BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

BLAKE LEASING COMPANY, LLC,	)	
	)	
Petitioner	)	
	)	
v.	)	PCB 2016-100
	)	(Water Well Setback Exception)
ILLINOIS ENVIRONMENTAL	)	
PROTECTION AGENCY and VILLAGE	)	
OF KIRKLAND,	)	
Respondent.	)	

NOTICE OF FILING

PLEASE TAKE NOTICE that I have filed today with the Illinois Pollution Control Board Illinois EPA's ILLINOIS EPA'S RESPONSE, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ Joanne M. Olson
Joanne M. Olson
Assistant Counsel
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Date: June 15, 2016

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Respondent.	)	

ILLINOIS EPA'S RESPONSE

NOW COMES the ILLINOIS ENVIRONMENTAL PROTECTION AGENCY ("Illinois EPA" or "Agency"), by and through its counsel, and pursuant to Sections 14.2 the Environmental Protection Act ("Act") (415 ILCS 5/14.2) and 35 Ill. Adm. Code 106.306, hereby submits its response to BLAKE LEASING COMPANY, LLC's ("Petitioner" or "Blake ") Petition for Water Well Setback Exception Pursuant to 415 ILCS 5/14.2(c) ("Petition").

I. INTRODUCTION

Blake Leasing filed a petition with the Illinois Pollution Control Board ("Board") on April 29, 2016, requesting an exception to the minimum setback zone for two community wells owned and operated by the Village of Kirkland. The wells are identified as Agency ID# 11424 and Agency ID# 11425 both of which have 400 foot minimum setback zones. The exception is for the construction and operation of 47 injection wells for remediation of leaking underground storage tanks. An injection well is a potential route, as defined in Section 3.350 of the Act, and therefore cannot be placed within the setback zone of the community water supply well without an exception from the Board.

II. LEGAL BACKGROUND

Sections 14.2 of the Act establishes minimum setback zones of 200 or 400 feet for all new potential routes; no new potential routes may be placed, without a wavier or exception, within 200 or 400 feet of an existing community water supply or other potable water supply well. 415 ILCS 5/14.2(a). The exception process is set forth in Section 14.2(c) of the Act and Subpart C of Part 106 of the Board's procedural rules.

To obtain an exception from the minimum setback zone for community water supply wells, the owner of the new potential route must file a petition with the Board and Agency. 415 ILCS 5/14.2(c). The petition must contain a general description of the potential impacts of the potential route on groundwater and the potable well, and an explanation of the applicable technology that will be used to minimize risk. Id. The Board's regulations further specify that the petition must state the nature of the petitioner's operation, the scope of the evaluation supporting the exception, the nature of the exception, and the reasons for the exception. 35 Ill. Adm. Code 106.304. The petitioner is required to serve a copy of the petition on all water supplies affected by the proposed exception. 415 ILCS 5/14.2(c); 35 Ill. Adm. Code 106.302(b).

Both the Act and the Board's regulations set forth the burden of proof. The petitioner must show (1) compliance with the setback zone would pose an arbitrary and unreasonable hardship; (2) petitioner will use best available technology; (3) the maximum feasible setback zone will be utilized; and (4) the location of the potential source or route does not constitute a significant hazard to the potable water supply well. 415 ILCS 5/14.2(c); 35 Ill. Adm. Code 106.310.

III. FACTUAL BACKGROUND

The subject property is a gas station owned by the Petitioner, located at 411 West Main Street, Kirkland, Illinois. In Paragraph 5 of the Petition, Petitioner states that active remediation is required at the subject property because it is located within the setback zone of the Village of Kirkland's emergency backup well and the main community water supply well. The Agency believes it is important to clarify certain aspects regarding the Village of Kirkland community water supply wells relative to the subject property.

The Village of Kirkland has three community water supply wells. Because the Village of Kirkland community water supply wells may be referred by different names in Agency documents and locally, the Agency will use the Agency assigned 5-digit numbers to identify and discuss the wells.

Well 01613 appears to be consistently referred to as well 3 in Agency documents, but is located more than one mile west of the Blake property and is not relevant to the petition and will not be discussed further.

Well 11424 is located south of the railroad tracks, closest to the Blake property and may in some documents be referred to as the emergency backup well, the railroad well, well RRW or well 1. Based on Agency records this well was drilled about 1896. The Agency has assigned this well a 400 foot minimum setback zone, based on the recorded casing depth of 88 feet and the evaluation of geologic maps and the well log of Well 11425. This setback determination was confirmed by enriched tritium analysis data from Well 11425, the village of Kirkland's main community water supply well, and Well 11425's proximity to Well 11424.

