

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.)

RESPONSE OF BLAKE LEASING COMPANY, LLC TO QUESTIONS POSED BY THE ILLINOIS POLLUTION CONTROL BOARD

NOW COMES Blake Leasing Company, LLC – Real Estate Series (Blake Leasing) as owner of Kirkland Quick Stop (KQS), Petitioner in the above-captioned matter, and submits its written responses to questions posed by this Honorable Board which were attached to the April 27, 2016 Order of Hearing Officer Bradley Halloran. The Board's questions and Blake Leasing's responses are as follows:

Section 35 Ill. Adm. Code 310(b)

The Petition for Water Well Setback Exception (petition) and the attached Corrective Action Plan (CAP) provide that the injection wells will be injected with a hydrocarbon degrading aerobic bacteria, an enzyme based surfactant and nutrient product, and a biological oxygen compound.

- 1) Submit Appendix D of the CAP, including a copy of the Material Safety Data Sheets for the hydrocarbon degrading aerobic bacteria, enzyme-based surfactant and nutrient product, and biological oxygen compound and the description of bioremediation amendments, to supplement the petition;

Response: Attached is a complete copy of the **Appendix D** portion of the CAP.

- 2) Explain whether the enhanced bioremediation injections may change the character of the groundwater supply for the Village of Kirkland CWS well. For example, will the resultant products of bio-degradation negatively impact the community water supply in any way?

Response: 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 in the Village of Kirkland (Village) municipal well setback zone are all natural, easily biodegradable, and are not harmful to human health according to their MSDS descriptions and the firsthand experience of applicator/installer Mr. John Noyes of CABENO Environmental Field Services. The bacterial inoculant (OSEI) will die off as the hydrocarbon contamination source decreases. Carbon-containing molasses and sugars are used as natural surfactants, while calcium peroxide (used in baking and in the manufacture of vitamin B-12) is the BOC product used to generate oxygen.

GEOTHINK proposes to conduct the injections into soils and saturated sediments ranging in depth from 5 to 17 feet below grade to treat in-situ benzene or PNA contamination above Tier 1 Class I soils and Class I groundwater remediation objectives. Water levels generally range between 7.5 to 11 feet below grade across the CAP remediation area. Of additional note is the fact that a dense silty clay aquitard is present across the CAP remediation area at a general depth of 28 to 35 feet below the shallow groundwater zone. Limestone bedrock ranges from 50 to 60 feet below grade in the CAP remediation area. The Village emergency well-M1 located northeast of the KQS site is approximately 737 feet deep, with steel well casing set from 0 to 88 feet below grade, while the Village main well-M2 located north of the site is approximately 630 feet deep, with steel well casing set from 0 to 152 feet below grade. GeoThink's July 1, 2015 testing of Village wells M1 and M2 did not detect BTEX/MTBE or PNA contamination above Class I GROs.

The resultant products after bio-degradation are oxygen (O₂), carbon dioxide (CO₂), water (H₂O) and biomass. These products will not negatively impact the community water supply wells, since these innocuous substances will be further diluted in the shallow groundwater zone with migration over distance, and the presence of protective steel well casings at Village wells M1 and M2 significantly prohibit the possibility of these products reaching the bedrock aquifer depths that supply these two wells. In addition, the presence of the previously-mentioned silty clay aquitard would also materially inhibit any potential vertical migration of the OSEI. As such, the proposed enhanced bioremediation injections will not change the character of groundwater supply for the Village CWS wells.

- 3) Explain whether the enhanced bioremediation injections or the impact of the injections of the existing soil and groundwater could cause an exceedance of the primary drinking water regulations at 35 Ill. Adm. Code 611 during or after remediation;

Response: For all of the reasons set forth in the Response to Question 2 above, it is unlikely that the enhanced bioremediation injections and their impacts on the existing soil and groundwater conditions in the CAP remediation area, could cause an exceedance of primary drinking water regulations (at 35 IAC 611) at the two Village water wells.

