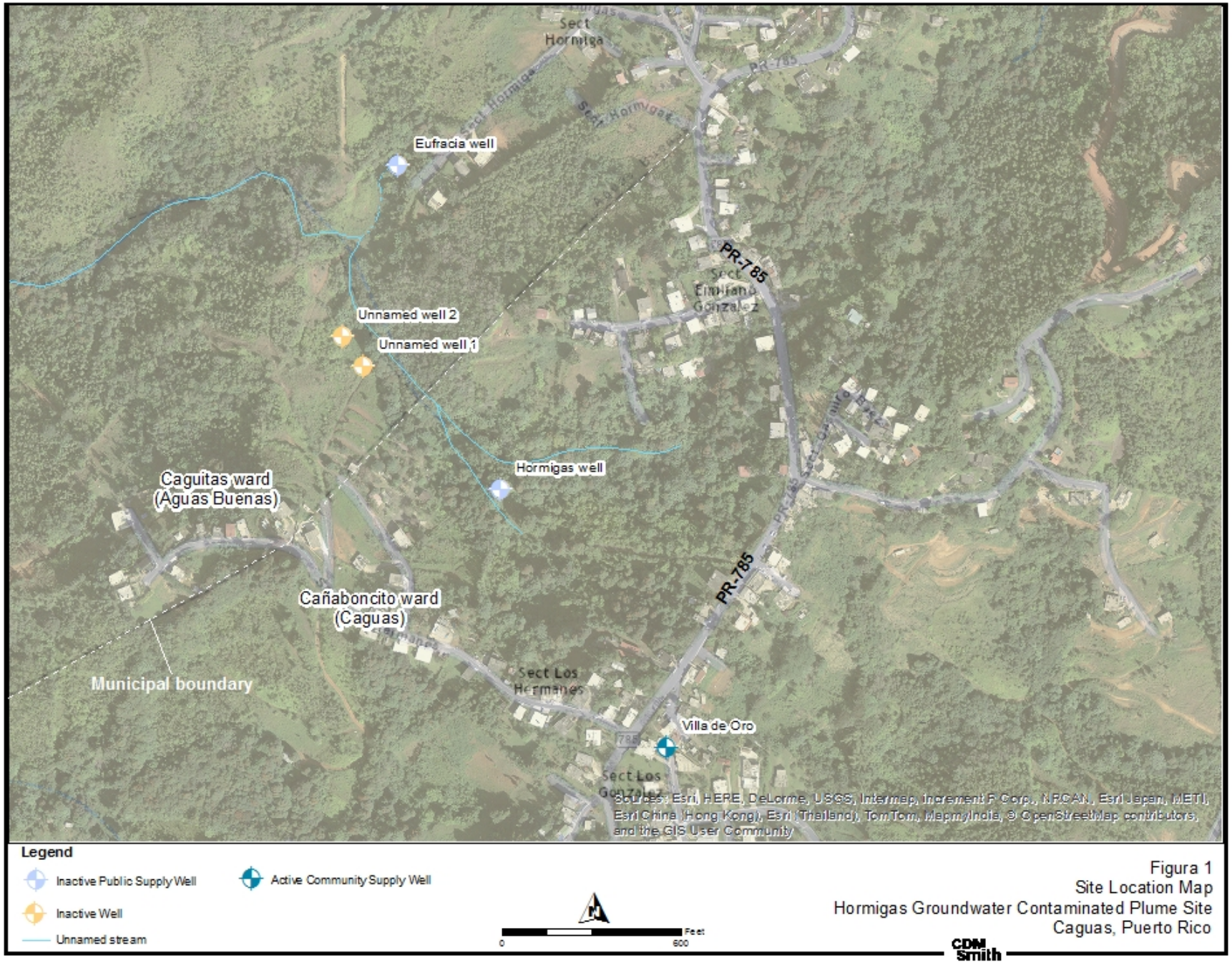

Figura 1
Site Location Map
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

APPENDIX V
Hormigas Groundwater Contaminated Plume Superfund Site
Transcript of the public meeting and written comments

[CERTIFIED TRANSLATION]

PUBLIC MEETING
HORMIGAS GROUNDWATER CONTAMINATED PLUME
SUPERFUND SITE
AUGUST 3, 2016
CAGUAS, PUERTO RICO

Date: August 3, 2016
Time: 6:00 pm
Place: El Mirador Community Center

Brenda Reyes: Good evening, I mean good afternoon still. Thank you all for being here tonight, this afternoon. My name is Brenda Reyes, Public Affairs Officer, U.S. Environmental Protection Agency, Caribbean Office, Region 2. I am accompanied today by several people who have helped to make this meeting possible. My thanks to the community for their warm reception today, and thank you for your usual cooperation. My thanks to Caguas municipal planner Guillermo Rivera. Guillermo has facilitated many little details, and Pedro, they are both here somewhere, I deeply appreciate all the help you have provided. These cases always require the help and cooperation of the municipalities. CDM, our contractor, is represented here by José Reyes, Frances Delano, and Mike Valentino. And my coworker, Dr. Adalberto Bosque, who is the project manager, will be presenting this afternoon.

The Hormigas groundwater Superfund site, as you know, is located here in the community, in the Municipality of Caguas. This was the site were contamination in a water supply was detected. The Department of Health must conduct regular studies of water supplies, wells were closed, the EPA conducted… during the years 2011...

Frances Delano: Initially in 2009, we came in during 2013.

Brenda Reyes: ...between 2009 and 2011, and from 2013 on, we conducted work, research, to see where the contamination originated. We did not identify what is known as the contaminated plume, the origin of the contamination, so this afternoon we are here to present the results and the reason why we are taking the No Action alternative. So, without further ado, I leave you with my colleague Adalberto Bosque. But first, I would like to say that if you have any questions, please save them for the end so that Adalberto can complete his presentation. Then, if you have a question, there is a microphone here, please state your name for the record. We are… the meeting... will be transcribed so I am going to ask you to give your name when the time comes to ask any questions. So, now, without further ado, here is Adalberto.

Adalberto Bosque: Good afternoon, it is a pleasure to be here with you this afternoon. After a couple of years of spending time with you, the residents of this area, and with municipal representatives, well, it's been a pleasure working with you, mainly in investigating the contamination issue. Initially it was a problem, as we will see in the slides. Initially, we had some setbacks, contamination in one of the wells. We conducted an investigation, and will be mentioning the wells that were sampled and the results from those wells. Aside from the wells belonging to the Puerto Rico Aqueduct and Sewer Authority, which were closed—there were two, Hormigas and Eufracia—there were also other private wells. As you will see during the presentation, an investigation was conducted, the wells were sampled, not once, but two, three, four, five, six times; we will be seeing that—and no contamination was detected. This means that the U.S. Environmental Protection Agency (EPA), with the consent of the Puerto Rico Environmental Quality Board—and we have Engineer Omar Santiago here with us,

representing the Environmental Quality board—will be presenting the results. I would like to add, as Brenda Reyes has already indicated, to please ask any questions you may have after we finish the presentation. At that time, the floor, the meeting will be open for questions. We really need for the questions to be related to this case, this case in particular, please. If you should have any other question about some other situation, or any concerns, remember this a municipal affair, so please contact Mr. Guillermo Rivera. If it is about a matter that needs to be addressed by the Environmental Quality Board, you can see the colleague from the Board; although he is representing the Superfund program at the Environmental Quality Board, he could take note. He could take note of your question and maybe make some sort of referral if necessary.

Well, we need a few minutes before we begin the presentation, but I think I can continue speaking and eventually we will see the slides, view them more rapidly. *(Transcriber's note: he is referring to projection issues that are being resolved.)*

So, the Hormigas case here dates back to the year 2006. In 2006, the presence of volatile organic compounds was detected in the Eufracia well, a public water supply well. At that time it served the Hormigas system, composed of the Eufracia and Hormigas wells. They supplied water to a population of approximately five-thousand four-hundred users (5,400), according to the information that was provided to us. The entire public water supply system must have oversight, or has oversight by the Department of Health. The Department of Health has a program called the drinking water program. This means that, when water is supplied, mainly by the Aqueduct and Sewer Authority, as is the case of these two wells, well there has to be compliance with

sampling requirements. From time to time, approximately every 3 months, they must collect samples, and they have to comply. The water supplied to the public must comply with certain concentrations, quantities, it cannot exceed the limits set for certain contaminants. In our case, in this case, the contaminants detected included one known as tetrachloroethylene. As you will see in the document, the English acronym is PCE. And another contaminant, TCE, exceeded the levels, exceeded the level of 5 parts per billion. This means that when these levels were exceeded the Department of Health told, required, or asked the Aqueduct and Sewer Authority to close those wells.

When the wells were closed, in 2009, the people who were supplied... the system was replaced, the Hormigas system, composed of two wells, was closed. Each of the wells was or is, approximately, three-hundred and thirty (330), over three-hundred feet deep. The water received by those residents was replaced by a system in Cidra. Our understanding is that, according to the information we have, the system was the one related to the combination between the lake and the well at the Cidra Lake, an area that is not impacted. It was not impacted, which means water was supplied, there was enough water to supply the residents. Once the agency became aware of the contamination, it proceeded to conduct an early sampling of the seven private wells located in the area... seven private wells, initially. The agency wanted to know, it already had some information, but wanted to have certain information about the Hormigas and Eufracia wells. The Hormigas and Eufracia wells were closed, which means people were no longer drinking water that could be contaminated, right?... or that was contaminated. It means the agency proceeded to collect samples from seven wells. The seven wells that were sampled are on the top of page 5, if this is the

version... I hope it is the same version, not a later or previous one *(Transcriber's note: he is referring to the Proposed Plan document in his hands)* ...were the Villa Vigía, El Paraíso, Los Velázquez, La Sierra 1, La Sierra 2, and La Sierra 3 wells. Those were the initial wells. Later, when no contamination was detected in these, when it was clear they were not contaminated, not impacted... do you have a question for later? *(Transcriber's note: the question is for a lady in the audience who raises her hand)*

Lady in the audience: It's on page 4.

Adalberto Bosque: Page 4, thank you. It's on page 4 of the document you have. Good. When it was determined then, and it is confirmed that these wells, these 7 wells, were not contaminated, meaning that those who were using them were not drinking contaminated water, then the agency conducted that initial sampling. Then in 2011 this site was included on the National Priorities List. On the National Priorities List of the U.S. Environmental Protection Agency. There is a procedure, and I will pause for a moment to explain the procedure. The U.S. Environmental Protection Agency, founded in 1970, has different laws it has to enforce. One of the federal agency's programs is known as the Superfund program. It is called that because when it was created in 1980... we are getting there *(Transcriber's note: he is referring to the projection issue being fixed).* ...when it was created in 1980, a billion-dollar fund was established in order to carry out the identification, investigation, and ultimate cleanup of contaminated sites, and that established some procedures. So what happens? The U.S. Environmental Protection Agency has different ways of determining if there is contamination present. One, the Aqueduct and Sewer Authority collected samples of its wells, it has to submit reports to the Puerto Rico Department of Health, and the U.S.

Environmental Protection Agency is notified that there is a contamination issue, therefore, the agency intervenes to conduct the investigation.

I'll move quickly to the sequence, and excuse me for a moment... so that we can continue with the presentation *(Transcriber's note: the presentation is now being projected and we see slide number 2 on the screen: Focus of the Studies*.) Those are basically the general objectives of the study. Remember, contaminated sites were identified. The agency then proceeded with the investigation to determine the magnitude and extent of the contamination. The magnitude and extent of the contamination is determined by certain studies. These are million-dollar studies, in other words, they cost a million dollars, they can cost 800, 900 [thousand], a million dollars or more, studies such as these, conducted to determine the magnitude and extent of the contamination, identify the contaminants, identify the concentration of the contaminants that may be present, as well as identify their distribution vertically and determine they distribution horizontally. Determination, if there is contamination, how far does it extend and who may be impacted and how—that is very important. That is why when we conducted the investigation... we evaluated ...did they close the Hormigas and Eufracia wells? We were clear on that, no one was drinking from them. The people are being supplied water from somewhere else? Yes. Ok, we were clear on that. Are there other private wells in the area? Private wells were identified. The agency quickly, as soon as it had knowledge, proceeded to conduct the initial sampling of those wells. Besides this, once we had information related to those contaminants, the concentrations present, a study known as risk assessment was conducted. In other words, do the concentrations present at the site represent an unacceptable risk to people's health?

And I say unacceptable risk because when we talk about risk, and this I learned the hard way... when I began with the U.S. Environmental Protection Agency, my first meeting was with the community from a no action site, such as this one, no action. Nothing will be done, nothing needs to be done. And a member of the community asked me, "Engineer, are you saying there is no risk here, if we move into this place?" It was an abandoned facility that had been investigated, where there had allegedly been spills, and I very naively responded: "No, there is no risk, a family can move there, a school can be located there, any type of activity, there is no risk." And, right away, a doctor in toxicology stood up, and I said to myself, "Oh-oh, what's going to happen here?" He stood up and said, "Well I..." and I thought, "Here it comes, the bucket of cold water..." And he said, "Well, I would like to clarify what the engineer said." And I thought, "...here we go". And then he said: "When we speak of risk, we can never say there is no risk, because, when you get up from bed in the morning, is there risk or not? There is the risk that you may stumble and fall. When you cross the street, is there risk or not? There is risk. When you got in your car to come here, there was risk. When you board a plane, there is risk. But this is what we call acceptable risk, and since it is acceptable, we drive the car, we board the plane, etc., etc., we engage in these activities. If the risk were not acceptable, we would definitely not be participating in these types of activity." The risk to human health is evaluated, as is any damage or adverse effect to the ecosystem. It is determined, there are studies that look for little birds, the type of bird, the type of vegetation, the entire ecosystem that may be in an area and whether there is an unacceptable risk for those organisms due to contaminants, and the contaminants that may have been detected. The third objective

is to conduct a feasibility study. The feasibility study is done once it is determined that action needs to be taken; different alternatives are evaluated for dealing with the contamination issue, the unacceptable problem, the risk that is not acceptable. In this case, no feasibility study had to be conducted because it was determined that the risk was acceptable. Finally, here we have: presenting recommended alternatives, it is part of the process. In this case there is no need to present alternatives because the risk is acceptable and the recommendation from the U.S. Environmental Protection Agency, with the approval of the government of Puerto Rico through its Environmental Quality Board, was that nothing needs to be done. OK? Let's go on.

(Transcriber's note: turns to slide 3: The Superfund Process)

This is basically the process that is followed from the time a site is discovered, the fact that there is a contamination issue, until the end of the investigation. We have here from the discovery of the site—the site was discovered, the U.S. Environmental Protection Agency becomes aware, the initial evaluation is conducted where the EPA looks for information to determine if in fact there is contamination, there was no contamination, if there are possible sources of contamination. And the agency did that, to determine what could have been the source of that contamination, that was done, and we will be talking about that. It was eventually included, in 2011, on what is known as the National Priorities List, which is a list at the U.S. level which assigns a priority to sites that merit investigation, and remedy if necessary. It means that in the Hormigas case, when the initial evaluation was conducted, it says here there is a scoring system, a scoring system is used, and if the score exceeds 28.5, that was a random number, then they investigate how many people drink from the groundwater in a half-mile

radius? ...x number, and a score is determined. How many persons drink the groundwater? There are wells within a mile... how many people bathe in the river, approximately? etc., etc. The ways a person could be exposed. The pathways of exposure we have are inhalation, ingestion, and dermal contact. There is another, injection, but normally the three main pathways are inhalation, ingestion... if we drink contaminated water, we are ingesting a contaminant. If vapors... when we heat the water, when a person showers, there is a compound that goes to the air, it vaporizes, and we could be breathing it in. And skin contact occurs when a person bathes and is exposed to the contaminant. The site was included on the National Priorities List in 2011, and, eventually, from 2013 to 2016, the U.S. Environmental Protection Agency carried out an investigation that we will be discussing this afternoon. But, before that, it had collected samples of the wells in the area to detect any eminent risk. Because, if the U.S. Environmental Protection Agency... there are places in which the agency intervenes ...in the town of Corozal, in the town of Corozal there is a site that is on the National Priorities List called the Corozal Case, Corozal groundwater, where there is a well [not PRASA's] that was contaminated, and what the agency did, when the U.S. Environmental Protection Agency intervened, was to install an activated carbon system, a system to remove the contaminant so that people could consume water that complied with the parameters for drinking water. This means that when the agency sees there is a risk that people could be exposed, then the agency takes measures. In this case there was no need, not initially and not after the investigation was completed. OK?

(Transcriber's note: turns to slide 4: Location Map)

Here we have the location, well we all basically know the location, where we are located.

(Transcriber's note: turns to slide 5: Site Description)

Hormigas, Eufracia, and the adjacent areas, including the wells nearby and the areas adjacent to the wells.

(Transcriber's note: turns to slide 6: Historic Background)

In order to make a determination, the agency tried to identify possible sources. The agency initially collected samples from Eufracia, initially, the last paragraph says: "The agency collected samples from the Eufracia well and samples from each of the following wells," and I will mention the wells that were initially sampled: The Villa Vigía, El Paraíso, Los Velázquez, La Sierra 1, La Sierra 2, and La Sierra 3 wells. Remember, when a sampling is carried out in some wells, the location of the wells also has to be considered in relation to the contaminated area, we need to have that information. Later, six rounds of well samplings were made, including the Villa de Oro well, it was included in these six rounds of samplings.

(Transcriber's note: turns to slide 7: Historic Background)

When the U.S. Environmental Protection Agency collected samples from the Eufracia well in 2009, they detected a presence or concentration of 260 parts per billion. The agency's drinking water standard is five (5), and a series of other contaminants such as trichloroethylene, known as TCE, fifty-nine (59) to sixty (60) ppb and other contaminants that are volatile organic compounds. So, in the biodegradation chain we have its dad, its parent could be present, that is, PCE or tetrachloroethylene. Tetrachloroethylene

could be in the environment, there may be a natural mitigation. It may be converted into TCE, trichloroethylene, and so on with the rest. This does not necessarily mean that the parent is more hazardous, there are times in which the offspring are more hazardous. Understand that there are other contaminants similar to trichloroethylene and PCE that can be bought directly. Tetrachloroethylene and trichloroethylene are generally used as solvents. They are sometimes used to remove grease, and tetrachloroethylene is also used in dry cleaning. That is why, when the U.S. Environmental Protection Agency became aware, what did it do? It identified seven facilities in the area. The agency said, "we have to carry out an investigation at these seven facilities in order to determine if any of them are responsible, and if they are, then take remedial action or require the owners to take the necessary measures to stop further leaking of contaminants."

