Revised – Underlined text is revised / added

34-11 BEACH CHANNEL DRIVE SITE

34-11 BEACH CHANNEL DRIVE, FAR ROCKAWAY, NEW YORK 11691

GROUNDWATER INVESTIGATION WORK PLAN

Revision #1

NYSDEC BCP Number: C-241141

Prepared For:

Rockaway Seagirt Limited Partnership
15 Verbena Avenue, Suite 100
Floral Park, NY 11001

Prepared by:

AMC Engineering PLLC
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AUGUST 2022

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CERTIFICATION

I, Ariel Czemerinski, certify that I am currently a [NYS registered professional engineer as defined in 6 NYCRR Part 375] and that this Groundwater Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

_____	_____	_____
NYS License Number	Date	Signature

GROUNDWATER INVESTIGATION WORK PLAN

1.0 INTRODUCTION

The Site is located in the Far Rockaway, Queens County, New York and is identified as Block 15950 and Lots 1001, 1002, and 1003 (formerly Lots 14 and 24) on the New York City Tax Map (see **Figure 1** – Location Map). The tax lots were changed to create a condo structure with three units at the property. The documentation pertaining to the change was provided to the NYSDEC, and also NYSDOL.

The Site is 36,657 square feet (0.84-acre) and is bounded by Far Rockaway Boulevard to the north and northwest, Beach Channel Drive to the northwest, Rockaway Freeway and the Manhattan Transit Authority A-Line to the south, and a vacant lot (Lot 29) to the east. The Site is now developed with a new 7-story mixed use (residential and commercial building). The building does not have a basement.

The Remedial Action for the Site was performed in accordance with the remedy selected by the NYSDEC in the Decision Document dated June 2, 2015 and in accordance with the BCA, Index No. C241141-11-12, dated December 18, 2012. The remedy achieved a Track 4 Cleanup and included the following items:

- Excavation to 8' below grade for the removal of underground storage tanks (USTs) from Lot 14, and the remediation of any grossly contaminated soil and groundwater resulting from leakage of the UST;
- Endpoint sampling from the base (8' below grade) and sidewalls (4' below grade) of the USTs excavation areas;
- Sitewide excavation to 4' below grade for the removal of all materials exceeding the 6 NYCRR Part 37-6.8, Restricted-Residential Use Soil Cleanup Objectives (RRUSCO).
- Endpoint sampling from 4' below grade across the site to meet the Track 4 Cleanup objectives (with the exception of EP6, EP8, and EP26, which failed endpoint sampling at 4' below grade, and were further excavated to 5' below grade for Track 4 compliance);
- Appropriate off-Site disposal of all materials removed from the Site, in accordance with all Federal, State, and Local rules and regulations for handling, transport, and disposal;
- Import of materials for use as cover material, in compliance with 6 NYCRR Part 375-6.7(d) and Appendix 5 of DER-10:

(1) chemical limits and other specifications included in **Table 1**;
(2) all Federal, State, and Local rules and regulations for handling and transport of material;

- Construction of a composite cover system that consisted of: buildings, pavement, sidewalk, or asphalt cover;
- Implementation of an In-Situ Chemical Oxidation (ISCO, aka chemical injections) plan, consisting of ten (10) injection wells to treat chlorinated volatile organic compounds (CVOCs) in soil and groundwater along the eastern property line where CVOCs were elevated in groundwater;
- Installation of a sub-slab depressurization system and vapor barrier beneath the Site to prevent the migration of vapors into the buildings;
- Development and implementation of a Site Management Plan (SMP) for long-term management of remaining contamination as required by the Environmental Easement, which includes plans for:
  (1) the Institutional and Engineering Controls;
  (2) an Excavation Plan;
  (3) Groundwater Monitoring;
  (4) Operation and Maintenance;
  (5) Reporting;
- Execution and recording of an Environmental Easement for the property that:
  - requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
  - allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
  - restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
  - requires compliance with the Department approved Site Management Plan.

2.0 PERIODIC REVIEW REPORT (APRIL 2020 TO APRIL 2021)

Under the conditions of the "Site Management Plan", groundwater monitoring/sampling and annual site inspections have been performed, and these can be found in prior Periodic Review Reports (PRR). The most recent PRR covered the reporting period of April 20, 2020 to April 20, 2021.

Each PRR requires a groundwater sampling event from the on-site monitoring well network on a biannual basis (as of November 2018, was quarterly prior), which consists of three onsite monitoring wells (15MW1, 15MW2, and 15MW3). These monitoring wells were installed to 30' below grade, and made up of 15' riser pipe and 15' screen. In addition, an inspection is required for the site cover and six (6) SSD system venting zones.

The PRR for the reporting period of April 2020 to April 2021 did not reveal any deficiencies, penetrations, or cracks on the site cover. All elements of the SSDS were inspected and found to be functioning properly. The groundwater sampling results indicated that an asymptotic reduction of concentrations of both chlorinated and petroleum hydrocarbons has been achieved.

Based on the conclusions above, AMC has requested that the groundwater monitoring to be discontinued. In addition, AMC has requested for the termination of the SSD system, which requires an "Indoor Air Monitoring Plan", if the Department allows for this request.

