# Fleming Engineering

March 23, 2021

Ms. Jane O'Connell, P.G.
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
47-40 21st Street
Long Island City, New York 11101

**Re: Queens West (Hunters Point) Parcel 8**
**BCP Site No. C241087**
**Corrective Measures Work Plan**

Dear Ms. O'Connell:

Fleming Engineering (FE) submits this Corrective Measures Work Plan (CMWP) in response to the Department's *Opportunity to Cure* letter to Queens West Development Corp. (QWDC) dated January 13, 2021, for the referenced site. This CMWP describes the locations and sampling of monitoring wells to be re-installed as noted in the Department's January 13, 2021 CMWP comment letter and on the conference call of March 8, 2021. All CMWP work will follow the requirements of the Parcel 8 Site Management Plan (SMP).

**Well Installation**

We have selected well locations that provide coverage over the entire site. The wells will be re-installed in pairs to monitor both the shallow and deep intervals as with the original wells. We have selected well pair locations that are as close as possible to the original locations, but had to adjust some locations as the library, park ranger station, walkways, and paved areas now restrict access to parts of the property. Some proposed well pair locations were moved slightly or combined so as to minimize disruption of the property, e.g., proposed MW-17(S) and MW-11(D). Figure 1 shows the proposed well locations.

All wells will be installed as close as possible to the construction details of the original wells' screened intervals, but may be adjusted slightly to accommodate construction as cluster wells with the shallow and deep wells in the same borehole. All wells will have flush-mount protective casings with a locking watertight well cap. A measuring mark will be placed on the top of the well risers. All wells will be developed during/after installation and a minimum two-week equilibration period followed before groundwater sampling may begin. Soil cuttings and well development/purge water will be contained in drums and disposed according to federal and state regulations. The wells will be installed using a sonic rig and/or hollow stem auger drill rig.

The monitoring wells will be installed using threaded, 2-inch-diameter PVC with 10- or 20-slot well screen. The bottom of the shallow well screen and top of the deep well screen will be separated by one foot of clean silica sand, Morie No. 2 or equivalent, and one foot of bentonite. The bottom screen sand pack will extend one foot above the bottom well screen and be followed by one foot of bentonite atop the sand pack. The bentonite will be wetted and allowed to seal for a minimum of 45 minutes before setting the shallow well screen and/or backfilling the remaining annular space with a cement-bentonite grout. The shallow well screen will be set following completion of the bottom well screen seal. The shallow well screen will have two feet of clean sand above the top of the well screen followed

by a two-foot bentonite seal that will be wetted and allowed to seal for a minimum of 30 minutes before filling the remainder of the annular space with cement-bentonite grout.

If warranted by depth, backfilling will be completed using a tremie pipe placed below the surface of the grout. Well construction diagrams and soil boring logs will be prepared for each well. Table 1 shows the proposed well screen depth intervals. The till layer at depth, 30 – 35 ft. ± will not be punctured and the well depths listed in Table 1 may be adjusted in the field to maintain the integrity of the till layer.

**Table 1 – Proposed Well Screen Intervals, ft. below Grade**

| Well | Screen Top | Screen Bottom |
|---|---|---|
| MW-17(S) | 6 | 16 |
| MW-11(D) | 19 | 29 |
| MW-20(S) | 6 | 16 |
| MW-15(D) | 19 | 29 |
| MW-9 | 14 | 24 |
| MW-21(S) | 7 | 17 |
| MW-7R | 20 | 30 |

Source: Parcel 8 SMP well logs. MW-9 detail from AKRF *Off-Site Investigation Report,* July 2006.Screen intervals rounded to nearest foot

**Groundwater Sampling**

QWDC will sample the newly installed wells for Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), iron, alkalinity, carbon dioxide, methane, sulfate, and sulfide. The wells will be sampled quarterly for the first year after re-installation and every six months in the second year. One sampling event in each year will coincide with the 15-month sampling period coincident with sampling of the other wells as required in the SMP. QWDC also proposes to sample for two additional 15-month periods after the first two years of sampling. The results will be presented to the Department after each sampling event. QWDC proposes to evaluate the groundwater sampling results after each event and, if warranted by the results and/or consistent results, petition the Department to issue a No Further Action letter for further groundwater sampling.

Groundwater sampling will include the wells listed in Table 1 plus all the wells listed in the SMP for sampling. Table 2 lists the complete set of monitoring wells to be sampled.

