

**ILLINOIS POLLUTION CONTROL BOARD**

Blake Leasing Company, LLC – Real Estate Series, )  
as owner of Kirkland Quick Stop, )  
 )  
Petitioner, ) PCB No. 16-100  
 ) (Water Well Setback Exception)  
v. )  
 )  
Illinois Environmental Protection Agency and )  
Village of Kirkland, )  
 )  
Respondents. )

**NOTICE OF FILING**

To: See Attached Certificate of Service

**PLEASE TAKE NOTICE** that on April 29, 2016, Blake Leasing Company, LLC – Real Estate Series filed with the Illinois Pollution Control Board, its **Notice of Service**, a copy of which is attached and served upon you.

Dated: April 29, 2016

Respectfully submitted ,

On behalf of Blake Leasing Company, LLC –  
Real Estate Series

/s/ Charles F. Helsten

Charles F. Helsten  
One of Its Attorneys

Charles F. Helsten  
HINSHAW & CULBERTSON LLP  
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P.O. Box 1389  
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[chelsten@hinshawlaw.com](mailto:chelsten@hinshawlaw.com)

**CERTIFICATE OF SERVICE**

I, Charles F. Helsten, an attorney, certify that I have served the attached **Notice of Service** on the named parties below by certified mail, return receipt requested, by 5:00 p.m. on April 29, 2016.

Division of Legal Counsel  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

Village of Kirkland  
Attn: Mayor Les Bellah  
511 W. Main Street  
Kirkland, Illinois 60146

Brad Halloran  
Hearing Officer  
James R. Thompson Center  
100 W. Randolph, Suite 11-500  
Chicago, Illinois 60601

Joanne M. Olson  
Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 N. Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

/s/Charles F. Helsten

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**NOTICE OF SERVICE**

**PLEASE TAKE NOTICE** that on April 29, 2016, Blake Leasing Company, LLC – Real Estate Series reserved its **Petition for Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c)**, upon the following, via certified mail, return receipt requested:

Division of Legal Counsel  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

Village of Kirkland  
Attn: Mayor Les Bellah  
511 W. Main Street  
Kirkland, Illinois 60146

Brad Halloran  
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Chicago, Illinois 60601

Joanne M. Olson  
Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 N. Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

A copy of the Petition for Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c), with new certificate of Service, is attached hereto.

Dated: April 29, 2016

Respectfully submitted ,

On behalf of Blake Leasing Company, LLC –  
Real Estate Series

/s/ Charles F. Helsten

Charles F. Helsten  
One of Its Attorneys

Charles F. Helsten  
HINSHAW & CULBERTSON LLP  
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815-490-4900  
[chelsten@hinshawlaw.com](mailto:chelsten@hinshawlaw.com)

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as owner of Kirkland Quick Stop, )  
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Petitioner, ) PCB No. 16-100  
 ) (Water Well Setback Exception)  
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Illinois Environmental Protection Agency and )  
Village of Kirkland, )  
 )  
Respondents. )

**PETITION FOR WATER WELL SETBACK EXCEPTION PURSUANT  
TO 415 ILCS 5/14.2(C)**

NOW COMES Petitioner, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, by and through its attorneys, Hinshaw & Culbertson, LLP, and for its Petition For Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c), states as follows:

1. Petitioner, Blake Leasing Company, LLC – Real Estate Series (“Petitioner”), is the owner of the Kirkland Quick Stop ("KQS") gas station property located at 411 W. Main Street, Kirkland, DeKalb County, Illinois 60146 (“Subject Property”).

2. Petitioner presents this Petition to further address the prior release of petroleum product (unleaded gasoline and diesel) from underground storage tanks formerly located at the Subject Property.

3. The remediation of the Subject Property is in response to Leaking Underground Storage Tank/Illinois Emergency Management Agency Incident Number 891717 requesting closure of a petroleum release from regulated underground storage tanks located at the Subject Property.

4. Through groundwater testing results of on-site and off-site monitoring wells at and near the Subject Property, it has been determined that the groundwater contaminants are

located within the regulated 1,000 foot setback zone for the two (2) municipal water supply wells located in the Village of Kirkland.

5. Institutional controls, TACO analysis Tier 2 modeling and R-26 calculations cannot be used to effectuate final corrective action status, as the residual contamination is in part located with the protected setback zone for potable water supply wells for the Village of Kirkland. Specifically, active remediation is required since the Subject Property is located within the setback zone of the Village of Kirkland emergency backup water supply well, which is located 75 feet east of the Northern boundary of the Subject Property, and the main Village supply well, which is located 422 feet North of the Northern boundary of the Subject Property, as TACO Tier 2 and 3 modeling indicate possible further down-gradient migration (North-Northwest) of polynuclear aromatic hydrocarbons (PNAs) and benzene in ground water.

6. As such, some form of active remediation is necessary at the Subject Property to mitigate certain relatively minor exceedances of applicable Tier 1 Class I ground water remediation objectives ("GROs") for Benzene, and/or PNA compounds that include Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Ideno(1, 2, 3-cd)pyrene, 2-Methylnaphthalene, and/or Naphthalene. However, 415 ILCS 5/14.2 of the Illinois Environmental Protection Act ("Act") prohibits GROs for sites located within a well setback zone in a designated well protection area. In this particular case, the area in which remediation would need to take place is within the protected setback zone for the two (2) potable water supply wells for the Village of Kirkland.

7. To move forward with the remediation, Petitioner retained the environmental consulting firm, GeoThink, LLC ("GeoThink"). GeoThink prepared a Corrective Action Plan and budget through which several different remedial alternatives were explored, and the most site-appropriate, safe and effective option was chosen. A copy of GeoThink's Corrective Action Plan is attached hereto as Exhibit "A" and incorporated by this reference. Options considered

were air sparging, ground water extraction (pump and treat) via extraction wells, ground water extraction via interceptor trench, and in-situ enhanced bioremediation. Both ground water extraction options also included reinjection of treated ground water at an up-gradient infiltration trench. The Illinois Environmental Protection Agency approved the Corrective Action Plan on November 24, 2015. A copy of that approval letter is attached hereto as Exhibit "B" and incorporated by this reference. A review of that correspondence reflects that the Corrective Action Plan was conditionally approved by IEPA upon receipt of a waiver from the Illinois Pollution Control Board to allow injection of bioremediation agents into the subsurface within the protective setback zone of the community water supply wells in question.

8. GeoThink ruled out air sparging because of the high iron concentrations in ground water and extensive O & M (which included significant winterization costs). Likewise, GeoThink ruled out both ground water extraction methods because of the limited success of pump and treat systems in this particular geological setting, and the anticipated time to achieve GROs even if successful, and extensive O & M (which include significant winterization costs).

9. GeoThink chose in-situ enhanced bioremediation as the recommended option since it has been successful at other representative Leaking Underground Storage Tank ("LUST") sites in remediating BTEX and PNAs, and the level of groundwater cleanup required would be localized to three distinct areas on-site, and one distinct area off-site along the Subject Property's northern property line and adjoining Railroad Street.

10. The enhanced bioremediation, as proposed by GeoThink in its Corrective Action Plan envisions the use of injection wells to address the three areas of groundwater contamination (2 on-site & 1 off-site) located within the setback zones of the Village of Kirkland's municipal water supply wells. Specifically, GeoThink, on behalf of Petitioner, proposes to inject enhanced bioremediation products in order to remediate residual petroleum hydrocarbons in the shallow

groundwater to below Class I GROs and obtain a No Further Remediation Letter ("NFR") from the IEPA LUST section.

11. The proposed enhanced bioremediation will be accomplished by injection of hydrocarbon degrading aerobic bacteria, OSEI, which is an enzyme-based surfactant and nutrient product, as well as a biological oxygen compound ("BOC") to provide oxygen and minerals needed by bacteria for the degradation process to take place. The three remedial amendment products proposed for injection are all natural, easily bio-degradable, and are not harmful to human health. GeoThink proposes a series of 47 temporary 1-inch diameter, PVC injection wells discretely screened in the impacted soil and groundwater zones approximately 15 feet deep. The in-situ bioremediation process is described in more detail in the attached Corrective Action Plan document marked as Exhibit "A".

12. The Village of Kirkland, along with the site owner and GeoThink, have executed a Site Access Agreement to the Village's property and its water supply wells for testing services related to the investigation and cleanup of the petroleum release. A copy of that Site Access Agreement is marked Exhibit "C" and attached hereto and incorporated by this reference.

13. Petitioner will utilize the best available control technology practicable so as to minimize the likelihood of contamination of the potable water supply well. Specifically, the injection well setback exception is justified, and the likelihood of contamination is minimized, for the following reasons:

- a. The bacteria, OSEI and BOC amendments proposed by GeoThink for injection are all natural and not a threat to human health;
- b. The shallow near surface groundwater within the setback zone is already contaminated with petroleum compounds that are harmful to human life and the resultant products after bio-degradation are: O<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O, and biomass;
- c. Bio-degradation and, in turn, natural attenuation is already occurring on its own and Petitioner, through GeoThink, is only proposing to accelerate the process already in place at three designated areas of groundwater contamination;

- d. The bacterial inoculant Petitioner proposes is not harmful to human health, is only for hydrocarbon degradation, and will die off as the contamination source decreases;
- e. The enzyme-based surfactant and bio-enhancement product Petitioner proposes to use is made up of a bio-degradable, edible surfactant, molasses, sugars; and
- f. BOC is calcium peroxide – it generates oxygen and is used in baking, pharma and making vitamin B12.

14. In performing the remediation outlined herein, Petitioner will utilize the maximum feasible alternative setback as required by this Board to encompass and address the entire KQS site (a setback of 600 feet for the main supply well, and a setback of 300 feet for the emergency backup well).

15. The use of injection wells as outlined herein, with the precautions as set forth herein, will not constitute a hazard to the potable water supply wells.

16. Petitioner had previously requested IEPA to grant relief from the setback requirements per Section 14.2(b) of the Act. In a letter dated January 21, 2016, IEPA denied that request because the relief sought was outside the scope of relief provided by provisional variances. However, Petitioner was directed by the Agency to Section 14.2(c)'s setback zone exception relative to a community water supply well. A copy of that January 21, 2016 letter from IEPA is marked Exhibit "D" and attached hereto and incorporated herein by this reference.

17. The allowed setback requirements of Section 14.2 of the Act pose an arbitrary and unreasonable hardship upon Petitioner, as generally, the use of enhanced bioremediation injection wells located within a protected minimum setback zone established for potable water supply wells per Section 14.2 of the Act is prohibited. However, a waiver pursuant to Section 14.2(b) of the Act, or an exception pursuant to 14.2(c) of the Act, may be obtained, thereby allowing the use of injection wells in a setback zone. Petitioner seeks that Section 14.2(c) exception by way of this Petition based upon the direction contained in the January 21, 2016 letter from Mr. Kim.



18. On September 17, 2015 Petitioner submitted its waiver request per Section 14.2(b) of the Act to the owner of the municipal water supply, the Village of Kirkland, to obtain the Village's permission to allow use of the injection wells and enhanced bioremediation to remediate the residual petroleum hydrocarbons in the shallow groundwater located within the Village well setback zone to below Class I GROs. The Village executed that waiver release form on or about February 2, 2016. A copy of Petitioner's waiver request and the Village's executed waiver is attached hereto as Exhibit "E".

19. For all of the reasons set forth herein, Petitioner respectfully requests a setback zone exception pursuant to Section 14.2(c) of the Act to perform the remedial work still needed on the Subject Property.

WHEREFORE, Petitioner, Blake Leasing Company, LLC – Real Estate Series as owner of Kirkland Quick Stop, respectfully requests that this Honorable Board accept this Petition and grant the setback zone exception requested pursuant to 415 ILCS 14.2(c) as set forth herein, as well as such other and further relief as this Board deems just and proper.

Dated: March 21, 2016

Respectfully submitted,

On behalf of Blake Leasing Company, LLC –  
Real Estate Series

/s/ Charles F. Helsten  
\_\_\_\_\_  
Charles F. Helsten  
One of Its Attorneys

Charles F. Helsten  
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815-490-4900  
[chelsten@hinshawlaw.com](mailto:chelsten@hinshawlaw.com)

**CERTIFICATE OF SERVICE**

I, Charles F. Helsten, an attorney, certify that I have served the attached **Petition For Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c)** on the named parties below by certified mail, return receipt requested, by 5:00 p.m. on April 29, 2016.

Division of Legal Counsel  
Illinois Environmental Protection Agency  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

Village of Kirkland  
Attn: Mayor Les Bellah  
511 W. Main Street  
Kirkland, Illinois 60146

Brad Halloran  
Hearing Officer  
James R. Thompson Center  
100 W. Randolph, Suite 11-500  
Chicago, Illinois 60601

Joanne M. Olson  
Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 N. Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

/s/Charles F. Helsten

**Environmental and Natural Resource Services Provider**

September 17, 2015

Mr. Matt Urish, Project Manager  
Leaking Underground Storage Tank Section- Bureau of Land - #24  
Illinois Environmental Protection Agency - Bureau of Land  
1021 North Grand Avenue East, P.O. Box 19276  
Springfield, Illinois 62794-9276

**RE: IEMA # 891717 / LPC # 0370305005 / DeKalb County  
Kirkland Quick Stop at 411 West Main Street, Kirkland, IL 60146  
Corrective Action Plan and Budget - Leaking UST Technical File**

Dear Mr. Urish,

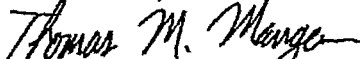
GeoThink, LLC (GEO THINK) of Geneva, Illinois on behalf of Mr. John Blake and Blake Leasing Company LLC-Real Estate Series (owner of Kirkland Quick Stop) are submitting this Corrective Action Plan (CAP) and budget per Part 734 regulations to Illinois Environmental Protection Agency (IEPA) for Kirkland Quick Stop (411 West Main Street in Kirkland, DeKalb County, IL, IEMA incident #891717).