2.1 Department's Response to PRR Conclusions

On July 29, 2021, AMC Engineering, PLLC (AMC), Environmental Business Consultants (EBC), and the New York State Department of Environmental Conservation (Department) had a conference call to discuss the Department's concerns with several onsite conditions. Notably, the Department pointed out that prior investigations and reports revealed a clay layer present below a large portion of the site. The reports revealed differing groundwater flow directions between the upper aquifer (above clay) and lower aquifer (below clay). The upper aquifer only spans a few feet below grade, but the existing onsite monitoring wells (15MW1, 15MW2, and 15MW3) had a screen interval from 15-30' below grade, and may not truly represent the conditions in both aquifers.

On October 6, 2021, the same parties had a follow-up conference call to discuss the Department's standing on the PRR, and the implementation of a "Groundwater Investigation Work Plan (GWIWP)", to determine the effectiveness of the proposed

remediation (minor excavation and chemical injections) below the Site. The Department was willing to approve the PRR, but deny the request to stop groundwater monitoring.

3.0 GROUNDWATER INVESTIGATION WORK PLAN – SCOPE OF WORK

The following work will be performed under this GWIWP:

1. The installation of new cluster wells on the job site, the adjacent sidewalk, and the adjacent BCP site (C241158) as shown in Figure 2.
2. The installation of data loggers (or similar groundwater level monitoring device) within one or more of the cluster wells, to determine the effect of tidal influence and other factors that may influence the groundwater flow direction.
3. The surveying of all new and existing monitoring wells at the site, relative to NAVD88 datum.
4. Continued sampling of the monitoring wells (new and existing), as established in the approved Site Management Plan (SMP), on a quarterly basis.

3.1 Installation of New Monitoring/Cluster Wells

The installation of new cluster wells is necessary to determine the groundwater flow direction within the upper and lower aquifers, and to evaluate whether the on-site groundwater contamination has migrated off-site.

3.1.1 Prior Investigations – Remedial Investigation Report (by FPM Group, dated February 2015) for C-241141

In July 2013, FPM Group installed nine (9) well clusters. Each cluster included one shallow well (representative of the groundwater in the upper aquifer), and one intermediate well (representative of the groundwater in the lower aquifer). Six (6) clusters were installed onsite, and three (3) clusters were installed off-site. The shallow wells were denoted MW-1S through MW-9S, and were installed with 5-15 feet of well screen, depending on the location of the underlying clay. The intermediate wells were denoted MW-1I through MW-9I, and were installed with 5 feet of well screen, immediately above the deep clay. All well were constructed using 2-inch diameter PVC casing, and 0.02-inch machine-slotted PVC screen. The well annuli were backfilled with More #1 well gravel (or equal), from approx. one foot below to one foot above each well screen. The sand pack above each screen was sealed with a two-foot bentonite seal, and the balance of each annulus was backfilled with sand to grade elevations.

FPM group obtained groundwater data from these well clusters in August 2013, November 2013, and November 2014. A brief summary of the groundwater flow directions from each mobilization event can be found below:

August 2013
Shallow wells: Groundwater flow was observed to be in the northwest direction.
Intermediate wells: Groundwater flow was observed to be in the southwest direction.

November 2013
Shallow wells: Groundwater flow was observed to be in the westerly direction.
Intermediate wells: Groundwater flow was observed to be in the west-southwest direction.

November 2014
Shallow wells: Groundwater flow was observed to be in the west direction.
Intermediate wells: Groundwater flow was observed to be in the easterly direction.

December 2014
Shallow wells: Groundwater flow was observed to be in the westerly direction (varies from southwest to northwest direction).
Intermediate wells: Groundwater flow was observed to be in the southwest direction.

January 2015
Shallow wells: Groundwater flow was observed to be in the west-southwest direction.
Intermediate wells: Groundwater flow was observed to be in the westerly direction.

Generally, the groundwater flow direction seems to be westerly within the upper aquifer, and south-westerly in the lower aquifer (with the exception of the November 2014 sampling event.

Copies of these groundwater flow contour maps (by FPM) can be found in **Attachment A**.

3.1.2 Prior Investigations – Remedial Investigation Report (by TRC Environmental Corp, dated February 2015) for C-241158

TRC Environmental Corporation (TRC) was retained by the owner of the adjacent property (under NYSDEC Project No. C-241158) for onsite remediation activities. An onsite monitoring well network, consisting of six (6) well clusters, was used to determine the groundwater flow direction for both aquifers. Based on groundwater level measurements collected on April 3, 2015 and an onsite survey performed on March 24, 2015, the groundwater flow in the upper aquifer was determined to be in the west-northwest direction. Based on the same data, the groundwater flow in the lower aquifer was determined to be northerly.

Copies of these groundwater flow contour maps (by TRC) can be found in **Attachment B**.