The groundwater concentrations of the petroleum contaminants of concern (COCs) that include Benzene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo (b) fluoranthene, Benzo(k)fluoranthene, Chrysene, Ideno (1,2,3-cd) pyrene, and/or Naphthalene are just slightly above applicable Class I GROs. Of further note is the fact that free-phase petroleum has not been observed during the last five years of Investigation/monitoring in the soil borings or groundwater monitoring wells at the KQS Remediation site. Recent 2015 shallow groundwater flow direction has been determined to be north-northwest, away from Village emergency well M1 located northeast of the KQS site, and the off-site monitoring wells located north of the RR tracks and those along northern edge of RR street did not detect COCs above Class I GROs, so off-site migration of COCs is limited to the southern half of RR street adjacent to the KQS site. Blake Leasing believes the enhanced bioremediation injections will be effective in reducing the concentrations of the COCs to levels below Class I GROs within the proposed treatment areas, and the harmless natural by products of these remediation injections are unlikely to cause an exceedance of the primary drinking water regulations in question at the two Village water wells.

Exh. E to the petition states, "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." Exh. E at 1, Exh. A at 6.

- 4) Has Blake Leasing agreed with the Village of Kirkland to have the CWS wells tested for BTEX/MTBE, PNAs, as well as the injected bacteria and OSEI product components after the injection activities?

Response: As stated in **Response 3** above, pursuant to the IEPA-approved CAP for KQS, the two Village wells M1 and M2 will be sampled for COCs post enhanced bioremediation treatments (2 qtrs.) at the 30 day and 120 day target thresholds to document compliance with 35 IAC 611 regulations. The two (2) separate sampling/testing events will include those petroleum COCs previously listed; there are no drinking water limits for oxygen (O2), carbon dioxide (CO2), water (H2O), calcium peroxide, sugars and biomass. The bacteria used for enhanced bio treatment injection is not E-coli genus.

- a. If an agreement is in place, describe how the Village and Blake Leasing will respond if BTEX/MTBE, PNAs, the injected bacteria, or OSEI product components are above drinking water standards.

Response: Blake Leasing and the Village have a current Right of Entry and Testing License Agreement valid until December 31, 2016, which allows access (as needed) to Village property (including Railroad Street), north of the RR tracks, and the two municipal water wells for testing services and post remediation monitoring services.

If BTEX/MTBE or PNAs (injected bacteria or OSEI product components have no drinking water limits) are detected in the two Village wells above drinking water limits, Blake Leasing will notify the Village of the exceedance(s) for those parameters and concentrations above regulatory limits. Blake Leasing will then conduct a new sampling event of the two Village wells within several weeks of the first Village well groundwater detection exceedance to confirm prior testing results. If no groundwater exceedances are detected in the subsequent sampling round, then notification to the Village will be deemed complete, and the matter considered closed. If additional exceedances are detected, then notification to the Village will ensue, and the specific well (main or backup) will be evaluated by water supply engineers for possible carbon filter or air stripping treatment options. Post treatment monitoring well testing results will be evaluated for possible hot spot(s) that may require additional injection treatments.

The results of this municipal well testing exercise will be provided to the IEPA Public Water Supply section and to the IEPA LUST section.

- b. If no agreement is in place for testing the CWS wells after injection, explain why.

Response: N/A. (See Response immediately above).

- c. Will Blake Leasing be required to prove to the Agency that an acceptable level of BTEX/MTBE, PNAs, injected bacteria, and OSEI product components remains in the groundwater or CWS wells before receiving a NFR letter from the Agency?

Response: Per the Agency-approved CAP, Blake Leasing will perform two quarters of post-remediation groundwater monitoring well testing at the 30 day and 120 day target thresholds after the final bio treatment injections have been completed at the 3 CAP remediation treatment areas. As previously noted in **Response 3**, the two Village wells (M1 and M2) will be sampled for COCs post enhanced bioremediation treatment (2 qtrs.) to document their compliance with 35 IAC 611 regulations. The two sampling/testing events at the Village CWS well and the two quarters of monitoring well groundwater testing results that document petroleum COCs below Class I GROs will be presented in the GeoThink Corrective Action Completion Report (CACR) to the IEPA in support of Blake Leasing's request for NFR closure for the KQS site. As stated previously, groundwater testing of CWS wells will only include the petroleum COCs previously listed; there are no drinking water limits for oxygen, carbon dioxide, water, calcium peroxide, molasses, sugars and biomass.

- d. Comment on the Board requiring Blake Leasing to sample the CWS wells for BTEX/MTBE, PNAs, injected bacteria, and OSEI product components following the injection activities as a condition of the exception. Provide a suggested timeframe for the sampling.

