NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BROOKLYN-QUEENS AQUIFER FEASIBILITY STUDY

CITIZENS ADVISORY COMMITTEE MEETING: October 3, 2002

MINUTES

The sixth meeting of the Brooklyn-Queens Aquifer (BQA) Feasibility Study Citizens Advisory Committee (CAC) was held on Thursday, October 3, 2002 at Hillside Manor Comprehensive Care Center. (Attendance list attached.)

Old Business

Helen Neuhaus, Helen Neuhaus & Associates Inc. (HNA), opened the meeting with welcoming remarks. Following adoption of the Minutes of the September 5th CAC meeting without changes, Ms. Neuhaus noted that many of the follow-up items from that meeting related to clean-up of the West Side Corporation (WSC) site. She stated that much of the information requested from the New York State Department of Environmental Conservation (NYSDEC) by CAC members was provided (see attached handouts). However, before turning to those items, Ms. Neuhaus indicated that an important announcement would be made. Stating that the person making the announcement deserves much credit and gratitude and that she is proud to work with him, Ms. Neuhaus turned the floor over to Deputy Commissioner Douglas Greeley, New York City Department of Environmental Protection (DEP).

WSC Clean-Up

Commissioner Greeley announced that during a meeting between Commissioner Christopher Ward, DEP, and southeast Queens elected officials including Congressman Gregory Meeks, Senator Malcolm Smith, and Councilman Leroy Comrie, it was decided that DEP will fund clean-up of the WSC site while DEC will perform the work. This will allow the project to proceed without waiting for funding through the State Superfund program, which has not yet been reauthorized. Noting that Commissioner Ward is very supportive of the Station 6 Pilot program and the clean-up efforts at the WSC, Commissioner Greeley added that following remediation of the WSC site, the property can be transformed into a more beneficial use for the community. Kenneth Gill expressed his view that the basic issue is that the Superfund has run out of money. He stressed the need for elected officials on all levels to join together to reauthorize the program. In response to Ms. Neuhaus's comment that Commissioner Greeley has been a strong advocate for moving the WSC clean-up forward, Commissioner Greeley noted that the entire CAC should be proud of its work. CAC members then gave him a round of applause.

Debora Hunte continued the discussion of WSC clean-up by referencing substantial distrust in the community concerning plans for home and school construction near the site. She observed that homes are already being built on contaminated land and that the process can't be trusted. In response, Ms. Neuhaus reiterated that DEP's purpose is to work with the CAC and community, adding that while the agency can't always address past problems or problems outside the scope

of the project, they can try to resolve community concerns. She expressed her view that, despite lingering mistrust, much progress has been made.

Yvonne Reddick noted that she has worked with Commissioner Greeley many times over the years and observed that DEP works very closely with the community. With the community's support, she stated, DEP will complete this project. She further noted that a private developer is constructing the homes adjacent to Station 24, but at the request of Assemblyman William Scarborough, testing was performed at both sites. In response, Commissioner Greeley reported that the test results showed that contaminants at the site of the homes are at safe levels; levels at the Station 24 property are higher. Ms. Reddick commented that the new homeowners should be informed of the history of the site.

In response to a question from Linda Hazel, Donald Cohen, Malcolm Pirnie, Inc., stated that the removal of groundwater contaminants through pumping at Station 24 and Station 6 would happen sequentially, rather than concurrently. Commissioner Greeley added that the plume must recede before any Station 6 pumping begins. Referring to DEP's pilot plant at Station 6, Manuel Caughman asked if DEC was planning a similar project to test the remediation method proposed for the WSC site. Commissioner Greeley answered that he had questioned DEC about this matter and was informed that a pilot program would require the drilling of so many holes that it would be more efficient to move forward with the actual program. In response to a question from Ms. Hazel, Bill Yulinsky, DEP, said that he is waiting for information from DEC on why the electrical probes will be installed deeper than the depth of groundwater.