3.1.3 Proposed Cluster Wells for the GWIWP

A total of four (4) cluster wells are proposed for this Groundwater Investigation, to determine the direction of the groundwater flow within the upper and lower aquifers. Each cluster well will consist of three (3) monitoring/observation wells, denoted as "Monitoring Well Shallow (MW-S)", "Monitoring Well Intermediate (MW-I)", and "Monitoring Well Deep (MW-D)". For four clusters, this is a total of twelve (12) monitoring wells (4 MW-S, 4 MW-I, and 4 MW-D).

All proposed monitoring well will be constructed using 2-inch diameter PVC riser/casing, and 0.02-inch machine-slotted PVC screen. Each monitoring well will be installed within a 6" borehole, to create a 2" annulus around the wells. The well annuli will be backfilled with #2 well gravel/sand pack (or equal) to cover the screened interval. The sand pack above each screen will be sealed with a two-foot bentonite seal, and the balance of each annulus will be backfilled with the sand pack to grade elevation.

Shallow Wells
The shallow wells (MW-1S, MW-2S, MW-3S, MW-4S) will be installed from grade elevation to 15' below grade. Each shallow well will consist of 5' riser and 10' screen. The shallow wells will represent the groundwater conditions from 5-15' below grade.

Intermediate Wells
The intermediate wells (MW-1I, MW-2I, MW-3I, MW-4I) will be installed from grade elevation to 25' below grade. Each intermediate well will consist of 15' riser and 10' screen. The intermediate wells will represent the groundwater conditions from 15-25' below grade.

Deep Wells
The deep wells (MW-1D, MW-2D, MW-3D, MW-4D) will be installed from grade elevation to 35' below grade. Each deep well will consist of 25' riser and 10' screen. The deep wells will represent the groundwater conditions from 25-35' below grade.

Monitoring/cluster well construction logs will be generated upon completion of the cluster well installation, and will be included in the groundwater investigation report.

The locations of the proposed cluster wells can be found in **Figure 2,** and are as follows:

- MW-1S, MW-1I, MW-1D: to be installed on the east-side sidewalk of Beach Channel Drive, immediately adjacent to the north-west property line of the property.
- MW-2S, MW-2I, MW-2D: to be installed along the north-east side sidewalk of Beach 34th Street, immediately adjacent to the south-west property line of the property.
- MW-3S, MW-3I, MW-3D: to be installed along the north-west side sidewalk of Rockaway Freeway or within the landscaped area along the south-east property line of the property.
- MW-4S, MW-4I, MW-4D: to be installed within the courtyard area (parking lot), in the middle of the property.

All installed wells will be installed and developed on the same day. Groundwater sampling will occur at least 1 week afterwards, to allow for aquifer stabilization.

3.2 Installation of Data Loggers (Or Other Groundwater Monitoring Device)

Data loggers (or other groundwater monitoring devices) will be installed in each of the eight (8) wells after well development. Data loggers (Level TROLL series by In-Situ Inc. or equal) will be installed to the bottom of the wells. Each data logger will be programmed to obtain one reading per minute for a total of three (3) days, to determine the changes in the groundwater elevations over a 72-hour period. This data will be used to determine whether tidal influence affects either aquifer.

If the data is unclear, the data loggers may need to remain for a longer period. This determination will be made in the future, upon review of the first 72 hours.

The installation of data loggers and elevation monitoring may be repeated during different times of the year, if requested by the Department.

3.3 On-Site Survey & Groundwater Flow Determination

At least one site mobilization is necessary to survey the new cluster wells and the existing onsite monitoring wells. The surveying of the wells will be performed as a stand-alone event, after all of the data loggers have been removed. Since there is an existing building onsite, surveying equipment utilizing GPS coordinates may be necessary. The surveyors (company), means and methods, and the mobilization date will be determined in the future, based on site activities and will be reported to the Department prior to mobilization.

3.4 Groundwater Quality Monitoring and Sampling

Upon installation of the four (4) cluster wells (twelve monitoring wells), there will be a total of fifteen (15) monitoring wells onsite. There are: MW-1S, MW-1I, MW-1D, MW-2S, MW-2I, MW-2D, MW-3S, MW-3I, MW-3D, MW-4S, MW-4I, MW-4D, 15MW1, 15MW2, and 15MW3.

Groundwater sampling will be collected following the EPA's Low-Flow Ground-Water Sampling Procedures (Section IV). At a minimum, the following parameters will be monitored for stabilization purposes and to determine whether samples can be collected as per EPA's guidance:

- pH;
- Specific Conductance;
- Redox Potential;
- Dissolved Oxygen; and
- Turbidity;

Groundwater samples will be collected once per calendar quarter from each monitoring well, unless otherwise noted by the Department. Each sample will be collected and analyzed for:

- Volatile Organic Compounds (VOCs) via EPA Method 8260.