Well 11425 is located to the north of the water tower and in some documents may be referred to as well 1 or well 2. Based on Agency records, this well was drilled about 1950. The

Agency has assigned this well a 400 foot minimum setback zone, based on the recorded outer casing depth of 69 feet and the evaluation of geologic maps and the well log. This determination was confirmed by enriched tritium analysis completed April 3, 2014. Enriched tritium analysis uses tritium (a hydrogen isotope) released into the atmosphere during above ground nuclear testing in the 1950's and 1960's to indicate a relative age of groundwater. Groundwater containing 1.0 tritium unit ("TU") or less is considered ancient water, and is not believed to have any recharge contribution from modern surface water. The tritium analysis of Well 11425 conducted in April 2014 reported 2.3, +/- 0.4 TU. See Exhibit A. Therefore, the Agency considers Well 11425 to be receiving recharge of some modern water and is not considered to be utilizing a confined aquifer system.

Therefore, pursuant to Section 14.2(d) of the Act, a minimum setback zone of 400 feet has been assigned to both Well 11424 and Well 11425. As such, the entire Blake property falls within the minimum setback zone of Well 11424 and a portion of the Blake property falls within the minimum setback zone of Well 11425.

According to Agency records, the underground storage tanks at the subject property began leaking, and Illinois Emergency Management Agency ("IEMA") incident number 891717 was issued September 7, 1989. See Exhibit B. Based on a review of the Illinois State Fire Marshal's underground storage tank ("UST") data base, the USTs currently operating at the subject property were installed November 2, 1993, and are considered "new potential secondary sources" as defined in Section 3.355 of the Act. See Exhibit C. The Agency was unable to find a Board issued exception for the installation of the currently operating UST tanks at the subject property. The Agency requests the Petitioner provide a Board Order for a setback exception for the installation of currently operating UST tanks within the minimum setback zone of Well

11424 and depending on the exact location of the tanks, the minimum setback zone of Well 11425. If the Petitioner is unable to produce this Board order, the Agency believes the installation and continuing operation of the USTs currently serving the subject property represents a violation of Section 14.2(d) of the Act.

In the event that a violation of the Act does exist, it appears to the Agency that such a violation could be resolved if Blake were granted an exception by the Board for the installation of "new potential sources" (the USTs currently serving the subject property) within the minimum setback zone of the Village of Kirkland Well 11424 and to the extent that the tanks are within its minimum setback zone, Well 11425. The Agency believes a separate exception petition and supporting documentation specifically for the installation of the current UST within the minimum setback zones would most clearly separate the remediation injection well issue from the UST installation issue. However, the Petitioner could also amend the current petition to combine the two issues.

In this recommendation, the Agency wants to clarify that it is only addressing Blake's request for exception for the installation of remediation injection wells within the setback zones of both Well 11424 and Well 11425.

IV. NOTIFICATION OF WATER SUPPLY

A Certificate of Service attached to the Petition indicates that the Village of Kirkland has been provided with a copy of the petition by certified mail, return receipt requested. The Agency concurs with the Petitioner's response to Board Question #12. The Agency believes the petition adequately addresses this requirement.

V. POTENTIAL IMPACTS TO GROUNDWATER AND WELLS

The Act requires that the Petitioner describe the potential impact of the injection wells to groundwater in general and specifically the affected wells. The Petitioner provides a general explanation that there are currently petroleum related contaminants in the area, the removal of which is required under current regulations. The Agency agrees that the petroleum products present at the subject property can cause harm and the contaminants should be removed or reduced to within regulatory limits. The Petitioner further states that the bacteria to be injected and the nutrient and oxidizing compounds are not harmful. The Agency will address these statements further in Section IX of this response.

In response to Board Question #1 the Petitioner supplied a color coded version of Figure 5. The Agency's review of the Petitioner's response in comparison to the data submitted with the petition indicates an apparent discrepancy. Section 2.3 of the corrective action plan ("CAP"), submitted as Exhibit A of the petition indicates that MW-30S and MW-30D have exceedences of PNAs. In the response, the color coded version of Figure 5 indicates that MW-30S and MW-30D have contaminants of concern (COCs) below the detection limit. The Agency's concerns expressed in this section of its response are based on information in the petition. The Agency will leave this discussion in its response until the Petitioner resolves the apparent discrepancy by providing current groundwater monitoring data to confirm whether COCs are below the detection limit in MW-30S and MW-30D.