This CAP plan and budget proposes enhanced bioremediation via injection wells to address three (3) areas of groundwater contamination (2 on-site & 1 off-site) located within the setback zones of municipal water supply wells (backup well and main supply well -Village of Kirkland). The Stage 2/Stage 3 SICR previously defined the extent of petroleum subsurface contamination with approval by IEPA (8-25-15).

Attached are copies of the GEO THINK waiver request letters to Mayor Les Bellah of the Village of Kirkland and to Mr. Rick Cobb-IEPA Bureau of Water /Public Water Supply for obtaining permission to inject enhanced bioremediation products to remediate residual petroleum hydrocarbons in the shallow groundwater to below Class I groundwater remediation objectives (GROs) and obtain a No Further Remediation Letter (NFR) from the IEPA LUST section. Upon Agency approval of this CAP and obtaining waivers from IEPA and Village of Kirkland, GEO THINK will then submit Class V Injection Well Inventory Forms and application to Mr. Bur Filson of the IEPA Permits section for approval.

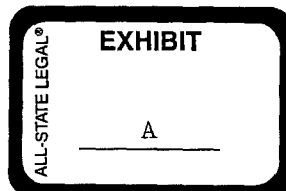
Our goal is to obtain Agency approvals so that the first round of injections can be conducted in October/November 2015 before the ground freezes and snow covers the subject property. If you have any questions, or want to discuss the CAP further, please contact us at (630) 208-5050.

Sincerely,  
GEO THINK, LLC.

  
Thomas M. Mangan, IL PG

**Attachment: Corrective Action Plan and Budget - KQS**

**C: John Blake, Blake Leasing Co. LLC  
Matt Warneke - Trans Environmental  
Village of Kirkland - Mayor Les Bellah  
Mr. Rick Cobb-IEPA Bureau of Water/Public Water Supply  
GEO THINK Project File**



611 Stevens Street 630-208-5050  
Geneva, Illinois 60134

Corrective Action Plan and Budget – Kirkland Quick Stop  
 Blake Leasing Co. LLC – Real Estate Series  
 411 W. Main Street, Kirkland, Illinois 60146

**CORRECTIVE ACTION PLAN & BUDGET**  
**Blake Leasing Company LLC-Real Estate Series**  
 Kirkland Quick Stop – Kirkland, IL, DeKalb County  
 411 West Main Street in Kirkland, Illinois 60146  
 LUST INCIDENT #891717 / LPC # 0370305005

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**APPENDICES**

- Appendix A – IEPA Correspondence, GEOTHINK Correspondence and IEPA Corrective Action Plan Form
- Appendix B – OSFM Eligibility and Deductible Determination Letter, Right of Entry and Testing License Agreement and SWAP & ISGS Well Search Results
- Appendix C – TACO Tier 2 Calculation Sheets and IEPA Forms, And Table 7 and Table 8
- Appendix D – Cabeno Remediation Proposal Dated August 27, 2015 and MSDS Sheets and Description of Bioremediation Amendments
- Appendix E - Proposed Corrective Action Plan Budget Documents

**TABLES**

- Table 1 – Stage 2 Investigation – Soil Testing Results – April 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup>, 2015
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- Table 5 – Soil Gas Testing Results – April 23, 2015
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- Table 7 – Tier 2 TACO Testing Results – July 22, 2015
- Table 8 – Tier 2 TACO Testing Results – July 22, 2015

Corrective Action Plan and Budget – Kirkland Quick Stop  
Blake Leasing Co. LLC – Real Estate Series  
411 W. Main Street, Kirkland, Illinois 60146

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## EXECUTIVE SUMMARY

This CORRECTIVE ACTION PLAN & BUDGET conveys information to address the release of petroleum product (unleaded gasoline and diesel) from regulated underground storage tanks (USTs) formerly located at the Kirkland Quick Stop (KQS) gas station property at 411 W. Main Street, Kirkland, DeKalb County, Illinois 60146 (Subject Property).

The May 31, 2012 Corrective Action Completion Report (CACR) by Trans Environmental, Ltd (TE), requested closure for the petroleum release associated with IEMA incident #891717 for the operating gas station facility located at 411 West Main Street in Kirkland, Illinois, DeKalb County. The IEPA rejected the CACR document in Agency correspondence dated July 9, 2012.

TE responded on August 19, 2013 in written correspondence to the concerns raised in the IEPA correspondence of July 9, 2012 with submittal of CAP work plan and budget for Agency approval regarding the installation and operation of Groundwater Remediation System using air sparging wells with micro-bubble technology. Subsequently, discussions on September 9th and 10th, 2013 between GEOTHINK and TE representatives and IEPA project manager Mr. Matt Urish, Mr. Urish informed GEOTHINK and TE that a Pilot System trial was required by the Agency before full-scale system installation and operation. Therefore, the prior TE generated CAP and Budget dated August 19, 2013 was going to be denied by the IEPA. The Agency issued a CAP and Budget rejection letter to Mr. John Blake and Kirkland Quick Stop on September 19, 2013.

GEOTHINK submitted February 24, 2014 CAP and budget to the IEPA for this LUST incident #891717. The CAP proposed Limited Air Sparge Pilot Study and several rounds of groundwater monitoring and testing for addressing the residual groundwater contamination and possibly off-site monitoring wells by defining its radius of influence, and potential off-site migration.

Mr. Matt Urish contacted GEOTHINK in late March 2014 requesting current groundwater conditions for on-site wells and off-site well MW-6 to be determined through resampling for BTEX and PNAs. The groundwater testing results of June 12, 2014 detected both benzene and PNA contaminants in the groundwater at monitor wells MW-6 (off-site), MW-3A (off-site), MW-14 and MW-5 at concentrations above Class I GROs. Each of these wells is located within the regulated setback zone of one (1) municipal water supply well for the Village of Kirkland. GEOTHINK determined groundwater flow direction across the KQS site is to the north. The benzene impacted well (MW-3A) and PNA impacted wells (MW-3A, MW-6, MW-14 and MW-5) document the soluble petroleum groundwater plume has migrated northward off-site and is potentially migrating towards the municipal water supply well.

In a June 25, 2014 GEOTHINK correspondence to the IEPA Mr. Matthew Urish, the June 12, 2014 groundwater results were summarized and presented herein that determined off-site well MW-6 and wells MW-3A and MW-14 at the Property line contains PNA and Benzene constituent concentrations above applicable Class I GROs. GEOTHINK requested the IEPA reject the 2-24-2014 CAP; and then request IEPA approval for a Stage 3 Investigation of the subsurface off-site conditions.

In a July 1, 2014 IEPA letter to KQS, the Agency formally rejected the GEOTHINK CAP & budget, and then requested a Stage 3 Investigation be conducted off-site to delineate groundwater contamination within a municipal supply well setback zone per IAC 734.325.

Corrective Action Plan and Budget – Kirkland Quick Stop  
Blake Leasing Co. LLC – Real Estate Series  
411 W. Main Street, Kirkland, Illinois 60146

GEO THINK submitted a Stage 2 and 3 Site Investigation Plan (SIP) and Budget on November 26, 2014 to the IEPA project manager Mr. Matt Urish. The IEPA modified the GeoThink SIP and approved the revised SIP budget in the Agency correspondence dated March 19, 2015 to Mr. John Blake.

GEO THINK previously submitted written letter requests in early August 2014 to both the Village of Kirkland and the Canadian Pacific Railroad to gain property access to conduct Stage 3 off-site investigation per Section 734.350. The Village of Kirkland executed with Mr. John Blake and GEO THINK, LLC Right of Entry and Testing License Agreement granting access to Village property for Stage 3 investigation and remediation purposes. No response has been received yet, from the Canadian Pacific Railroad.

Stage 2 on-site investigation soil boring, soil sampling and monitor well installation work by GeoThink staff and drilling subcontractor was conducted on April 20<sup>th</sup>, 21<sup>st</sup>, and 22<sup>nd</sup>, 2015 (5 borings/3 wells), while Stage 3 off-site boring advancement, soil sampling and monitor well installation work by GeoThink was conducted on April 20<sup>th</sup>, April 22<sup>nd</sup> and April 23<sup>rd</sup>, 2015 (9 borings/5 wells).

Most wells were screened to monitor shallow groundwater. Boring/monitoring well MW-30D at the off-site well nest (MW-30S) was targeted for a depth of 50 feet BGL. However the boring contacted a thick zone of saturated Sands from 16 to 30 feet bgs, when dense sandy/silty Clay till aquitard was encountered at approximately 30 to 35 feet bgs. Drilling was terminated at 35 feet bgs and the well was set to 31 feet bgs to monitor deeper ground water conditions near the Village water supply well.

A soil gas sample was collected from SB-37 (4' – 5') on April 23, 2015 on the village water tower parcel, directly adjacent to a two-story apartment building (east) and analyzed for TO-15 volatile organic compounds (VOCs) that include BTEX, MTBE, and Naphthalene. Reported soil gas BTEX, MTBE and Naphthalene concentrations were less than published IEPA remediation objectives.

Slug tests were conducted at monitoring wells MW-11 and MW-16 on June 10, 2015 in order to determine the hydraulic conductivities of soils/shallow groundwater for on-site monitoring wells. Calculated hydraulic conductivity values (spreadsheet via Hvorslev and Bouwer-Rice methods) for MW-11 is  $3.542 * 10^{-2}$  cm/s, while MW-16 is  $2.453 * 10^{-2}$  cm/s. These hydraulic conductivity values comply with Class I Potable Resource Groundwater conditions (Section 620.210).

Ground water samples were collected from monitoring wells on May 12, 2015. Samples collected were analyzed for BTEX, MTBE, pH, mercury, iron, total lead, and PNAs. On July 1, 2015 initial groundwater sampling was conducted on monitor well MW-20 (located north of tracks near village water tower), village main water supply well (north of water tower), and village back-up supply well (northeast of KQS site, south of tracks), and wells MW-6 and MW-14 were resampled for BTEX, MTBE, pH, mercury, iron, total lead, and PNAs.

Ground water remediation objective (GRO) exceedences for Class I were reported for benzene at MW-1: total lead hits at wells MW-8, MW-13, MW-15, MW-17, and MW-30D; and PNAs hits at wells MW-14, MW-15, and MW-30D. The July 1<sup>st</sup> groundwater testing results found Class I GRO exceedences for benzene at on-site well MW-14; while total lead hits at MW-14, and off-site MW-20, and MW-30S; and PNAs hits at off-site well MW-6 and on-site well MW-14. The July 1, 2015 groundwater results for the main village supply well and village back-up well reported non-detect or BDL concentrations for BTEX, MTBE, and total lead, mercury, and PNA parameters.

Corrective Action Plan and Budget – Kirkland Quick Stop  
Blake Leasing Co. LLC – Real Estate Series  
411 W. Main Street, Kirkland, Illinois 60146

Based upon calculated ground water elevations from May 12, 2015, shallow groundwater appears to flow in a northwesterly direction toward the Kishwaukee River. Localized groundwater mounding was observed at the south-central to east central part of the site around the existing tank cavity and where prior underground storage tanks (USTs) were most likely removed.

Based upon the ground water flow direction, off-site well nest monitoring wells MW-30S and MW-30D appear to be side-gradient of the site. Therefore, contaminants (total lead and PNAs) detected at those wells appear to be from a different source area, not the KQS site.

Ground water elevation differences between MW-30D and MW-30S were used to calculate a vertical hydraulic gradient, to determine if shallow ground water was flowing downward toward the active and standby municipal well intakes. No measurable downward vertical hydraulic gradient was detected at the MW-30 well nest cluster. A clay aquitard layer was also observed at the bottom of MW-30D, which should further restrict vertical movement of contaminants. Ground water above that aquitard appears to flow horizontally north-northwest toward the River, not vertically toward the municipal well screens.

Institutional controls, TACO analysis Tier 2 modeling and R-26 calculations and possibly Tier 3 impractical remediation under 35 IAC 742.920 cannot be utilized for final corrective action completion, since the subject site's low levels of soil and groundwater contamination by BTEX, PNAs and/or total lead are located within the protected setback zone for potable water supply wells (i.e. Village of Kirkland backup water supply well 75' northeast of site). Section 14.2 of IL Environmental Protection Act (Act) prohibits groundwater contamination above Tier 1 Class I GROs for sites located within a well setback zone in a designated well protection area. Some form of active remediation is necessary at this site to mitigate the relatively low levels of COC exceedences above applicable Tier 1 Class 1 GROs by Benzene, and/or PNA compounds that include Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Ideno(1,2,3-cd)pyrene, 2-Methylnaphthalene, and/or Naphthalene.