Additional sampling events may be scheduled as needed, if determined by the Department. All well sampling activities will be recorded in a field book and a groundwater-sampling log. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

At a minimum, this should include a description of:

- Well gauging;
- Well purging;
- Sampling methodology;
- Analytical methodology:
    - Lab certification;
    - Analytical methods;
    - Analytes;

A typical groundwater sampling event will be conducted in accordance with the following:

- Wear appropriate health and safety equipment during the sampling. At a minimum, Level D PPE, and nitrile gloves should be worn.
- Inspect each well for any damage or evidence of tampering and note condition in field logbook.
- Remove the well cap.
- Lay out plastic sheeting and place the monitoring, purging, and sampling equipment on the sheeting.
- To avoid cross-contamination, do not let any downhole equipment touch the ground.
- A synoptic water level measurement round should be performed (in the shortest possible time) before any purging and sampling activities begin. Measure and record the depth to water using a water level meter or interface probe to the nearest 0.01 ft. Record the measurement in the field logbook. Do not measure the depth to the bottom of the well at this time (to avoid disturbing any sediment that may have accumulated). Obtain depth to bottom information from installation information in the field logbook or soil boring logs.
- Fit the polyethylene tubing with a check valve, connect the tubing to the pump and lower the tubing into the well to approximately the middle of the screen. Tubing should be a minimum of 2 feet above the bottom of the well as this may cause mobilization of any sediment present in the bottom of the well. Groundwater sampling to follow the EPA's Low-Flow Ground-Water Sampling Procedures.
- Start the pump at its lowest speed setting and slowly increase the speed until discharge occurs. Check groundwater level.
- There should be at least 1 foot of water over the end of the tubing so there is no risk of entrapment of air in the sample. Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to avoid purging the well dry. However, if the recharge rate of the well is very low and the well is purged dry, then wait until the well has recharged to a sufficient level before collecting the appropriate volume of sample.
- If a bailer is used instead, ensure that a new a bailer is used for each well, to avoid cross contamination.
- Samples shall be collected directly into pre-preserved sample containers. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

- Label the samples and record them on the chain of custody form. Place immediately into a cooler for shipment and maintain at 4°C.
- Remove the tubing from the well. The polyethylene tubing must either be dedicated to each well or discarded. If dedicated the tubing should be placed in a large plastic garbage bag, sealed, and labeled with the appropriate well identification number.
- Close and lock the well.
- Decontaminate pump either by changing the pump tubing between wells or as follows:
    - Flush the equipment/pump with potable water.
    - Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.
    - Flush with potable or distilled/deionized water to remove all the detergent solution. If the water is recycled, the water must be changed periodically.
    - Flush with isopropyl alcohol (pesticide grade). If equipment blank data from the previous sampling event show that the level of contaminants is insignificant, then this step may be skipped.
    - Flush with distilled/deionized water. The final water rinse must not be recycled.

Samples will be collected in pre-cleaned laboratory supplied glassware, stored in a cooler with ice and submitted to Phoenix Environmental Laboratories, Inc., a New York State ELAP certified environmental laboratory (NY Lab ID # 11301). All purging and sampling data will be recorded on dedicated well sampling forms.

QA/QC

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site. Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:

  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be labeled accordingly.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected, as necessary.
- Sample Custody and Tracking;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures;

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be stored in the field in a cooler containing ice or cold-pak(s) to maintain a temperature of 4°C. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved with ice or cold-pak(s) to maintain a temperature of 4°C, +/- 2°C.

Dedicated disposable sampling materials will be used for groundwater samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, field rinsate blanks will be prepared at the rate of 1 for every eight samples collected. Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.

Trip blanks will accompany samples each time they are transported to the laboratory.

3.5 LABORATORY ANALYSIS AND REPORTING

Sample analysis will be provided by a New York State ELAP certified environmental laboratory. Category B deliverables and EDDs will be requested for all sampling results, and DUSRs will be prepared for all groundwater data. The DUSR preparer will be determined at a later date, and a copy of his/her resume will be submitted in the future, once a decision has been made. Groundwater sample collection will not begin until the DUSR preparer is approved by the Department.

A tabular and map summary of all sampling events and exceedances of water quality standard will be included in the Groundwater Investigation Report.

3.6 SCHEDULE

The start date for the cluster well installation will be determined and scheduled following the approval of this GWIWP by the Department. Mobilization for the cluster well installation and well development is anticipated 4 weeks after the approval, to coordinate with ownership and mobilization of drilling equipment. A round of groundwater samples will be collected at least one week after the well installation, to allow for aquifer stabilization. Data loggers will be installed during the same day as this sampling event. An onsite survey will be performed shortly after the removal of the data loggers (pending surveyor's availability and site access).

Schedule Milestone	Estimated Completion Date
Installation of New Cluster Wells and Well Development	Approx. 4 weeks after plan approval
First Round of Groundwater Samples, and Data Logger Installation	At least one week after the installation of new cluster wells
Onsite Survey	TBD (pending surveyor's availability and site access)
Submission of Groundwater Investigation Report and/or Additional Work Plan(s)	TBD, based on correspondence with the Department and evaluation of the newly collected data

4.0 REPORTING TO THE DEPARTMENT

4.1 CLUSTER WELL INSTALLATION

Upon the completion of the cluster well installation, a summary report summarizing the work performed, with monitoring well construction logs, will be submitted to the Department.