In response to questions regarding the ownership and continued use of the WSC site, Commissioner Greeley explained that although the site is still in private ownership, DEC has the legal right to enter any property at any time in order to abate a hazardous condition. On the other hand, DEP would need to take title in order to access the property. The city's Law Department is opposed to such action based on concerns about liability associated with taking over a hazardous waste site. Commissioner Greeley also explained that the bus company (Atlantic Express) currently using part of the site serves the community and will not be evicted without an attempt to help it relocate. Mr. Caughman noted it was recently learned that the bus company is in Chapter 11. Michael Turner expressed concern that tax dollars are being spent on clean-up of the site while the property owner continues to receive rental income. Answering further questions, Commissioner Greeley stated that DEC Commissioner Erin Crotty assured Congressman Meeks that work will begin in March 2003. Mr. Cohen noted that DEC has agreed to provide monthly reports on clean-up progress and to attend CAC meetings every two to three months. Commissioner Greeley added that the DEC project manager who will oversee construction at the WSC is located in Long Island City, which may make it easier for a DEC representative to attend CAC meetings.

Scientific Review Panel (SRP)

Ms. Neuhaus reported that based on the recommendations of the Health and Engineering Subcommittees, eight SRP candidates were contacted and invited to serve on the panel. All eight are available and eager to serve. They are Jack Caravanos (Hunter College), Paul Lioy (Rutgers University), Alan Rabideau (SUNY Buffalo), Robert Snyder (Rutgers University College of Pharmacy), James Gossett (Cornell University), James "Chip" Kilduff (Rensselaer Polytechnic

Institute), Len Lion (Cornell University), and Gilbert Hanson (SUNY Stony Brook). Ms. Neuhaus proposed, and the SAC agreed, that SRP members be invited to the November CAC meeting. SRP members will also be invited to tour the Station 6 Pilot Plant.

In response to questions regarding the functioning of the SRP, Mr. Yulinsky explained that SRP members will be available on an "as needed" basis to review and evaluate information provided by the project team. The SRP will not conduct independent studies, but will be the CAC's "check on what we're telling you." Ms. Neuhaus noted that the SRP may work together or independently, depending on the issue being addressed. She stated that the CAC may meet with SRP members in person or ask for reports on technical issues, adding that "they'll answer to you."

Using the recent testing of groundwater as an example, Commissioner Greeley and Mr. Cohen addressed concerns about the independence of the SRP in light of the panel being funded by DEP. They explained that Assemblyman Scarborough initiated the independent testing effort and identified Marin Engineering as a reputable consultant. While DEP paid for Marin's services, the contract clearly stated that Marin was working for Assemblyman Scarborough, who was acting on behalf of the community. Commissioner Greeley and Mr. Cohen indicated that the SRP contract could be written in a similar way to protect its independence. Ms. Neuhaus observed that trust will develop in time based on relationships with SRP members. She noted that safeguards were instituted in the SRP selection process, including the elimination of potential members due to conflicts of interest. Ms. Neuhaus added that her experience shows that agency funding is the only possible way to create a review panel, as the community is generally unable to raise funds on its own. In response to a question from Ms. Hunte, Ms. Neuhaus noted that two of the SRP members served on a science advisory committee for DEP's Pelham Bay Landfill Remediation project.

The discussion returned to the issue of community trust in the project. Jeff Diggs asserted that the general public trusts community leaders such as those serving on the CAC. Mr. Caughman expressed his view that the contract with Marin was the best possible arrangement, adding that he would never accept a deal that was not good for the community. Following Ms. Hazel's comment that the community is disenfranchised and has questions that were never answered, Ms. Hunte stated that clear and specific information is needed to build trust. Ms. Neuhaus responded by noting that data from the pilot plant would be presented later in the meeting and that the CAC would continue to receive data as the project moves forward.

Following up on an issue raised at the September CAC meeting, Ms. Neuhaus announced that Dr. Dhanonjoy Saha's resume had been forwarded to the Health Subcommittee. Ms. Hazel reported that all members of the Subcommittee, with the exception of Gloria Black, were present at a brief meeting held before tonight's meeting, at which it was decided to recommend Dr. Saha for membership on the SRP. She stated that Dr. Saha is familiar with specific community concerns relating to Stations 6 and 24 and has a background in epidemiology. He is willing to vacate his seat on the CAC to serve on the SRP. Mr. Caughman noted that Dr. Saha was highly recommended by Assemblyman Scarborough and Senator Smith. Mr. Hicks and Mr. Diggs observed that people in the community have a strong trust in Dr. Saha. Ms. Neuhaus called for a

motion recommending that Dr. Saha be removed from the CAC and invited to serve on the SRP. The motion was made and adopted.