Different remedial alternatives were explored, and the most site appropriate, safe and functional option was chosen. Options considered were air sparging, ground water extraction (pump and treat) via extraction wells, ground water extraction via interceptor trench, and in-situ enhanced bioremediation. Both ground water extraction options also included reinjection of treated ground water at an up-gradient infiltration trench. Air sparging was ruled out because of the high iron concentrations in ground water and extensive O & M with winterization costs. Both ground water extraction methods were also ruled out because of the limited success of pump and treat systems, and anticipated time to achieve GROs if successful, and extensive O & M with winterization costs. In-situ enhanced bioremediation was chosen as the recommended option since it has been successful at other LUST sites remediating BTEX and PNAs, and level of groundwater cleanup required is localized to three distinct areas on-site at KQS and one area off-site along the northern KQS property line in Railroad St.

The use of enhanced bioremediation injection wells located within a protected minimum setback zone established for potable water supply wells per Section 14.2 of Act are prohibited. However, a waiver pursuant to Section 14.2(b) of the Act can be obtained, allowing GEOTHINK the use of injection wells in a setback zone, through written requests for waiver authorization to: 1) the owner of the community water supply well i.e. Kirkland Mayor Les Bellah and 2) Mr. Rick Cobb of the IEPA Bureau of Water/Public Water Supply. In addition, the IEPA LUST section must approve the CAP and Budget. Once Agency approval of the CAP along with approved IEPA and Kirkland waivers allowing the injection wells has been received by GEOTHINK, then the Class V Injection Well Inventory Forms and application can be submitted to Mr. Bur Filson of the IEPA Permits section to obtain proper permit to commence injection well drilling, construction and subsequent bioremediation treatments in-situ.

Corrective Action Plan and Budget – Kirkland Quick Stop  
Blake Leasing Co. LLC – Real Estate Series  
411 W. Main Street, Kirkland, Illinois 60146

## CORRECTIVE ACTION PLAN

### 1.0 INTRODUCTION

#### 1.1 Site Identification

This CORRECTIVE ACTION PLAN & BUDGET conveys information to address the release of petroleum product (unleaded gasoline and diesel) from ten (10) regulated underground storage tanks (USTs) formerly located at the Kirkland Quick Stop (KQS) gas station property at 411 W. Main Street, Kirkland, DeKalb County, Illinois 60146 (Subject Property). **Figure 1** shows the Site Location Map on the USGS topographic map for LUST Incident number 891717 located at the northwest quarter of the northeast quarter of Section 26, Tier 42 North and Range 6 East.

#### 1.2 Site Information and Conditions

GeoThink, LLC (GEO THINK) of Geneva, Illinois on behalf of Mr. John Blake and Blake Leasing Company LLC-Real Estate Series (owner of Kirkland Quick Stop) are submitting this Amended Corrective Action Plan (ACAP) and Budget per Part 734 regulations to Illinois Environmental Protection Agency (IEPA) LUST Section for Kirkland Quick Stop (KQS) to remediate the petroleum release associated with IEMA incident #891717. This CAP plan and budget proposes enhanced bioremediation via injection wells to address three (3) residual areas of low-levels of groundwater impaction by benzene and PNA parameters. The CAP briefly summarizes preliminary Tiered Approach to Corrective Action Objectives (TACO) analysis performed. The Corrective Action Plan is being submitted per 734.335 regulations and the IEPA CAP Form is provided in **Appendix A**.

Active remediation is required since the subject property is located within the setback zone of one Village of Kirkland emergency backup water supply well 75 feet northwest of KQS, site is located within maximum setback zone of Kirkland main water supply well located north of RR tracks, and TACO Tier 2 and 3 modeling indicate possible further down-gradient migration of polynuclear aromatic hydrocarbons (PNAs) and benzene in ground water. Soil, soil vapor, and groundwater analytical results (see Tables 1–5), and hydraulic conductivity slug test results (see Table 6) from the completed Stage 2 and 3 Site Investigation were previously submitted to the IEPA by GEO THINK's Site Investigation Completion Report (SICR) dated August 10, 2015. The SICR is incorporated by reference for use in this CAP. The IEPA approved the SICR and requested a CAP and Budget for the subject property in a correspondence dated August 25, 2015. See **Appendix A** for IEPA Correspondence. **Figure 2** details the soil boring and monitoring well locations from the prior site investigations, includes the location of the Village of Kirkland emergency backup water well, and presents the Stage 2 and Stage 3 investigations soil testing results map.

Fill layer consisting of coal and ash was observed in several borings during site investigation along the northern property line and extending across Railroad Street right-of-way, and could be a contributing source of polynuclear aromatic hydrocarbons (PNAs) and total lead detected in soil and ground water. The IEPA (project manager Matt Urish and section chief Mike Lowder) stated, after completion of preliminary TACO review and technical review of the SICR, that due to the low levels of lead detected and site conditions, no further testing for metals is required at this site. Therefore, metals (including lead and mercury) are no longer contaminants of concern (COCs) for this incident number.



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Ground water remediation objective (GRO) exceedences for Class I were reported for benzene at MW-1: total lead hits at wells MW-8, MW-13, MW-15, MW-17, and MW-30D; and PNAs hits at wells MW-14, MW-15, and MW-30D. The July 1<sup>st</sup> groundwater testing results found Class I GRO exceedences for benzene at on-site well MW-14; while total lead hits at MW-14, and off-site MW-20, and MW-30S; and PNAs hits at off-site well MW-6 and on-site well MW-14. The July 1, 2015 groundwater results for the main village supply well and village back-up well reported non-detect or BDL concentrations for BTEX, MTBE, and total lead, mercury, and PNA parameters. **The two nearby Village water wells have not been contaminated by the shallow groundwater petroleum associated with petroleum release incident number #891717 at the KQS site.**

The groundwater testing results map generated from the May and July 2015 Site Investigations are summarized on Figure 3 with the somewhat approximate locations of the former USTs and building. In addition, the drawing contains the outline of the three (3) areas that contain residual groundwater petroleum source (Benzene and PNAs) impacts that have been identified as the 3 locations for placement of injection wells and in-situ enhanced bioremediation treatments.

Based upon calculated ground water elevations from May 12, 2015, shallow groundwater appears to flow in a northwesterly direction toward the Kishwaukee River as shown in Figure 4. Localized groundwater mounding was observed at the south-central to east central part of the site around the existing tank cavity and where prior underground storage tanks (USTs) were most likely removed.

Based upon the ground water flow direction, off-site well nest monitoring wells MW-30S and MW-30D appear to be side-gradient of the site. Therefore, contaminants (total lead and PNAs) detected at those wells appear to be from a different source area, not the KQS site.

Ground water elevation differences between MW-30D and MW-30S were used to calculate a vertical hydraulic gradient, to determine if shallow ground water was flowing downward toward the active and standby municipal well intakes. No measurable downward vertical hydraulic gradient was detected at the MW-30 well nest cluster. A clay aquitard layer was also observed at the bottom of MW-30D, which should further restrict vertical movement of contaminants. Ground water above that aquitard appears to flow horizontally north-northwest toward the River, not vertically toward the municipal well screens that have been set below steel casing contact with limestone bedrock. The closest municipal well (emergency backup) located some 75 feet northeast of the KQS site has steel casing from the ground surface into the limestone bedrock 88 feet deep, some 63+ feet deeper than the shallow groundwater contamination at KQS site that has been detected in the water table from 9 to 25 feet deep. The most recent SWAP and ISGS Well Search results from July 2015 for the 2 municipal wells and nearby residential wells are provided in Appendix B.

This CAP plan and budget proposes enhanced bioremediation via injection wells to address three (3) areas of groundwater contamination (2 on-site & 1 off-site) located within the setback zones of municipal water supply wells (backup well and main supply well -Village of Kirkland). The Village of Kirkland, along with Mr. John Blake (Entrant) and GEOTHINK (Entrant) have an executed Right-Of-Entry and Testing License Agreement to access Village property and its water supply wells for testing services related to the investigation and cleanup of this petroleum release dated December 19, 2014. The agreement is valid until December 31, 2016 and a copy is provided in Appendix B.

The updated December 2015, OSFM Eligibility and Determination Letter for the Blake Leasing Company, LLC-Real Estate Series and KQS site are provided in Appendix B.

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Blake Leasing Co. LLC -- Real Estate Series  
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## 2.0 PROPOSED METHODS OF REMEDIATION

Institutional controls, TACO analysis Tier 2 modeling and R-26 calculations and possibly Tier 3 impractical remediation under 35 IAC 742.920 cannot be utilized for final corrective action completion, since the subject site's low levels of soil and groundwater contamination by BTEX, PNAs and/or total lead are located within the protected setback zone for potable water supply wells (i.e. Village of Kirkland backup water supply well 75' northeast of site). Section 14.3 of IL Environmental Protection Act (Act) prohibits groundwater contamination above Tier 1 Class 1 GROs for sites located within a well setback zone in a designated well protection area. Some form of active remediation is necessary at this site to mitigate the relatively low levels of COC exceedences above applicable Tier 1 Class 1 GROs by Benzene, and/or PNA compounds that include Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Ideno(1,2,3-cd)pyrene, 2-Methylnaphthalene, and/or Naphthalene.

The use of enhanced bioremediation injection wells located within a protected minimum setback zone established for potable water supply wells per Section 14.2 of Act are prohibited. However, a waiver pursuant to Section 14.2(b) of the Act can be obtained, allowing GEOTHINK the use of injection wells in a setback zone, through written requests for waiver authorization to: 1) the owner of the community water supply well i.e. Kirkland Mayor Les Bellah and 2) Mr. Rick Cobb of the IEPA Bureau of Water/Public Water Supply. In addition, the IEPA LUST section must approve the CAP and Budget. Once Agency approval of the CAP along with approved IEPA and Kirkland waivers allowing the injection wells has been received by GEOTHINK, then the Class V Injection Well Inventory Forms and application can be submitted to Mr. Bur Filson of the IEPA Permits section to obtain proper permit to commence injection well drilling, construction and subsequent bioremediation treatments in-situ. Copies of GEOTHINK waiver request correspondence to both the IEPA Public Water Supply and to the Village of Kirkland are provided in Appendix A.

### 2.1 Completed Corrective Action Activities and Evaluation of Remediation Options

Tier 2 Construction Worker Inhalation SROs for mercury and naphthalene were completed via TACO s-series equations. The calculated Tier 2 SROs exceed reported concentrations, so this exposure pathway has been addressed, and mercury and naphthalene are no longer contaminants of concern for this exposure pathway. The results are summarized on Table 7.

Down-gradient compliance distances (maximum future theoretical down-gradient extents of ground water contamination) were calculated for reported total lead, PNA, and benzene GRO exceedences via R-26 (tier 2). The modeling indicates impacted ground water can spread beyond the municipal wells. Due to no detectable downward vertical gradient and the presence of a clay layer starting at approximately thirty (30) feet, the potential impact to the municipal wells appears to be minimal. The results are summarized on Table 8.

Due to the large compliance distances calculated via equation R-26, tier 3 modeling was performed. The purpose was to shorten and provide more realistic down-gradient compliance distances. For this tier 3 modeling, contaminant velocity was used in R-26 instead of groundwater velocity. Compliance distances for all contaminants except for benzene, lead, and 2-methylnaphthalene were noticeably smaller. Benzene was not much smaller due to the low contaminant retardation factor.

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Tier 3 compliance distances for lead and 2-methylnaphthalene were the same as the tier 2 distances, because there were no published first order degradation constants. The results are summarized on **Table 7**. All TACO calculations sheets were previously submitted as Appendix F in the GEOTHINK August 10, 2015 Stage 2 and Stage 3 Site Investigation Completion Report and are incorporated by reference in this CAP document. The completed IEPA TACO forms based on these previously submitted worksheets are included as **Appendix C**.

TACO Tier 2 and Tier 3 analysis have been conducted to address those reported Soil Remediation Objective (SRO) and Ground Water Remediation Objective (GRO) exceedences, and indicate further down-gradient migration of impacted ground water is possible. Based upon analytical results, active remediation is required by IEPA since the site is within the setback zones for two municipal wells (one active and one backup).

Different remedial alternatives were explored, and the most appropriate option was chosen. Options considered were air sparging, ground water extraction (pump and treat) via extraction wells, ground water extraction via interceptor trench, and in-situ enhanced bioremediation. Both ground water extraction options also included reinjection of treated ground water at an up-gradient infiltration trench. Air sparging was ruled out because of the high iron concentrations in ground water. Both ground water extraction methods were also ruled out because of the limited success of pump and treat systems, and anticipated time to achieve GROs if successful. In-situ enhanced bioremediation was chosen as the recommended option since it has been successful at other sites.

Different remedial alternatives were explored, and the most site appropriate, safe and functional option was chosen. Options considered were air sparging, ground water extraction (pump and treat) via extraction wells, ground water extraction via interceptor trench, and in-situ enhanced bioremediation. Both ground water extraction options also included reinjection of treated ground water at an up-gradient infiltration trench. Air sparging was ruled out because of the high iron concentrations in ground water and extensive O & M with winterization costs. Both ground water extraction methods were also ruled out because of the limited success of pump and treat systems, costs of interceptor trench materials disposal and backfilling while the existing storm sewer in Railroad Street functions like an interceptor trench, and anticipated long duration time to achieve GROs if successful, and extensive O & M with winterization costs. In-situ enhanced bioremediation was chosen as the recommended option since it has been successful at other LUST sites remediating BTEX and PNAs, and level of groundwater cleanup required is localized to two distinct and one shared areas on-site at KQS and one shared area off-site along the northern KQS property line in Railroad St.