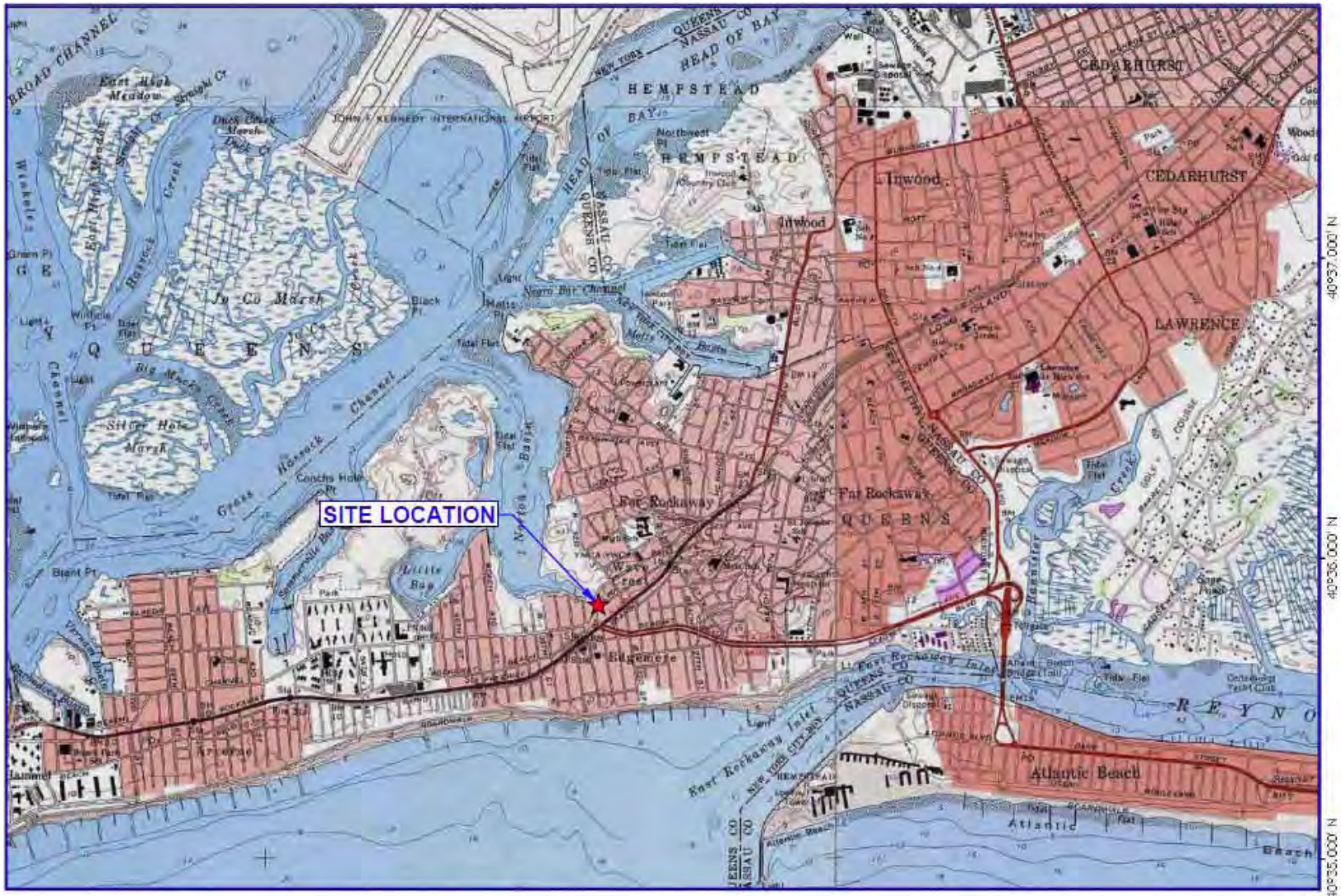
4.2 FIELD MOBILIZATION EVENTS (POST-WELL INSTALLATION)

Each field mobilization event (sampling, surveying, data logging, etc) will be described and noted as a Daily Status Report (DSR). At a minimum, each DSR will contain the following information:

- Date and time of field event;
- Name of the inspector;
- Site name, site address, and NYSDEC BCP project number;
- Brief description of site activities performed, equipment used;
- Any issues encountered; and
- Any corrective measures needed

These DSRs will be submitted to the Department by noon the following day, and also included in each Quarterly Sampling Report. Quarterly Reports will be appended to the annual Period Review Report (PRR).