**Table 2 – Monitoring Wells for Sampling**

| | | | |
|---|---|---|---|
| MW-17(S) (Parcel 8) | MW-21(S) (Parcel 8) | MW-24(S) (Peninsula Park, PP) | MW-25(S) (PP) |
| MW-11(D) (Parcel 8) | MW-7R (Parcel 8) | MW-24(D) (PP) | MW-25(D) (PP) |
| MW-20(S) (Parcel 8) | MW-10 (Parcel 8) | MW-27(S) (PP) | MW-26(S) (PP) |
| MW-15(D) (Parcel 8) | MW-19(D) (Parcel 8) | MW-27(D) (PP) | MW-26(D) (PP) |
| MW-9 (Parcel 8) | | MW-30(S) (Gantry St. Park) | |
| MW-16(S) (Parcel 8) | | MW-30(D) (Gantry St. Park) | |

**Reporting**

The results of groundwater sampling will be presented to the Department in the form of a letter report. The results report will follow one month after receipt of data validation results. The report will include data summary tables, lab packages, data validation reports, and graphs and discussion of results. Well construction diagrams will be included in the first groundwater sampling report. Waste characterization results and disposal documentation will be included in the first groundwater sampling report or when they become available since disposal does not always immediately follow sampling. QWDC has contacted the library to secure access and implement the CMWP.

**Proposed Schedule**

| **Event** | **Planned Work Start** |
|---|---|
| NYSDEC approves CMWP | TBD |
| Obtain Contractor Estimates | Two weeks following NYSDEC approval of CMWP |
| Begin Well Installation | One month following NYSDEC approval of CMWP |
| Complete Well Installation | Two weeks following start of well installation |
| Well Equilibration | Two weeks following end of well installation |
| Groundwater Sampling | |
| Quarterly Groundwater Sampling, First Year<br>Adjust to coincide with 15-month sampling | Begin one week following end of equilibration period |
| Second Year Semiannual Groundwater<br>Adjust to coincide with 15-month sampling | Continue after first year of groundwater sampling |
| 15-Month Sampling | Two additional sampling events |

Schedule subject to library review, approval, and coordination.

Please call us at (212) 675-3225 if you have any questions or comments.

Sincerely,

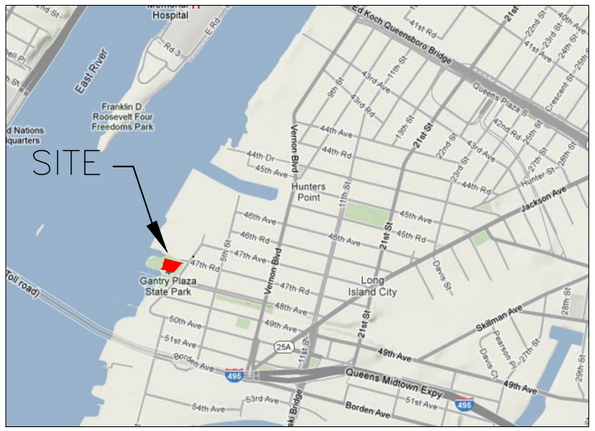
**Fleming Engineering**

Arnold F. Fleming, P.E.

47th ROAD

MW-19 (D)
MW-10
MW-24(S/D)
MW-17 (S)
MW-18 (D)
MW-17 (S)/MW-11 (D)
MW-13 (S)
MW-11 (D)
MW-15 (D)
MW-15 (S)/MW-20 (D)
MW-20 (S)
MW-25(S/D)
MW-27 (S/D)
MW-23 (S)
PENINSULA PARK
MW-12 (D)
MW-14 (S)
MW-22 (D)
CENTER BOULEVARD
MW-16 (S)
MW-9
MW-9
MW-21 (S)
MW-21 (S)/MW-7R
MW-7R
MW-26(S/D)
MW-30(S)
MW-30(D)
GANTRY PLAZA STATE PARK
48th AVE
-N-
0 30' 60'

VICINITY MAP




**FLEMING ENGINEERING**

158 West 29th Street, 9th Fl
New York, NY 10001

**Queens West Development**
**Parcel 8**
**BCP Site No. C241087**

# FIGURE 1

## SITE PLAN / PROPOSED WELL RE-INSTALLATION PLAN

January 2021

**Project Number**
10011

## LEGEND

- PARCEL 8 SITE BOUNDARY
- MONITORING WELL (ABANDONED)
- EXISTING MONITORING WELL
- PROPOSED SHALLOW / DEEP WELL CLUSTER RE-INSTALLATION

*LOCATIONS ARE APPROXIMATE AND MAY BE MOVED IN THE FIELD SLIGHTLY DUE TO SITE CONDITIONS