Other Follow-Up Items

- Ms. Neuhaus noted that lists of SRP candidates and criteria were forwarded to the New York Public Interest Research Group (NYPIRG), as per their request.

- In response to Ms. Hazel's request to obtain a prospectus from Horsley and Whitten, an environmental engineering consulting firm recommended by NYPIRG, a prospectus was obtained. Ms. Neuhaus noted that a copy is available for review at the sign-in table.

Project Update

Karim Naraghi, Malcolm Pirnie, provided an overview of operations at the Station 6 Pilot Plant since its opening earlier this year. He stated that the objective of the plant is to demonstrate that consistently high quality drinking water that meets city standards can be produced by pumping groundwater from the Station 6 wells. Mr. Naraghi noted that groundwater from the Station 6 wells had a pH of 6.3, as compared to the New York City average of 7.2 - 7.3. The hardness level of the groundwater was approximately 150, compared to 20-30 for city water. He then explained the three primary testing processes that are being performed at the plant to improve groundwater quality:

1. raising the pH of the groundwater - in order to speed up the process by which dissolved iron and manganese will become solid particles that can be removed by filtration. A higher pH will also reduce the water's corrosion potential. Two technologies are being tested to raise the pH: 1) aeration, which adds air to the water and does not involve using any chemicals and 2) caustic addition, which adds a chemical, sodium hydroxide. The testing of both alternatives was completed in June.

2. adding oxygen to the water - in order to change iron and manganese into particles large enough to be filtered. One process, which adds potassium permanganate (a purple chemical) has been used throughout the world for decades to facilitate iron and manganese removal and to address taste and odor concerns. The other method, a chemical-free process that adds ozone to the water, is used extensively in Europe and has become increasingly popular in the United States, although it is still considered a new technology in this country. Mr. Naraghi explained that each technique was tested to determine which was more effective.

3. filtration- in order to remove the large iron and manganese particles. The pilot program is testing three technologies to filter the iron and manganese from the water. Results to date have reduced iron concentrations from 6 parts per million (ppm) to 0 and manganese levels from 1 ppm to .02 ppm. Filtration is also being used to remove minerals that cause hardness.

Mr. Naraghi further explained that in testing different techniques, many variables have been examined, including dosages, operational needs, etc. Performance tests, during which each system is run continuously for 30-60 days to determine how it operates over time, are being run.

These tests have been completed for potassium manganate and are in progress for ozone. Mr. Naraghi held up samples of well water at various stages of treatment, showing the orangish natural color of untreated well water, the cloudy condition of oxidized water, and the clear, filtered water. He urged CAC members to visit the plant for a tour anytime between 8:00 a.m. and 6:00 p.m. (Ms. Neuhaus noted that children need a release signed by their parent or guardian to visit.)

Ms. Hunte complimented the team on its work at the plant, stating that she hadn't fully understood the processes until she toured the facility. She suggested that the project be better publicized. In response to Ms. Hazel's question about the effectiveness of ozone, Mr. Naraghi observed that ozone is performing very well, as it is biodegradable, doesn't require pH adjustment and reacts instantly. He added that there have been interesting results in removing PCE, TCE, and MBTE with ozone. Commissioner Greeley noted that DEP is considering the use of ozone at the Croton filtration plant.

In response to Mr. Diggs' inquiry about bringing school groups to the plant, Ms. Hazel described the tour she had taken this summer with students from P.S. 59. She stressed that the children, who will be around in 40-50 years, should become educated consumers and know the history of their community. Mr. Caughman said that he is working with Michael Johnson, Superintendent, District 29, regarding a possible tour. Further discussion followed regarding the benefits of involving schoolchildren in the pilot program. Ideas that were raised included a hands-on laboratory, fact sheets and curriculum development. Commissioner Greeley reminded the CAC that a tour of the Department's laboratory at Lefrak City is also possible.