## 2.2 Proposed In-Situ Enhanced Bioremediation

**Figure 5** details the proposed layout of the Corrective Action Plan methodology employing enhanced in-situ bioremediation through the use of approximately forty-seven (47) injection wells in three (3) groupings associated with three defined areas of residual petroleum groundwater contamination by Benzene and PNA compounds.

Below the surface fill materials and silty clay layer that extends 6 to 8 feet below grade, there are continuous silty sands to gravelly sands to sands layer that is mostly saturated which extends to depths of 28-30 feet BGL, where dense silty clay till aquitard is present. This clay till aquitard is identified on several water supply well logs from in the immediate area, including municipal well #2,

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most likely identified as the Kirkland main supply well located north of the RR tracks and water tower and south of North Street (see well logs in Appendix B). Water levels range from 7.5 to 11.0 feet below the ground surface across the site depending upon precipitation events.

A total of forty-seven (47) injection wells will be installed at three (3) grouping locations by Cabeno Environmental under the direction of GEOTHINK staff to address residual benzene and PNA GRO exceedences. These direct push borings constructed into injection wells will be one (1)-inch diameter PVC wells, screened from five (5) to fifteen (15) feet, or seven (7) to seventeen (17) feet below grade depending on visual evaluation of soil boring continuous sampling and field screening by GEOTHINK professional geologist, and secured with flush-mount protective coverings concreted in place. Twenty-four (24) injection wells will be installed at the northern property line and into Railroad Street on 10-foot centers extending approximately 80-feet east to west by 30-feet north to south (by monitoring wells MW-6, MW-3A, MW-14, and MW-15) to address remaining benzene and PNA GRO exceedences. Fifteen (15) injection wells will be installed by MW-15 and north of MW-8 to address PNA GRO exceedences at that MW-15 location on 10-foot centers extending approximately 50-feet south to north by 30-feet east to west. Another eight (8) injection wells will be installed by MW-1 on 10-foot centers extending approximately 20-feet east to west by 40-feet north to south to address the residual benzene GRO exceedence. Injection well installation will require five (5) days. Proposed injection well locations are shown on Figure 5.

Figure 6 details on the South to Northeast geologic cross-section layout map with the proposed locations of the three bioremediation treatment areas. Figure 7 displays the proposed general locations of subsurface sediments in the South to Northeast geologic cross-section and illustrations of the proposed injection well points into the permeable saturated silty sands and sand zones where the residual petroleum contamination has been detected in the prior Stage 2 & 3 investigation.

After well installation, aerobic bacteria, an enzyme-based surfactant, nutrients, and an oxygen release compound will be injected into those injection wells during three (3) injection events by Cabeno Environmental. The first event will take place immediately after well installation. The other two events will occur two (2) and four (4) weeks after the first event. Each injection event will require three (3) days, for a total of nine (9) days of bioremediation amendments injection.

Installation and injection methodologies, proposed costs, along with MSDS sheets and product descriptions are summarized in Cabeno's proposal dated August 27, 2015 as shown in Appendix D.

Prior to injection, samples will be collected from monitoring wells MW-1, MW-6, MW-11, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-30S, and MW-30D by GEOTHINK personnel for dissolved oxygen (DO), specific conductance (SpC), temperature (T), pH, nitrate-nitrogen, ammonia-nitrogen, potassium, and total phosphorous analysis. Samples will be collected vial low-flow methods, using peristaltic pump to pump water from the well through a flow cell. DO, SpC, T, and pH values will be obtained from a multi-parameter probe in the flow cell. Once those parameters have stabilized, samples for nitrate-nitrogen, ammonia-nitrogen, potassium, and total phosphorous analysis will be collected, and submitted for laboratory analysis. The purpose is to get background (pre-injection) concentrations.

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Those same wells will be monitored for DO, SpC, T, and pH during the first injection activity to help determine the area of influence for the injections. Samples will be collected via low-flow methods, using peristaltic pump to pump water from the well through a flow cell. DO, SpC, T, and pH values will be obtained from a multi-parameter probe in the flow cell. Changes in those values with respect to background concentrations will indicate if materials injected have reached the wells being monitored.

### 2.3 Additional Ground Water Sampling

Monitoring wells with reported 2014 and/or 2015 GRO exceedences for contaminants of concern (COCs) BTEX and PNAs will be sampled for two (2) quarterly sampling events as follows:

MW-1	<u>Benzene</u>
MW-6	<u>PNAs</u>
MW-14	<u>Benzene and PNAs</u>
MW-15	<u>PNAs</u>
MW-30S	<u>PNAs</u>
MW-30D	<u>PNAs</u>
MW-3A	<u>Benzene and PNAs</u>
MW-5	<u>PNAs</u>

Additional monitoring wells with no reported 2014 and 2015 GRO exceedences for COCs in close proximity to the three treatment well injection areas will be sampled for two (2) sampling events to provide groundwater quality measurements in the aftermath of the two treatment events for wells: for up-gradient wells MW-11 and MW-8, and down-gradient wells MW-17, MW-16, MW-18 and MW-19.

These 14 monitor wells, in addition to well MW-20 (located north of the RR tracks) and well MW-2 (by carwash) will have groundwater statics measured before the commencement of the 47 soil borings/injection well installations. Subsequent groundwater statics of the monitoring wells will be collected immediately prior to the 30<sup>th</sup> day (1<sup>st</sup> qtr.) and 120<sup>th</sup> day (2<sup>nd</sup> qtr.) groundwater purging and sampling events post final treatment injection. All fourteen (14) monitoring wells will be individually purged of 3 to 5 well volumes by disposable bailer the day prior to sampling events of the 1<sup>st</sup> and 2<sup>nd</sup> quarter's post final injection treatment.

In addition, there will be one duplicate sample collected for benzene (BTEX) and PNA analysis during each sampling event. One (1) trip blank for benzene (BTEX) analysis will also be included with each event. The first ground water sampling event (1<sup>st</sup> quarter) will occur approximately thirty (30) calendar days after completion of the last injection event. The second quarter (and hopefully final) ground water sampling event will take place approximately ninety (90) days after the first sampling event, and approximately 120 calendar days after the last bioremediation injection event.

During the first sampling event, samples will be collected from monitoring wells MW-1, MW-3A, MW-5, MW-6, MW-8, MW-11, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-30S, and MW-30D for DO, SpC, T, pH, nitrate-nitrogen, ammonia-nitrogen, potassium, total phosphorous analysis and BTEX/MTBE and PNAs. Samples will be collected via low-flow methods, using peristaltic pump to pump water from the wells through dedicated and disposable tubing to a flow cell. DO, SpC, T, and pH values will be obtained from a multi-parameter probe in the flow cell. Once those parameters have stabilized samples for nitrate-nitrogen, ammonia-nitrogen, potassium, total phosphorous analysis and BTEX/MTBE and PNAs will be collected, and submitted for laboratory analysis.

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The purpose is to determine if nutrient levels and geochemical parameter values indicate conditions supporting aerobic biodegradation and the BTEX/MTBE and PNA testing will determine if these COCs concentrations are decreasing as a direct result of the in-situ bioremediation amendments injected into the petroleum impacted soil smear zone and groundwater table.

The 47 injection wells and 16 monitoring wells will be properly abandoned by Cabeno after receipt of the draft No Further Remediation (NFR) letter from IEPA.

#### 2.4 Anticipated Schedule – CAP

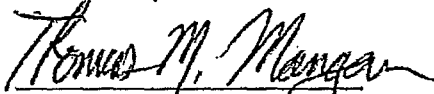
Injection well installation and injection activities will be scheduled to start after IEPA CAP approval and waiver authorizations letters from IEPA Public Water Supply and Village of Kirkland have been received. In addition, a final permit approval for the Class V Well Inventory form from the IEPA Permits section has been obtained. Hopefully in October or early November 2015 we can commence with injections, and should be finished between mid to late November 2015. Ground water sampling will follow in December 2015 and March 2016. Data analysis should be completed by May 2016. A Corrective Action Completion Report (CACR) should be submitted to IEPA in July / August 2016.

The proposed budget for then scope of work described in this ACAP is \$297,985.39. A copy of the proposed budget is included as Appendix E. A smaller CAP Budget for the prior CAP generation and related monitoring/testing/reporting work in 2013 and 2014, that previously approved by Mr. Matt Urish of IEPA in the amount of \$26,886.21 is included in this CAP Budget. Total combined CAP Budget is approximately \$324, 871.60 to remediate and close out this 26+ year old incident number.

We look forward to your quick response. Should there be any questions or concerns, please contact us at (630) 208-5050.

Sincerely,

GEOTHINK, LLC



Thomas M. Mangan, IL PG  
Senior Project Manager

**FIGURE 1 - SITE LOCATION / TOPOGRAPHIC MAP**

**BLAKE LEASING COMPANY, LLC - REAL ESTATE SERIES**

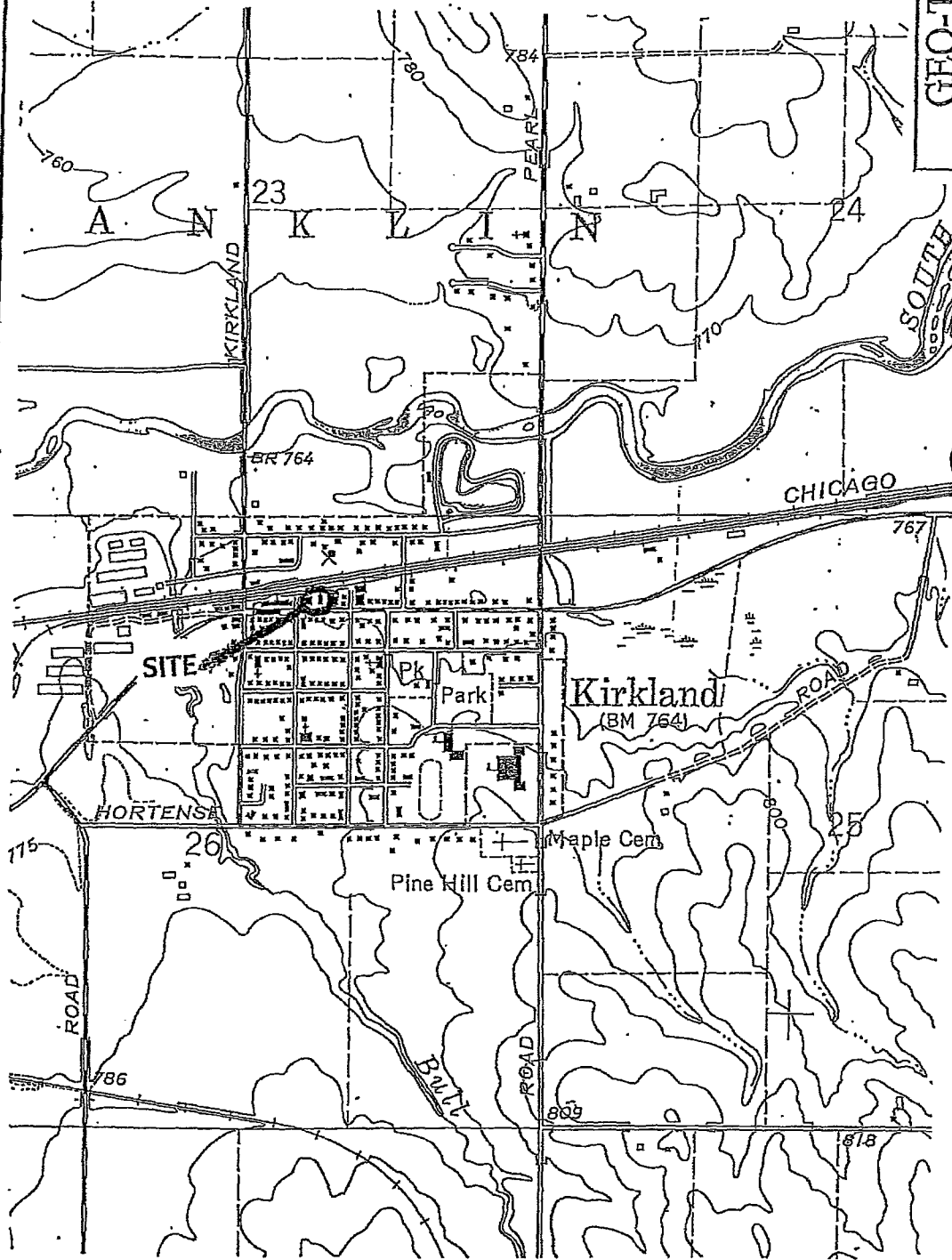
411 West Main Street Kirkland, Illinois / IEMA # 891717