Response: Blake Leasing would accept a Board condition requiring sampling of the two CWS wells for BTEX/MTBE and PNAs to obtain the exception. Per the Agency approved CAP, Blake Leasing will perform two quarters of groundwater monitoring well testing at the 30 day and 120 day target thresholds after the final bio treatment injection has been completed at the 3 CAP remediation treatment areas. Again, as noted in **Response 3**, the two Village wells (M1 and M2) will be sampled for COCs post enhanced bioremediation treatments (2 qtrs.) at the 30 day and 120 day target threshold to document their compliance with 35 IAC 611 regulations. In the event that the two quarterly sampling/testing events at the Village CWS wells and the two quarters of monitoring well groundwater testing results document that petroleum COCs are below Class I GROs, GeoThink will then submit a Corrective Action Completion Report (CACR) to the IEPA in support of Blake Leasing's request for NFR closure for the KQS site. As stated previously, groundwater testing of CWS wells will only include petroleum COCs previously noted; there are no drinking water limits for oxygen, carbon dioxide, water, calcium peroxide, molasses, sugars and biomass.

- 5) How will Blake Leasing determine if the enhanced bioremediation injection is successful and what criteria will be used to make that determination?

Response: Per the Agency approved CAP, Blake Leasing, by way of GeoThink, will perform two quarters of groundwater monitoring well testing post treatment at the 30 day and 120 day target threshold after the final bio treatment injection has been completed at the 3 CAP remediation treatment areas.

Dissolved oxygen (D.O.), pH, specific conductance (SpC), temperature (T), and oxidation-reduction potential (ORP) will also be monitored at all monitoring wells prior to injection and during the 30 day and 120 day post-injection groundwater sampling events to determine baseline conditions and remedial effectiveness. Those same parameters will also be measured during injection activities at nearby monitoring wells to determine effective radii of influence of remedial injection activities.

If both quarters of groundwater testing results from both monitoring well network and the two Village PWS wells determine no COCs above Tier 1 Class I GROs, then the enhanced bioremediation injections can be considered a success, with the subsequent generation and submittal of the CACR to the Agency requesting issuance of a NFR letter for the KQS site.

- 6) Explain Blake Leasing's plan if levels of benzene and PNA persist in the groundwater monitoring wells above the groundwater remediation objectives after the second quarter of sampling;

Response: If BTEX/MTBE and/or PNAs (injected bacteria or OSEI product components have no drinking water limits) are detected in the groundwater monitoring wells above Class I GROs after the second quarter of groundwater sampling (120 days), Blake Leasing and GeoThink will notify the Agency of the exceedance(s). A request for additional injection treatments and subsequent groundwater testing for those specific "hot

spot” areas will be made to IEPA, followed by an Amended CAP and Budget Request to be sent electronically for immediate review and authorization. Notification to the Village will be made after IEPA approval of additional enhanced bioremediation treatments and monitoring requirements.

- 7) Comment on the Board requiring a minimum of four consecutive quarters of groundwater sampling rather than two, as proposed in the petition;

Response: The IEPA-approved CAP for the KQS site specifically defines two quarters of groundwater testing to achieve regulatory closure consideration. If the IPCB requires four quarters of groundwater monitoring and testing as a condition of obtaining the exemption, then Blake Leasing will submit an amended CAP and Budget to IEPA, proposing the two additional quarters of monitoring, sampling and testing.

- 8) Indicate whether IEPA will require Blake Leasing to obtain an Underground Injection Control (UIC) Permit for the 47 Class V injection wells pursuant to 35 Ill. Adm. Code 704.147;

Response: As stated in the IEPA-approved CAP for the KQS site, once the IPCB issues Blake Leasing a Variance Exception, Blake Leasing and GeoThink will submit a formal Underground Injection Control (UIC) permit application, along with a copy of the IPCB variance, to Mr. Bur Filson of the IEPA Permits Section for the proposed 47 Class V injection wells pursuant to 35 IAC 704.147. Once permit approval is received for the Class V injection wells, Blake Leasing will notify the Village of permit issuance, and will then coordinate/schedule a target date to commence bioremediation injections in the 3 treatment areas.

- 9) Clarify the maximum feasible alternative setback for all CWS wells;

Response: Both municipal wells M1 and M2 have an IEPA required minimum setback zone of 400 feet. Based on the entire KQS site and CAP remediation injection areas being located within the proposed well setback zones for this petition, Blake Leasing proposes maximum feasible setback distances for CWS wells to be 600 feet for Village main supply well (M2) and 400 feet for Village emergency supply well (M1).