The Petitioner indicates that based on the groundwater elevations reported in MW-30S and MW-30D groundwater moves laterally instead of vertically towards the open intervals of Well 11424 and Well 11425. Page 4 of the CAP indicates that while drilling MW-30D clay was encountered from 30-35 feet. *See* Exhibit A of the Petition. Drilling was terminated at 35 feet

and the well was set at 31 feet. The Agency interprets this description to mean the bottom of the well screen is at 31 feet, though well logs and construction information were not provided with the Petition. Neither the CAP text, nor the cross-section provided in Figure 7 of the CAP, indicate that MW-30D is completed below the clay layer. Therefore, it appears that MW-30S and MW-30D are completed in the same sand and gravel formation above the clay layer. Given the close proximity of the two monitoring wells, the lack of measurable difference in groundwater elevation is not unexpected. The lack of head difference does not demonstrate a lack of connection between the Blake property and the community wells. Figure 7 of the CAP also illustrates that none of the other wells used in the cross-section encountered the clay layer. Without additional information, the Agency cannot determine if the clay layer, which the Petitioner asserts helps protect Well 11424 and Well 11425, exists at the site at any location other than MW-30D.

Figure 4 of the CAP provides a potentiometric surface map of the subject property. On Page 4 of the CAP the Petitioner states that MW-30S and MW-30D appear to be side gradient based on water elevations on May 11, 2015. The CAP indicates a groundwater mound exists in the former UST location and said mound is drawn on Figure 4. However, where data is not available on a potentiometric surface map, values must be interpolated between known points. Figure 4 indicates that MW-2 has a groundwater elevation at some value above 760.40 feet. Figure 4 also indicates that MW-30S and MW-30D have a groundwater elevation at some value below 760.30 feet. The indicated groundwater mound has an elevation indicated to be at least 760.33 feet, with no value reported at MW-5 within the closed contour of the mound. Since no empirical data exists between MW-2 and MW-30S and MW-30D the mound could extend to the northeast, with associated groundwater flow in that direction, as opposed to being truncated as

drawn in Figure 4. A cursory review of a very voluminous Leaking Underground Storage Tank ("LUST") database revealed that an April 14, 1992 Remedial Investigation Report indicated groundwater flow in a northeasterly direction at the site. The Agency acknowledges that groundwater flow direction can change seasonally and with lowered or elevated water tables due to drought or wet weather. The Petitioner dismisses PNAs detected in MW-30S and MW-30D as having another source, in spite of the close proximity to a known source of those contaminants, based on one interpretation of a data snap-shot. Such an interpretation does not fully evaluate the risks over time. The Petitioner then applies the same logic to the fate of the injected materials. Due to the data gaps discussed above, the Agency does not believe the Petition adequately describes the risk to groundwater or the affected wells. The Agency requests the Petitioner provide the following data to the Board for review:

- Boring sample logs for all monitoring wells and soil borings associated with the subject property;
- Well construction details for all monitoring wells associated with the subject property;
- Clear copies of Figure 4 and Figure 7;
- The groundwater elevations used to construct Figure 4 identified with the monitoring well where measured; and
- Information relied upon by the Petitioner to conjecture that there is an additional source which could be impacting MW-30S and MW-30D.

VI. ARBITRARY AND UNREASONABLE HARDSHIP

The Petitioner appears to maintain that the siting prohibitions within setback zones pursuant to Section 14.2 of the Act in and of themselves pose an arbitrary and unreasonable hardship. Petitioner asserts: "[t]he allowed setback requirements of Section 14.2 of the act pose

an arbitrary and unreasonable hardship upon the Petitioner, as generally, the use of bioremediation injection wells located within a minimum protected setback zone established for potable water supply wells per Section14.2 of the Act is prohibited." See paragraph 17 of Petition. When Blake purchased the property in 2001, known contamination at the site, setback zones prohibitions and the presence of potable wells with setback zones were existing conditions. The Agency acknowledges and agrees that some form of active remediation is appropriate and required by regulation. However, the Agency disagrees that the requirements of the exception process and the associated evaluation of the relative safety and efficacy of the remedial activities themselves poses an arbitrary and unreasonable hardship. Therefore, the Agency does not believe the petition, as filed, adequately demonstrates an arbitrary and unreasonable hardship.