NW ¼ of the NE ¼ of Section 26, Tier 42 N, Range 3E

**GEO-THINK, LLC**

ENVIRONMENTAL AND NATURAL RESOURCE PROVIDER

611 Stevens Street  
Geneva, IL 60134  
630-208-6050

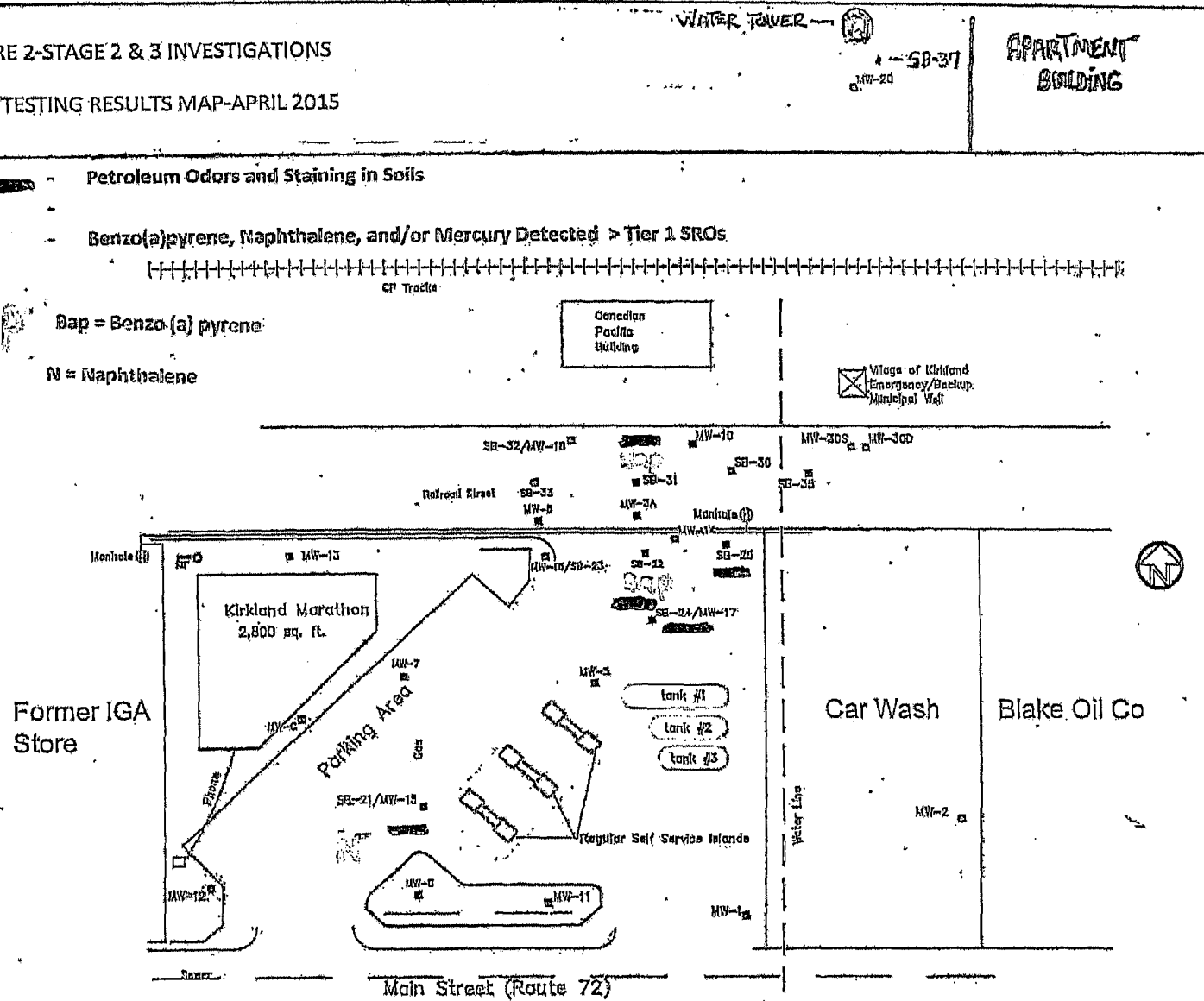


Note: USGS Kirkland Quadrangle Map, 1968  
Contour interval 10 feet

FIGURE 2-STAGE 2 & 3 INVESTIGATIONS  
-SOIL TESTING RESULTS MAP-APRIL 2015

- Petroleum Odors and Staining in Soils
  - Benzo(a)pyrene, Naphthalene, and/or Mercury Detected > Tier 1 SROs
- CP Tracts

**Bap**  
Bap = Benzo (a) pyrene  
**N**  
N = Naphthalene



# GeoThink

Stage 2 and Stage 3 Investigation Soil Borings/Well Locations  
Blake Real Estate Series, LLC/Kirkland Quickstop  
411 W. Main Street  
Kirkland, Illinois  
IEMA # 891717

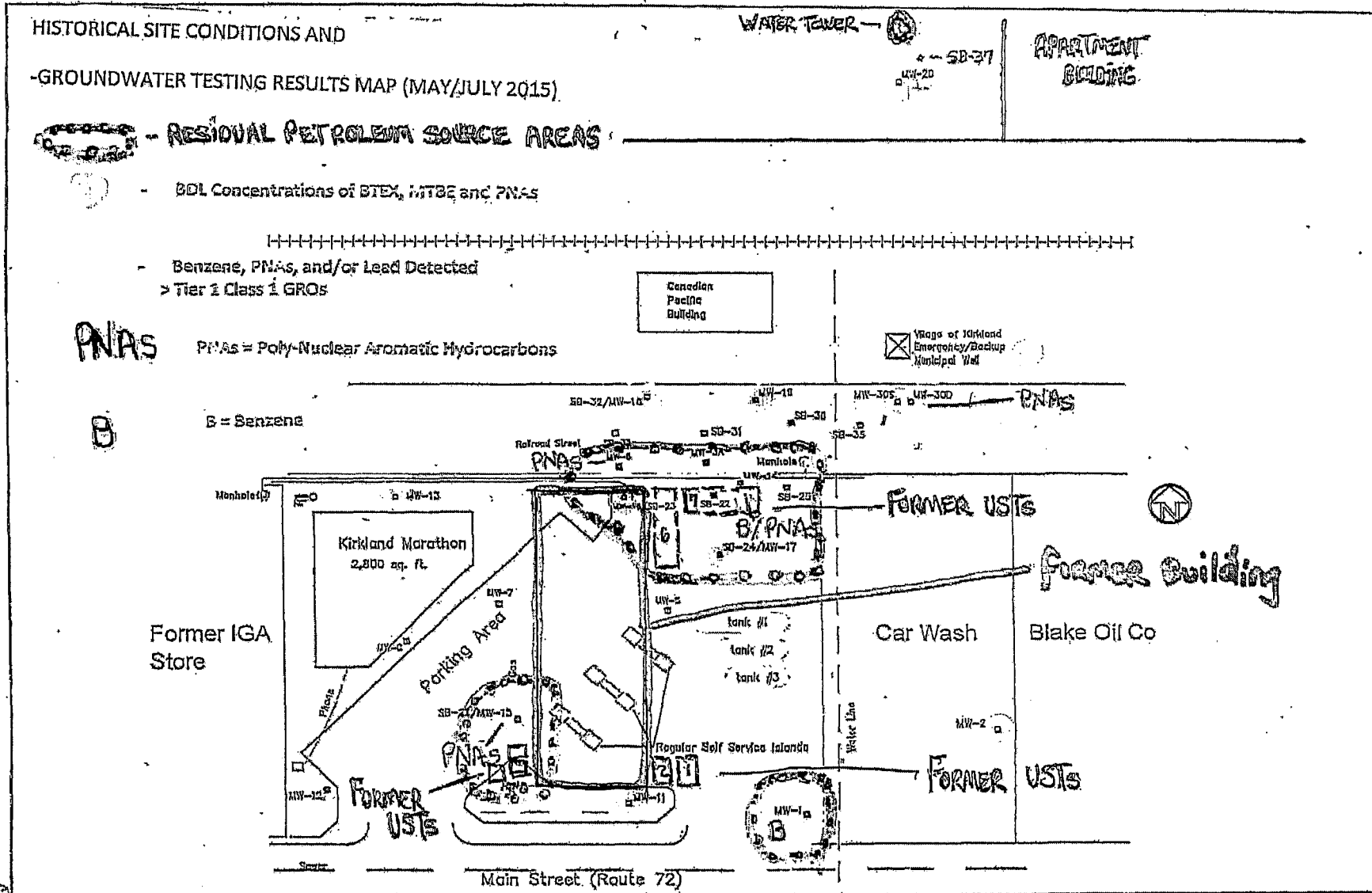
### Revisions

Date	Who	Requirement	Approved
6-29-06	Original	MJW	MJW
8-28-09	Revised	MJW	MJW
6-30-15	Revised	PNW	

Drawn By: Cody Lonas  
Scale: 1" = 50'

Project #: TE06-057  
Date: June 30, 2015





**GeoThink**

Stage 2 and Stage 3 Investigation Soil Borings/Well Locations  
 Blake Real Estate Series, LLC/Kirkland Quickstop  
 411 W. Main Street  
 Kirkland, Illinois  
 IEMA # 891717

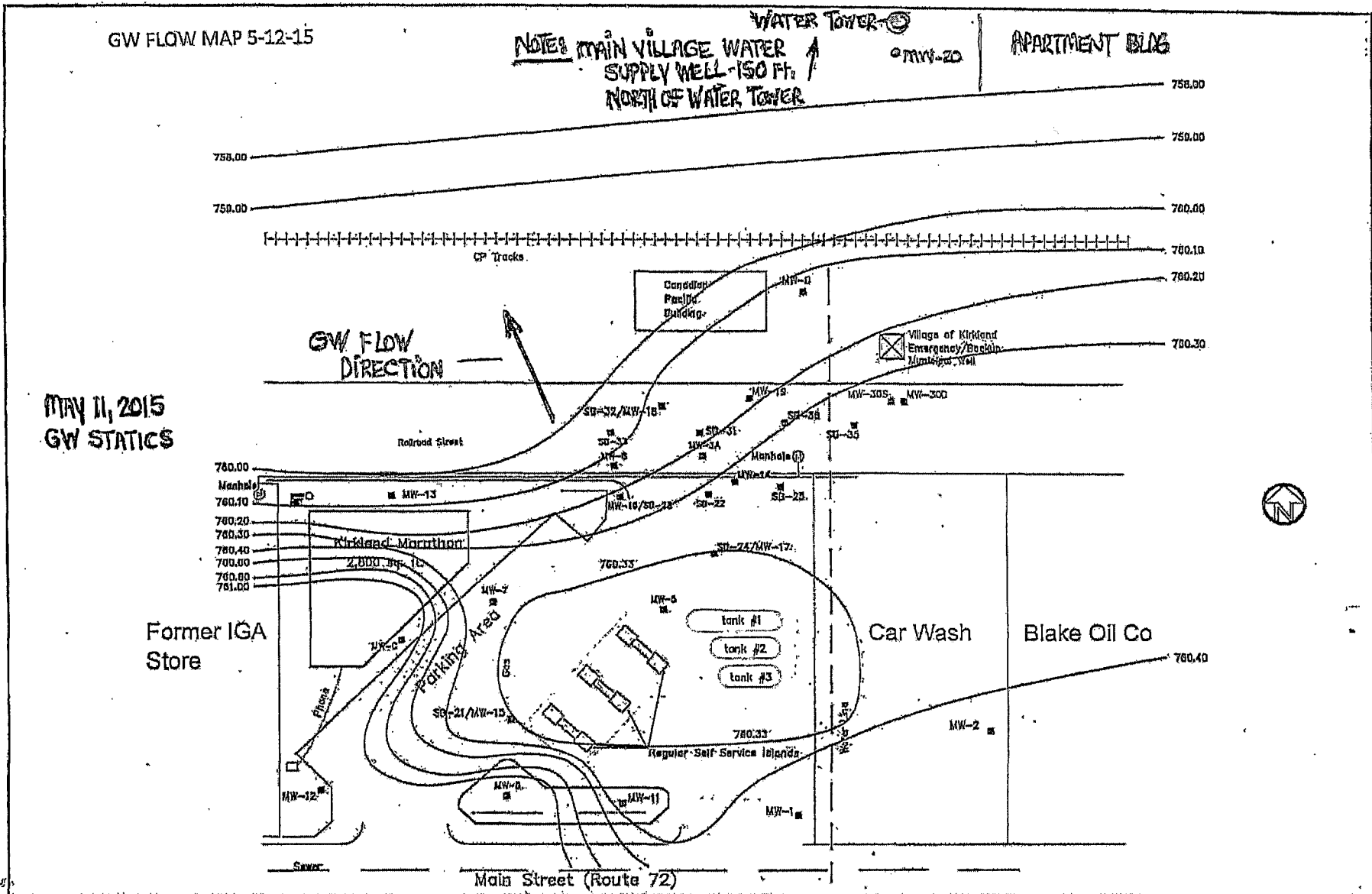
Revisions

Date	Info	Revised By	Approved
8-29-06	Original	MJM	MJM
8-25-09	Revised	MJM	MJM
8-30-15	Revised	MJM	MJM

Drawn By: Cody Lonas  
 Scale: 1" = 50'

Project#: TE06-057  
 Date: June 30, 2015

FIGURE 3



MAY 11, 2015  
GW STATICS

# GeoThink

Stage 2 and Stage 3 Investigation Soil Borings/Well Locations  
 Blake Real Estate Series, LLC/Kirkland Quickstop  
 411 W. Main Street  
 Kirkland, Illinois  
 IEMA # 891717

FIGURE 4

Revisions				
Date	Time	Revised	Revised	Approval
8-29-06	Original			MJV
4-28-09	Revised			MJV
6-30-10	Revised			JMM
8-31-15	Revised			TMM

Drawn By: Cody Lonas  
 Scale: 1" = 50'