- 10) Indicate the property lines of the Blake Leasing Kirkland Quick Stop property on Exh. A, Fig 5;

Response: The Blake Leasing (KQS) property line is shown on attached **Figure 5** in highlighted green. The black hatched line identified as the 200-foot radius setback zone from Village emergency backup well M1 does not cover the entire Blake Leasing site. Therefore, as noted in prior **Response 9**, a 400-foot maximum setback zone M1, and a 600-foot maximum setback zone for M2 will both encompass the entire KQS facility at 411 W. Main Street in Kirkland, Illinois, DeKalb County.

- 11) Submit a copy of Appendix B of the CAP to supplement the petition;

Response: Attached is a complete copy of the **Appendix B** portion of the CAP.

- 12) Indicate whether the locations of the enhanced bioremediation injection wells would be within the setback zone of any other wells besides the Village of Kirkland CWS wells;

Response: Based on the IEPA Source Water Assessment Program (SWAP) well search and ISGS well records provided in Appendix B of the CAP, the injection wells would not lie within the setback zone of any other CWS wells, or private water supply wells.

- 13) Comment on the Board including a condition that the exception automatically expires upon issuance of a NFR letter from IEPA;

Response: Blake Leasing would accept such a condition.

- 14) Provide evidence of whether or not either DeKalb County or the Village of Kirkland has an ordinance with more stringent well setback standards than the prohibitions of 415 ILCS 5/14, 2.

Response: GeoThink contacted Mr. Greg Maurice of the DeKalb County Health Department (DCHD) regarding county regulations pertaining to applicable water supply well setback zones. Mr. Maurice advised that the DCHD employs whatever protective setback distances have been established by IEPA for community and private water supply wells. Upon information and belief, Blake Leasing understands that the Village of Kirkland defers to Section 14.2 of the ACT (and corresponding regulations) for CWS setback protection.

Dated: May 25, 2016

Respectfully submitted ,

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

/s/ Charles F. Helsten

Charles F. Helsten
One of Its Attorneys

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CERTIFICATE OF SERVICE

I, Charles F. Helsten, an attorney, certify that I have served the attached RESPONSE OF BLAKE LEASING COMPANY, LLC to questions posed by the ILLINOIS pollution control board **Response of Blake Leasing Company, LLC to Questions Posed by the Illinois Pollution Control Board** on the named parties below by certified mail, return receipt requested, by 5:00 p.m. on May 25, 2016.

John J. Kim
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
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph, Suite 11-500
Chicago, Illinois 60601

Joanne M. Olson
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John T. Therriault, Clerk
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100 West Randolph Street, Suite 11-500
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/s/Charles F. Helsten

APPENDIX D

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

Appendix D

Cabeno Remediation Proposal

MSDS Sheets

And

Description of Bioremediation Amendments



August 27, 2015

Mr. Thomas M. Mangan, P.G.
Geo-Think, LLC
611 Stevens Street
Geneva, IL 60134

**Re: Proposal for Remediation of Hydrocarbons in Groundwater
Kirkland Quikstop - Kirkland, IL**

Dear Mr. Mangan,

CABENO Environmental Field Services, LLC (CABENO) is pleased to provide you with this proposal for the remediation of hydrocarbons in groundwater at the above referenced site. This proposal has been developed to remove and eliminate the presence of hydrocarbons in groundwater to concentrations below Class I standards. This will be accomplished via an in-situ enhanced bioremediation technology. This proposal describes and provides costs for the process technology.

Method

Direct injection (i.e. thru DPT/probe rods, generally out the bottom in unsealed borehole) of remedial amendments into the subsurface too often results in a significant volume at ground surface where it is not needed due to daylighting. It is not known where in the subsurface the material is exactly going; if any significant volume is going into the ground at all; and is it even reaching the intended target zone? This has been the genesis for CABENO's proposed injection process.

The 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 the oxygen and minerals needed by bacteria for the degradation process. The three remedial amendment products proposed for injection are all natural, obviously easily bio-degrade, and are not harmful to human health.

The injection application process proposed will be through 1-inch diameter PVC injection wells discretely screened within the impacted soil and groundwater zones. Well screens are placed exactly where the injectate is required in the subsurface. This method has proven successful for CABENO by placing the bio-enhancement amendments exactly where they need to be in the subsurface, consistently over multiple injection events.