(Transcriber's note: turns to slide 8: Historic Background)

It collected samples from these seven facilities: Taller Pototo, Mariel T-Shirts, San Lorenzo Busline, County Professional Dry Cleaners, JR Auto Body Collision & Paint, and Taller González. It sampled the soil, visited the seven facilities and did not detect the presence of these volatile organic compounds. With the exception of a time when a small amount of contamination was detected, very mild, below action limits, at the dry cleaners. Additionally, the dry cleaners is located on Road 172, which is far, and it is understood that the underground water from there does not flow, come here. When the U.S. Environmental Protection Agency carried out the investigation, it determined that there was no need to take any action there, at any of these seven facilities. In 2011, I mentioned what happened, that there was an inclusion in the National Priorities List and

then in 2013-2016 the investigation took place with the results that we will be discussing this afternoon.

(Transcriber's note: turns to slide 9: Map)

This is the area. The blue dots represent the wells, the private wells. The private wells, as I mentioned, seven were initially sampled, and later Villa de Oro was included for, eventually, a total of six wells. These six wells, plus two others known, we have them as Unnamed wells, we have no names for those wells. The wells with no name are the ones on top, the unnamed wells. And four wells were drilled, constructed; one of them 300 feet deep, another 330 feet deep and another two, known as shallow wells, approximately 110 or 100 feet deep. All these wells were sampled.

(Transcriber's note: turns to slide 10: Remedial Investigation)

With respect to the soil and vapors that may be released from the contaminated water that could have been in the area, the U.S. Environmental Protection Agency made twelve borings in the area. The twelve borings were made in the area where Eufracia is located, because that's where the contamination had been detected, to try to identify a possible source of contamination or contaminated areas. Fifty-five soil samples were collected and no presence of these volatile organic compounds was detected. Additionally, some tests were conducted that are known as soil vapor sampling studies. This is nothing more than trying to sample vapor that could be present... contaminants that are volatile and could be released. The sample was collected and no presence of these volatile organic compounds was detected either. This means that there was no soil or vapor contamination. In contrast, we have another site in San German where the

concentration is up to 65,000 parts per billion (ppb). Sixty-five thousand parts per billion of trichloroethylene and twenty-four thousand or twenty-nine thousand parts per billion of tetrachloroethylene. And there are buildings... when you have a volatile organic contaminant it vaporizes, it rises, and if there is a structure it rises and remains below the structure, it could be a home or any type of facility; and then, if there is a crack, it continues to rise and eventually enters the house or the facility. But, in this case, there are no contaminants, the soil was sampled and there were no contaminants in the area. Vapor samples were collected and no contamination was detected either.

(Transcriber's note: turns to slide 11: Map)

Here we can see the dots where these tests were conducted. It is important to mention that in the environmental [office], the planning and environmental [offices], there are copies available of the investigation documents. If at any time you would like to ask a question, don't hesitate to call me, my phone number is on the documents, and I will gladly talk with you. And, if you need to come here, no problem. I am from Caguas, I live here in Caguas. It is a pleasure to come here, it is nice to come to this area, I will not complain.

(Transcriber's note: turns to slide 12: Map)

These dots represent the areas were vapor sampling was done. As you will see, you can see that it is towards the area where the houses are, over here, where the road leading to Eufracia is, where Doña Judith's home is at the end, Doña Judith, thank you for your help and patience. You can also see on the top where there are little dots, no contaminants were found.

(Transcriber's note: turns to slide 13: Remedial Investigation)

As part of our investigation, I also mentioned that another three wells were sampled, two wells known as Unnamed and the Villa de Oro well. Samples were collected from these wells and there was no presence of the compounds that had been identified, the volatile organic compounds. We then proceeded to collect samples at the Hormigas and Eufracia wells. Initially, samples were collected without having developed these wells, and we will see that the presence of contaminants was detected at the Eufracia well, but you will see that the concentration was .92, which is way below the concentration level established for drinking water. Which means it is a concentration that, when the risk assessment is made, does not represent an unacceptable concentration. When we speak of the development of the wells, I just mentioned the development of the wells because the wells were developed later. What we basically have is this:

(Transcriber's note: the presenter takes a piece of paper and rolls it up in the shape of a tube)

If I take this piece of paper... initially when the Eufracia well was inspected, and Hormigas, it's as if I had this little tube here and took a sample from here. This little tube has water here, if I take I what I want regularly, the well is developed, it is pumped, I don't know, 2, 3, 4 times the volume of that well then, the sample was taken in the well and the sample was representative of what there was ...where? Remember the well was initially sampled in the year 2009, from 2009 to 2013 there were no samplings, which means that when the sample was collected initially, as is, the presence of approximately .92 parts per billion of tetrachloroethylene was detected. At the

Hormigas well, no presence of volatile organic compounds was detected. So that means that the U.S. Environmental Protection Agency, through its contractors, proceeded to develop both wells to collect samples and to carry out another series of studies and samplings of those wells. I mentioned in the last paragraph, it tells us that that some drillings were done to collect soil samples. At the same time the soil samples were collected, when we reached the water, and I believe the water was approximately at about 30 feet, when we touched the water, we automatically took advantage of the opportunity and collected some water samples; and no presence of volatile organic compounds was detected. In the beginning I mentioned that some fractures were determined. Fractures are areas similar to holes through which groundwater can pass. Initially it was not developed, they took samples, and the paragraph here, what it says is that, as I mentioned earlier, the concentration of trichloroethylene [sic] detected was .92. This is practically nothing, remember the drinking water level is 5, if it exceeds 5, then a little flag is raised. This does not say that if I drink 5, I will get cancer, because there is a whole study about that. It's like when you go to the doctor. When you go to the doctor, the doctor asks, do you smoke or not? Your mom? Your dad? etc., etc. There are other factors that could be influencing the condition or the prevalence of some type of disease.

(Transcriber's note: turns to slide 15: Remedial Investigation)

For the Cis-1,2-DCE contaminant, the maximum concentration found was 1.7 parts per billion, the standard is 70, so it's much lower. That result was without developing the well. It was later developed, some "multiports" were installed, multiple ports, a system for collecting samples at different depths. Because you want to sample the well at

different depths. Remember, these wells, when initially investigated, a study was conducted where they inserted little cameras and they carried out a series of studies to know which areas produce more water, where the water is flowing so you then know where you should collect samples. The well was developed and eventually the Hormigas and Eufracia wells were sampled again and no presence of these volatile organic compounds was detected.

(Transcriber's note: turns to slide 16: Remedial Investigation)

Therefore, what we know as the "Round 1 of sampling" was begun. In the "Round 1 of sampling,"—remember we had sampled earlier— in the "Round 1 of sampling," the Villa de Oro well was sampled, and samples are also taken from the Unnamed 1, Unnamed 2, Hormigas, and Eufracia wells; Eufracia was already a multiport. This means there were five places, five different depths at which samples could be collected, and were collected from the Eufracia well. The result was that no presence of contaminants was detected in these wells. The agency then proceeded to conduct round number 2, a second sampling. When I say second sampling, remember that earlier I said that a sampling had been made. What we call the second round of sampling is carried out. For the second round, the multiports had already been connected in those wells in order to take samples at different depths. The same wells from the Round 1 sampling were included. Villa de Oro, Hormigas, Eufracia, now at five lengths, five different depths, and again no presence of volatile organic compounds was detected. Later the U.S. Environmental Protection Agency determined and said "well we have sampled the Hormigas, the Eufracia, and the Villa de Oro wells, the two unnamed wells, we sampled these seven wells I mentioned earlier. We need to drill some additional wells." And

those are the 2 wells that at some point were drilled in front of Doña Judith's house, a deep well at a depth of 330 feet and a shallow one at approximately 110 feet, and another where Eufracia is, after Eufracia in the lower part, at 330 feet. The difference is, remember that Eufracia is below, in the depression below, another shallow well, samples were taken at these wells and no presence of volatile organic compounds was detected.

(Transcriber's note: turns to slide 17: Remedial Investigation)

Then we proceeded to conduct the round 3 sampling. Round 3 included Villa de Oro, the two installed wells were sampled, Hormigas was not sampled, nor were the 2 unnamed wells, because it was already known in which direction the groundwater flowed. But Villa de Oro and the drilled wells, the 4 wells that had been drilled before round 3, were sampled again. In round number 4, the same wells were again sampled, Villa de Oro, Eufracia, and the 4 wells that had been drilled in the area to determine if there was any contamination. What happened with that contaminant? Did it go down-gradient lower than the water from the Eufracia well location? We went down-gradient in the direction of the groundwater flow and no presence of volatile organic compounds was detected. What could have happened with the contaminants? That's a good question. That's a million-dollar question. An investigation was carried out, a sampling was done up-gradient... if the groundwater flows in this direction and the sampling is done up-gradient, the sampling is done at the point where the contamination is and also in the direction of the flow of the groundwater. What we believe may have happened is that it was a one-time event. Maybe someone used, or disposed of one of these types of chemicals, it was only a single event, possibly when the Eufracia well was in

operation a bit was extracted, it was extracted and was basically was remedied. Because when there is a problem related to groundwater, one of the alternatives is to extract groundwater and treat it in order to remove the contaminant. Another alternative, and it may be a combination of all of these, is that the contaminants had broken down naturally. Regardless of the reason, or the combination of reasons, what we can clearly say here is that there were no contaminants. When the investigation was carried out, there were no contaminants in the area. And the wells that we sampled, I mentioned the wells where this was done, well, they were not contaminated with those volatile organic compounds. This is very important. There is a question I've been asked already, and I should explain. Some people have asked, “Will the Aqueduct and Sewer Authority be able to use that well in the future?" The U.S. Environmental Protection Agency will definitely not get involved. That's a government decision, that is, a decision of the Aqueduct and Sewer Authority. If it sees a need, that people need water, then it has to supply it. What we can say as an agency, and the Environmental Quality Board can say, because they agree with our decision and was involved in the investigation from day one, is that there is no contamination, and that the risk is acceptable. In the future, if there is a need to use those wells again, well, the Aqueduct and Sewer Authority will definitely have to contact the Department of Natural Resources, which grants the permit for extracting water, and will also have to contact the Department of Health's drinking water program, which regulates the supply and quality of the water supplied to people who need it for drinking or other uses.

(Transcriber's note: turns to slide 18: Map)

Here we can see the location of the wells. The yellow dots are the unnamed wells. The wells we have over there, the blue dots, here we have Villa de Oro, and here is Eufracia, and here we have the four wells. In each one of these wells, we have two wells. As I mentioned earlier, there is a deep well, a shallow one and eventually one deep and one shallow well. That is what we have to date with respect to the investigation that was carried out.

(Transcriber's note: turns to slide 19: Remedial Investigation)

When we talk about surface water, I also mentioned that the agency took samples of the surface water. There is a small stream, were Eufracia is, in that area, that we identified as Unnamed Stream. It has no name, at least at the time of the investigation it had no name that we know of. Sediment samples were collected at that stream, since at times there can be contaminants deposited in the sediments that people could eventually be exposed to. No contaminants were detected, none of the contaminants in the investigation, no contamination was detected in the surface area or in the sediments at that stream, the little stream that runs through the area.

(Transcriber's note: turns to slide 20: Map)

Here we can see the dots were surface water samples were taken, and also sediment samples, we can see them here.

(Transcriber's note: turns to slide 21: Summary of Site Risks)

A risk summary, of the risk assessment study. I mentioned that there is what is known as acceptable risk and unacceptable risk. The U.S. Environmental Protection Agency uses certain values to determine if the risk is acceptable or unacceptable. There are

values of 1 person in 10,000 to 1 person in 1,000,000. One in ten-thousand is acceptable or 1 in one million, that is acceptable. There is a way they obtain those figures. But basically, at this site, several scenarios were evaluated. At this site, the ways in which people could be exposed to the contaminants was evaluated. If there were a contaminant present, how could they come into contact with it? One scenario is that of child or adult resident who may drink contaminated water, there can be dermal contact, there can be inhalation of the vapors. In this case and in all the cases, that scenario was evaluated. In this case there was no problem because there were no contaminants. This means that people, if they used the water resource, well there are no contaminants, it means no one is ingesting contaminated water. Then there is the scenario of recreational users, teenagers who go and walk around the area, jump in the stream, drink water, etc., etc. In this case there is no problem because the surface water, the sediments in that river were not contaminated. The third scenario was that of the construction workers, people who are working in some type of construction in the area, if the surface was contaminated, if they are exposed to contaminated soil. In this case, soil samples were taken, surface water samples were taken, vapor samples were taken, possible vapors, and no presence of the contaminants was found, detected. The contaminants we have mentioned, the contaminants in question.

(Transcriber's note: turns to slide 22: Summary of Site Risks)

Based on these results of the risk assessment that was made, the risk to human health, the risk is acceptable.

(Transcriber's note: turns to slide 23: Recommendation)

So the U.S. Environmental Protection Agency, and also based on the risk assessment to the ecosystem, the agency is recommending No Action. No Action for the site.

(Transcriber's note: turns to slide 24: Comment Period)

Eventually the procedure was as follows; a public comment period was established, opened on July 20. It is a 30-day comment period, in which anyone, any entity that has any type of question, can send their comments to the U.S. Environmental Protection Agency and we will respond to those comments. After that 30-period ends, if there are no more comments, then a document is prepared known as the Record of Decision. In this document, the U.S. Environmental Protection Agency has to provide more detailed information than in the document that you have in your hands, called the Proposed Plan. In addition, there will be a transcript of everything said here today in both English and Spanish, and it will be included with that document. The U.S. Environmental Protection Agency must establish and provide more information, results, as well as the recommendation, and the decision it would be making once we have the approval, as I mentioned earlier, of the Environmental Quality Board. That is basically the procedure. After the Record of the Decision is signed, the agency will eventually follow the procedures to remove the site from the National Priorities List. This is so the site is not on a list, from the United States, from anywhere, so people cannot say "there is a contaminated site there." No, the agency carried out an investigation, the risk was documented as acceptable, which means there is no contamination that could create any type of problem for human health or for the environment. This basically wraps up the presentation. If anyone has any questions we will be happy to answer them. If we don't have the answer, we will take it home as an assignment and answer it later.

Carmen Rosario: I live here, in the Hormigas community. My question is, those two wells that you say are unnamed wells, are they on private property?

Someone in the audience answers: That's in the Los Báez sector.

José Reyes: Yes, in the Los Báez sector, they are not active wells.

Carmen Rosario: Yes, because he mentioned two unnamed wells...

Adalberto Bosque: Here we have the map, here we have a larger map so that we can see the location. Here, these are the unnamed wells.

Carmen Rosario: Because you are saying they are unnamed wells, and I am wondering if they are here in our community of Hormigas, because we know the well you mentioned as the Baez well… you mentioned Eufracia and you mentioned...

Adalberto Bosque: Hormigas.

Carmen Rosario: Hormigas, that's the one higher up, right? You really have to climb. Where the Baez family lives, near the well?

Adalberto Bosque: Hormigas is the one on the main road, but there is a long drop to reach the Hormigas well.

Carmen Rosario: That's the Eufracia you were mentioning.

Adalberto Bosque: No, here we have Hormigas. This is the Hormigas well... (*he refers to the map in front*)

Carmen Rosario: Oh, OK, in the Báez family sector.

Adalberto Bosque: And we have Eufracia, which is where Doña Judith lives.

Carmen Rosario: Doña Judith. Then further up, which was the first one we had in the community, the one up in the Santiago Rivera sector, that one is not being used anymore either, right?

There is talk among the audience, cannot make out conversation.

Carmen Rosario: Ah, because that over there is a tank.

Frances Delano: Yes, good evening, my name is Frances Delano. Those wells were never used to supply water to the community. They are wells which were drilled, abandoned, and we sampled them, that is why we call them Unnamed, because they were never officially used. They are on a farm.

Carmen Rosario: Oh, OK, they are in that farm, but isn't that...? The whole community benefits from being clear on this, because when you mention those two wells, because if here in the community we know the Eufracia well, and that other one in the Los Báez sector, and the tank further up, which was where we were getting our supply from, which is going up towards the Santiago family area.

Adalberto Bosque: Good. In our case, regardless of the fact that the well was not used, well we had to take advantage of the fact that there is a well there. That means less money invested in the investigation. It means that we took advantage of the wells that were there and sampled them.

Carmen Rosario: Oh, OK.

Adalberto Bosque: The important thing about taking groundwater samples is finding out if the contaminant is moving in that direction. In the end, we were able to see that

the contaminant was in that area. Remember that in 2009, when a sample was taken, the contaminant was detected there. That is why the circle was narrowed down little by little. Private wells, eventually this one continued to be sampled, the Villa de Oro well; Hormigas was then included, the Unnamed wells were included, in order to gradually narrow down the circle until we arrived at the well where the contamination was and eventually, not only sample that area, but also sample down-gradient from these wells in order to determine if there is contamination further down. To determine what happened with the contamination, that is basically what was done.

Carmen Rosario: Thank you. You answered my question.

Adalberto Bosque: You are quite welcome.

Ernesto Díaz Guzmán: Good evening, my name is Ernesto Díaz Guzmán and I was the community president of aqueducts, when Aqueducts belonged to the community. I went down to those wells, we had 2 active ones. The one you call Eufracia and the one you say is closed.

Adalberto Bosque: Hormigas?

Ernesto Díaz Guzmán: Yes. At that time those two wells were the ones we had to supply water to the community. The aqueduct was the community's, it was not...

Adalberto Bosque: That was early on, before the Aqueduct and Sewer Authority took control of those wells.

Ernesto Díaz Guzmán: Exactly. Then what happened was that after I left the local administration, some people took control and closed down the well known as Los Báez,

because once when they were trying to install a pump it fell and broke and the well could not be used anymore. They continued to work with a single pump and a single well, the Eufracia well. Then later I... we heard that the Authority took the administration away from the community, to this day.