Project #: TE06-057  
 June 30, 2015

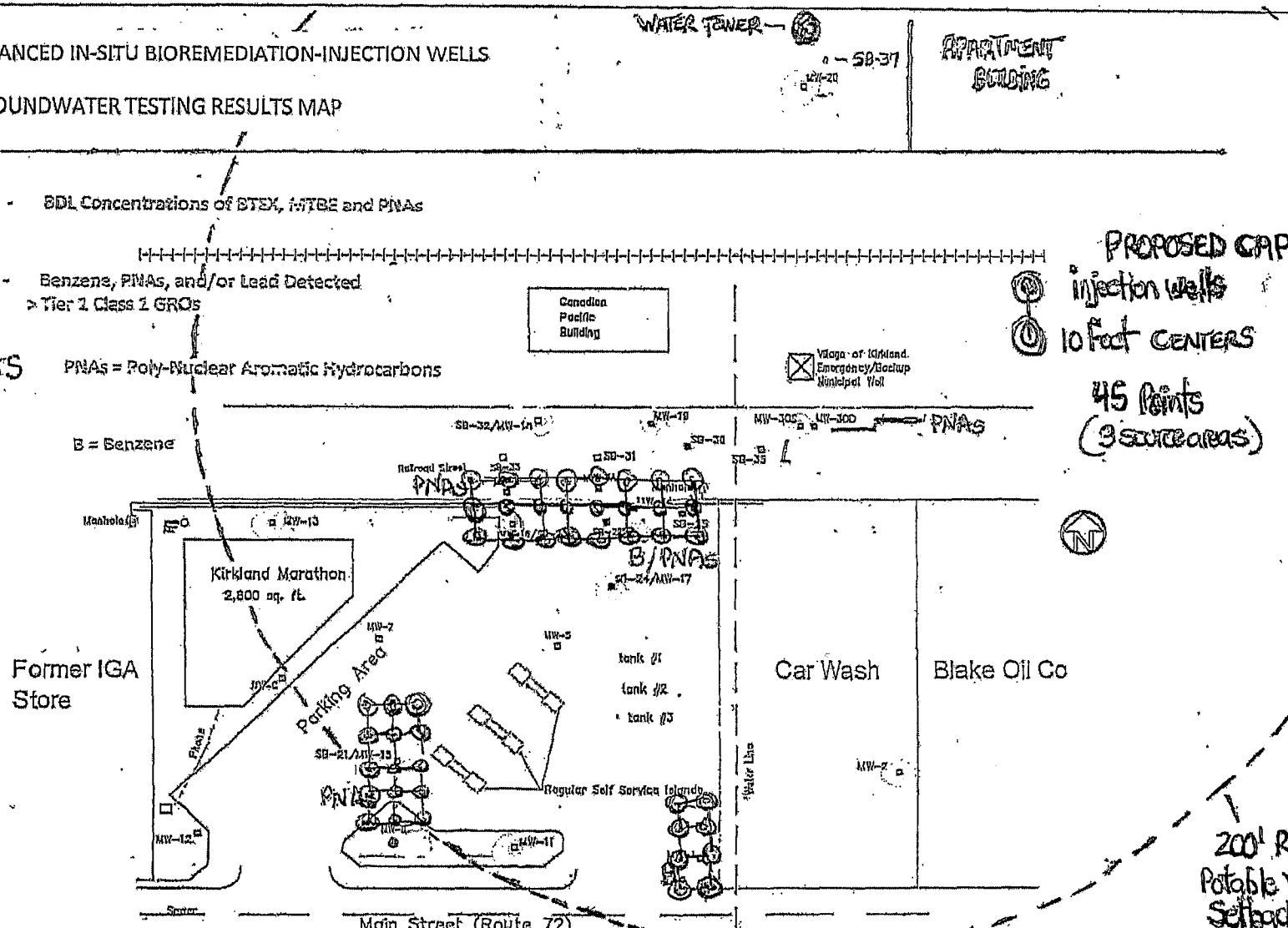
ENHANCED IN-SITU BIOREMEDIATION-INJECTION WELLS

-GROUNDWATER TESTING RESULTS MAP

- BDL Concentrations of STEK, MTBE and PNAs
- Benzene, PNAs, and/or Lead Detected  
 > Tier 1 Class 1 GROs
- PNAs = Poly-Nuclear Aromatic Hydrocarbons
- B = Benzene

PNAs

B



PROPOSED CAP  
 injection wells  
 10 foot CENTERS  
 45 Points  
 (9 source areas)

200' Radius  
 Potable Well  
 Setback zone

**GeoThink**

Stage 2 and Stage 3 Investigation Soil Borings/Well Locations  
 Blake Real Estate Series, LLC/Kirkland Quickstop  
 411 W. Main Street.  
 Kirkland, Illinois  
 IEMA # 891717

FIGURE 5-PROPOSED CAP

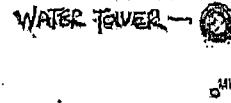
Revisions

Date	Info	Revised by	Approved
8-29-08	Original	M.J.W	M.J.W
8-28-09	Revised	M.J.W	M.J.W
6-30-15	Revised	M.J.W	

Drawn By: Cody Lonas  
 Scale: 1" = 50'

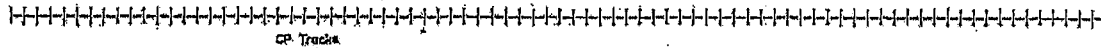
Project #: TE06-057  
 Date: June 30, 2015

SOUTH TO NORTHEAST LAYOUT OF GEOLOGI CROSS-SECTION  
AND PROPOSED LOCATIONS OF ENHANCED BIOREMEDIATION



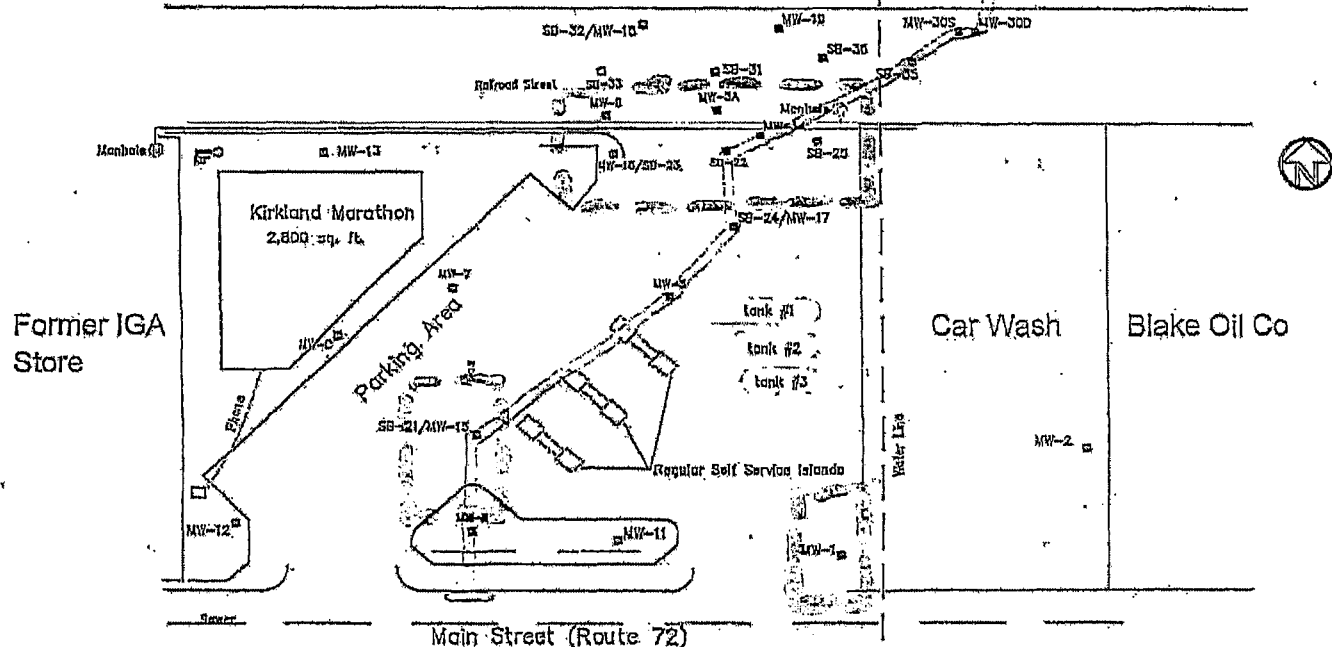
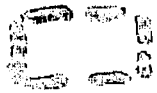
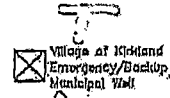
APARTMENT BUILDING

Cross-Section Path Between Borings/Wells



CP Tracks

ENHANCED IN-SITU BIOREMEDIATION  
INJECTION WELL TREATMENT AREAS



**GeoThink**

Stage 2 and Stage 3 Investigation Soil Borings/Well Locations  
Blake Real Estate Series, LLC/Kirkland Quickstop  
411 W. Main Street  
Kirkland, Illinois  
IEMA # 891717

FIGURE 6.

Revisions

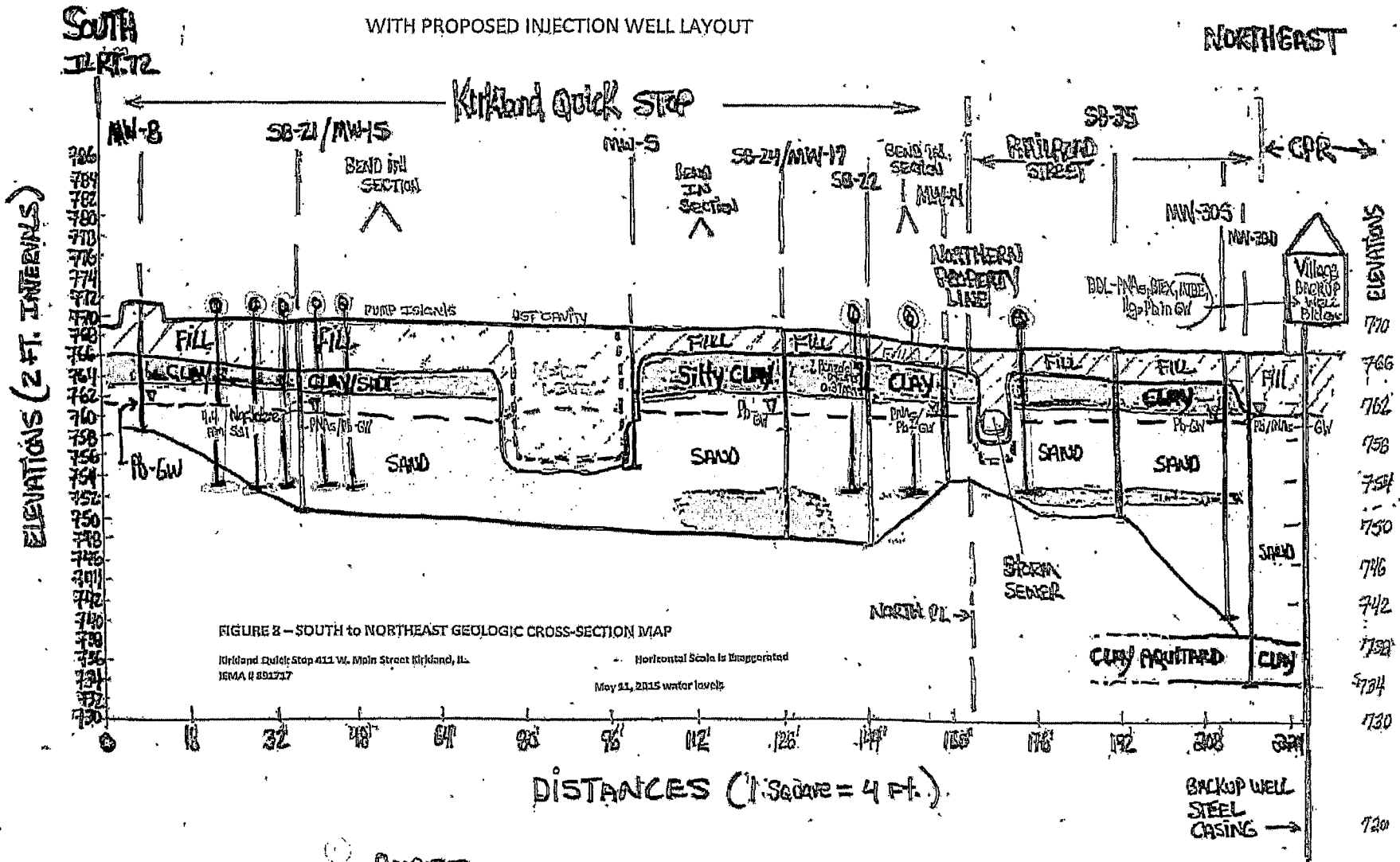
Date	File	Revised	Approved
6-29-06	Original	MJV	MJV
8-23-09	Revised	MJV	MJV
6-30-15	Revised	MJV	

Drawn By: Cody Lonas  
Scale: 1" = 50'

Project #: TE06-057  
Date: June 30, 2015.