VII. BEST AVAILABLE TECHNOLOGY

In Paragraphs 8-13 of the Petition, the Petitioner portrays that enhanced bioremediation is the best available technology ("BAT") to remediate groundwater at the subject property. However, a summary of site activities contained in a June 2012 Remedial Action Completion Report, by Trans Environmental, LTD indicates that beginning in 2002 and continuing periodically through 2009, bioremediation and oxygen releasing compounds were injected at the subject property on multiple occasions for the purpose of groundwater remediation. See Exhibit D. Based on a cursory review of documents in the LUST database it appears that concentrations of petroleum related compounds have decreased over the years. However, considering that the leaking tanks were removed in 1989 and 1993, soil was excavated and treated ex-situ, multiple rounds of bioremediation have been used and the hydraulic conductivity is reported in the CAP as being 2.4×10^{-2} centimeters per second or higher in the sand and gravel unit, it is not entirely clear whether remedial activities or 20 plus years of dilution and groundwater migration have

reduced contaminant concentrations. See Exhibit D. As recently as August 2013, Trans Environmental, LTD proposed air-sparging as a means to remediate residual hydrocarbons near MW-6. The LUST Section denied that proposal because a limited pilot study defining radius of influence, a cost comparison with excavation and the potential for contaminant rebound was not provided. Similarly, the Petitioner does not provide any detailed information with the petition supporting bioremediation as the BAT. Seven years of less than successful bioremediation appears to indicate bioremediation may not be the BAT. The Agency recommends that the Petitioner provide the Board a cost and technical feasibility evaluation of the various possible remedial activities.

The Agency does note that air injection wells used for air-sparging are also Class V injection wells and as such would require an exception if located inside the setback zone of well 11424 and well 11425. The Agency also notes that the Village of Kirkland has a waste water treatment plant. Therefore reinjection of treated water from extractive forms of remediation may not be necessary. The Agency further notes that the Board requested and the Petitioner provided copies of the material safety data sheets (MSDS) for specific injected constituents. The BioRenova MSDS indicates the solution is composed of calcium peroxide (75% minimum) and calcium hydroxide (25% maximum). An internet search of those compounds indicates that their pH is 11.7 standard units ("SU") and 12.4 SU, respectively. The MSDS for OESI indicates that pH over 11.7 is incompatible with this material. The Petitioner should provide information demonstrating that as injected, BIORenova and OESI are compatible together.

The Agency does not believe the petition, as filed, adequately demonstrates that enhanced bioremediation is the BAT.

VIII. MAXIMUM FEASIBLE SETBACK

Typically in the setback zone exception process, the maximum feasible setback is considered to assure that the greatest possible distance between a potential source or potential route, and a potable well is maintained. Increased distance is proportional to the time it takes a contaminant to move through groundwater from its source to a well. In the case of injective remedial technologies, the maximum feasible distance is necessarily as close as the contaminants of remedial concern. In the opinion of the Agency, as long as injected materials will not cause greater potential harm, the distance between the remedial injection wells and the community water supply wells is not as important as assuring that the petroleum contaminants are fully remediated within minimum setback zones. Also with regard to setback zones, Board Question #14 asks if Kirkland or DeKalb County have adopted more stringent setback standards than required by Section 14.2 of the Act. The Agency notes that Kirkland has adopted a maximum setback zone pursuant to Section 14.3 of the Act. See Exhibits E and F. Due to the presence of petroleum related contaminants within the minimum setback zone, the Agency supports the use of remedial injection wells within the minimum setback zone of Well 11424 and Well 1142 if a technology using injection is the BAT, injection will not adversely impact Well 11424 and Well 11425, and injection will not pose a significant hazard.

IX. SIGNIFICANT HAZARD

Section 14.2(c) of the Act states that the Petitioner must demonstrate to the Board that the potential route is not a significant hazard to the potable wells. Closely related to this demonstration is the description in the Petition of the possible impacts that the potential route may have on groundwater and the potable wells. Also related to the existence of a significant

hazard are monitoring to demonstrate the injected materials are not adversely effecting water supplies and that the chosen remediation is successful.