931 Country Creek Dr.
New Lenox, IL 60451

ph: (815) 774-3747
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Mr. Thomas M. Mangan, P.G.
Kirkland Quikstop

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August 27, 2015
Kirkland, IL

Application

Injection Well Installation

CABENO is proposing installing a total of 47 injection wells broken up over three residual petroleum source areas of soil and groundwater impact. Eight injection wells are proposed on a 10-foot grid centered around MW-1 area. Fifteen injection wells are proposed on 1 10-foot grid centered around MW-15 area. Twenty-four injection wells are proposed on a 10-foot grid centered around MW-6 to MW-14 area, including into the ROW for Railroad Street. Injection well screens will be 10-feet in length from 5-feet to 15-feet below ground surface.

Injection wells will be installed using a track mounted Geoprobe rig, 6610 series or larger using 3.25-inch O.D. dualtube rods. The rods will be blind drilled to depth using an expendable point. Little to no waste will be generated. The 1-inch PVC screen and riser will be placed inside the rods, including filter pack and they will then be removed from the hole. A 40-slot screen opening is used to ensure minimal clogging of screen over time. A pea-gravel filter pack is used around the screen, approximately 1-foot of granular bentonite is placed atop the filter pack, the remaining portion of the annulus is backfilled with Portland cement. Riser pipe will be cut to several inches above grade. A flushmount protective steel cover with concrete pad will be placed over each injection well.

Installation Time / Schedule

Injection Well Installation

It is estimated for this effort to take approximately 5-field days to install all wells.

Injection Events

Once wells are installed CABENO will mobilize an injection crew to the site. Due to the fine granular nature of the soil and the near surface injection requirement it is best to breakup the injection volumes over three events. Each event will require up to 3-days onsite each to complete and each event should be spaced by approximately 2-weeks so all amendments are injected within a 30-day window.

Quarterly groundwater sampling is suggested once injection events are complete, with the first groundwater sampling event occurring 30-days after last injection event. This obviously lets us know the effectiveness of the bio-degradation process, indicates where we may need to add additional amendments, and lets us know when we have met the cleanup objectives. It is a key component of a successful enhanced bio-remediation process.

Overall for this process we are estimating between reaching cleanup objectives within 90-days from date of last injection. It is most likely that we will see large portions of the Area's achieve cleanup goals along the way reducing efforts and a few higher concentration, recalcitrant areas requiring more time. The time required for achieving cleanup objectives is not exact and CABENO does not want to overpromise. We have typically achieved cleanup objectives earlier than described above, however each site and

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August 27, 2015
Kirkland, IL

associated subsurface conditions are unique, creating potential variability and unknowns that could also extend cleanup times. For example, if an unknown area of free product continues to release hydrocarbons to the groundwater cleanup will take longer. Also, if a new release occurs, the process is essentially starting over again.

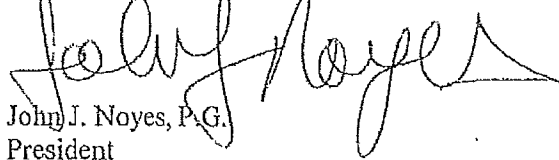
Cost Estimate

A detailed cost estimating sheet is attached. CABENO's estimated costs are \$143,206.00. This cost estimate is based on the above described application details and the following bullet notes:

- 30% down payment of well material, product and labor costs (not injection events) at start of project, remaining costs paid 30-days after receipt of invoice.
- Pricing of injection events assumes access to wells is not obstructed or delayed beyond a reasonable amount of time when onsite for injection.
- As discussed, the time required for achieving cleanup objectives is not exact and CABENO does not want to overpromise. We have typically achieved cleanup objectives earlier than described above, however each site and associated subsurface conditions are unique, creating potential variability and unknowns that could extend cleanup times.
- Pricing includes abandonment of the system: injection of bentonite grout throughout the system, removal and disposal of above ground equipment, cutoff wells 2'bgs.

We at CABENO greatly appreciate the opportunity to offer this cost proposal and look forward to working with you on this project. Please feel free to contact me if you have any questions or require any additional information.