Adalberto Bosque: Good. Thank you. And we know that when drinking water is supplied, the Department of Health is involved and in this case the Authority... at least according to the information we have... complied with the Department of Health, sampled the wells, and detected the contamination. As I mentioned earlier, there could be some type of contamination, but if it does not exceed certain limits, then it continues to be monitored, the sampling continues, to see if the contamination increases and could eventually present an unacceptable risk, one that exceeds the limits. In this case, we were able to see what I mentioned earlier, that the greatest concentration was when this well was sampled in 2009, specifically the Eufracia well, which showed approximately 260 parts per billion. Then what happened? Well, I mentioned the possible theories. Maybe it was that at that point the contaminant had arrived recently and eventually it was purged, the contaminated water was extracted. Or the other alternative I mentioned earlier. Who else had a question?

Carlos Juan Colón: Good evening, my name is Carlos Juan Colón from Villas de Oro. OK, this is so I can take your input back to the community. I am a layman in these matters. I am not an engineer, a chemist, a biologist, nothing like that, but I understand that the water we are consuming, given your presentation, is drinkable water. That was my first question. My second question, since you are already removing it or recommending that the federal agency remove it from the list... will there be, as you

well said, there is always a risk… will there be some kind of monitoring, even if it is not frequent, of the wells to make sure that there is no contamination in the future? That was my second question.

Adalberto Bosque: Good. The first question, in terms of the message that you can take back to the community. You paraphrased me well. The first question was if the water supplied was drinkable, I don't know if specifically in Villa de Oro or in any other private or community system sampled, to include the rest, whether the water is drinkable or not. The parameters sampled by the U.S. Environmental Protection Agency are these parameters that we have already established. The wells [sic] for bacteriology, there are other parameters, required by the Department of Health, that the agency did not sample because those were not the ones in question with these chemicals. Remember that when samples are collected, they are not only taken to detect volatile organic substances and insecticides, samples are generally taken for metals also. But samples were not taken for bacteriology. This means that in terms of the contaminants in question, we are good. You had another question about if monitoring was going to continue. The procedure, as I mentioned earlier, as there is no contamination, the agency eventually says, "well, I am going to sign the Record of Decision, which says No Action." No action will be taken. The agency cannot have a site open indefinitely. There will be a procedure in which the agency eventually has to say: "Well, we have to move towards removing the site from the National Priorities List." This morning we had a meeting with the municipality, with the honorable mayor of Caguas and his staff, in which we gave him a summary of the investigation more or less, thanked him for his cooperation, but indicated that the agency will be staying in

touch with the municipality and with you all about the next steps, about when the procedure to remove the site from the National Priorities List will begin. What happens then? The agency, in this procedure, in the case of No Action, it cannot continue taking samples indefinitely. The agency says: "we have finished this investigation, we have sampled here..." there were four rounds of samplings, plus the two early ones that were taken, plus the seven wells that were sampled from 2006 to 2009. It means that the U.S. Environmental Protection Agency eventually says: "Well, I'm out of here." After that Record of Decision is signed the agency basically says: "We have completed our mission or assignment." If the Aqueduct and Sewer Authority uses the well or reactivates the well, then the Authority, by law, had to monitor the water supplied to the public. It must monitor it, or ask for permission from the Department of Natural Resources, because they are extracting water, and must sample it for the parameters established by the Department of Health, the safe drinking water law, delegated to the Department of Health, to determine that the water the consumers receive is drinkable. Was that the question? Was there any other question or did I cover them all? If you have any questions later, don't hesitate to let me know. If anyone has to contact me, you have my phone number, you can also do it through the municipality, if you need any type of response or assistance. Question?

Evelyn Guzmán: My name is Evelyn Guzmán and I am the president of the association, and I am a bit new at this, there is a lot of things I don't know about. But may I ask, how did you come to know that this well was contaminated? How did you learn about it? What happened?

Adalberto Bosque: Good question. In the case in question, the entity using the well to supply public water, in this case the Aqueduct and Sewer Authority, takes samples at the wells. They have to submit that information to the Department of Health, they have to submit a report to the Department of Health. Also, by law, we as users are supposed to receive a water quality report periodically. Supposed to. When the Department of Health [sic] takes samples, they have to submit a report to the Department of Health. So the Department of Health is now aware, and says: "Look, we need to close down this well, it exceeds some levels, close it." The Authority closes it down and automatically the information is sent to the U.S. Environmental Protection Agency either directly from the Department of Health and/or the Environmental Quality Board. The government of Puerto Rico then says: "EPA, I have this site where the presence of volatile organic compounds was detected," and the agency begins the procedure of determining if there is contamination or not, and then begins the investigation.

Evelyn Guzmán: Then, what about what you were saying about water samples? Because there were some water tankers around here a couple of months ago. Was that in order to monitor the water from the Eufracia wells?

Adalberto Bosque: No. The tankers are used when a well is drilled. In this case we drilled 4 wells. Definitely, when the drilling is done, I don't know if those are the tankers you are referring to, water is generated, because the drilling continues to remove soil and generates water. We don't deposit that water in the stream. We don't say, "let's throw it here in the stream or let's dump it on the ground." We can't do that because it could be contaminated. It is collected in those tankers. Eventually, that water is tested and is later disposed of appropriately, it is not disposed of at the site. If the water has

no contaminants and complies with certain criteria or parameters, we contact the Aqueduct and Sewer Authority. They have treatment plants where they can receive that water. If that is not possible, then we must dispose of it somewhere else. The parameters were met and eventually the water was disposed of.

Evelyn Guzmán: And how long would you leave that water there for those studies?

Adalberto Bosque: No, what we do is drill, when the drilling is done, it generates...

Evelyn Guzmán: water

Adalberto Bosque: ...the tankers are gradually filled, we have several options. To take them away one by one, or to say "well we are going to leave this here until we have 2 or 3 [tanks filled] and eventually dispose of them," and that's what was eventually done.

Evelyn Guzmán: So then those… sorry to ask so many questions… and those gases that you are saying are volatile, in the atmosphere... what is the reason for their appearance?

Adalberto Bosque: Well, if there is a substance... in this case there was none because there are no contaminants... if there had been contaminants that could enter the air, vaporize, evaporate, what could happen? They begin to rise in the soil, and as I mentioned, if there are cement structures they may accumulate, and if there are cracks in the structures, people could be affected. In your case, in this investigation, there were no contaminants in the groundwater, no contaminants in the soil, so they said "let's check for vapors," and there were no vapors either. This means there are no

contaminants that could have an adverse effect on people's health. Good. Are there any other questions?

Nelson Aquino: Good evening, my name is Nelson Aquino. I am the one... let's put it this way, I am the guard at the Eufracia well. I live across from the entrance. My question is this. You say that since 2009 tests were being made, but that Eufracia well was closed by the Aqueduct and Sewer Authority way before 2009. And I say, and I apologize if there is anyone from the Authority here, but were the ones who were irresponsible. And why am I saying this? Because I was one of the people that got up every morning that they went down to conduct samplings and they would leave their cars on top because the road was damaged or wet. "Oh, no, forget about it," they would say. "Oh, no, forget about it…" the one from the Department of Health, he went down once and I had to pull him out with my car; he wasn't able to take samples because his car got stuck down there. They invested a bunch of money on an access, I'm saying, on a huge entrance, you could drive trucks down there, all for nothing. Now, you say they might monitor it after we are removed from the list. What assurance can EPA give us that the same thing won't happen again once the Authority is in control of the well again? If tomorrow the Authority says that they are going to open it and next month it's contaminated… And I think there are people here who knew the day that well was closed. They stopped working, they took the register, the whole substation, they took everything apart. That's money that was lost on that well. Who can tell me that won't happen again tomorrow or two months from now? Can it happen or not?

Adalberto Bosque: Good question. Definitely the Environmental Protection... a federal... thanks for your question... definitely the U.S. Environmental Protection Agency

cannot offer assurance that there will or will not be contamination in the future. We don't know. Normally when we talk about…we are generally not talking about treatment plants, or sewers, etc., etc., because the Authority has to deal with that, and they may be responsible for certain problems that may be happening. In terms of contaminated groundwater in general, in Puerto Rico we have 16 sites that are currently included on the National Priorities List, of which 8, 7 or 8, have groundwater contamination issues, where groundwater from Aqueduct and Sewer Authority wells have become contaminated. Usually, the Authority's position, which is understandable at one level, is "I am a victim." The Authority says "I am a victim" because I did not cause the contamination; regardless of whether it is a company or an individual who contaminated my wells, the wells are now impacted. This is why the law known as the Safe Drinking Water Act was created, which establishes some parameters that must be monitored. If the water is supplied to the public, for whatever use, samples must be taken to determine if the water is suitable for consumption or not. The investigation definitely determined that there are no contaminants, the ones we were talking about. As I mentioned earlier, if there is bacteria or something else, well those are parameters that are monitored in drinking water. This means that at this time the recommendation is No Action. If in the future the Aqueduct and Sewer Authority says, "well, I want to start using this well again," well then they have to go to the department of Natural Resources and say, "I am going to extract water." They must have the permit. Everyone who wants to drill a well must have or should have a permit from the Department of Natural Resources, and the Department of Health will require that they conduct samplings. If it

will become contaminated in the future or not, we can't say. We hope that will not happen. Alright? Doña Judith.

Judith Santana Zayas: Good evening. I only have one thing to clarify. My name is Judith Santana Zayas. Only to clarify the situation in terms of when the well was closed. I understand that when the first people arrived to evaluate the place, they found a lot of contaminants, they were going to request that the well be closed for that reason. That resulted in the communication between the Department of Health and you all. And that is why we have some wells drilled there at this time. Thank God we do not have contaminants, and that at some time they may be able to use that well again. The Eufracia well, which was great for us because if the water supply was cut off in the area, we always had a trickle of water. Good water. Thank you.

Adalberto Bosque: And I understand that, remember, when there is an investigation such as this one, it is definitely team work. It's team work not only among agencies, but most importantly with the population. Because the residents are the ones who should receive this benefit. We have the right, as individuals we have the right to receive safe water. No one wants to be affected. There has been communication here from the beginning. Initially, in 2013, approximately, before beginning the work, there was a meeting, there was a meeting right here. Representatives from the Agency for Toxic Substances and Disease Registry (ATSDR) were here. There was a meeting. They visited the community. Brenda, Frances, and representatives from the municipality walked around, spoke with people. Two articles were submitted, published in the weekly newspaper, in *Primera Hora*. I understand it was even announced on the radio. We are here to serve you, and we believe that to the extent that we can all do our bit...

and we appreciate your patience. But the guilty party here, if you are going to argue, argue with José. We are proud, not only of the citizens, of the work done, of the good working relationship with the municipality of Caguas, with the honorable mayor and his representatives, assistants, with the CDM company, the Environmental Quality Board, and grateful to all of you for allowing us to carry out all this investigative work. If the situation had been different, and a company or a responsible entity had been identified, the U.S. Environmental Protection Agency would have tried to recover the money. They would send them a bill, a note, to try to recover the money invested by the Agency. In this No Action case, no responsible party was found. This means that all that money, I did not say cost, I said investment, because health is an investment we must make. Thank you very much, if there are no other questions. As you know we have until August 19th. Should you have any other questions, we will be happy to assist you. And we will continue to be in contact because there are a few details pending. Thank you very much, I'm at your service.

The audience applauds. The meeting is called to an end and the record is closed at 7:23pm.

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TRANSCRIBER CERTIFICATE

I, Aledawi Figueroa Martínez, transcriber for the Smile Again Learning Center, Corp. hereby CERTIFY:

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I also certify that I have no interest in the results of this issue and I am not related in any degree of consanguinity to the parties involved in said issue.

In Isabela, Puerto Rico, on August 12, 2016.

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CERTIFICADO DE TRADUCCIÓN AL INGLÉS	**CERTIFICATE OF TRANSLATION INTO ENGLISH**
Yo, Vivian Otero, traductora profesional con Maestría en Traducción y miembro *bona fide* de la *American Translators Association (ATA)*, por la presente certifico que a mi mejor entender el documento anterior es una traducción fiel y exacta al inglés del texto en español, realizada a solicitud de la parte interesada.	I, Vivian Otero, a professional translator with an M.A. in Translation and a member in good standing of the American Translators Association, hereby certify that, to the best of my knowledge and abilities, the foregoing is a true and faithful rendering into English of the Spanish text, made at the request of the interested party.
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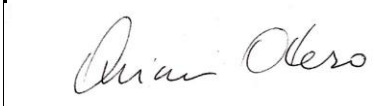	
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REUNIÓN PÚBLICA
LUGAR DE SUPERFONDO DE CONTAMINACIÓN
DEL AGUA SUBTERRÁNEA DE HORMIGAS, CAGUAS
3 DE AGOSTO DE 2016
CAGUAS, PUERTO RICO

Fecha: 3 de agosto de 2016
Hora: 6:00pm
Lugar: Centro Comunal El Mirador

Brenda Reyes: Buenas noches, buenas tardes todavía. Gracias a todos y a todas por estar aquí en la noche de hoy, en la tarde de hoy. Mi nombre es Brenda Reyes, oficial de asuntos públicos de la Agencia Federal de Protección Ambiental, oficina del Caribe, de la Región 2. Me encuentro aquí en la tarde de hoy acompañada de varias personas que han hecho posible esta reunión. Gracias a la comunidad que nos ha recibido tan cálidamente en el día de hoy, y gracias por su acostumbrada cooperación. Gracias a Guillermo Rivera, el planificador del Municipio de Caguas. Guillermo ha facilitado muchas cositas, y Pedro, que están por aquí, les agradezco infinitamente toda la ayuda brindada. Estos casos siempre requieren la ayuda de los municipios y la cooperación. CDM, nuestro contratista está representado aquí por José Reyes, Frances Delano y Mike Valentino. Y mi compañero de trabajo, el doctor Adalberto Bosque, quien es el gerente del proyecto, que va a estar ofreciéndoles una presentación en la tarde de hoy.

El lugar de Superfondo de agua subterránea de Hormigas, pues como ustedes saben, se encuentra ubicado aquí en la comunidad, en el Municipio de Caguas. Esto era un lugar donde se detectó contaminación en un abasto de agua. El Departamento de Salud tiene que hacer unos estudios periódicos a los abastos de agua, se cerraron los pozos, la EPA realizó durante los años 2011…

Frances Delano: Inicial 2009, y nosotros entramos en 2013

Brenda Reyes: …entre 2009 a 2011, y 2013 en adelante, estuvimos haciendo trabajos, haciendo investigación, a ver de dónde provenía esa contaminación. No se identificó lo que se conoce como el plumacho de contaminación, la procedencia de la contaminación, y entonces en la tarde de hoy estamos aquí para presentarles a ustedes los resultados de por qué estamos tomando la alternativa de No Acción. Así que sin mucho preámbulo les voy a dejar con el compañero Adalberto Bosque. Antes de, les voy a comentar lo siguiente: si tienen alguna pregunta, les voy a agradecer que la dejen para el final, para que Adalberto pueda dar la presentación, y entonces cuando vayan a hacer esa pregunta, por aquí hay un micrófono, deben decir su nombre para que conste en el record. Estamos…la reunión… se hace una transcripción de la reunión así que yo les voy a pedir que digan su nombre, cuando sea el momento de hacer las preguntas. Y nada, sin mucho preámbulo, les dejo aquí con Adalberto.

Adalberto Bosque: Bien, buenas tardes, es un placer estar con ustedes en esta tarde. Luego de un par de años, y compartir con ustedes con los residentes de esta área, y con los representantes del municipio, pues ha sido un placer estar con ustedes. Y principalmente para investigar el problema de contaminación. Inicialmente fue un problema, según estaremos viendo en las transparencias, que estaremos enseñando. Inicialmente hubo unos contratiempos, una contaminación en unos pozos. Realizamos una investigación, y le estaremos mencionando los pozos que se muestrearon y los resultados de esos pozos. A parte de los pozos de Acueductos y Alcantarillados, que fueron cerrados, que eran dos, Hormigas y Eufracia, también había otros pozos que son pozos privados. Ustedes estarán viendo, durante el transcurso de la presentación, que

se realizó la investigación, se muestrearon estos pozos, no solamente una, sino dos, tres, cuatro, cinco, seis veces; lo estaremos viendo y no se detectó contaminación. Quiere decir que la Agencia de Protección Ambiental Federal en anuencia con la Junta de Calidad Ambiental, y tenemos al ingeniero Omar Santiago con nosotros, representante de la Junta de Calidad Ambiental, pues estaremos presentándoles los resultados. Aparte de esto ya la compañera Brenda Reyes, indicó que las preguntas, al final de que terminemos la presentación. Cuando se termine la presentación, se va a abrir la sala, la reunión, para que puedan hacer preguntas. Necesitamos, por favor, que las preguntas sean de este caso, de este caso en particular. Si tuvieran alguna otra pregunta de alguna otra situación, o alguna preocupación, recuérdense, si es asunto del Municipio, pues con el Sr. Guillermo Rivera, se pueden comunicar. Si es un asunto que debe ser atendido por la Junta de Calidad Ambiental, pues se pueden acercar al compañero de la Junta de Calidad Ambiental, aunque él es el representante del programa de Superfondo, en la Junta de Calidad Ambiental, pues pudiera tomar nota. Pudiera tomar nota y quizás si tiene que hacer algún tipo de referido, pues hacer el referido.