FIGURE 7-SOUTH TO NORTHEAST CROSS-SECTION

WITH PROPOSED INJECTION WELL LAYOUT





ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

BRUCE RAUNER, GOVERNOR

LISA BONNETT, DIRECTOR

217/524-3300

CERTIFIED MAIL

NOV 24 2015

7012 0470 0001 2970 8817

Kirkland Quick Stop  
Attn: John Blake  
401 Main Street  
Kirkland, Illinois 60146

Re: LPC #0370305005 --DeKalb County  
Kirkland/Kirkland Quick Stop  
411 West Main Street  
Leaking UST Incident No. 891717  
Leaking UST Technical File

Dear Mr. Blake:

The Illinois Environmental Protection Agency (Illinois EPA) has reviewed the Corrective Action Plan (plan) submitted for the above-referenced incident. This plan, dated September 17, 2015, was received by the Illinois EPA on September 24, 2015. Citations in this letter are from the Environmental Protection Act (415 ILCS 5) (Act) and Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code).

The Illinois EPA requires modification of the plan; therefore, the plan is conditionally approved with the Illinois EPA's modifications. The following modifications are necessary, in addition to those provisions already outlined in the plan, to demonstrate compliance with Title XVI of the Act (Sections 57.7(b)(2) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(a)):

The Corrective Action Plan is conditionally approved upon receipt of a waiver from the Illinois Pollution Control Board in regard to the injection of bioremediation agents within the setback zones of two (2) community wells.

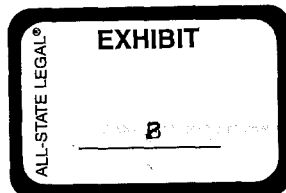
Please note that all activities associated with the remediation of this release proposed in the plan must be executed in accordance with all applicable regulatory and statutory requirements, including compliance with the proper permits.

In an effort to ensure that the proposed alternative technology will not adversely affect human health and safety or the environment, a 24-hour, seven-days-per-week emergency telephone number must be visibly posted on the building/structure housing the treatment unit(s). (Section 57.7(b)(2) of the Act).

In addition, the budget is modified pursuant to Sections 57.7(b)(3) and 57.7(c) of the Act and 35 Ill. Adm. Code 734.505(b) and 734.510(b). Based on the modifications listed in Section 2 of Attachment A, the amounts listed in Section 1 of Attachment A have been approved. Please note that the costs must be incurred in accordance with the approved plan. Be aware that the amount of payment from the Fund may be limited by Sections 57.7(c), 57.8(d), 57.8(e), and 57.8(g) of the Act, as well as 35 Ill. Adm. Code 734.630 and 734.655.

If the owner or operator agrees with the Illinois EPA's modifications, submittal of an amended plan and/or budget, if applicable, is not required (Section 57.7(c) of the Act).

4302 N. Main St., Rockford, IL 61103 (815) 987-7760  
595 S. State, Elgin, IL 60123 (847) 608-3131  
2125 S. First St., Champaign, IL 61820 (217) 278-5800  
2009 Mall St., Collinsville, IL 62234 (618) 344-5120



2511 Hardron St., Des Plaines, IL 60016 (847) 294-4000  
412 SW Washington St., Suite D, Peoria, IL 61602 (309) 671-3022  
2309 W. Main St., Suite 116, Marion, IL 62959 (618) 993-7200  
800 W. Randolph, Suite 10-300, Chicago, IL 60601

Page 1

NOTE: Pursuant to Section 57.8(a)(5) of the Act, if payment from the Fund will be sought for any additional costs that may be incurred as a result of the Illinois EPA's modifications, an amended budget must be submitted. Amended plans and/or budgets must be submitted and approved prior to the issuance of a No Further Remediation (NFR) Letter. Costs associated with a plan or budget that have not been approved prior to the issuance of an NFR Letter will not be paid from the Fund.

Pursuant to Sections 57.7(b)(5) and 57.12(c) and (d) of the Act and 35 Ill. Adm. Code 734.100 and 734.125, the Illinois EPA requires that a Corrective Action Completion Report that achieves compliance with applicable remediation objectives be submitted within 30 days after completion of the plan to:

Illinois Environmental Protection Agency  
Bureau of Land - #24  
Leaking Underground Storage Tank Section  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276

Please submit all correspondence in duplicate and include the Re: block shown at the beginning of this letter.

If within four years after the approval of this plan, compliance with the applicable remediation objectives has not been achieved and a Corrective Action Completion Report has not been submitted, the Illinois EPA requires the submission of a status report pursuant to Section 57.7(b)(6) of the Act.

An underground storage tank system owner or operator may appeal this decision to the Illinois Pollution Control Board. Appeal rights are attached.

Sincerely,



Michael T. Lowder  
Unit Manager  
Leaking Underground Storage Tank Section  
Division of Remediation Management  
Bureau of Land

MTL:MU/891717.doc

Attachments: Attachment A  
Appeal Rights

cc: Thomas Mangan, GEOTHINK, LLC.

Page 2

**Attachment A**

Re: LPC #0370305005 -- DeKalb County  
Kirkland/Kirkland Quick Stop  
411 West Main Street  
Leaking UST Incident No. 891717  
Leaking UST Technical File

**SECTION 1**

As a result of Illinois EPA's modification(s) in Section 2 of this Attachment A, the following amounts are approved:

\$30,194.21	Drilling and Monitoring Well Costs
\$12,187.72	Analytical Costs
\$111,978.68	Remediation and Disposal Costs
\$0.00	UST Removal and Abandonment Costs
\$14,069.13	Paving, Demolition, and Well Abandonment Costs
\$110,829.15	Consulting Personnel Costs
\$15,055.25	Consultant's Materials Costs

Handling charges will be determined at the time a billing package is reviewed by the Illinois EPA. The amount of allowable handling charges will be determined in accordance with Section 57.1(a) of the Environmental Protection Act (Act) and 35 Illinois Administrative Code (35 Ill. Adm. Code) 734.635.

**SECTION 2**

\$561.85 for site investigation or corrective action costs for mileage that are not reasonable as submitted. Such costs are ineligible for payment from the Fund pursuant to Section 57.7(c)(3) of the Act and 35 Ill. Adm. Code 734.630(dd).

Mileage from Loves Park, Illinois to the job site in Kirkland, Illinois is approximately twenty-five (25) miles. Adjusted round trip mileage of fifty (50) miles accordingly.

The costs associated with consultants personnel costs for monitoring well abandonment are not approved as part of this budget. These charges are included in the monitoring well abandonment rate, for which a maximum rate of \$12.39 per foot applies. The costs exceed the maximum payment amounts set forth in Subpart H, Appendix D, and/or Appendix E of 35 Ill. Adm. Code 734. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(zz). In addition, such costs are not approved pursuant to Section 57.7(c)(3) of the Act. because they are not reasonable.



Page 3

Based upon the above deduction, a total of \$2,998.40 was deducted from personnel costs.

The costs associated with mileage for injection well abandonment are not approved as part of this budget. These charges are included in the monitoring well abandonment rate, for which a maximum rate of \$12.39 per foot applies. The costs exceed the maximum payment amounts set forth in Subpart H, Appendix D, and/or Appendix E of 35 Ill. Adm. Code 734. Such costs are ineligible for payment from the Fund pursuant to 35 Ill. Adm. Code 734.630(zz). In addition, such costs are not approved pursuant to Section 57.7(c)(3) of the Act because they are not reasonable.

Based upon the above deduction, a total of \$111.00 was deducted from consultant material costs.

Appeal Rights

An underground storage tank owner or operator may appeal this final decision to the Illinois Pollution Control Board pursuant to Sections 40 and 57.7(c)(4) of the Act by filing a petition for a hearing within 35 days after the date of issuance of the final decision. However, the 35-day period may be extended for a period of time not to exceed 90 days by written notice from the owner or operator and the Illinois EPA within the initial 35-day appeal period. If the owner or operator wishes to receive a 90-day extension, a written request that includes a statement of the date the final decision was received, along with a copy of this decision, must be sent to the Illinois EPA as soon as possible.

For information regarding the filing of an appeal, please contact:

John Therriault, Assistant Clerk  
Illinois Pollution Control Board  
James R. Thompson Center  
100 West Randolph, Suite 11-500  
Chicago, IL 60601  
312/814-3620

For information regarding the filing of an extension, please contact:

Illinois Environmental Protection Agency  
Division of Legal Counsel  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, IL 62794-9276  
217/782-5544

**RIGHT OF ENTRY AND TESTING LICENSE AGREEMENT**

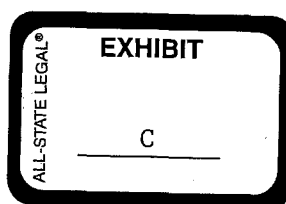
This Right of Entry and Testing License Agreement ("Agreement") is made as of the 4<sup>th</sup> day of November 2014 (the "Execution Date"), between VILLAGE OF KIRKLAND, an Illinois unit of local government ("Village"), BLAKE LEASING COMPANY LLC-REAL ESTATE SERIES ("Blake"), has contracted GEO-THINK, LLC, ("Geo-Think") to act as its environmental consultant to perform investigation, testing and/or monitoring on the property owned by Village and depicted on Exhibit 1, attached hereto, ("Property"). Blake and Geo-Think are collectively referred to as "Entrant".

Village owns the Property. Village and Entrant agree that Entrant may conduct groundwater monitoring on certain portions of the Property. In order for Entrant to determine the proper scope for the groundwater monitoring, Entrant desires to enter upon and inspect the Property to perform investigative activities, including but not limited to soil borings and sampling. Thereafter, Entrant expects to drill and construct groundwater monitoring wells (the "Permitted Activities") in accordance with the letter attached hereto as Exhibit 2 including groundwater sampling of two Village owned municipal wells.

As an accommodation to Entrant, Village is willing to grant permission to Entrant, its employees, agents and contractors to enter upon the Property solely to conduct such investigations and then to drill and construct the wells under the terms and conditions stated herein. In consideration of the mutual covenants and agreements contained herein, the receipt and sufficiency of which are hereby acknowledged, the parties hereto hereby agree as follows.

1. Village grants to Entrant, its contractors, agents and employees a right of entry and license to enter upon the Property solely to conduct and perform Permitted Activities. Entrant's entry rights are specifically limited to the Permitted Activities on the Property and shall not include any other activities on the Property or on any other property or areas surrounding the Property. Entrant shall be responsible for any and all costs related to entry and the Permitted Activities under this Agreement, including, without limitation, any temporary installation, operation and removal of equipment on the Property. Village shall not be required to be present during, or to make on-site inspections of, or to check the quality or progress of, Permitted Activities. Village shall not be responsible for the means, methods, techniques, sequences or procedures, or for any safety precautions and programs in connection with the Permitted Activities, and the foregoing approval and supervision shall not re-allocate or confer upon Village any risk, responsibility, or liability associated with the Permitted Activities.

2. Entrant agrees to comply with all local, state, and federal laws, rules and ordinances applicable to the Permitted Activities. Entrant further agrees to exercise due care in the entry and the performance of all Permitted Activities on the Property, and not to interfere with or interrupt Village or any other party's activities or operations on the Property or surrounding areas. Entrant shall promptly repair, at its sole cost, any damage to the Property or any other property caused by the acts or omissions of Entrant, its agents, employees, contractors or subcontractors and restore the Property to the same conditions which existed prior to Entrant's entry and performance of the Permitted Activities and after all testing agency reporting and monitoring is completed, the monitoring wells shall be removed and



the Property restored. Village may terminate this Agreement upon thirty (30) days written notice and upon termination the Property shall be restored as previously provided.

3. Entrant shall release, indemnify, hold harmless, and defend Village, its elected and appointed officials, employees, agents or contractors, from any and all claims, actions, damages, liability and expense whatsoever, including without limitation attorneys' fees and costs, in connection with personal injury, death, property damage or destruction, arising out of the acts or omissions of Entrant, its employees, agents or contractors, including without limitation the Permitted Activities, upon the Property or any other portion of the property surrounding the Property. The provisions of this Paragraph 3 shall survive the expiration or termination of this Agreement.

4. Entrant shall procure and maintain for the duration of this Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the Entrant's Permitted Activities and Entrant's occupancy and use of the Property. The cost of such insurance shall be paid by Entrant. The insurance shall provide coverage of the following kinds and amounts:

A. Commercial General Liability: \$1,000,000.00 combined single limit per occurrence for bodily injury, personal injury and property damage. The policy or policies providing coverage over property damage to the Property shall be endorsed to name Village as an additional insured and no part of the Property shall be considered a part of any "work" of Entrant nor subject to the economic loss doctrine.

B. Worker's Compensation and Employer's Liability: Worker's Compensation limits as required by statute and Employers Liability limits of \$500,000.00 per accident and \$500,000.00 per disease each employee.

C. Automobile Liability: \$1,000,000.00 combined single limit each accident.

D. Umbrella Excess Liability: \$2,000,000.00 over primary.

E. The Village, its elected and appointed officials, employees, members, successors and assigns (collectively, the "additional insureds") are to be named as additional insured on the required policies of insurance to provide coverage with respect to liability resulting from Entrant's occupancy or use of the Property and/or arising out of activities performed by or on behalf of Entrant hereunder, including those performed by independent contractors hired by Entrant or its or their subcontractors. The coverage shall contain no special limitation on the scope of the protection afforded to the additional insureds. Entrant's insurance coverage shall be primary as respects the additional insureds with respect to claims based upon Entrant's actions. Any insurance or self-insurance maintained by the Village shall be secondary and excess of Entrant's insurance and shall not contribute with it in such cases.