FIGURES



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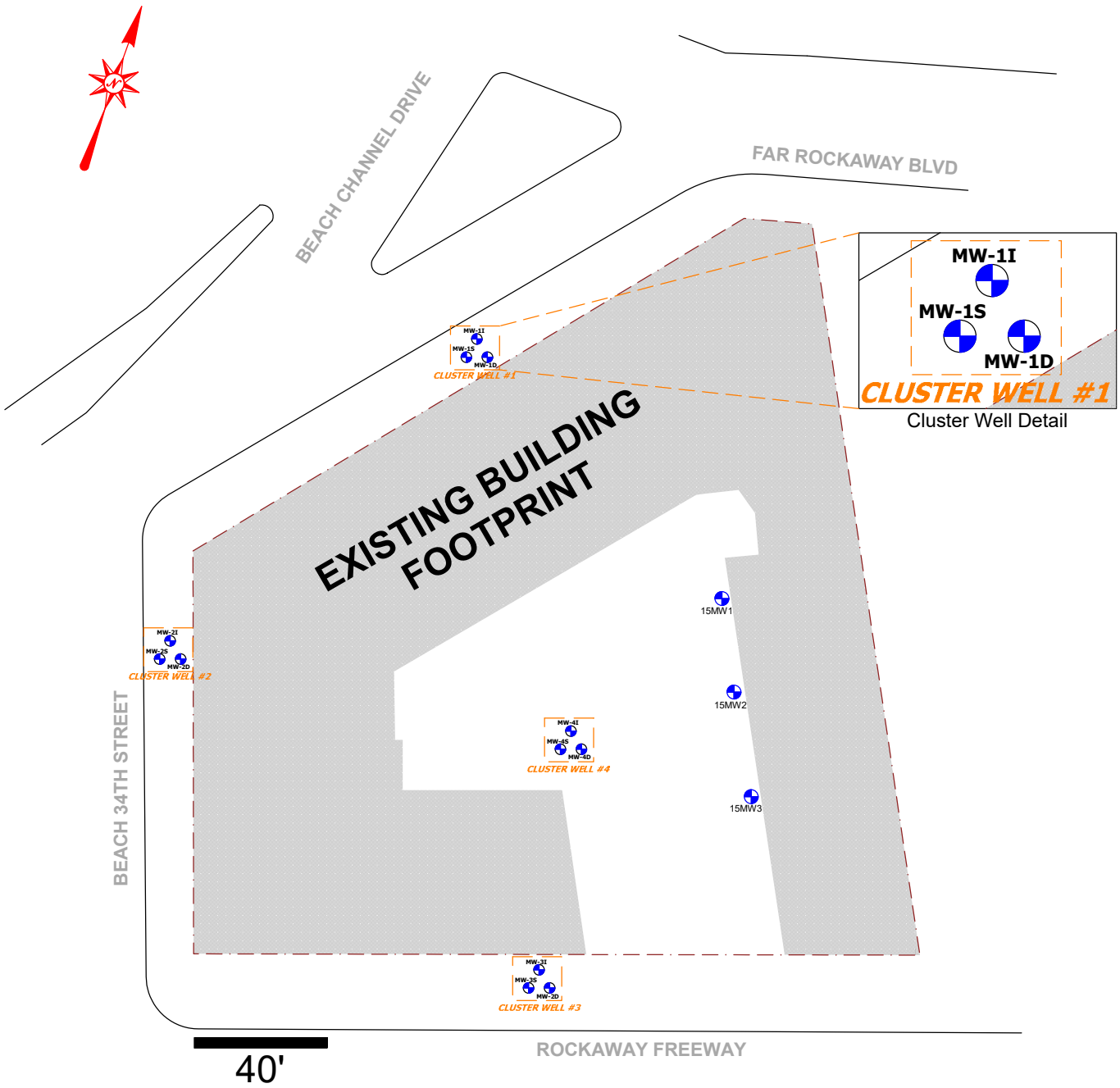
PROJECT

NYSDEC BCP #C-241141
34-11 Beach Channel Drive
Far Rockaway, NY

DATE: NOV 18, 2021

DRAWING BY: AS

TITLE: FIGURE 1 - SITE LOCATION MAP



Notes:

1. The exact location of each cluster well will be updated after the installation is completed.
2. Cluster well #3 may be installed within the property line on the landscaped area, if permitted to do so. Otherwise, it will be installed on the sidewalk (as shown). This information will be provided after the installation is completed.
3. Each cluster well will consist of a shallow well, intermediate well, and deep well.
   a. Shallow wells (MW1-S to MW4-S) will be installed to 15' below grade, and consist of 5' riser pipe and 10' screen (0.02 slotted).
   b. Intermediate wells (MW1-I to MW4-I) will be installed to 25' below grade, and consist of 15' riser pipe and 10' screen (0.02 slotted).
   c. Deep wells (MW1-D to MW4-D) will be installed to 35' below grade, and consist of 25' riser pipe and 10' screen (0.02 slotted).

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PROJECT

NYSDEC BCP #C-241141
34-11 Beach Channel Drive
Far Rockaway, NY

DATE: AUG 22, 2022

DRAWING BY: AS

TITLE: FIGURE 2 - New Proposed Cluster Well Location Map

ATTACHMENT A
Remedial Investigation Report GW Contour Maps (by FPM Group)

LEGEND:

- SHALLOW WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1S (15.65)
- GROUNDWATER FLOW DIRECTION
- 15.8 — WATER TABLE CONTOURS (WESTERN WELLS)
- 15.7 — WATER TABLE CONTOURS (EASTERN WELLS)

FPM GROUP		
FIGURE 3.3.2.1 AUGUST 2013 SHALLOW GROUNDWATER RELATIVE ELEVATIONS 34-11 BEACH CHANNEL DRIVE SITE FAR ROCKAWAY, QUEENS, NEW YORK		
Drawn By: H.C.	Checked By: B.C.	Date: 4/9/2014