Board Questions #2, #3 and #4 relate to groundwater quality, particularly in relation to Well 11424 and Well 11425. The Agency agrees that no constituent should be allowed to exceed the national primary drinking water standards (MCLs) per 35 Ill. Adm. Code 611. However, the Agency also applies a stricter, narrative standard found in 35 Ill. Adm. Code 601.101 to community water supply wells. Section 601.101 states that community water supplies shall provide water that is "assuredly safe in quality, clean adequate in quantity, and of satisfactory mineral characteristics for ordinary domestic consumption" 35 Ill. Adm. Code 601.101. The Agency believes these requirements would prohibit any taste, odor or discoloration caused by the injection of remedial materials, or the introduction of petroleum degrading bacteria into Well 11424 or Well 11425. The MCLs are, in general, based on human health risk assuming a lifetime of water consumption. The MCL for xylene (one of the COCs), for example, is 10 milligrams per liter ("mg/L") however, the taste and odor threshold is 0.02 mg/L. Therefore, following this example, the drinking water from Wells 11424 and 11425 could be made objectionable to consumers with xylene concentrations far below the concentrations that would cause physical harm. Similarly, many PNAs don't have an associated MCL. Therefore, the appropriate concentration measurement for PNAs without an MCL at Wells 11424 and 11425 is the Tier 1, Class I remedial objective that applies on the Blake property, not an MCL.

The Agency believes a successful remediation is one that reduces the target contaminants to a level below regulatory limits in all contaminant source areas. At the same time, materials injected for remedial purposes should not reach harmful levels that would endanger drinking water or render it aesthetically unacceptable. Specifically, with regard to the Petitioner's

response to Board Question #4a, the Agency believes treatment of the drinking water could be necessary at concentrations below the MCL for certain constituents. Further, those contaminant reductions should be proven by continued monitoring over a period adequate to demonstrate success.

As discussed in the Potential Impacts section of this response, the Agency has not been convinced by the data submitted in the Petition that the PNAs detected in MW-30S and MW-30D are unrelated to the subject property. Since the Petitioner maintains that bio-remedial injection within the setback zone of Well 11424 and Well 11425 is an acceptable risk, the Agency believes the MW-30S and MW-30D area should also be remediated using the selected BAT, unless the data clearly shows another source of contamination.

The Agency reviewed the questions and comments posed by the Board to the Petitioner, and the responses provided by the Petitioner. In addition to specific responses the Agency has provided herein regarding the Board's questions and the Petitioner's responses, the Agency provides the following:

- Due to regulatory requirements, the Agency believes meeting all remedial objectives in all monitoring wells and meeting all regulatory requirements in the affected potable wells is the measure of a successful remediation.

Additionally the Agency believes the Petitioner should:

- Monitor Well 11424 and Well 11425 for BTEX, PNAs, injected bacteria and OSEI product for the term of the remediation.
- Monitor all monitoring wells associated with the Blake remediation and Well 11424 and Well 11425 for a minimum of one year (four quarters) of compliant samples, as suggested by Board Question #7, which the Petitioner found acceptable.

The Agency does not believe the petition, as filed, adequately demonstrates that there is no significant hazard.

X. RECOMMENDATION

The Agency recommends that the Board deny the Petition because the Petitioner has failed to adequately describe the risk to groundwater or the affected wells, demonstrate that compliance with the setback zone would pose an arbitrary and unreasonable hardship, demonstrate that enhanced bioremediation is the BAT, and demonstrate that use of the injection wells would pose no significant hazard.

The Agency requests that the Board require the Petitioner to submit the data requested by the Agency in addition to any additional information requested by the Board.

WHEREFORE, the Illinois EPA respectfully submits its Response.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

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CERTIFICATE OF SERVICE

Joanne M. Olson, Assistant Counsel for the Illinois EPA, herein certifies that she has served a copy of the foregoing NOTICE OF FILING and ILLINOIS EPA'S RECOMMENDATION upon

Village of Kirkland
Attn: Mayor Les Bellah
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Brad Halloran
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by placing a true copy in an envelope duly addressed bearing proper first class postage in the United States mail at Springfield, Illinois on June 15, 2016, or by sending an email from my email account (joanne.olson@illinois.gov) to the email addresses designated above with the following attached:

Notice of Filing and Illinois EPA's Response: 16 page PDF document

Exhibit A: 1 page PDF document

Exhibit B: 6 page PDF document

Exhibit C: 16 page PDF document

Exhibit D: 215 page PDF document

Exhibit E: 40 page PDF document

Exhibit F: 16 page PDF document

in an e-mail transmission on or before 5:00 pm on June 15, 2016.

/s/Joanne M. Olson
Joanne M. Olson