Sincerely,
CABENO Environmental Field Services, LLC



John J. Noyes, P.G.
President

Attachments: A-Cost Estimating Sheet

August 27, 2015

Thomas M. Mangan, P.G.
Geo-Think, LLC
611 Stevens Street
Geneva, IL 60134

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- Enhanced Bio-Remediation for Benzene & PNAs in Groundwater
- Approximately 45 injection wells (ESTIMATED)
- 10' spacing of wells, distributed over 3-hot spot areas
- Injection Amendments: BOC, OSEI & Environoc101 Inoculant

Site Location: Kirkland Quikstop.
411 W. Main Street
Kirkland, IL

Task - Install Vertical Injection Wells	Units	Unit Cost	Proposed No. of Units	Estimated Totals
Direct-push platform for injection well install	per foot	\$21.87	675	\$14,762.25
Injection well install via direct push platform	per foot	\$15.18	675	\$10,246.50
Private utility locate	lump sum	\$750.00	1	\$750.00
			Totals:	\$25,758.75

Task -BOC, Surfactant & Bacterial Inoculant	Units	Unit Cost	Proposed No. of Units	Estimated Totals
BOC (biological oxygen compound)	Per lb	\$8.25	5290	\$43,642.50
OSEI (Enzyme base surfactant & nutrient)	Per gallon	\$6.15	5290	\$32,533.50
Bacterial Inoculant from Midwest Biodyne	Per gallon	\$62.00	275	\$17,050.00
			Totals:	\$93,226.00

Task - Injections: Product will be injected over three events, each consisting of 3-days each	Units	Unit Cost	Proposed No. of Units	Estimated Totals
injection event assumes: 8 hrs onsite per day, 2-person crew, air compressor, generator, mix tanks, hoses, mixers, pumps, manifolds, etc. (includes mob time)	Per day	\$1,780.00	9	\$16,020.00
			Totals:	\$16,020.00

Task - System Abandonment When Complete	Units	Unit Cost	Proposed No. of Units	Estimated Totals
Monitoring well abandonment	per foot	\$12.15	675	\$8,201.25
			Totals:	\$8,201.25