H:\ALPROF\RI FIGURES\AUG 2013 SHALLOW GW ELEV.dwg, 1/20/2015 10:02:05 AM, Letter

LEGEND:

- INTERMEDIATE WELLS WITH INTERMEDIATE GROUNDWATER RELATIVE ELEVATION
  MW-1I (15.23)
- GROUNDWATER FLOW DIRECTION
- 15.1 — INTERMEDIATE GROUNDWATER CONTOURS

FPM GROUP

FIGURE 3.3.2.2
AUGUST 2013 INTERMEDIATE GROUNDWATER RELATIVE ELEVATION CONTOURS
34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: B.C.	Date: 4/9/2014

H:\ALPROF\RI FIGURES\AUG 2013 INTERMEDIATE GW ELEV.dwg, 1/20/2015 10:02:46 AM, Letter

LEGEND:

- SHALLOW WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1S (14.75)
- GROUNDWATER FLOW DIRECTION
- 15.0 — WATER TABLE CONTOURS (WESTERN WELLS)
- 14.8 — WATER TABLE CONTOURS (EASTERN WELLS)

FPM GROUP		
FIGURE 3.3.2.3 NOVEMBER 2013 SHALLOW GROUNDWATER RELATIVE ELEVATION CONTOURS 34-11 BEACH CHANNEL DRIVE SITE FAR ROCKAWAY, QUEENS, NEW YORK		
Drawn By: H.C.	Checked By: B.C.	Date: 4/9/2014

H:\ALPROF\RI FIGURES\NOV 2013 SHALLOW GW ELEV.dwg, 1/20/2015 10:03:38 AM, Letter

LEGEND:

- INTERMEDIATE-LEVEL WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1I (14.24)
- GROUNDWATER FLOW DIRECTION
- 14.2 — INTERMEDIATE GROUNDWATER CONTOURS

FPM GROUP

FIGURE 3.3.2.4
NOVEMBER 2013
INTERMEDIATE GROUNDWATER
RELATIVE ELEVATION CONTOURS

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: B.C.	Date: 4/9/2014

H:\ALPROF\RI FIGURES\NOV 2013 INTER GW ELEV.dwg, 1/20/2015 10:04:21 AM, Letter

LEGEND:

- SHALLOW WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1S (15.61)
- GROUNDWATER FLOW DIRECTION
- 16.0 — WATER TABLE CONTOURS (WESTERN WELLS)
- 15.8 — WATER TABLE CONTOURS (EASTERN WELLS)

FPM GROUP		
FIGURE 3.3.2.5 NOVEMBER 2014 SHALLOW GROUNDWATER RELATIVE ELEVATION CONTOURS 34-11 BEACH CHANNEL DRIVE SITE FAR ROCKAWAY, QUEENS, NEW YORK		
Drawn By: H.C.	Checked By: S.D.	Date: 12/2/2014

H:\ALPROF\RI FIGURES\NOV 2014 SHALLOW GW ELEV.dwg, 1/20/2015 10:07:55 AM, Letter

LEGEND:

- INTERMEDIATE-LEVEL WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1I (14.49)
- GROUNDWATER FLOW DIRECTION
- (-) WELL WAS DAMAGED
- 14.8 INTERMEDIATE GROUNDWATER CONTOURS

FPM GROUP

FIGURE 3.3.2.6
NOVEMBER 2014
INTERMEDIATE GROUNDWATER
RELATIVE ELEVATION CONTOURS

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: S.D.	Date: 12/2/2014

H:\ALPROF\RI FIGURES\NOV 2014 INTER GW ELEV.dwg, 1/20/2015 10:07:06 AM, Letter

LEGEND:

- SHALLOW WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1S (15.86)
- GROUNDWATER FLOW DIRECTION
- 16.0 — WATER TABLE CONTOURS (WESTERN WELLS)
- 16.1 — WATER TABLE CONTOURS (EASTERN WELLS)

FPM GROUP

FIGURE 3.3.2.7
DECEMBER 2014
SHALLOW GROUNDWATER
RELATIVE ELEVATION CONTOURS

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: S.D.	Date: 1/13/2015

H:\ALPROF\RI FIGURES\DEC 2014 SHALLOW GW ELEV.dwg, 1/20/2015 10:08:38 AM, Letter

LEGEND:

- INTERMEDIATE-LEVEL WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) (e.g. MW-1I (14.66))
- GROUNDWATER FLOW DIRECTION
- 14.0 — INTERMEDIATE GROUNDWATER CONTOURS

FPM GROUP		
FIGURE 3.3.2.8 DECEMBER 2014 INTERMEDIATE GROUNDWATER RELATIVE ELEVATION CONTOURS 34-11 BEACH CHANNEL DRIVE SITE FAR ROCKAWAY, QUEENS, NEW YORK		
Drawn By: H.C.	Checked By: S.D.	Date: 1/13/2015

H:\ALPROF\RI FIGURES\DEC 2014 INTER GW ELEV.dwg, 1/20/2015 10:09:27 AM, Letter

LEGEND:

- SHALLOW WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) — MW-1S (15.86)
- GROUNDWATER FLOW DIRECTION
- 16.0 — WATER TABLE CONTOURS (WESTERN WELLS)
- 16.1 — WATER TABLE CONTOURS (EASTERN WELLS)

FPM GROUP

FIGURE 3.3.2.9
JANUARY 2015
SHALLOW GROUNDWATER
RELATIVE ELEVATION CONTOURS

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: S.D.	Date 2/9/2015

H:\ALPROF\RI FIGURES\JANUARY 2015 SHALLOW GW ELEV.dwg, 2/9/2015 2:36:37 PM, Letter

LEGEND:

- INTERMEDIATE-LEVEL WELLS WITH GROUNDWATER RELATIVE ELEVATION (FEET) (MW-1I (14.66))
- GROUNDWATER FLOW DIRECTION
- 14.0 — INTERMEDIATE GROUNDWATER CONTOURS

FPM GROUP

FIGURE 3.3.2.10
JANUARY 2015
INTERMEDIATE GROUNDWATER
RELATIVE ELEVATION CONTOURS

34-11 BEACH CHANNEL DRIVE SITE
FAR ROCKAWAY, QUEENS, NEW YORK

Drawn By: H.C.	Checked By: S.D.	Date: 2/9/2015

H:\ALPROF\RI FIGURES\JANUARY 2015 INTER GW ELEV.dwg, 2/9/2015 2:37:09 PM, Letter

ATTACHMENT B
Remedial Investigation Report (for Adjacent Property) GW Contour Maps (by TRC Environmental Corp)

FAR ROCKAWAY BOULEVARD

CURB

SIDEWALK

P.O.B.

TO BAY
32ND STREET

12' GATE

8' CHAIN LINK FENCE

8' CHAIN LINK FENCE

8' CHAIN LINK FENCE

6' CHAIN LINK FENCE

MW-1i

MW-1s
2.68

MW-2
5.66

3.0

3.1

3.2

3.3

3.4

BLOCK 15950
LOT 29

BLOCK 15950
LOT 24

3.08
MW-6s*
MW-6i

MW-9s*
MW-9i
3.17

3.42
MW-3s
MW-3i

3.20
MW-4s*
PZ-3
MW-4i*

MW-10s
3.27

3.22
MW-8s*
MW-8i

PROPERTY LINE

BLOCK 15950
LOT 55

CAPPED
RE-BAR SET

8' CHAIN LINK FENCE

BEACH 2

ROCKAWAY FREEWAY

0 30
APPROXIMATE SCALE

LEGEND

MW-1 — MONITOR WELL LOCATION

MW-1* — MONITOR WELL LOCATION FOR MNA GW SAMPLES

3.08 — GROUNDWATER ELEVATION

GROUNDWATER FLOW DIRECTION

TRC ENVIRONMENTAL CORP.
41 Spring Street
New Providence, New Jersey 07974

SHALLOW GROUNDWATER ELEVATIONS
APRIL 3, 2015

CPB – FAR ROCKAWAY, NEW YORK

JOB NO.: 174788

HFN	DATE: MAY 2015	FIGURE: 4

FAR ROCKAWAY BOULEVARD

CURB

SIDEWALK

TO BAY
32ND STREET

P.O.B.

12' GATE

8' CHAIN LINK FENCE

8' CHAIN LINK FENCE

8' CHAIN LINK FENCE

6' CHAIN LINK FENCE

MW-1i
1.34
MW-1s

MW-2

1.35

BLOCK 15950
LOT 29

BLOCK 15950
LOT 24

MW-6s*
MW-6i
1.37

MW-9s*
MW-9i
1.37

1.4

1.45

1.47
MW-4s*

MW-10s

PZ-3
1.46
MW-4i*

MW-3s
MW-3i
1.39

MW-8s*
MW-8i
1.49

PROPERTY LINE

BLOCK 15950
LOT 55

CAPPED
RE-BAR SET

8' CHAIN LINK FENCE

ROCKAWAY FREEWAY

0 30
APPROXIMATE SCALE

LEGEND

MW-1	MONITOR WELL LOCATION
MW-1*	MONITOR WELL LOCATION FOR MNA GW SAMPLES
1.39	GROUNDWATER ELEVATION
	GROUNDWATER FLOW DIRECTION

TRC ENVIRONMENTAL CORP.
41 Spring Street
New Providence, New Jersey 07974

INTERMEDIATE GROUNDWATER ELEVATIONS
APRIL 3, 2015

CPB – FAR ROCKAWAY, NEW YORK

JOB NO.: 174788

HFN	DATE: MAY 2015	FIGURE: 5

FILE: \\MILLBURN-FP2\DRAFTINGFILES\CAD FILES\VISION PROJECTS\174788\SOIL GAS SAMPLING\JULY 2015 RIR FIGURES.DWG, DATE: 07/27/2015 05:15:17PM

ATTACHMENT C-E
CAMP, HASP, QAPP
[See approved RAWP, FER, SMP]