F. Any of Entrant's errors or omissions shall not affect coverage provided to the additional insureds.

G. Coverage shall state that Entrant's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the insurer's liability

H. Each insurance policy required by this Agreement shall not be canceled except after thirty (30) days prior written notice by (10 days notice due to non-payment) by regular U.S. mail, has been given to the Village.

I. Insurance shall be placed with insurers licensed to do business in the State of Illinois.

J. Either Blake or Geo-Think shall furnish Village with a certificate or certificates of insurance with endorsements evidencing the coverages as required by this Section 4. The certificates and endorsements for each type of insurance shall be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates, policies and endorsements are to be received by the Village within fifteen (15) days of the Execution Date and in any event prior to commencement of any Permitted Activities.

5. The term of this Agreement shall be from the Execution Date to December 31, 2016.

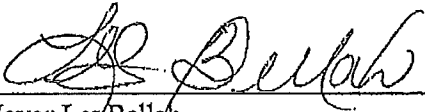
6. Prior to each entry, Entrant shall contact the Village's Public Works Director and apprise him of the reason for the entry and any work to be done, which work shall be subject to his reasonable review and approval. Further, prior to the installation of monitoring wells, the parties shall agree in writing as to their location, depth and method of operation. The Village shall have the final determination of the location of the monitoring wells.

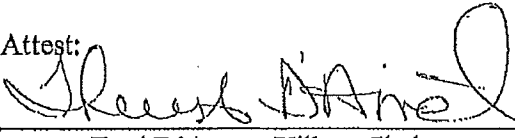
7. Entrant shall pay all of the Village's personnel costs for review and construction oversight, along with the Village's engineering and attorneys' fees for reviewing plans and otherwise administering this Agreement.

8. This Agreement constitutes the entire understanding between the parties with respect to the activities contemplated by this Agreement. All prior agreements or understandings, whether oral or written, are superseded. This Agreement may be amended only by a written document duly executed by the parties. This Agreement is governed by the laws of the State of Illinois and jurisdiction for any dispute shall be in the Circuit Court of DeKalb County, Illinois.

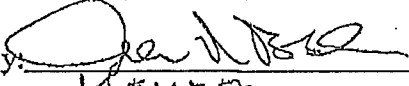
IN WITNESS WHEREOF, the undersigned have hereunto set their hands and seals as of the date first above written.

VILLAGE OF KIRKLAND

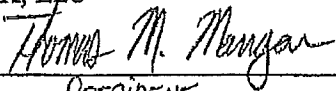
By:   
Mayor Les Bellah

Attest:   
Terri D'Amato, Village Clerk

BLAKE LEASING COMPANY LLC-REAL ESTATE SERIES

By:   
Its: MEMBER

GEO-THINK, LLC

By:   
Its: PRESIDENT

12/9/2014



**ILLINOIS ENVIRONMENTAL PROTECTION AGENCY**

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397  
BRUCE RAUNER, GOVERNOR                      LISA BONNETT, DIRECTOR

January 21, 2016

**CERTIFIED MAIL**  
7009 2820 0001 7496 2753

Mr. Thomas Mangan, PG  
Geo-Think, LLC  
611 Stevens Street  
Geneva, Illinois 60134

**RE:** - Application for Provisional Variance from Section 14.2 of the Illinois Environmental Protection Act for the Installation of Injection Wells within the Setback Zone of Kirkland Community Water Supply Wells.

Dear Mr. Mangan:

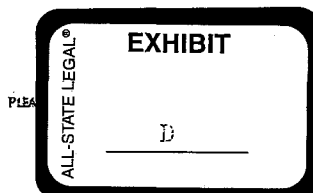
This letter responds to the submittal received by the Illinois Environmental Protection Agency ("Agency") on December 22, 2015 for a provisional variance from the minimum setback zone requirements in Section 14.2 of the Illinois Environmental Protection Act ("Act") (415 ILCS 5/14.2). Under the Act, the Agency may grant provisional variances from "any rule or regulation, requirement or order of the Board, or with any permit requirement." 415 ILCS 5/35(b) (2016). The relief Mr. John Blake and Blake Leasing Company LLC—Real Estate Series seeks is from Section 14.2 of the Act, not a rule, regulation, Board order or requirement, or permit requirement. The Agency does not have statutory authority to grant provisional variances from the requirements of the Act. Therefore, the Agency denies the application because the relief sought is outside the scope of relief provided by provisional variances. See 35 Ill. Adm. Code 180.301(b). Section 14.2(c) of the Act describes a process by which the Illinois Pollution Control Board ("Board") may grant a setback zone exception to the owner of a new potential route or new potential source relative to a community water supply well.

Should you have further questions or concerns please contact me or Joanne Olson of my staff at (217) 782-5544, or the letterhead address.

Sincerely,

John J. Kim  
Chief Legal Counsel

CC: Joanne Olson  
Lynn Dunaway  
File



Environmental and Natural Resource Services Provider

September 17, 2015

Mr. Les Bellah, Mayor  
Village of Kirkland  
511 West Main Street  
Kirkland, Illinois 60146

**RE: Request for Waiver From Section 14.2 of ACT to Allow Injection Wells in the Setback Zone of Municipal Potable Well; Corrective Action Plan to Address Residual Petroleum Groundwater Contamination at IEMA # 891717 / LPC # 0370305005 / DeKalb County; Kirkland Quick Stop at 411 West Main Street, Kirkland, IL 60146; Corrective Action Plan and Budget - Leaking UST Technical File**

Dear Mayor Bellah,

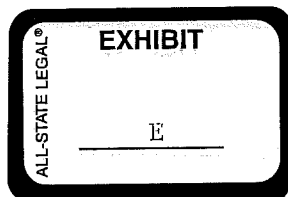
GeoThink, LLC (GEOTHINK) of Geneva, Illinois on behalf of Mr. John Blake and Blake Leasing Company LLC-Real Estate Series (owner Kirkland Quick Stop-KQS) are submitting you this copy of the Corrective Action Plan and budget per Part 734 regulations to IEPA for Kirkland Quick Stop (411 West Main Street in Kirkland, DeKalb County, IL, IEMA incident #891717). Also enclosed for your documentation is a copy of the August 10, 2015 GEOTHINK Stage 2 and Stage 3 Site Investigation Completion Report, which was approved in IEPA correspondence, dated August 25, 2015.

This CAP plan and budget proposes enhanced bioremediation via injection wells to address three (3) areas of groundwater contamination (2 on-site & 1 off-site) located within the setback zones of municipal water supply wells (backup well and main supply well -Village of Kirkland). The Village of Kirkland, along with Mr. John Blake (Entrant) and GEOTHINK (Entrant) have an executed site access agreement to Village property and its water supply wells for testing services related to the investigation and cleanup of this petroleum release dated December 19, 2014. The agreement is valid until December 31, 2016.

Groundwater testing on July 1, 2015 of the two Village of Kirkland municipal water supply wells (main and backup) for petroleum contaminants BTEX/MTBE and PNAs detected below laboratory detection limit (BDL) concentrations and < Tier 1 Class I GROs (drinking water standards) for all BTEX/MTBE and PNA compounds. The two nearby Village water wells have not been contaminated by the shallow groundwater petroleum associated with petroleum release incident number #891717. These two water supply wells each have steel casing from the ground surface into the limestone bedrock 88 to 152' deep, some 63 to 127+ feet deeper than the shallow groundwater contamination at KQS.

During the Stage 2 and Stage 3 investigations, no free-phase petroleum product has been detected on the KQS site, nor detected on the Railroad Street right-of-way property maintained by the Village of Kirkland. The groundwater in off-site wells MW-6 and MW-3A located just north of the KQS property line in Railroad Street detected levels of Benzene and PNA contamination slightly above Tier 1 Class I GROs. Monitoring wells MW-18 and MW-19 located further north on Railroad Street detected BDL groundwater concentrations of BTEX/MTBE and PNAs.

GEOTHINK on behalf of Mr. John Blake and Kirkland Quick Stop propose to inject enhanced bioremediation products to remediate residual petroleum hydrocarbons in the shallow groundwater to below Class I groundwater remediation objectives (GROs) and obtain a No Further Remediation Letter (NFR) from the IEPA LUST section.





Section 14.2 of the IL Environmental Protection Act (ACT) establishes minimum setback zones for potable water supply wells. New potential sources or routes of groundwater contamination including injection wells, as defined in Section 3.350 of the ACT are prohibited in the setback zone of a potable well unless a waiver pursuant to Section 14.2 (b) of the ACT is obtained from IEPA and from the owner of the well(s) known as the Village of Kirkland.

We request a written waiver or written authorization from Section 14.2 of the ACT to obtain Village permission to allow use of injection wells and enhanced bioremediation to remediate residual petroleum hydrocarbons in the shallow groundwater of the Village well setback zone to below Class I GROs. Page 3 of this request letter provides written authorization by Village official to grant GEOTHINK and Mr. John Blake a waiver from Section 14.2 of the ACT that prohibits injection wells in Village well setback zones.

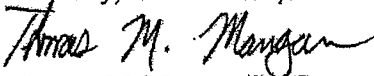
The proposed enhanced bioremediation will be accomplished by injection of hydrocarbon degrading aerobic bacteria, OSEI which is an enzyme based surfactant and nutrient product, and biological oxygen compound (BOC) to provide oxygen and minerals needed by bacteria for the degradation process. The three remedial amendment products proposed for injection are all natural, easily bio-degrade and are not harmful to human health. GEOTHINK proposes a series of 47-1-inch diameter PVC injection wells on 10-foot centers with wells discretely screened in the impacted soil and groundwater zones ~15 feet deep. The in-situ bioremediation process is described in more detail in the attached CAP document.

As far as the issue of environmental concern about injecting bio-enhancements within a potable well setback zone; we believe an injection well waiver for bioremediation is justified for the subject property:

- the bacteria, OSEI and BOC amendments we are proposing to inject are all natural and not a threat to human health-see MSDS sheets in CAP plan document,
- the shallow near surface groundwater within said setback zone is already contaminated with petroleum compounds that are harmful to human health.
- the resultant products after bio-degradation are: O<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O, and biomass.
- Bio-degradation is already occurring on its own and we are only proposing to jump start the process and speed it along at three designated areas of groundwater contamination.
- the bacterial inoculant we are proposing is not harmful to human health, is only for hydrocarbon degradation, and will die off as the contamination source decreases.
- the enzyme based surfactant and bio-enhancement product we propose to use is made up of a bio-degradable, edible surfactant, molasses, sugars, etc.; and
- BOC is calcium peroxide; generates oxygen, and used in baking, pharma & making vitamin B12.

Our goal is to obtain Agency approvals so that the first round of injections can be conducted in October/November 2015 before the ground freezes and snow covers the subject property. If you have any questions, or want to discuss the waiver request/CAP further, please contact us at (630) 208-5050.

Sincerely, GEOTHINK, LLC.



Thomas M. Mangan, IL PG

Attachment: Corrective Action Plan and Budget - KQS

C: John Blake, Blake Leasing Co. LLC  
Matt Warneke - Trans Environmental  
Matt Urish, IEPA PM and Rick Cobb-IEPA Public Water Supply

WAIVER RELEASE FORM-CORRECTIVE ACTION WELL INJECTIONS in MUNICIPAL WELL SETBACK ZONE at KQS SITE at 411 W. Main St., Kirkland, IL. 60146 // IEMA # 891717

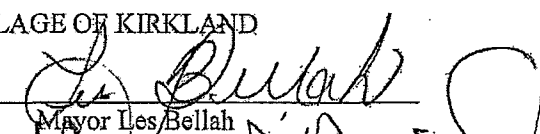
GEOTHINK, LLC and Mr. John Blake of KQS (previously identified as Entrants in the December 9, 2014 Right-Of-Entry and Testing License Agreement) request a written authorization from Village of Kirkland (waiver permission) to allow uses of injection wells and enhanced bioremediation amendments to remediate residual petroleum hydrocarbons to below Class I GROs in the shallow groundwater at the KQS site and adjoining portion of Railroad Street. All of this remediation injection area is located within the Village water supply wells regulated setback zone. This setback zone area includes the three (3) proposed groupings of injection wells to be installed by GEOTHINK and/or its subcontractor(s) near well MW-1 on the KQS property, near well MW-15 on the KQS property, and near wells MW-14 and MW-16 on the KQS site and near wells MW-3A and MW-6 on the Railroad Street property just north of KQS boundary. These Class V injection wells will be approved and permitted by the IEPA before commencement of drilling and construction. These injection wells will be removed and property restored after all remediation injections, and all testing agency reporting and monitoring is completed, in accordance with requirements of the current Right-Of-Entry and Testing License Agreement item No. 2. (Signed by Village and Entrants December 9, 2014, and valid until December 31, 2016).

This signed letter provides written authorization by Village of Kirkland official to grant GEOTHINK and Mr. John Blake a waiver from Section 14.2 of the ACT that prohibits injection wells within Village water supply well setback zones.

DATED: Feb. 2, 2016

In Witness Whereof, the undersigned have hereunto set their hands and seals as of the date first written above written.

VILLAGE OF KIRKLAND

By:   
Mayor Les Bellah

Attest:   
Terri D'Amato, Village Clerk

BLAKE LEASING COMPANY LLC-REAL ESTATE SERIES

By: \_\_\_\_\_

Its: \_\_\_\_\_

GEOTHINK, LLC

By: Thomas M. Mangano

Its: President