Bien, estamos esperando un poquito para que se haga la presentación, pero yo creo que yo puedo seguir hablando y eventualmente vemos las transparencias, las podemos ver de una forma más rápida. *(Nota de la transcriptora: se refiere a que hay problemas con la proyección y lo están resolviendo).*

Bien, aquí el caso de Hormigas viene desde el año 2006. En el 2006, se detecta la presencia de unos compuestos orgánicos volátiles en el pozo Eufracia, pozo de abasto, de agua potable. Servían en ese momento el sistema de Hormigas, compuesto de

Eufracia y de Hormigas. Suplían, según la información que se nos proveyó, a aproximadamente cinco mil cuatrocientas (5,400) personas, eran las personas que recibían agua. Todo sistema de abasto de agua potable, tiene que tener una supervisión, del Departamento de Salud. El Departamento de Salud tiene un programa que se llama Programa de Agua Potable. Quiere decir que, cuando se suple agua, y principalmente Acueductos y Alcantarillados, como el caso de estos dos pozos, pues tiene que cumplir con unos muestreos. Cada cierto tiempo, son aproximadamente como cada 3 meses, tienen que tomar muestras, y tienen que cumplir. El agua que se le suple a la ciudadanía tiene que cumplir con unas concentraciones, una cantidad, no puede exceder unos límites para unos contaminantes. En el caso de nosotros, de este caso, los contaminantes que se detectaron hay uno que se conoce como tetracloroetileno. Lo van a ver en el documento, la abreviación es PCE, por sus siglas en inglés. Y otro TCE, excedieron los niveles, excedieron los niveles de 5 partes por billón. Quiere decir que cuando exceden estos niveles, el Departamento de Salud le dice, le exige o le pide a Acueductos y Alcantarillados que cierren estos pozos.

Cuando se cierran estos pozos, en el año 2009, las personas que se suplían… el sistema es sustituido, se cierra el sistema de Hormigas, compuesto por estos dos pozos. Cada uno de los pozos tenía aproximadamente, o tiene aproximadamente, trecientos treinta (330), trecientos y pico pies de profundidad. Se sustituye el agua que reciben los residentes por un sistema de Cidra. Entiéndase, según la información que nosotros tenemos, fue el sistema que tiene que ver una combinación entre el lago y el pozo en el lago de Cidra, área que no está impactada. No está impactada, quiere decir que se suplió, había agua para poderles suplir. Una vez la agencia tiene conocimiento de esta

contaminación procede entonces la agencia a realizar un muestreo inicial de siete pozos privados que están en el área… siete pozos privados, inicialmente. Para saber, porque ya tenía una información, cierta información de los pozos de Hormigas y Eufracia. Los pozos de Hormigas y Eufracia estaban cerrados, quiere decir que la gente ya no estaba tomando agua que pudiera estar contaminada, ¿no?, o que estaba contaminada. Quiere decir que la agencia procede y muestrea siete pozos. Los siete pozos que se muestrearon están en la página 5 a la parte superior, si esta versión es…espero que sea la misma, que no sea una versión posterior o anterior *(Nota de transcriptora: se refiere al documento del plan propuesto que tiene en sus manos) …* fueron Villa Vigía, El Paraíso, Los Velázquez, La Sierra 1, La Sierra 2 y La Sierra 3. Esos fueron inicialmente. Porque posteriormente, cuando estos no detectan contaminación, se sabe que no están contaminados, que no están impactados… ¿tiene una pregunta luego? *(Nota de la transcriptora: La pregunta va dirigida a señora del público que levanta su mano)*

Señora del Público: La página 4.

Adalberto Bosque: La página 4, gracias. La página 4 en el documento que ustedes tienen. Bien, cuando se determina entonces, y se comprueba que estos pozos, 7 pozos, no están contaminados, quiere decir que los que los están utilizando no están tomando agua, ingiriendo agua contaminada, pues la agencia entonces realiza este muestreo inicial. Entonces en el año 2011 se incluye este lugar en la Lista Nacional de Prioridad. En la Lista Nacional de Prioridad de la Agencia de Protección Ambiental Federal. Hay un procedimiento, y me detengo un momento para que veamos el procedimiento. La Agencia de Protección Ambiental Federal, creada en 1970, tiene diferentes leyes que tiene que hacer cumplir. Uno de los programas que tiene la Agencia de Protección

Ambiental Federal se conoce como el programa de Superfondo, así se conoce. Se conoce porque cuando se creó en 1980…estamos llegando *(Nota de la transcriptora: se refiere a la proyección de la presentación que está siendo arreglada).* Se creó en 1980, se estableció un fondo billonario para poder llevar acabo la identificación, la investigación, y posterior limpieza de lugares contaminados, y eso establece unos procedimientos. ¿Qué sucede? La Agencia de Protección Ambiental Federal tiene diferentes maneras para poder saber que hay contaminación. Uno, que Acueductos y Alcantarillados tome muestras de sus pozos, tiene que someter reportes al Departamento de Salud, la Agencia de Protección Ambiental Federal es notificada de que hay un problema de contaminación, por lo tanto, la agencia interviene para realizar la investigación.

Voy rapidito a la secuencia y disculpen que ahora… para irnos con la presentación *(Nota de la transcriptora: ya se está proyectando la presentación y vemos en pantalla la laminilla número 2: Enfoque de los Estudios)*. Estos son prácticamente los objetivos generales del estudio. Una vez se identifica lugares en los cuales hay contaminación… la agencia procede a hacer una investigación para determinar la magnitud y la extensión de la contaminación. La extensión y la magnitud de la contaminación se determinan a base de unos estudios. Estos estudios pueden costar millones de dólares, o sea, vale un millón de dólares, puede salir en 800, 900, un millón de dólares o más, estudios como éste. Para determinar la magnitud y la extensión de la contaminación, identificar cuáles son los contaminantes, identificar las concentraciones de los contaminantes que pudieran estar presentes, identificar también su distribución de una forma vertical y determinar su distribución también en una forma horizontal. Determinar hasta dónde, si

hubiera contaminación, hasta dónde se extiende la contaminación y quiénes, y de qué forma pudieran estar impactados, eso es bien importante. Por eso es que cuando nosotros hacemos la investigación… evaluamos si los pozos Hormigas y Eufracia estaban cerrados. Estamos claros ahí, nadie está tomando agua de ellos. ¿Se suple la gente de otro lugar? Sí. Ok, estamos claros ahí. ¿Hay otros pozos privados que puedan estar en el área? Se identificaron pozos privados. La agencia rápidamente, tan pronto tuvo conocimiento, procedió y realizó ese muestreo inicial de esos pozos. A parte de eso, una vez tengamos, o se tiene la información con relación a los contaminantes, las concentraciones que están presentes, se hace un estudio que se llama un avalúo de riesgo. O sea ¿Las concentraciones presentes en ese lugar representan un riesgo no aceptable para la salud de las personas? Y dije riesgo no aceptable porque cuando hablamos de riesgo, y eso lo aprendí yo cuando empece en EPA. Cuando comencé con la Agencia de Protección Ambiental Federal, mi primera reunión con la comunidad era un lugar de No Acción, como aquí, No Acción. No se va a hacer, no hay que hacer nada. Y una persona de la comunidad me dice “Ingeniero, ¿me quiere decir que no hay riesgo aquí, de mudarnos en ese sitio? Era una facilidad abandonada que se investigó, supuestamente había habido derrames, y yo muy cándidamente le conteste “No, no hay riesgo, allí puede mudarse una familia, puede haber una escuela, cualquier tipo de actividad porque no hay riesgo” Y automáticamente un doctor en toxicología se levantó, y yo dije “¿qué va a pasar aquí?” Se levantó y dijo: “Bueno yo…” Y yo dije: “Ahh, aquí fue, un bañito de agua fría”. Y dijo, “bueno yo quiero aclarar un poco lo que dijo el ingeniero”. Y yo dije: “eahh”. Y dijo: “Cuando hablamos de riesgo, nunca podemos decir que no hay riesgo, porque cuando usted se levanta de su cama ¿hay riesgo, o no hay

riesgo? Hay riesgo de que usted tropiece y se caiga. Cuando usted cruza una calle ¿hay riesgo, o no hay riesgo? Hay riesgo. Cuando usted se monta en su automóvil y sale de aquí o llegó aquí había un riesgo. Cuando usted se monta en un avión hay riesgo. Pero el riesgo se dice que es aceptable, y como es aceptable guiamos vehículos, nos montamos en el avión, etcétera, etcétera, hacemos las actividades. Porque si el riesgo no fuera aceptable, definitivamente no estaríamos realizando ese tipo de actividad. Riesgo a la salud humana se evalúa, así también se evalúa cualquier daño o efecto adverso que pueda haber al ecosistema. Se determina, hay estudios que se hacen que se buscan los pajaritos, el tipo de pájaro, el tipo de vegetación, el ecosistema completo, que pueda haber en el área y si hubiera un riesgo o no aceptable para esos organismos por la contaminación y los contaminantes que se hayan detectado. El tercer objetivo fue realizar un estudio de viabilidad. El estudio de viabilidad es un estudio que realiza, una vez se determina que hay que tomar acción, se evalúan diferentes alternativas de cómo lidiar con ese problema de contaminación, ese problema que no es aceptable, ese riesgo que no es aceptable. En este caso no hubo que realizar el estudio de viabilidad porque se determinó queel riesgo era aceptable. Por último, aquí tenemos: presentar las alternativas recomendadas, ese es parte del proceso. En este caso no hay que presentar las alternativas porque el riesgo es aceptable y la recomendación de la Agencia de Protección Ambiental Federal, con el visto bueno del gobierno de Puerto Rico, a través de la Junta de Calidad Ambiental, es que no hay que hacer nada. ¿Bien? Seguimos.

(Nota de la transcriptora - Se pasa a la laminilla 3: Proceso de Superfondo)

Éste es prácticamente el proceso que se sigue desde el descubrimiento del lugar, de que hay un problema de contaminación hasta el final de la investigación. Tenemos por aquí

desde el descubrimiento del lugar, se descubre el lugar, la Agencia de Protección Ambiental Federal tiene conocimiento, se realiza una evaluación inicial donde la Agencia de Protección Ambiental Federal busca información para determinar si efectivamente hay contaminación, no hay contaminación, si hay posibles fuentes de contaminación. Y eso la agencia lo hizo, para determinar, cuál puede haber sido la fuente de esa contaminación, eso se hace, y estaremos mencionando. Se incluye, eventualmente, en el año 2011, en lo que se conoce como la Lista Nacional de Prioridad, que es una lista a nivel de Estados Unidos, donde se le da prioridad a aquellos lugares que ameriten investigar, y de ser necesario remediar. Quiere decir que el caso de Hormigas cuando se hizo la evaluación inicial, aquí dice un sistema de puntuación, se realiza un sistema de puntuación, y si ese sistema de puntuación excede de 28.5, eso fue arbitrario, se busca ¿cuántas personas toman agua subterránea en el área a media milla?… tantas, y le dan cierta puntuación. ¿Cuántas personas toman agua subterránea? Hay pozos en una milla, ¿cuántas personas se bañan en el río aproximadamente? Etcétera, etcétera. Las formas que uno se pudiera estar exponiéndose. Entiéndase que las rutas de exposición que nosotros tenemos son inhalación, ingestión y contacto dermal. Hay otra que es inyección, pero regularmente las tres principales es inhalación, ingestión y contacto dermal. Nosotros si tomamos agua contaminada, estamos ingiriendo un contaminante. Si los vapores…calentamos el agua, cuando una persona se da la ducha, y hay un compuesto que se va a la atmósfera, se evapora, pues podemos estar respirándolo. Y contacto dermal es si la persona se baña y entra en contacto con ese contaminante. Se incluyó el lugar en la Lista Nacional de Prioridad en el año 2011 y, eventualmente, del año 2013 al año 2016, la Agencia de Protección Ambiental Federal

realizó la investigación que le estaremos mencionando en esta tarde. Pero antes había tomado muestras de pozos en el área para determinar que no hubiera un riesgo eminente. Porque si la Agencia de Protección Ambiental Federal…hay lugares que la agencia interviene… en el pueblo de Corozal, en el pueblo de Corozal hay un lugar que está en la Lista Nacional de Prioridad que se llama el Caso de Corozal, agua subterránea en Corozal, donde hay un pozo "Non PRASA que se contaminó, y la agencia lo que hizo fue, cuando intervino la Agencia de Protección Ambiental Federal, fue instalar un sistema de carbón activado, un sistema para remover ese contaminante, y que las personas pudieran utilizar un agua cumpliendo con los parámetros de agua potable. Quiere decir que la agencia si ve que hay un riesgo que la gente pudiera estar expuesta a él, pues entonces la agencia estaría tomando medidas. En este caso no hubo la necesidad, ni inicialmente, ni posteriormente cuando se hizo la investigación completa. ¿Bien?

(Nota de la transcriptora - Se pasa a la laminilla 4: Mapa de Localización)

Tenemos por aquí la ubicación, pues ya prácticamente nosotros sabemos la ubicación, donde estamos ubicados.

(Nota de la transcriptora - Se pasa a la laminilla 5: Descripción del lugar)

Hormigas, Eufracia, y las áreas aledañas que incluían los pozos cercanos que estaban cercanos, y áreas aledañas a los pozos.

(Nota de la transcriptora - Se pasa a la laminilla 6: Trasfondo Histórico)

Para poder determinar, la agencia trató de identificar posibles fuentes. Inicialmente la agencia tomó muestras de Eufracia, inicialmente, dice el último parrafito, dice: "La agencia tomó muestras del pozo Eufracia y muestras de cada uno de los siguientes

pozos” Y aquí menciono los pozos que se muestrearon inicialmente: El Pozo Villa Vigía, El Paraíso, Los Velázquez, La Sierra 1, La Sierra 2, y La Sierra 3. Recuérdense cuando se lleva a cabo un muestreo de unos pozos pues también se tiene que tomar en consideración la ubicación de esos pozos versus el área contaminada para poder tener esa información. Posteriormente se hicieron seis “rounds” de muestreos de pozos, que incluyó el pozo Villa de Oro, se incluyó en ese muestreo, seis rondas de muestreos.

(Nota de la transcriptora - Se pasa a la laminilla 7: Trasfondo Histórico)

Cuando la Agencia de Protección Ambiental Federal en el año 2009 tomó muestras del pozo Eufracia, detectó la presencia o la concentración de 260 partes por billón. El estándar de agencia potable son cinco (5), y así sucesivamente una serie de otros contaminantes como tricloroetileno, que se conoce con la abreviación de TCE, cincuenta y nueve (59) a sesenta (60) ppb y otros contaminantes que son orgánico volátiles. Entiéndase que en la cadena de degradación está el papá, pudiera estar el papá, que es PCE, tetracloroetileno. Tetracloroetileno pudiera estar en el ambiente, puede haber una atenuación natural. Se puede convertir en TCE en tricloroetileno, y así sucesivamente en los demás. Necesariamente no quiere decir que el papá es más peligroso, hay veces que los que salen de él son más peligrosos. Entendiendase que hay otros contaminantes como el tricloroetileno y el DCE que pueden ser comprados directamente. El tetracloroetileno y el tricloroetileno se usan generalmente como solventes. A veces los utilizan para sacar la grasa, y el tetracloroetileno se utiliza también en los “dry cleaners”. Por eso fue que cuando Agencia de Protección Ambiental Federal tiene conocimiento, pues entonces ¿qué hace?, identifica siete facilidades en el área. La agencia dice “tengo que llevar a cabo una investigación en esas siete facilidades para determinar si alguna

de ellas es responsable, y si es responsable pues tomar acción de remediación o exigirles a los dueños que tomen las acciones necesarias para que no se escapen más contaminantes".

(Nota de la transcriptora - Se pasa a la laminilla 8: Trasfondo Histórico)

Realiza ese muestreo en esas siete facilidades: Taller Pototo, Mariel T-Shirts, San Lorenzo Busline, County Professional Dry Cleaners, JR Auto Body Collision & Paint y Taller González. Realiza un muestreo de suelos, visita a esas siete facilidades y no detecta la presencia de estos compuestos orgánicos volátiles. Con la excepción en un momento, donde se detectó un poco de contaminación, pero bien leve, por debajo de los límites de acción, en el dry cleaners. Pero también el dry cleaners está ubicado en la Carretera 172 que está distante, el agua subterránea se entiende que de allá no viene para acá. Cuando la Agencia de Protección Ambiental Federal hace la investigación determina que no hay que hacer ningún tipo de acción allí, en ninguna de estas siete facilidades. En el año 2011 yo les mencioné lo que sucedió, se incluyó en la Lista Nacional de Prioridad y de 2013 al 2016 es que se realiza la investigación cuyo resultado estaremos mencionando en esta tarde.

(Nota de la transcriptora - Se pasa a la laminilla 9: Mapa)

Esta es el área, los puntitos azules representan los pozos, los pozos privados. Los pozos privados, yo les mencioné que inicialmente se muestrearon siete, posteriormente se incluyó Villa de Oro, para un total eventualmente de seis pozos. Estos seis pozos, más hay dos pozos que se conocen, los tenemos como pozos Sin Nombre, no tenemos nombre de esos pozos. Los "unnamed", son los que están a la parte de arriba, son los

pozos Sin Nombre. Y se hincaron, se construyeron cuatro pozos; uno a 300 pies de profundidad, otro a 330 pies de profundidad y otros dos, lo que se conoce como llanos, aproximadamente a 110, 100 pies de profundidad. Todos estos pozos se muestrearon.

(Nota de la transcriptora - Se pasa a la laminilla 10: Investigación Remediativa)

Con relación al suelo y vapores que puedan estar siendo liberados, liberando del agua contaminada que pudiera haber habido en el área, la Agencia de Protección Ambiental Federal hizo doce perforaciones, doce barrenos en el área. En este caso, los doce barrenos se dirigieron hacia el área donde estaba Eufracia porque allí estaba prácticamente la contaminación, para tratar de identificar una posible fuente de contaminación, o áreas que estuvieran contaminadas. Se tomaron 55 muestras de suelo y no se detectó la presencia de estos compuestos orgánicos volátiles. Así también se llevaron a cabo unas pruebas que se conocen como un estudio de muestreo de vapor del suelo. Que no es otra cosa que tratar de muestrear vapor que pueda estar…estos contaminantes que se volatilizan pudieran estar saliendo. Se toman muestras y no se detectó tampoco la presencia de estos compuestos orgánicos volátiles. Quiere decir que no había contaminación ni de suelos, ni de estos vapores saliendo del agua y/o suelo. A diferencia, nosotros tenemos otro lugar en San Germán que la concentración es hasta 65,000 partes por billón (ppb) en aguas subterraneas. Sesenta y cinco mil partes por billón de tricloroetileno y veinticuatro mil o veintinueve mil partes por billón de tetracloroetileno. Y hay estructuras…porque cuando usted tiene un contaminante orgánico volátil, se volatiliza, va subiendo, y si hay una estructura va subiendo, y se queda debajo de la estructura, bien sea vivienda o cualquier tipo de facilidad, y si hay alguna grieta, eventualmente sigue y entra dentro de la casa o de la facilidad. Pero en

este caso de Hormigas no hay contaminantes, se tomó muestras de suelo y no hay contaminantes en el área. Se tomó muestras de vapores y tampoco se detectó contaminación.