Other Issues

- In response to questions about the status of the drought wells, Commissioner Greeley explained that the "A" and "B" wells have been sampled; the "C" and "D" wells are not yet ready. DEP and elected officials recently held a public forum regarding southeast Queens environmental issues, at which the possible reactivation of drought wells was discussed. Commissioner Greeley noted that the reservoirs are at 60% capacity, or approximately 15% below normal.

- Responding to Ms. Hazel's request that the CAC be able to use Tom Tipa, DEP, as a resource, Commissioner Greeley confirmed that Mr. Tipa is available at anytime.

- Stating that he was stimulated by Councilman Comrie's report of his meeting with Israeli officials regarding their water supply system, Commissioner Greeley distributed information about France's water treatment system.

The next CAC meeting will be held on **Thursday, November 7, 2002 at 7 p.m.** at the Hillside Manor Comprehensive Care Center, 188-11 Hillside Avenue, Jamaica Estates.

Follow Up Items

1. Provide copy of agreement with Marin Environmental to CAC for review. Responsibility: DEP/MPI.

2. Invite SRP candidates to November 7th CAC meeting and tour of pilot plant. Notify CAC of time of plant tour. Responsibility: HNA.
3. Provide detailed work schedule regarding WSC clean-up project. (Irving Hicks) Responsibility: DEC/MPI.
4. Provide additional copies of August 2002 "Report to the Community" to Yvonne Reddick, Manny Caughman and Earl Roberts. Responsibility: HNA.
5. Provide additional information regarding electrical resistance heating method proposed for clean up at WSC site (how depth of electrodes was determined, has method been used in locations with conditions similar to WSC site, etc.). (Linda Hazel) Responsibility: Bill Yulinsky, DEP.
6. Contact Superintendent of District 29 to discuss development of possible educational programs. Responsibility: Manny Caughman, HNA, MPI, DEP.

Brooklyn-Queens Aquifer Feasibility Study
Citizens Advisory Committee
Thursday, October 3, 2002

Attendance List

CAC Members/Alternates

Tracey Bowes
Community Board #12

Manuel Caughman
Community Board #12/
Brinkerhoff Action Association

Jeff Diggs
Councilman Leroy Comrie

Kenneth Gill
Addisleigh Park Civic Association

Linda Caleb Hazel
A Better Day Inc./St. Benedict the Moor/
St. Bonaventure

Irving Hicks
Brinkerhoff Action Association

Debora Hunte
Brinkerhoff Action Association

Yvonne Reddick
Community Board #12

Earl Roberts
113th Precinct Community Council

Dr. Dhanonjoy C. Saha
Resident

William Scarborough
New York State Assembly

Michael Turner
Addisleigh Park Civic Association

Guests

Sarah Hicks
Brinkerhoff Action Association

Project Team

Nicole Brown
Malcolm Pirnie, Inc.

Don Cohen
Malcolm Pirnie, Inc.

Douglas Greeley
New York City Department of
Environmental Protection

Natasha Harper
New York City Department of
Environmental Protection

Karim Naraghi
Malcolm Pirnie, Inc.

Helen Neuhaus
Helen Neuhaus & Associates Inc.

Denise Woodin
Helen Neuhaus & Associates Inc.

Anita Wright
Helen Neuhaus & Associates Inc.

Bill Yulinsky
New York City Department of
Environmental Protection

NEW YORK STATE DEPARTMENT OF

ENVIRONMENTAL CONSERVATION

Dear Interested Citizen:

If you have any questions or would like more information, please do not hesitate to contact:

Mr. Shive R. Mittal, P.E.
Project Manager
NYSDEC
625 Broadway
Albany, New York 12233-7017
(518) 402-9671

or

Mr. Hari Agrawal, P.E.
Regional Project Manager
NYSDEC
Region 2 Headquarters
1 Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101
(718) 482-4995

For site related health questions, please contact the following Health Department representative:

Ms. Stephanie Selmer
NYSDOH
547 River Street
Troy, NY 12180
1 (800) 458-1158, Ext. 27880

FACT SHEET

WEST SIDE CORPORATION SITE

Hazardous Waste Site (Site # 2-41-026)

REMEDIAL PROGRAM UPDATE

September 2002

Introduction

The New York State Department of Environmental Conservation (NYSDEC), in cooperation with the New York State Department of Health (NYSDOH), is pleased to bring you this update on the remedial program for the West Side Corporation Site. The site is located at 107-10 180th Street in Jamaica, Queens (See Figure on page 4).