Total Estimated Remedial Cost: \$143,206.00

Client	Contaminants	Initial Concentrations	Final Concentrations	Remedial Approach	Approx. Dollars
Environmental Consulting Group					
Betty Brite Cleaners, Chicago, IL	PCE & degradation products in tight clay soils. 3' bgs to 17' bgs	~5,000 ppm	<350 ppm	-ISCO installed ~35 injection wells & header system underground & above ground inside active dry cleaner. System setup in back of cleaners. RegenOx Parts A & B. Achieved cleanup objectives for 1/2 of the area in 9-months, another 1/4 of the area achieved cleanup objectives after 15-months. Source area under large dry cleaning machine was the most recalcitrant, required installation of injection wells at 45-degree angles under machine and took an additional 9-months to achieve cleanup objectives in source area.	\$150,000.00
BB Chemical, LaGrange, IL	Free Product Hydrocarbon atop water table and dissolved phase TCE in groundwater. Silty clay soils. 5' bgs to 12' bgs.	Free Product Hydrocarbon (5-11 inches in several wells). ~2,000 ppm TCE in groundwater.	Site Closed Achieved Cleanup Objectives; free product has been completely removed and TCE in GW is below IL GW Cleanup Standards	-LNAPL Hydrocarbon: Installed five 4" recovery wells with LNAPL skimmers, all product lines underground running to tank system in adjacent room, facility remained active. Once free product LNAPL was depleted to ~1/16 inch in recovery wells after 12-months switched to enhanced bio-remediation. Installed 12 injection wells. Injected Biological Oxygen Compound (oxygen & nutrients) with Environo101 (aerobic bacteria) over a period of 3-weeks. Within 3-months of injection, free product completely gone. IEPA Project Manager came to visit site and inspected each well and could believe the speed of degradation with process used. TCE in groundwater was degraded by injecting Regensis PersulfOx oxidant into 8-injection wells over 4-events. Remedial cleanup objectives met after 5-months.	\$100,000.00
WW Henry, Bourbonnais, IL	TCE & degradation products in groundwater. Silty clay and weathered bedrock, cohesive conditions. 7' bgs to 13' bgs	~3,500 ppm	~1,000 ppm & ongoing	-Installed ~20 injection wells & some direct injection points. Enhanced Reductive Dechlorination using 3DME & BDI+ (anaerobic bacteria). Initial injection was along site property line to stop offsite migration of contaminants. 2nd and 3rd round of injections was in source area and body of plume respectively. Downgradient (offsite) of fence line concentrations are non-detect. Onsite TCE parent product concentrations are decreasing, slight increase in degradation products (cis & trans isomers, vinyl chloride, etc.) onsite showing active ERD. 1st injection event at fence line ~2-years ago, onsite injections about 1.5 years ago.	\$65,000.00
ECS Environmental					
Carroll Street, Chicago, IL	TCE & degradation products. 5' bgs to 15' bgs. Tight clay soils.	High of 48,800 ppm, average 15,000ppm	Achieved non-detect for 2/Beds area after 9-months. While quarterly sampling recalcitrant 1/2nd portion 6-months ago found previously unknown source area (48,800ppm). Last months (April 2015) sampling event 700ppm!!!	-ISCO using PersulfOx oxidant. Initially installed 14 injection wells, weekly site visit for injection into wells in small courtyard. After 9-months identified previously unknown source area. Added 6-additional injection wells and increased injection volumes/concentrations. After additional 6-months hot spot concentrations have reduced from 48,800 ppm to 700ppm. Currently below CSAT cleanup objective. Waiting for 2nd round of verification sampling.	\$100,000.00
Cardno/ATC					
North Shore Cleaners, Glencoe IL	PCE & degradation products. 5' bgs to 20' bgs. Tight clay cohesive soils.	9,500 ppm	ongoing/active in operation for 1.5 years. (quarterly soil sampling event shows reduction below site specific CSAT of 1,000ppm over 75% of site)	-ISCO using RegenOx Parts A & B oxidants. Installed 35 injection wells both inside active cleaners & outside in public courtyard, all wells connected to underground header system, tank, automated control panel and system setup in back of cleaners. Weekly site visits for O&M to fill tank and inspect system.	\$100,000.00
Northern Environmental					
Norman's Cleaners	PCE & degradation products. 0' bgs to 12' bgs, tight clay/cohesive soils.	~6,000 ppm	~450 ppm	-ISCO using Perculfate. Soil mixed then followed with 12 injection wells. Total time from start to finish was 9-months. Inside dry cleaner in strip mall. Dry cleaner unit was empty, cut alley/back wall and brought mini-excavator into store unit. Cut out concrete floor slab, performed soil mixing in place. Followed up treatment of recalcitrant hotspots with injection wells. Slowdown due to tight clay soils over 6-months, once weekly injections. Cleanup goals achieved after 9-months.	\$65,000.00
CRA					
Pipeline Facility, Cahokia, IL	Gasoline & Diesel LNAPL 5' bgs to 25' bgs. Fine grained sand & silt. GW at 5' bgs	5,000 ppm to 25,000ppm	ongoing/active	-ISCO using RegenOx Parts A & B oxidants and ORC Advanced. Installed 25 injection wells. Working on 2nd round of injections. No quarterly progress sampling yet. 6-months ongoing due to slow gravity feed requirements. Shallow water table and shallow contamination. Do not want to push contaminants to surface. So slow feed fine grained Mississippi River sand & silt deposits. 5' - 25' bgs	\$150,000.00
CB&I					