(Nota de la transcriptora - Se pasa a la laminilla 11: Mapa)

Aquí podemos ver los puntos donde se realizaron estas pruebas. Importante mencionar, en el área de ambiental, de planificación y ambiental, hay copias de los documentos de la investigación que se realizó. Si en algún momento usted tiene alguna pregunta en confianza me pueden llamar, el teléfono mío está en el documento, y muy amablemente, gustosamente podemos dialogar. Y si yo tengo que venir aquí en confianza soy cagueño, o sea que vivo aquí en Caguas. Es un placer venir aquí, es muy bonito venir a esta área, no me va a estar malo.

(Nota de la transcriptora - Se pasa a la laminilla 12: Mapa)

Estos puntos presentan las áreas donde se muestreó para vapor. Como ustedes verán, ustedes ven que está para las áreas de las casas, para acá, donde está la carretera que nos lleva a Eufracia, donde está al final Doña Judith, muchas gracias por su ayuda y paciencia. También ven a la parte superior que también están los puntitos, no se encontró contaminantes.

(Nota de la transcriptora - Se pasa a la laminilla 13: Investigación Remediativa)

Como parte de nuestra investigación, yo les mencioné que también se muestrearon otros tres pozos, dos pozos que se conocen como los pozos Sin Nombre y Villa de Oro. Se tomaron muestras de estos pozos y no detectaron la presencia de los compuestos identificados, estos compuestos orgánicos volátiles. Se procedió entonces a tomar

muestras del pozo Hormigas y Eufracia. Inicialmente se tomó muestras sin haber desarrollado estos pozos, y en el pozo Eufracia vamos a ver que se detectó la presencia de contaminantes, pero ustedes van a ver la concentración, fue .92 ppb, que está muy por debajo de la concentración establecida para agua potable. Quiere decir que es una concentración, que cuando se hace el avalúo de riesgo, no representa una concentración inaceptable. Cuando hablamos del desarrollo de los pozos, yo les mencioné ahora mismo el desarrollo de los pozos porque posteriormente se desarrolló el pozo. Lo que tenemos prácticamente es lo siguiente:

(Nota de la transcriptora – El orador toma un papel en la mano y lo enrolla en forma de tubo)

Si yo cojo este papelito… Inicialmente cuando se vio el pozo Eufracia y Hormigas es como si yo tuviese este tubito aquí y tomara una muestra aquí. En este tubito hay agua aquí, si yo tomo lo que yo quiero regularmente se desarrolla un pozo, se bombea no sé si 2, 3 veces, 4 veces el volumen de ese pozo para entonces, se toma la muestra en el pozo y la muestra es representativa de lo que hay ¿dónde?. Recuérdense que inicialmente el pozo en el año 2009, fue cuando se había muestreado, del 2009 al 2013 no se había muestreado, quiere decir que cuando inicialmente se toma una muestra, así como está, y detectó la presencia de aproximadamente .92 partes por billón de tetracloroetileno. El pozo Hormigas no detectó la presencia de compuestos orgánicos volátiles. Quiere decir entonces que la Agencia de Protección Ambiental Federal, a través de sus contratistas, procedieron a desarrollar ambos pozos para tomar muestras y llevar a cabo otra serie de estudios y muestreos en esos pozos. Les mencioné el último parrafito, nos dice a nosotros que se hicieron unos barrenos para tomar muestras de

suelo. A la vez que se tomaron muestras de suelo, cuando se llegó al agua, y yo entiendo que el agua era aproximadamente como 30 pies, cuando se tocó el agua, automáticamente tomamos muestras de agua para aprovechar y no se detectó la presencia de estos compuestos orgánicos volátiles. Inicialmente yo les mencioné que se determina cuáles son unas fracturas. Fracturas son el área como si fueran los orificios por donde puede pasar el agua subterránea. Inicialmente fue sin desarrollar, se tomaron muestras, y el parrafito por aquí lo que les dice es, lo que yo les mencioné anteriormente, que la concentración de tricloroetileno que se detectó fue .92 ppb. Eso es prácticamente nada, entiéndase que el nivel de agua potable es 5, si excede de 5 entonces se levanta una banderita. No quiere decir que si yo tomo 5 me va a dar cáncer, porque hay un estudio completo de eso. Eso es como cuando uno va al médico. Cuando uno va al médico el doctor le pregunta ¿usted fuma o no fuma? ¿su papá, su mamá? Etcétera, etcétera. Hay otros factores que pudieran estar incidiendo en la condición o en la prevalencia de algún tipo de enfermedad.

(Nota de la transcriptora - Se pasa a la laminilla 15: Investigación Remediativa)

Para el contaminante Cis-1,2-DCE se detectó, la concentración máxima fue de 1.7 partes por billón, el estándar es 70, que está muy por debajo. Ese resultado fue sin desarrollar el pozo. Posteriormente se desarrolló, se instalaron lo que se conoce como unos "multiport", unos puertos múltiples, que son un sistema para poder tomar muestras a diferentes profundidades. Porque el pozo usted quiere muestrearlo a diferentes profundidades. Recuérdense, esos pozos cuando inicialmente se investiga se hace un estudio que se meten unas camaritas y se hacen una serie de estudios para saber qué áreas son las áreas donde produce más agua, donde está fluyendo el agua para

entonces saber en qué área se estarían tomando las muestras. El pozo se desarrolla y eventualmente se volvieron a muestrear el pozo Hormigas y Eufracia y no detectaron la presencia de estos compuestos orgánicos volátiles.

(Nota de la transcriptora - Se pasa a la laminilla 16: Investigación Remediativa)

Por lo tanto, se comienza lo que nosotros conocemos como el "round 1 de muestreo". En el "round 1 de muestreo", recuérdense que habíamos muestreado anteriormente. En el "round 1 de muestreo, se muestrea Villa de Oro, y se toma también muestras del pozo Sin Nombre 1, pozo Sin Nombre 2, el pozo Hormigas, y el pozo de Eufracia, siendo el pozo Eufracia convertido ya en un multipuerto. Quiere decir que había cinco lugares, cinco diferentes profundidades que se podía estar tomando muestras, se tomó muestras del pozo Eufracia. El resultado fue que no se detectaron la presencia de contaminantes en estos pozos. Procede entonces la agencia a realizar una ronda número 2, un segundo muestreo. Cuando digo segundo muestreo, recuérdense que anteriormente yo les dije que se había tomado un muestreo. Se lleva a cabo lo que nosotros conocemos como la segunda ronda de muestreo. La segunda ronda pues ya se había conectado los "multiports" en estos pozos para poder tomar muestras a diferentes profundidades. Se incluyeron los mismos pozos de la ronda número 1: Villa de Oro, Hormigas, Eufracia, ya en cinco distancias, cinco profundidades diferentes y tampoco detectó la presencia de compuestos orgánicos volátiles. Posteriormente la Agencia de Protección Ambiental Federal determina y dice "bueno ya muestreamos el pozo Hormigas, el pozo Eufracia, Villa de Oro, los dos pozos sin nombre, muestreamos estos siete pozos que yo mencioné anteriormente. Tengo que hincar algunos pozos adicionales. Y esos son los pozos que en algún punto frente a la casa de Doña Judith se hincaron 2 pozos allí, que son uno

profundo de 330 de profundidad, y uno llano de 110 pies aproximadamente, y otro donde está Eufracia, después de Eufracia en la parte de abajo de 330 pies de profundidad. La diferencia es, recuérdense que Eufracia está abajo en la depresión abajo, otro pozo llano se tomó muestras de estos pozos y no se detectó la presencia de los compuestos orgánicos volátiles.

(Nota de la transcriptora - Se pasa a la laminilla 17: Investigación Remediativa)

Se procedió entonces a la ronda número 3, en la ronda número 3 se muestreó Villa de Oro, se muestrearon los 2 pozos instalados, ahí no se muestreó ni Hormigas, ni se muestrearon los 2 pozos sin nombre, porque ya se sabía hacia dónde fluyen las aguas subterráneas. Pero si se volvió a muestrear Villa de Oro y los pozos que se hincaron, los 4 pozos que se habían hincado previo a la ronda número 3. Ronda número 4, se muestrearon de nuevo los mismos pozos, Villa de Oro, Eufracia, y los 4 pozos que se hincaron en el área para determinar si había alguna contaminación, ¿qué pasó con ese contaminante? ¿se fue un poco más gradiente abajo del agua de la ubicación del pozo Eufracia? Gradiente abajo en la dirección del agua subterránea y no se encontró la presencia de compuestos orgánicos volátiles. ¿Qué puede haber pasado con la contaminación? Eso es una buena pregunta. Esa es una pregunta de un millón de dólares. Se realizó una investigación, se muestreó gradiente arriba…si el agua subterránea va en esta dirección se muestrea gradiente arriba, se muestrea en el punto donde está la contaminación y se muestrea hacia donde fluye el agua subterránea. Lo que entendemos que puede haber pasado es que haya sido un evento de una ocasión. Quizás alguien utilizó, o no utilizó o descartó alguno de estos tipos de sustancias químicas, fue un solo evento, posiblemente cuando el pozo de Eufracia estuvo en

operación extrajo poco, se extrajo y prácticamente remedió. Porque cuando hay un problema referente a agua subterránea una de las alternativas es extraer agua subterránea y tratar el agua subterránea para poder remover ese contaminante. Otra alternativa, y puede ser una combinación de todas, es que naturalmente los contaminantes se hayan ido degradando. Independientemente cuál haya sido la razón, o la combinación de razones, lo que sí podemos decir es que no hay contaminantes. Cuando se hace la investigación no hay contaminantes en el área. Y que los pozos que nosotros muestreamos, les dije los pozos donde se realizó, pues no están contaminados con estos compuestos orgánicos volátiles. Eso es bien importante. Una pregunta que me han hecho ya, y es bueno explicarla. Hay personas que me han dicho "¿ese pozo Acueductos y Alcantarillados pudiera utilizarlo en el futuro?" La Agencia de Protección Ambiental Federal definitivamente no interfiere en este asunto. Esa es una decisión del gobierno, entiéndase, de Acueductos y Alcantarillados. Si ve la necesidad, de que la gente necesita agua, pues tiene que suplir. Lo que sí nosotros podemos decir como agencia, y la Junta de Calidad Ambiental, porque concurre con la decisión, y estuvo envuelta desde el día uno en la investigación, es que no hay contaminación, y el riesgo es aceptable. En el futuro, si hubiera la necesidad de volver a utilizar dichos pozos, pues definitivamente, Acueductos y Alcantarillados tiene que hacer contacto con el Departamento de Recursos Naturales, quien es que otorga la franquicia para extraer agua y también tendría que hacer contacto con el Departamento de Salud con el programa de agua potable que es quien regula el suplido y la calidad del agua que se le suple a las personas que necesiten esa agua para ser ingerida, o el uso que le estarían brindando.

(Nota de la transcriptora - Se pasa a la laminilla 18: Mapa)

Aquí podemos ver la ubicación de los pozos. Los puntos amarillos son los pozos sin nombre. Los pozos que tenemos por allá, el azul, aquí tenemos Villa de Oro, y aquí tenemos el pozo Eufracia, y tenemos aquí los cuatro pozos. En cada uno de estos pozos tenemos dos pozos. Como mencioné anteriormente hay uno profundo, uno llano y eventualmente uno profundo y uno llano. Eso es lo que tenemos hasta el momento con relación a la investigación realizada.

(Nota de la transcriptora - Se pasa a la laminilla 19: Investigación Remediativa)

Cuando hablamos del agua superficial, les mencioné también que la agencia tomó muestras del agua superficial. Hay una quebradita, por donde pasa Eufracia, por esta zona que nosotros la identificamos como Quebrada Sin Nombre. No tiene nombre, por lo menos en el momento de la investigación no tiene nombre, que pudiéramos tener conocimiento. Se tomó muestra de los sedimentos en esa quebrada, porque hay veces que puede haber unos contaminantes que se depositan en los sedimentos y eventualmente pudiera haber algún tipo de contacto. No se detectó la presencia de estos contaminantes, de los contaminantes que se llevó a cabo la investigación, no se detectó contaminación ni en el área superficial ni en los sedimentos de esta quebradita. Esta quebradita que transcurre en el área.

(Nota de la transcriptora - Se pasa a la laminilla 20: Mapa)

Aquí podemos ver los puntos donde se tomaron las muestras de agua superficial, así también como de sedimentos, aquí los podemos ver.

(Nota de la transcriptora - Se pasa a la laminilla 21: Resumen de Riesgo en el Lugar)

Resumen del riesgo, del estudio de riesgo. Yo les mencioné como lo que se conoce como riesgo aceptable y el riesgo no aceptable. La Agencia de Protección Ambiental Federal utiliza unos valores para saber si el riesgo es aceptable o no aceptable. Hay unos valores de 1 persona en 10,000 a 1 persona en 1,000,000. Es aceptable uno en diez mil o uno en un millón, eso es aceptable. Hay una forma en que se obtienen esos números. Pero prácticamente en este sitio lo que se evaluaron fueron varios escenarios. Prácticamente en este sitio se evaluaron las formas en que las personas pueden entrar en contacto. Si hubiera un contaminante, cómo pueden entrar en contacto con ese contaminante. Es residente niño o adulto que puedan ingerir agua contaminada, puede haber contacto dermal, puede haber inhalación de vapores. En este caso y en todos los casos se evalúa ese escenario. En este caso no hay problema porque no hay contaminante. Quiere decir que la gente, si utilizara ese recurso agua, pues no hay contaminantes, quiere decir que no estaría ingiriendo agua contaminada. En usuarios recreativos adolescentes que vayan y caminen por el área, se metan por la quebradita, tomen agua, etcétera, etcétera. En este caso no hay problema porque el agua superficial, los sedimentos de ese río no están contaminados. El tercer escenario fue los trabajadores de construcción, personas que lleven a cabo un tipo de construcción en el área, y si pudiera haber terreno contaminado, que estén en contacto con ese suelo contaminado. En este caso se tomó muestras de suelo, se tomó muestras de agua superficial, se tomó muestras de sedimento, se tomó muestras de vapores, posibles vapores y no se encontró, o no se detectó, contaminantes relacionados. Los que estamos mencionando, estos contaminantes en cuestión.

(Nota de la transcriptora - Se pasa a la laminilla 22: Resumen de Riesgo en el Lugar)

En base a estos resultados de la evaluación del riesgo, el avalúo del riesgo que se realizó a la salud humana, el riesgo es aceptable.

(Nota de la transcriptora - Se pasa a la laminilla 23: Recomendación)

Quiere decir que la Agencia de Protección Ambiental Federal y también en base al avalúo del riesgo, a la evaluación del riesgo al ecosistema, la agencia está recomendando la No Acción. La No Acción para el lugar.

(Nota de la transcriptora - Se pasa a la laminilla 24: Periodo de Comentarios)

Eventualmente el procedimiento es el siguiente, se estableció, se abrió un periodo de comentarios públicos, el 20 de julio. Hay 30 días de periodo de comentarios, donde cualquier persona, cualquier entidad que tenga algún tipo de pregunta puede hacerle llegar los comentarios a la Agencia de Protección Ambiental Federal y estaremos respondiendo a esos comentarios. Una vez transcurridos esos 30 días si no hay más comentarios se procede a preparar un documento que se conoce como el Record de Decisión. En ese documento la Agencia de Protección Ambiental Federal tiene que proveer información completa más detallada que la que ustedes tienen en sus manos, ese documento que se llama Plan Propuesto. Y aparte de eso todo lo que se diga aquí va a haber una transcripción tanto en inglés como en español y va a estar en ese documento. La Agencia de Protección Ambiental Federal tiene que establecer y proveer un poco más de información, resultados, así también la recomendación, y la decisión que estaría tomando una vez ya tengamos el visto bueno, como yo mencioné anteriormente a través de la Junta de Calidad Ambiental. Ese es prácticamente el procedimiento. Luego que se firme el Record de Decisión, eventualmente la agencia realizaría los

procedimientos para remover el lugar de la Lista Nacional de Prioridad. Esto es para que no esté en una lista que, de Estado Unidos, o cualquier sitio, no digan “allí hay un sitio contaminado”. No, la agencia realizó una investigación, se documentó deque el riesgo es aceptable, quiere decir que no hay contaminación que pueda crear algún tipo de problema a la salud humana ni al medio ambiente. Con esto prácticamente yo entiendo que termino la presentación. Si alguien tiene alguna pregunta estamos a la mejor disposición de contestarle la pregunta. Si no tenemos la contestación nos la llevamos de asignación y le podemos luego contestar la pregunta.

Carmen Rosario: Vivo aquí en esta comunidad de Hormigas. Mi pregunta es la siguiente, esos dos pozos que usted dice pozos sin nombre ¿esos son en propiedad privada?

Contestan del público: Eso es en el Sector Los Báez

José Reyes: Si en el sector Los Báez, no son pozos activos.

Carmen Rosario: Sí, porque él menciona dos pozos sin nombre…

Adalberto Bosque: Aquí tenemos el mapa, aquí tenemos un mapita más grande para que podamos ver la ubicación. Mire aquí los pozos sin nombre.

Carmen Rosario: porque usted dice pozos sin nombre, y pregunto si son aquí en nuestra comunidad de Hormigas, porque nosotros conocemos el pozo Báez como el pozo que usted dice el pozo…Usted mencionaba el Eufracia y mencionaba…

Adalberto Bosque: Hormigas

Carmen Rosario: Hormigas, ese de Hormigas es el que está arriba ¿verdad? alto que hay que subir, ¿Qué vive la familia Báez, allí alrededor del pozo?

Adalberto Bosque: Hormigas es el que está en la carretera principal, pero hay una bajada grande para llegar al pozo Hormigas.

Carmen Rosario: Ese es el de Eufracia el que usted mencionaba.