Background

The site is owned and was operated by West Side Corporation as a storage and distribution center for chemicals used in the dry-cleaning industry from about 1969 until 1992. Below the ground surface, groundwater and soils at the site have been contaminated by spills of the dry-cleaning chemical Perchloroethylene (PCE). PCE was unloaded from trucks and railroad tank cars into large storage tanks, where it was stored until it was transferred into 55-gallon drums for distribution to dry-cleaning establishments. The facility is currently leased by a bus company (Atlantic Express) and is used for servicing, storage and dispatching of school buses. The school buses do not come into contact with the contaminated soil or groundwater.

In the past, Jamaica Water Supply Company wells 24, 24A, 24B, and 24C were located on the adjoining properties. These wells were taken out of service between 1975 and 1982 when PCE was detected in these wells. In November 1999, an on-site investigation was completed to determine the nature and extent of the contamination. The investigation found PCE concentrations in soil and groundwater in the center of the site thousands of times greater than acceptable levels. Alternatives to clean up the site were evaluated and a Record of Decision (ROD) selecting a remedy for the site ("Operable Unit No. 1or OU-1") was signed in July 2000.

ON-SITE REMEDY: To address high levels of subsurface soil and groundwater contamination, the OU-1 remedy included:

- soil vapor extraction and treatment (SVET) to remove contaminants from soils above the water table
- if shown to be effective in a pilot test, treatment of contaminants in soil below the water table in the most highly contaminated area ("Source Area No. 1") using a chemical process called in-situ chemical oxidation (ISCO, the results of the pilot test are described below)
- groundwater collection and treatment to prevent further off-site migration of contaminated groundwater (as described below, this component was replaced by the larger groundwater remedy selected for OU-2).

An investigation was also completed to determine the extent of off-site contamination. The results showed no soil contamination in residential areas but found that contaminated groundwater has moved off-site (the off site area is referred to as "Operable Unit No. 2 or OU-2"). Groundwater is found approximately ten feet below the ground surface where contamination is found. A ROD selecting a remedy to clean up off-site groundwater was signed in February 2002.

OFF-SITE REMEDY: The off-site remedy includes the collection and treatment of contaminated groundwater to prevent farther migration of contaminated groundwater and reduce the concentration of contaminants in groundwater. To accomplish these goals, a new high capacity groundwater extraction well and treatment system will be installed and operated. Treated water will be discharged to the sewer system. The well and the treatment system will be located on property owned by the New York City Department of Environmental Protection (NYCDEP). The high capacity of this collection system makes it possible to control and treat both on-site and off-site groundwater. Therefore, the groundwater collection and treatment component of the on-site remedy (OU-1) will not be needed. This is discussed in more detail in the OU-2 ROD.

Current Status

ON-SITE (OU-1) REMEDY: During the fall and winter of 2001, a pilot-scale study was performed by the Department's consultant as part of the remedial design. Although some reduction in contamination was noted, the Department concluded that the reduction was not great enough to move ahead with the full-scale application of the in-situ chemical oxidation (ISCO) technique. The Department's engineering consultant was asked to evaluate other technologies that could be used in Source Area No. 1. This evaluation was completed during May-June 2002 and the conclusion was a recommendation to use a technology called electrical resistive heating (ERH, described below). Although the technology to be used in Source Area No. 1 will be different, the approach will be the same. Specifically, contamination will be treated in-place ("in-situ" to a depth of approximately 40 to 50 feet below the ground surface) to greatly reduce the amount of PCE in soil and groundwater.

The change to use ERH is recorded in a document called an Explanation of Significant Differences (ESD) which will become part of the Administrative Record for this Site. The information here is a summary of what can be found in greater detail in documents that have been placed in the repositories listed below.

ERH is a remediation technology that involves the use of electricity to heat water in saturated soil up to the boiling point. ERH speeds the removal of contaminants by converting them from the liquid to the vapor phase so that it can be collected and removed. This technology is similar to that used in some household room vaporizers. Electrodes are placed in holes drilled in the soils around the contamination. The space around the electrodes is packed with a conductive material, such as graphite or steel shot, to increase the effective diameter of the electrode and to ensure a good electrical connection with the soil and groundwater. The flow of electricity in the soil is limited to the area to be treated. At this site, the ERH system would consist of approximately 15 electrodes installed around Source Area No. 1 (an area of high-level contamination that measures about 60 by 60 feet on the surface and 55 feet deep).