Adalberto Bosque: No, por aquí nosotros tenemos Hormigas. Este es el pozo Hormigas… *(se refiere al mapa que está al frente)*

Carmen Rosario: ahh, ok, por el sector de la familia Báez

Adalberto Bosque: Y tenemos Eufracia que es por donde vive Doña Judith

Carmen Rosario: Doña Judith. Y entonces arriba, que fue el primero que teníamos en la comunidad, que es el que está arriba en el Sector de Santiago Rivera que ya ese tampoco se está usando ¿verdad?

En el público hablan, pero no se percibe la conversación.

Carmen Rosario: Ah, porque aquello es un tanque.

Frances Delano: Sí, buenas noches, mi nombre es Frances Delano. Estos pozos nunca fueron pozos de agua para la comunidad. Son pozos que se barrenaron, los abandonaron y nosotros los muestreamos, por eso decimos Sin Nombre, porque nunca oficialmente se utilizaron. Están dentro de una finca.

Carmen Rosario: Ah, ok, ¿Qué están dentro de esa finca, pero que eso no está…? Es para beneficio de toda la comunidad que tengamos eso claro, porque cuando están mencionando esos dos pozos, si nosotros aquí en la comunidad conocemos el de

Eufracia, y ese otro que está por el Sector Los Báez, y el tanque arriba que era de donde nos suplíamos la comunidad que es subiendo para la familia Santiago.

Adalberto Bosque: Perfecto. En el caso de nosotros independientemente que el pozo no se utilizó, pues tenemos que aprovechar de que hay un pozo ya hincado. Eso es menos dinero de inversión en la investigación. Quiere decir que aprovechamos de que estos pozos estaban allí y se tomó muestra.

Carmen Rosario: ¡Ah! Ok

Adalberto Bosque: Lo importante de tomar muestra de agua subterránea es para saber si el contaminante se está moviendo en esa dirección. Eventualmente nosotros pudimos ver que el contaminante está en esta zona. Recuerden que en el año 2009 cuando se tomó muestra se encontró la presencia del contaminante aquí. Por eso es que se va cerrando el círculo. Pozos privados, eventualmente se sigue manteniendo este, Villa de Oro, y se incluye Hormigas, se incluyen los Sin Nombre, para ir cerrando el círculo, y cerrando hasta que llegamos hasta el pozo donde estaba la contaminación y eventualmente, no solamente muestrear en esta zona, si no también muestreamos gradiente abajo de este pozo para poder determinar si hay contaminación más allá. Determinar qué pasó con la contaminación, eso es prácticamente lo que se realizó.

Carmen Rosario: Gracias. Contestada mi pregunta.

Adalberto Bosque: A la orden.

Ernesto Díaz Guzmán: Buenas noches, mi nombre es Ernesto Díaz Guzmán yo fui presidente de la comunidad en cuestión de acueductos, cuando Acueductos era de la

comunidad. Y yo bajaba a esos pozos que teníamos 2 activos. Eufracia que ustedes llaman y el que llaman que está cerrado.

Adalberto Bosque: ¿Hormigas?

Ernesto Díaz Guzmán: Sí. En ese tiempo esos dos pozos eran los que teníamos para suplirle agua a la comunidad. El acueducto era de la comunidad, no era de...

Adalberto Bosque: Eso fue inicialmente antes de que Acueductos y Alcantarillados tomara control de esos pozos.

Ernesto Díaz Guzmán: Exacto. Entonces pasó que después que yo salí de la administración local unas personas cogieron el mando e inutilizaron el pozo que llaman de los Báez, porque se cayó una bomba una vez que estaban montándola y se dañó y no pudieron utilizar más el pozo. Siguieron trabajando con una sola bomba y un solo pozo que era el de Eufracia. Entonces después yo…supimos que Acueductos cogió a la comunidad para ellos administrar, y desde esa vez pues hasta ahora.

Adalberto Bosque: Perfecto. Gracias. Y entiéndase que cuando se suple agua potable, el Departamento de Salud interviene y el caso de Acueducto…por lo menos la información que tenemos…fue cumpliendo con el Departamento de Salud muestrean los pozos y detectan la contaminación. Mencioné anteriormente, puede haber algún tipo de contaminación, pero si no excede de cierto límite pues se sigue monitoreando, lo que se hace es que se sigue muestreando para saber si aumenta esa contaminación y puede eventualmente ser un riesgo no aceptable, que excede los límites. En este caso pudimos ver lo que yo les mencioné anteriormente, que la concentración mayor fue cuando se muestreó en el 2009 este pozo, específicamente Eufracia que dio 260, aproximadamente

260 partes por billón. ¿Qué pasó? Pues yo les mencioné las teorías que pueden haber. Puede ser que haya sido recientemente en ese punto que hubiera y ahí llegó el contaminante y eventualmente se purgó, extrajo el agua contaminada. O la otra alternativa que les mencioné anteriormente. ¿Alguien más tiene alguna pregunta?

Carlos Juan Colón: Buenas noches, mi nombre es Carlos Juan Colón de Villas de Oro. Ok, para llevarle parte del insumo a la comunidad sobre lo que usted ha dicho. Yo como lego al fin en esto, no soy ingeniero, no soy químico, biólogo, nada de eso entiendo que el agua que estamos consumiendo por la exposición que usted ha hecho es agua potable. Esa es mi primera pregunta. Mi segunda pregunta, ya ustedes están sacando o están recomendándole a la Agencia Federal sacarlo de la lista. Existirá, como usted muy bien dijo, siempre hay un riesgo, ¿va a existir algún tipo de monitoreo, aunque no sea frecuente a los pozos para ver si en un futuro no hay una contaminación? Esa es mi segunda pregunta.

Adalberto Bosque: Perfecto. La primera pregunta con relación al mensaje que le puedes llevar a la comunidad. Y usted me dice si la parafraseo bien. La primera pregunta era si era el agua potable que se suplía, no sé si es específicamente en Villa de Oro o en cualquier otro sistema que se muestreó privado, comunitario, para incluir los demás, si el agua que están tomando es agua potable o no. Entiéndase que los parámetros que muestrea la Agencia de Protección Ambiental Federal son estos parámetros ya establecidos. Los pozos para bacteriología, hay otros parámetros, que le exige el Departamento de Salud que la agencia no tomó muestras porque esos no son los que están en cuestión con estas sustancias químicas. Recuérdense que cuando se toma muestras, no solamente se toman muestras para las sustancias orgánico volátiles,

plaguicidas, se toma muestras también para metales, en general. Pero no se toman muestras para bacteriología. Quiere decir que para los contaminantes que nosotros estamos en cuestión, estamos bien. Había otra pregunta con relación de si se iban a seguir monitoreando, muestreando. El procedimiento, yo les mencioné anteriormente, no hay contaminación, la agencia eventualmente dice "pues voy a firmar el record de decisión, que dice No Acción" No se va a hacer acción. La agencia no puede tener un lugar abierto indefinidamente. Va a haber un procedimiento donde eventualmente la agencia tiene que decir: "pues yo me tengo que mover entonces para sacarlo de la Lista Nacional de Prioridad" Esta mañana tuvimos una reunión con el municipio, con el señor alcalde de Caguas y su personal, dándole un resumen más o menos de la investigación, dándole las gracias por la cooperación, pero indicándole que la agencia se va a mantener en comunicación con el municipio y con ustedes para que sepan cuáles van a ser los próximos pasos, cuándo va a comenzar ese procedimiento de eliminarlo de la Lista Nacional de Prioridad. ¿Qué sucede aquí? La agencia cuando hace este procedimiento, en este caso de la No Acción no puede seguir indefinidamente muestreando. Lo que la agencia dice es: "ya yo terminé esta investigación, ya tomé aquí… Hubo los cuatro muestreos, más inicialmente se tomaron como dos más, más los siete pozos que se muestrearon del 2006 al 2009. Quiere decir que la Agencia de Protección Ambiental Federal eventualmente dice: "pues ya yo salí de aquí" Después que se firme el record de decisión ya prácticamente la agencia dice: "ya yo terminé con la misión o la encomienda que yo tenía". Si Acueductos utiliza el pozo o reactiva el pozo, pues Acueductos, por mandato de ley, tiene que monitorear el agua que se le supla a la gente. Tiene que monitorearla, o pedirle permiso a Recursos Naturales, porque están extrayendo agua y

muestrearlos para los parámetros establecidos por el Departamento de Salud, la ley de agua potable, delegada al Departamento de Salud para determinar que el agua que reciben los consumidores es agua potable. ¿Esa era la pregunta? ¿Había alguna otra pregunta o le cubrí las preguntas? Cualquier pregunta posterior luego en confianza me puede dejar saber. Si alguien me tiene que conseguir pues tiene mi número de teléfono, también puede hacerlo a través del municipio, si necesitan algún tipo de contestación o ayuda. ¿Pregunta?

Evelyn Guzmán: Mi nombre es Evelyn Guzmán, yo soy la presidenta de la asociación, y yo en esto pues soy un poco nueva, porque no estoy muy enterada de muchas cosas. Pero yo pregunto, ¿cómo ustedes se enteraron de que ese pozo estaba contaminado? ¿Cómo ustedes se enteraron? ¿Qué pasó?

Adalberto Bosque: Buena pregunta. En el caso en cuestión, en este caso, el que utiliza el pozo para suplir agua, Acueducto y Alcantarillado, toma muestras de los pozos. Ellos tienen que someter la información al Departamento de Salud, tienen que someter el reporte al Departamento de Salud. Se supone también, que por ley cada, cierto tiempo nosotros como usuarios, recibamos un informe de la calidad del agua. Se supone. Cuando el Departamento de Salud toma muestras, tiene que someterle el reporte al Departamento de Salud. El Departamento de Salud tiene conocimiento, y dice: “pues mira, ese pozo hay que cerrarlo, me excede unos niveles, ciérralo”. Acueducto lo cierra y automáticamente hay un insumo de información a la Agencia de Protección Ambiental Federal a través directamente del Departamento de Salud y/o a traves de la Junta de Calidad Ambiental. Viene el gobierno de Puerto Rico y dice: “EPA, tengo este lugar donde se detectó la presencia de compuestos orgánicos volátiles”, y la agencia comienza

el procedimiento de determinar si sí o no hay contaminación, y posteriormente realizar la investigación.

Evelyn Guzmán: Y entonces, ¿eso que ustedes dicen de las muestras de agua? Porque aquí hacen par de meses pusieron unos tanques de agua. ¿Eso era para monitorear esa agua del pozo de Eufracia?

Adalberto Bosque: No. Hay unos tanqueros cuando se hinca un pozo. En este caso nosotros hincamos 4 pozos. Definitivamente cuando se hace el barreno, no sé si eran esos tanqueros que usted se está refiriendo, se genera agua, porque el barreno sigue barrenando, sigue removiendo tierra y genera el agua. Esa agua nosotros no la depositamos a la quebrada. No decimos “ah, vamos a tirarla aquí a la quebrada o vamos a tirarla al piso” No, porque pudiera estar contaminada. Se recoge en esos tanqueros. Eventualmente nosotros, se realizan muestras de esa agua que se generó y posteriormente se dispone apropiadamente esa agua, no se dispone en el lugar. En el caso de nosotros si el agua no tiene contaminantes y cumple con unos criterios de unos parámetros, se hace contacto con Acueductos y Alcantarillados. Ellos tienen plantas de tratamiento donde finalmente pueden recibir esa agua. Si no se pudiera, pues tenemos que disponerla en otro lugar. Se cumplieron los parámetros y eventualmente se hace esa disposición de esa agua.

Evelyn Guzmán: ¿Y cuánto es el término que ustedes dejarían esa agua ahí para hacer esos estudios?

Adalberto Bosque: No, ya, lo que se hace es que se hace el barreno, cuando se hace el barreno, según se va generando…

Evelyn Guzmán: el agua

Adalberto Bosque: …se van llenando esos tanqueros tenemos varias opciones. Si fuéramos a llevarlos uno a uno, o si decimos "pues vamos a dejar esto aquí en lo que tenemos 2 o 3 y eventualmente los depositamos, lo disponemos" y eso fue lo que eventualmente se realizó.

Evelyn Guzmán: Y entonces y esos…perdona que le haga tantas preguntas…y esos gases que usted dice del ambiente volátiles… ¿A qué se debe que sean…que aparezcan así?

Adalberto Bosque: Bien, cuando hay una sustancia… en este caso no hubo porque no hay contaminantes…si hubiera contaminantes que pueden irse al aire, evaporizarse, evaporarse, ¿Qué puede pasar? Van subiendo por el terreno, y lo que yo mencioné, si hay estructuras de cemento se pueden acumular, y las personas si hay grietas en las casas se pudieran estar impactando. En el caso de ustedes, de la investigación, no hay contaminantes en el agua subterránea, no hay contaminantes en el suelo, y también se dijo "pues vamos a chequear vapores" y tampoco hubo vapores. Quiere decir que no hay contaminantes que puedan causar un efecto adverso a la salud de las personas. Bien ¿alguna otra pregunta?

Nelson Aquino: Buenas noches mi nombre es Nelson Aquino. Soy el que está… diciendo así, como el vigilante del pozo de Eufracia. Vivo al frente de la entrada. Mi pregunta es la siguiente. Usted dice que desde el 2009 se estaban haciendo pruebas, pero ese pozo de Eufracia lo cerró Acueductos mucho antes del 2009. Y digo yo, y perdonen si hay alguien de Acueductos aquí, pero los irresponsables fueron ellos. ¿Por

qué le digo? Porque yo era uno de los que me levantaba cada día que ellos bajaban a hacer muestreos y dejaban a veces los carros arriba porque el camino estaba dañado o estaba mojado. "Ah, no, olvídate de eso" Así decían: "Ah, no, olvídate de eso" El de Salud, el de Salud bajó una vez y yo lo tuve que sacar con mi carro, porque él no pudo hacer el muestreo porque se le atoró el carro allá abajo. Gastaron un montón de dinero en una entrada. Pero te digo, en una senda entrada, que bajaron camiones por allí, para nada. Ahora, usted dice que puede ser que den un monitoreo, después que nos borre de la lista. ¿Qué seguridad nos da la EPA de que eso no se vuelva a repetir si Acueducto coja el pozo de nuevo? Si Acueductos mañana dice que lo va a abrir y el mes que viene está contaminado. Y yo creo que aquí hay gente que no supieron el día que cerraron ese pozo. Ellos dejaron de funcionar, se llevaron lo que registra, toda la subestación, ellos esbarataron todo. Eso es dinero que se perdió en ese pozo. ¿Quién me puede decir a mí que si mañana o dos meses después suceda lo mismo? ¿Puede o no puede que suceda?

Adalberto Bosque: Buena pregunta. Definitivamente la Agencia de Protección, un Federal…gracias por su pregunta… Definitivamente la Agencia de Protección Ambiental Federal no puede dar seguridad de si va a haber contaminación o no va a haber contaminación en el futuro. No lo sabemos. Regularmente cuando hablamos nosotros no estamos hablando de plantas de tratamiento, o alcantarillados, etcétera, etcétera, porque ya Acueductos ahí tiene que bregar, y pueden ser responsables de ciertos problemas que pueden estar surgiendo. En el caso de agua subterránea contaminada generalmente nosotros en Puerto Rico tenemos 16 lugares que están incluidos en la Lista Nacional de Prioridad actualmente, de los cuales aproximadamente 8, 7 o 8, que

tienen problemas de contaminación de agua subterránea donde pozos de Acueductos se han contaminado. Regularmente la posición de Acueductos, y por un lado se entiende es que “yo soy víctima”. Acueductos dice “yo soy víctima” porque yo no causé la contaminación, independientemente que sea una compañía, una persona un individuo, me contaminó los pozos, se me impactaron. Por eso es que se creó la ley que se conoce como la Ley de Agua Potable Segura, donde hay unos parámetros que se tienen que velar. Si el agua se suple a la ciudadanía, independientemente del tipo de uso, hay que tomar unas muestras y determinar si el agua que se le suple a la ciudadanía es apta para consumo o no apta para consumo. Definitivamente la investigación determinó que no hay contaminantes, de los que estamos hablando. Mencioné anteriormente que si hay bacteria o lo que sea pues esos son otros parámetros que se velan en agua potable. Quiere decir que en este momento la recomendación es No Acción. Si Acueductos y Alcantarillados en el futuro dice “pues yo quiero volver a utilizar ese pozo” pues ellos tienen que ir a Recursos Naturales y decirles “yo voy a extraer agua”. Tienen que tener la franquicia. Todo el mundo que quiera hincar un pozo tiene que tener una franquicia de Recursos Naturales, o debiera de tener una franquicia de Recursos Naturales, y el Departamento de Salud le exigiría que lleve a cabo un muestreo. Si se contamina o no en el futuro, no pudiéramos decir. Esperamos que no ocurra. ¿Bien? Doña Judith.

Judith Santana Zayas: Buenas noches. Solamente para cuestión de aclarar. Mi nombre es Judith Santana Zayas. Solamente para aclarar la situación de cuándo cerraron el pozo. Tengo yo entendido que cuando llegaron las primeras personas a hacer la evaluación del lugar que encontraron altos contaminantes, ellos iban a solicitar que se cerrara el pozo por esa razón. Y de ahí surgió la comunicación entre el Departamento

de Salud y ustedes. Y por eso es que tenemos esos pozos hincados ahí en la actualidad. Gracias a Dios no tenemos contaminantes, y que en alguna ocasión pudiera usarse ese pozo. El pozo de Eufracia que tanto beneficio nos daba porque se iba el agua en toda el área y nosotros siempre teníamos un hilito de agua. Y buena agua. Gracias.

Adalberto Bosque: Y yo entiendo que, recuérdense, esta investigación, cuando hay una investigación como esta, definitivamente es un trabajo en equipo. Es un trabajo en equipo no solamente con las agencias, lo más importante son la ciudadanía. Porque la ciudadanía es quien debe recibir ese beneficio. Tiene el derecho, uno como individuo tiene el derecho de recibir agua segura. Nadie quiere afectarse. Aquí ha habido una comunicación desde el principio. Inicialmente en el año 2013, aproximadamente, antes de comenzar los trabajos hubo una reunión, aquí mismo hubo una reunión. Vinieron representantes de la Agencia de Sustancias Tóxicas y Registro de Enfermedades, lo que se conoce en inglés como ATSDR. Hubo una reunión. Se visitó la comunidad. Brenda Frances y representantes del municipio caminaron, dialogaron. Se sometieron, se publicaron 2 veces en el periódico de la semana, en el periódico Primera Hora. Tengo entendido que hasta en la radio salió el anuncio. Lo que estamos aquí es para servirles, y entendemos que en la medida que todos nosotros podamos poner nuestro granito de arena…y se le agradece la paciencia. Pero el culpable de esto, si van a pelear, peleen allí con José. Estamos orgullosos, no solamente de la ciudadanía, del trabajo que se realizó, la buena relación de trabajo con el municipio de Caguas, con el señor alcalde y sus representantes, sus asistentes, con la compañía CDM, la Junta de Calidad Ambiental y todos ustedes por habernos permitido realizar todo este trabajo de investigación. En otro caso si se hubiese identificado una compañía, una entidad responsable pues la

Agencia de Protección Ambiental Federal iba a tratar de recuperar el dinero. Le pasa un "bill", una notita, tratando de recuperar el dinero invertido por la Agencia de Protección Ambiental Federal. En este caso es No Acción, no se encontró parte responsable. Quiere decir que todo ese dinero, no dije costo, estoy diciendo inversión, porque la salud es una inversión que nosotros debemos de realizar. Muchas gracias, si no hay ninguna otra pregunta. Saben que tenemos hasta el día 19 de agosto. Si usted tiene alguna otra pregunta, estamos a la mejor disposición de poderles ayudar. Y estaremos todavía en contacto porque faltan algunas cositas más. Muchas gracias y estamos a la orden.

El público aplaude. Se dan por terminadas las labores y se cierra record a las 7:23pm.

CERTIFICADO DE TRANSCRIPTORA

Yo, Aledawi Figueroa Martínez, transcriptora de Smile Again Learning Center, Corp. CERTIFICO:

Que la que antecede constituye la transcripción fiel y exacta de la grabación realizada durante la reunión celebrada en el sitio y la fecha que se indican en la página uno de esta transcripción.

Certifico además que no tengo interés en el resultado de ese asunto y que no tengo parentesco en ningún grado de consanguinidad con las partes involucradas en él.

En Isabela, Puerto Rico, a 12 de agosto de 2016.

Aledawi Figueroa Martínez
Smile Again Learning Center, Corp.
787-872-5151 / 787-225-6332
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APPENDIX VI
Hormigas Groundwater Contaminated Plume Superfund Site
RESPONSIVENESS SUMMARY

PUBLIC COMMENTS PREPARED IN SUPPORT OF THE RESPONSIVENESS SUMMARY FOR THE RECORD OF DECISION HORMIGAS GROUNDWATER CONTAMINATED PLUME SITE CAGUAS, PUERTO RICO

On July 20, 2016, the U.S. Environmental Protection Agency (EPA) released for public comment the Proposed Plan for the Hormigas Groundwater Contaminated Plume Site (Site). During the public comment period, EPA held a public meeting on August 3, 2016. The purpose of the meeting was to explain the alternatives considered and the reason for proposing the preferred alternative to accept comments regarding preferred alternative set forth in the Proposed Plan. EPA received verbal comments at the public meeting. No written comments were received during the public comment period, which lasted from July 20, 2016 through August 19, 2016. This document summarizes comments from the public at the public meeting on August 3, 2016. EPA's responses are provided following each comment.

The comments are grouped generally in the following categories:

- Background
- Remedial Investigation
- Risk Assessments

Background

Comment 1: A member of the community wanted to know if the two unnamed wells sampled as part of the remedial investigation are located on private property.

Response 1: The two unnamed wells sampled as part of EPA's remedial investigation are located on private property in an area called Los Baez and are not in use. These wells were drilled but never used. The two unnamed wells were sampled and did not show any contamination.

Comment 2: A member of the community indicated that the Hormigas well was operated by the community before PRASA.

Response 2: EPA recognized the comment from the community member.

Comment 3: A community member would like to know how EPA became aware of contamination in the wells.

Response 3: EPA became aware of the contamination through a notification by the government of Puerto Rico.

Remedial Investigation Report

Comment 1: Will there be further water samples from the private wells?

Response 1: EPA's proposed alternative is No Action. As such, once the ROD is signed it will mean that no further samples will be collected unless new information indicates the need to do so. EPA will eventually delete the Site from the National Priorities List. If the wells are placed back in operation in the future, the Puerto Rico Department of Health will require the operator to collect samples.

Comment 2: A resident wanted to know about the water tanks used during the investigation.

Response 2: During the installation of the monitoring wells, EPA's consultant used tanker trucks to store the water produced from the installation process. Once the drilling activities were completed, the water was analyzed and disposed of accordingly.

Comment 3: How long did EPA retain the tanker truck at the Site?

Response 3: EPA's consultant retained the tanker truck at the Site for a period of four months. During this period of time, it managed the disposal of the water contained in the tanker trucks and disposed of the water on a frequent basis, based on the availability of the treatment plant where the water was disposed.

Comment 4: A resident wanted to know why there could be vapors.

Response 4: The contaminants associated to the Site are classified as volatile organic compounds and as such they can vaporize into the air.

Comment 5: A resident wanted to know what kind of assurance EPA can offer to avoid the contamination of these wells again.

Response 5: EPA did not identify the source of the initial contamination at the wells. Consequently, EPA cannot guarantee that a well will not be contaminated again. However, as noted previously, operators of drinking water wells are required by the Department of Health to collect samples and analyze for potential contamination.

Comment 6: A resident recognized the benefit of the Eufracia well when it was in service.

Response 6: EPA recognized the comment.

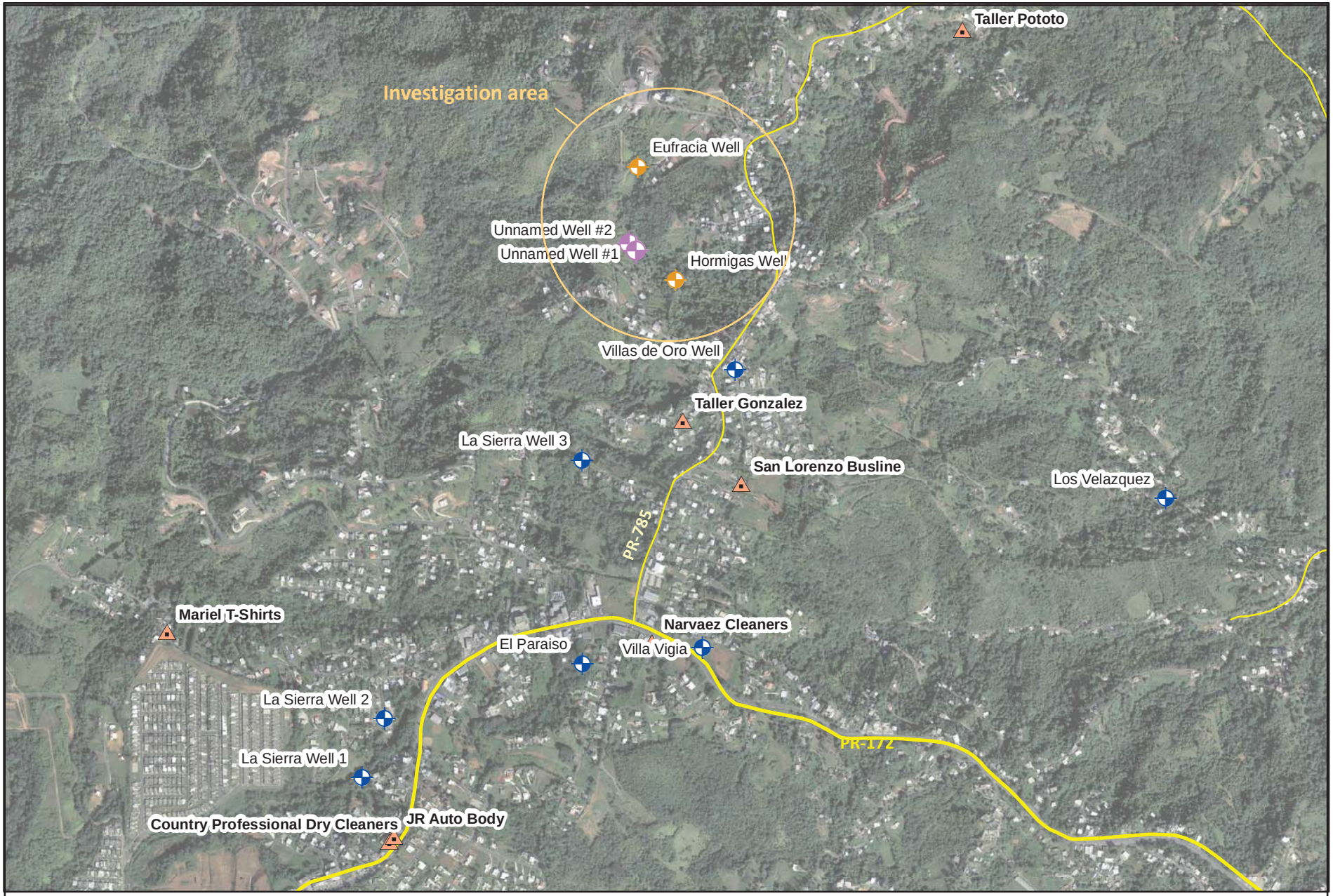
Risk Assessments

Comment 1: A community member from Villas de Oro asked if the water from Villas de Oro well is potable.

Response 1: As part of EPA's investigation, water samples collected at the Villas de Oro well did not reveal contaminants associated with the Site. Nevertheless there are other water parameters that were not analyzed for during EPA's investigation that the Department of Health might require be screened for to evaluate the suitability of the well as a source of potable water.

APPENDIX VII
Hormigas Groundwater Contaminated Plume Superfund Site
FIGURES

Figure 1
Site Location Map
Hormigas Groundwater Contamination Plume Site
Caguas, Puerto Rico



Legend

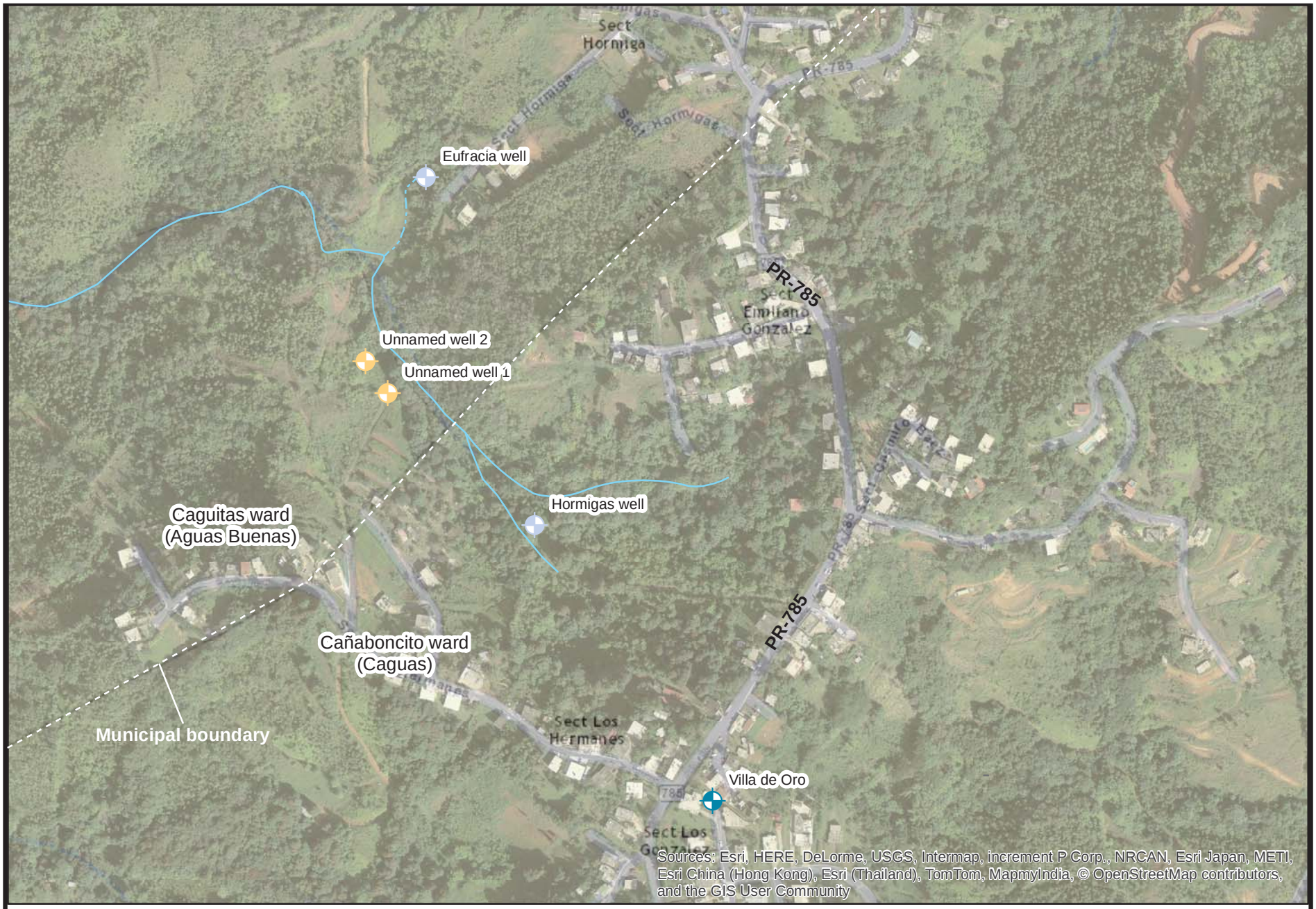
- Investigated Potential Source Location
- Closed PRASA Supply Wells
- Active Community Wells
- Unnamed Wells

N

0 — 2,200 Feet

Figure 2
Community Supply Wells and Potential Source Locations
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith



Legend

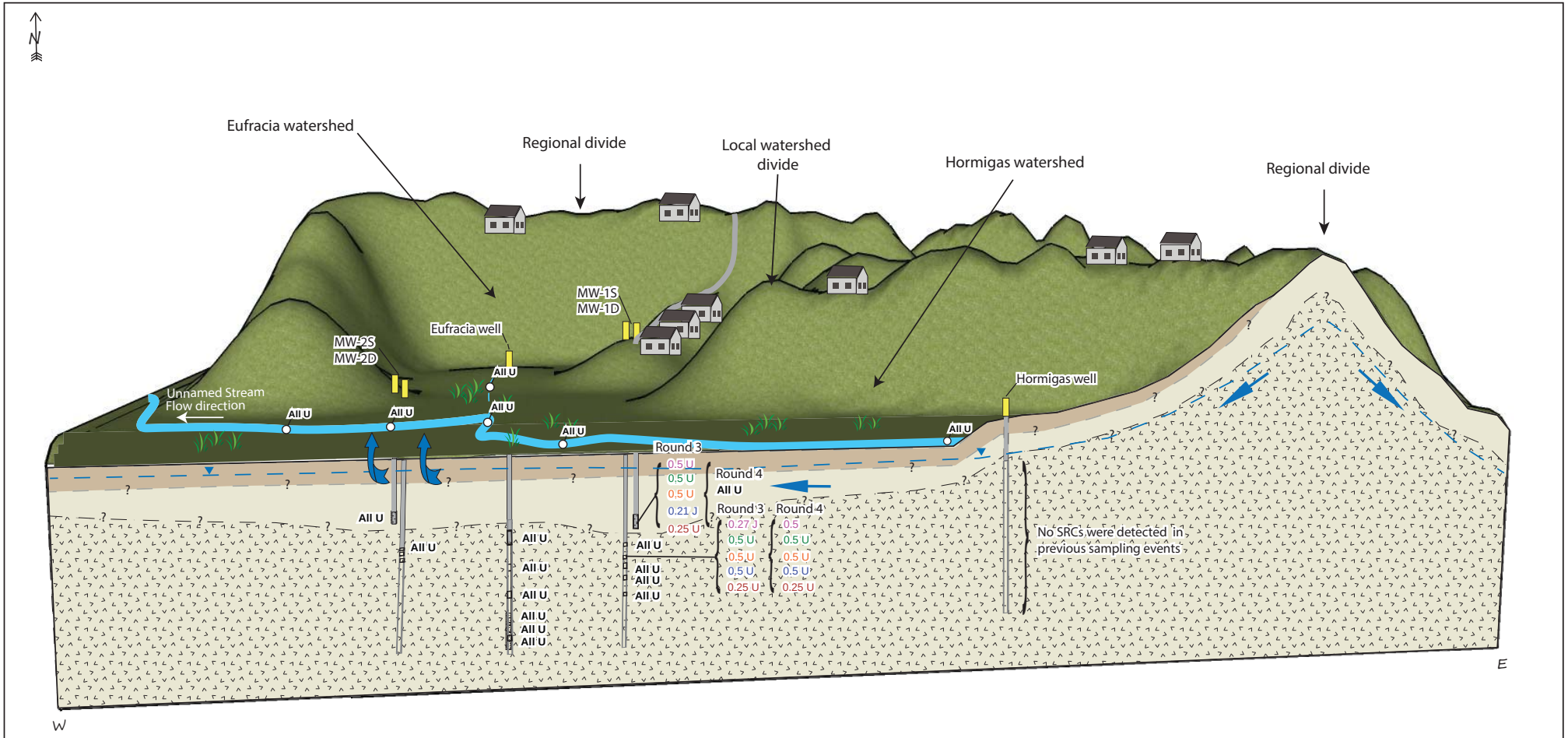
- Inactive Public Supply Well
- Active Community Supply Well
- Inactive Well
- Unnamed stream

N

0 Feet 600

Figure 3
Existing Well Location
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith



Not to Scale

Legend

- Overburden
- Saprolite
- Bedrock

All U — Surface water location and results for all SRCs

Notes:

SRCs - Site Related Contaminants
All U - no SRCs were detected

SRCs results;