Electrical power is applied to the ERH electrodes causing the soil and groundwater within the target treatment volume to heat to the boiling point of water. Steam is then generated throughout the heated volume and moves up toward the groundwater surface. Heating causes contaminants to volatilize from the liquid into the vapor phase, enabling a high degree of removal over a relatively brief treatment period, perhaps six months. The vaporized contaminants generated by the heating are captured in the soil above the water table (vadose zone) by the SVET system. The same wells used for the electrodes can be screened in the vadose zone to remove soil vapor and moisture for treatment. Contaminants are captured using activated carbon and disposed off-site or can be converted to non-hazardous materials on site. The ERH technology has been successfully used at several sites throughout the country.

During fall of 2001, a pilot test was completed to verify the effectiveness of the SVET technology and to provide information necessary for the full-scale design of an SVET system. The Department's engineering consultant is currently working on the remedial design.

OFF-SITE (OU-2) REMEDY: As part of the Brooklyn Queens Aquifer (BQA) Feasibility Study, the NYCDEP is planning to restart several groundwater production wells located downgradient of the site (groundwater flows to the south-southwest) to address flooding problems from a rising water table and to potentially provide a future source of potable water. The NYSDEC and NYCDEP have been working together to ensure that the BQA project is compatible with the remediation of the West Side Corporation site. The NYCDEP has agreed to undertake the bulk of the design and construction of the OU-2 remedy. NYSDEC and NYCDEP are working together on an agreement to formalize this undertaking. Drilling of the high capacity recovery well and associated monitoring wells is complete. The design of the OU-2 remedy is beginning and should be complete at about the same time as the OU-1 remedy.

Next Steps

ON-SITE (OU-1) REMEDY: The next steps involve completion of the Remedial Design (RD), bidding of the project for construction, installation and operation of the ERH, and installation and operation of SVET. The RD, which consists of the preparation of the design drawings, specifications, and contract documents, is in progress and should be completed before spring of 2003. The process of soliciting bids and awarding a construction contract typically takes about three months. The ERH system can be installed in about two to three months. It will take approximately three months to reduce the PCE concentrations in soil and groundwater in Source Area No. 1 to desired levels. The installation of the SVET system is likely to take four to six months and operation of the SVET system is likely to continue for 24 to 30 months.

OFF-SITE (OU-2) REMEDY: As stated above, the NYSDEC, in cooperation the NYCDEP, will undertake the remedial design and construction of the off-site remedy. During the design phase, detailed plans and specifications will be prepared that will be used by the remediation contractor to construct the remedy. The design and construction of high capacity well and surrounding monitoring wells have been substantially completed by the NYCDEP. The full design and construction including the treatment system is likely to be completed in 2003. Once operational, this off-site system is likely to operate for about 10 years to clean up the groundwater to the desired levels. After this system becomes operational, any further migration of contamination off-site will be stopped.

Document Repositories

The NYSDEC has established Document Repositories for the West Side Corporation site at the locations listed below. The site related documents are available for public review at these repositories.

Queens Borough Public Library
89-11 Merrick Boulevard
Jamaica, New York 11432
(718) 990-0778

NYSDEC's Region 2 Office (by appointment)
1 Hunters Point Plaza
47-40 21st Street
Long Island City, New York 11101-5407
(718) 482-4995

Electrical Resistance Heating, Project Summary

Site Name	Type of Client	Electrical Phasing	Initial Concentrations of Contaminants of Concern	Operations Period	Geology/Hydrology and Size of Treatment Area (yds^3)	Cleanup goals	Summary of performance data	Present Status
Former Pharmaceutical Manufacturer, Northwest, OR	private	TPH	TCE; 40,000 ug/L	05/04/2000 - 11/2001	Heterogeneous discontinuous layers of silt, fine silty sand, and fine sands. Groundwater depth 8 feet bgs.	DNAPL removal	Remediation is completed.	Project completed in 2001.