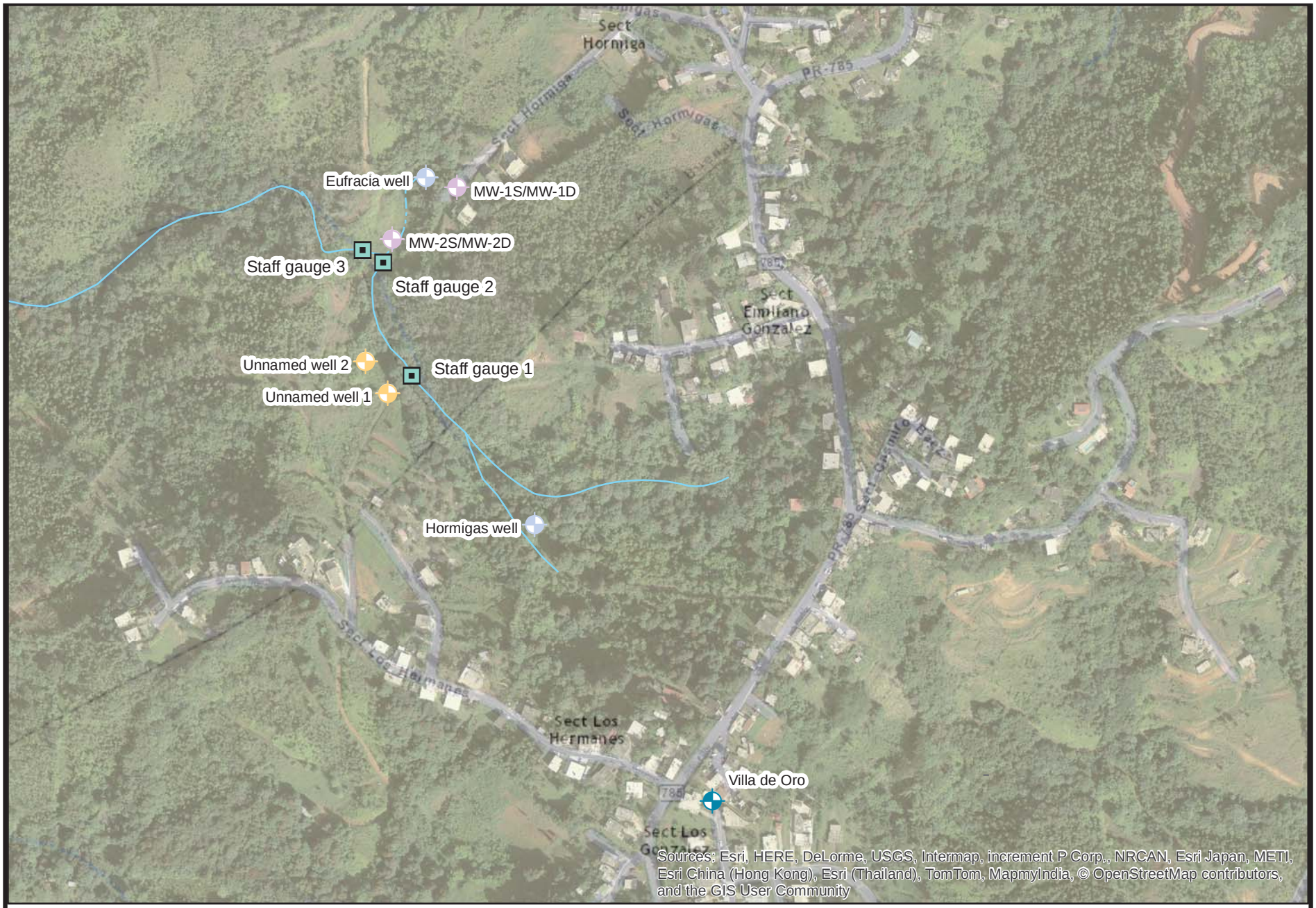
0.27 J - Tetrachloroethene detection
0.5 U - Trichloroethene
0.5 U - cis-1,2-Dichloroethene
0.25 J - 1,1 - Dichloroethene detection
0.25 U - Vinyl chloride

Concentrations in micrograms per liter

- Groundwater flow direction
- Groundwater discharge to stream
- Groundwater table

Figure 4
Conceptual Site Model
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith



Legend

- Inactive Public Supply Well
- Inactive Well
- Unnamed stream
- Active Community Supply Well
- Monitoring Well Location
- Staff gauge

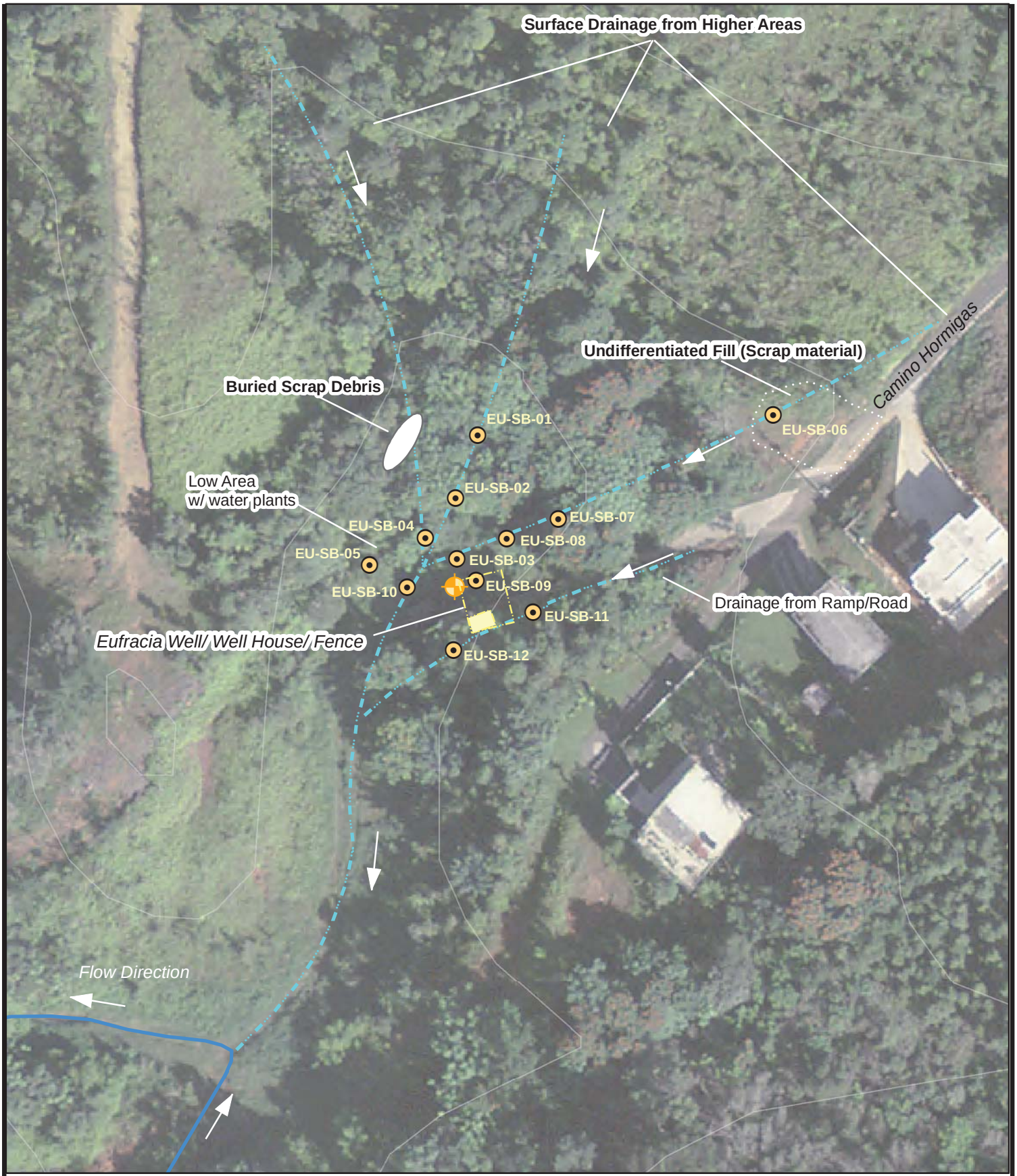
Abbreviations;
MW-1S – Saprolite monitoring well
MW-1D – Bedrock multiport well

N

0 600 Feet

Figure 5
Well Location Map
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith



Legend

- Potential Source Area (PSA) Soil Sampling Location
- Unnamed creek
- Inactive Public Supply Well
- Surface Drainage

0 80 Feet

Figure 6
PSA Soil Sampling Location Map
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith

Legend

- Passive soil gas sampling location
- Additional passive soil gas sampling location

N

0 25 50 100 150 200 Feet

Figure 7
Passive Soil Gas Sampling Location
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith

Figure 8
Groundwater Screening Sampling Location Map
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

CDM Smith

APPENDIX VIII
Hormigas Groundwater Contaminated Plume Superfund Site
TABLES

Table 1
Wireline Fracture Zone Sample Site-Related Contaminant Results
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

Sample Location	Sample ID	Date	Sample Depth (feet)	Concentration (Groundwater - µg/L)			
				PCE	TCE	cis-1,2-DCE	1,1-DCE
Screening Criterion (µg/L)				**5**	**5**	**70**	**7**
Eufracia well	EU-WL-01	3/20/2014	255	0.2 U	**0.92**	**1.7**	0.5 U
Eufracia well	EU-WL-02	3/20/2014	239	0.2 U	**0.73**	**1.4**	0.5 U
Eufracia well	EU-WL-03	3/20/2014	224	0.2 U	**0.33 J**	**0.65**	0.5 U
Eufracia well	EU-WL-04	3/20/2014	187	0.2 U	0.5 U	0.5 U	0.5 U
Eufracia well	EU-WL-05	3/20/2014	122	0.2 U	0.5 U	0.5 U	0.5 U
Eufracia well	EU-WL-06	3/20/2014	75	0.2 U	0.5 U	0.5 U	0.5 U
Eufracia well	EU-WL-07	3/20/2014	54	0.2 U	0.5 U	0.5 U	0.5 U
Eufracia well	EU-WL-08 (1)	3/20/2014	54	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-01	3/21/2014	350	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-02	3/21/2014	312	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-03	3/21/2014	287	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-04	3/21/2014	264	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-05	3/21/2014	243	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-06	3/21/2014	216	0.2 U	0.5 U	0.5 U	0.5 U
Hormigas well	HO-WL-07	3/21/2014	198	0.2 U	0.5 U	0.5 U	0.5 U
Unnamed well 2	UN1-WL-01	3/18/2014	63	0.5 U	0.5 U	0.5 U	0.5 U
Unnamed well 2	UN2-WL-01	3/18/2014	38	0.2 U	0.5 U	0.5 U	0.5 U
MW-1D	MW-1D-WL-1	2/18/2016	102	0.5 U	0.5 U	0.5 U	0.5 U
MW-1D	MW-1D-WL-2	2/18/2016	110	0.5 U	0.5 U	0.5 U	0.5 U
MW-1D	MW-1D-WL-3	2/18/2016	142	0.5 U	0.5 U	0.5 U	0.5 U
MW-1D	MW-1D-WL-4	2/18/2016	152	0.5 U	0.5 U	0.5 U	0.5 U
MW-1D	MW-1D-WL-5	2/18/2016	192	0.5 U	0.5 U	0.5 U	0.5 U
MW-1D	MW-1D-WL-6	2/18/2016	228	0.5 U	0.5 U	0.5 U	0.5 U
MW-1S	MW-1S-WL	2/25/2016	70	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-WL-1	2/18/2016	82	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-WL-2	2/18/2016	85	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-WL-3	2/18/2016	103	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-WL-4	2/18/2016	117	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-WL-5	2/18/2016	181	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-WL-6 (2)	2/18/2016	181	0.5 U	0.5 U	0.5 U	0.5 U
MW-2S	MW-2S-WL	2/25/2016	38	0.5 U	0.5 U	0.5 U	0.5 U

(1) Duplicate of EU-WL-07
(2) Duplicate of MW-2D-WL-5

Acronyms:

µg/L - microgram per liter
PCE - tetrachloroethene
TCE - trichloroethene
cis-1,2-DCE - cis-1,2-dichloroethene
1,1-DCE - 1,1-dichloroethene
U - non-detect (the value is the detection limit)

Table 2
Round 3 Monitoring Well Site-Related Contaminant Results
Hormigas Groundwater Contaminated Plume Site
Caguas, Puerto Rico

Sample Location	Sample ID	Date	Sample Depth (feet)	Concentration (Groundwater - µg/L)			
				PCE	TCE	cis-1,2-DCE	1,1-DCE
Screening Criterion (µg/L)				**5**	**5**	**70**	**7**
EU-MPW	EU-MPW-P1-R3	4/14/2016	56 - 94	0.5 U	0.5 U	0.5 U	0.5 U
EU-MPW	EU-MPW-P2-R3	4/14/2016	124 - 144	0.5 U	0.5 U	0.5 U	0.5 U
EU-MPW	EU-MPW-P3-R3	4/14/2016	174 - 194	0.5 U	0.5 U	0.5 U	0.5 U
EU-MPW	EU-MPW-P4-R3	4/14/2016	223 - 235	0.5 U	0.5 U	0.5 U	0.5 U
EU-MPW	EU-MPW-P5-R3	4/14/2016	239 - 261	0.5 U	0.5 U	0.5 U	0.5 U
EU-MPW	EU-MPW-P6-R3	4/14/2016	276 - 287	0.5 U	0.5 U	0.5 U	0.5 U
MW-1S	MW-1S-R3-R	4/15/2016	72	0.5 UJ	0.5 UJ	0.5 UJ	**0.21 J**
MW-1S	MW-12S-R3-R (1)	4/15/2016	72	0.5 UJ	0.5 UJ	0.5 UJ	**0.25 J**
MW-1D	MW-1D-P1-R3	4/13/2016	100.5 - 120.5	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MW-1D	MW-1D-P2-R3	4/13/2016	139.5 - 146.5	**0.27 J**	0.5 UJ	0.5 UJ	0.5 UJ
MW-1D	MW-1D-P3-R3	4/13/2016	152.5 - 169.5	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MW-1D	MW-1D-P4-R3	4/13/2016	189.5 - 202.5	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MW-1D	MW-1D-P5-R3	4/13/2016	222.5 - 232.5	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MW-2S	MW-2S-R3-R	4/12/2016	38	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-P1-R3	4/12/2016	79.25 - 81.75	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-P2-R3	4/12/2016	83.75 - 91.25	0.5 U	0.5 U	0.5 U	0.5 U
MW-2D	MW-2D-P3-R3	4/12/2016	99.25 - 107.25	0.5 U	0.5 U	0.5 U	0.5 U
VO-GW	VO-R3	4/14/2016	-	0.5 U	0.5 U	0.5 U	0.5 U

Notes:
(1) Duplicate of MW-1S-R3-R

Acronyms:
µg/L - microgram per liter
PCE - tetrachloroethene
TCE - trichloroethene
cis-1,2-DCE - cis-1,2-dichloroethene
1,1-DCE - 1,1-dichloroethene
EU - Eufracia well
VO - Villa de Oro well
J - estimated value
U - non-detect (the value is the detection limit)
ID - identification

TABLE 3. Selection of Exposure Scenarios

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis
Current/Future	Soil	Surface soil	Surface soil	Resident	Adult and Child	Ing/Der/Inh	Quantitative
	Surface water	Surface Water	Unnamed stream	Recreational user	Adolescent (12-18)	Ing/Der	Quantitative
	Sediment	Sediment	Unnamed stream	Recreational user	Adolescent (12-18)	Ing/Der	Quantitative
Future	Soil	Surface and subsurface soil	Surface and subsurface soil	Construction worker	Adult	Ing/Der/Inh	Quantitative
	Groundwater	Groundwater	Groundwater	Resident	Adult/Child	Ing/Der/Inh	Quantitative
		Indoor air	Indoor air	Resident	Adult and Child	Inh	Quantitative

Ing – Ingestion

Der – Dermal

Inh - Inhalation

Summary of Selection of Exposure Pathways

The table describes the exposure pathways that were evaluated for the risk assessment. Exposure media, exposure points, and characteristics of receptor populations are included.

APPENDIX IX
Hormigas Groundwater Contaminated Plume Superfund Site
EQB Concurrence Letter

COMMONWEALTH OF
PUERTO RICO
Environmental Quality Board

June 30, 2016

Eng. Ramón Torres
Response and Remediation Branch Chief
US Environmental Protection Agency (USEPA)
Caribbean Environmental Protection Division (CEPD)
City View Plaza II - Suite 7000
#48 Road 165 km 1.2
Guaynabo, PR 00968-8069

ATT: Dr. Adalberto Bosque, Remedial Project Manager

RE: HORMIGAS GROUNDWATER PLUME CONTAMINATION SITE PROPOSED PLAN CONCURRENCE LETTER

Dear Doctor Bosque/Engineer Torres:

The Puerto Rico Environmental Quality Board (PREQB) has completed its review of the aforementioned document. This Draft Community Engagement Plan (DCEP) dated June 23, 2016, identify efforts USEPA will take to inform and involve the community in major decisions regarding investigation activities at the Hormigas Groundwater Contaminated Plume Site. After evaluating the DCEP, PREQB concurs with the findings and conclusions of the following documents produced by CDM Smith. Draft Screening Level Ecological Risk Assessment Technical Memorandum (Draft SLERA) of May 27, 2016, Draft Remedial Investigation Report (Draft RI) June 3, 2016, Draft Human Health Risk Assessment (HHRA) Report of June 9, 2016 Final Screening Level Ecological Risk Assessment Technical Memorandum (Final SLERA) of June 10, 2016 which is based on the data analyzed and reported. Based on this, PREQB concludes with the final determination exposed by the DCEP that the Hormigas contaminated site no longer needs further action in the remedial process. Hence, no further corrective action is necessary for the HORMIGAS site.

If you have any question, please feel free to contact Mr. Omar E. Santiago-Santiago, Environmental Compliance and Inspection Officer assigned to this case at (787) 767-8181 extension 3216 or by e-mail at omarsantiago@jca.pr.gov.

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EQB
ENVIRONMENTAL QUALITY BOARD
COMMONWEALTH OF PUERTO RICO

Cordially,

Juan José Babá Peebles
Manager
Superfund Program
Environmental Emergencies Response Area

Attached