-Rockford, IL	Free Product Hydrocarbon (heating & machine oil) 7' bgs to 13' bgs. Sand, gravel, cobbles, boulders, and former building debris.	Free Product	Completed, free product degraded	-ISCO using PersulfOx oxidant. Installed 25 injection wells inside active office and factory. Injected for 2-weeks at a time, once a month for 3-months until cleanup objectives achieved. Outside front of facility installed 15-injection wells as well as horizontal near surface injection lines. Connected headers and ran to enclosed trailer containing tanks, mixers, heaters, etc. Twice weekly visits for 6-months. Free product degraded.	\$125,000.00
Enviro Analytcs Group					
-Melrose Park, IL	TCE & degradation products Fine grained cohesive clay soils. Most areas 5' to 15' bgs, one area is 0' to 11' bgs.	~15,000 ppm	ongoing/active Just started system In May 2015	-First SlowRem Injection project approved by Illinois RCRA program. ISCO using PersulfOx oxidant. Facility is closed, former solvent recycler. Soil mixed 5' to 10' in three hot spot source areas. Installed 190 injection wells. In three separate treatment areas. One area is a rail spur at back of building, contaminants are 0' to 11' bgs. Installed well screens from 1' bgs to 11' bgs and simultaneously injecting at depth as well as flooding surface of the rail spur area.	\$250,000.00
Mankoff Industries					
-St James Hospital, Chicago Heights, IL	Free product heating oil 7' bgs to 20' bgs, cohesive clay soils	Free Product Heating Oil	Client & property owner approved, Just started system August 2015	-Free product recovery and enhanced bio-remediation. Installation of 11-6" recovery wells outside in courtyard. Installation of 37 injection wells inside building basements and outside in courtyard. Weekly injections of Biological Oxygen Compound, Environoc101 (aerobic bacterial), and hydrocarbon degrading enzymes. Weekly vac truck extraction from recovery wells. Anticipated to occur over 2-year period.	\$350,000.00
Symbiont/Stantec					
-Scott Cleaners, Glenview, IL	PCE and degradation products in soil and groundwater. Cohesive soils: silt & clays. Source area behind cleaners was 0' bgs to 6' bgs. GW plume adjacent to building up to river bank 6' to 20' bgs.	5,000 ppm to 7,000 ppm	PCE in soil source/mixing area below CSAT for site ~350ppm. PCE and degradation products in groundwater are decreasing significantly in less than 1-year.	-Used PersulfOx oxidant for soil mixing in source area. Followed up with ERD in several source areas hot spots. Within 3-months hotspot was below CSAT for site specific cleanup goals. Source area installed 20 injection wells between building and river bank for Enhanced Reductive Dechlorination in groundwater. Two injection events over 1-month. Injected EDME and BDI4. In less than 1-year significant degradation of PCE and degradation products. Active degradation still ongoing.	\$135,000.00
Golars					
-Gas Station, Orion, IL	Free Product Hydrocarbon atop water-table and in vadose zone. Silty clay soils. 10' bgs to 20' bgs.	Free Product Hydrocarbon (over 12-inches in several wells) ~2,000 ppm TCE in groundwater.	System Went Online April 2015, Free Product Removed by June 2015. Just started OSEI injections August 2015 to release additional free product being held in soil.	-LNAPL Hydrocarbon: installed eleven 4" recovery wells with LNAPL-skimmers, all product lines underground running to tank system in mobile mini trailer. System recovery and injection wells are installed on both sides of 1st Street, with additional injection wells installed in middle of 1st street. Current free product LNAPL has been removed in recovery wells, no evidence after 2-months of monitoring. Currently OSEI enzyme based surfactant to free additional LNAPL product from soils.	\$225,000.00



Innovations in bioremediation

BOC+

August 27, 2015

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Our Goal: A Clean Environment

Our Goal: A Clean Environment

Product Overview

Biological Oxygen Compound+Plus™, (BOC+™)

BioRenova developed a mixture of ingredients known as Biological Oxygen Compound+Plus™, (BOC+™), which is a two (2)-part, cost effective, food grade formulation with Calcium Peroxide that contains approximately 18% oxygen by weight (more than our competitors), and produces a slow and sustained release of molecular oxygen for up to one year depending on site conditions, when in contact with soil moisture or groundwater.



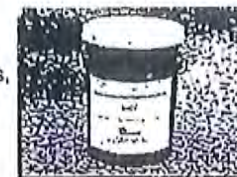
In addition to greater oxygen-releasing capabilities, unlike its competitors, BOC+ also contains food grade macro and micronutrients, pH adjustment, a blend of biodegradable surfactants, carbon sources and other ingredients that promote and support beneficial microbial growth and enzymatic diversity.

The soil groundwater matrix normally does not contain a sufficient amount of nutrients to support optimum biotransformation. It is for this reason; unlike our competitors, BOC+ also contains a diverse nutrient supplement to increase the biomass. The degradation rate is proportional to the amount of biomass, more biomass, and faster degradation of contaminants.

Respirometer studies have conclusively proven that in order to have optimum degradation, it is also necessary to have the contaminants available for microbial activity, a blend of biodegradable surfactants, minerals, vitamins, pH buffering and other adjusted site conditions greatly increase the rapid mineralization of hydrocarbons.

Dehalogenation Compound+Plus (DHC+),

In the late 1980s Environmental Laboratories, Inc., started performing experiments with electron acceptors and donors, carbon energy sources, surfactants, yeast extracts, macro and micro nutrients, etc. for anaerobic bioremediation of chlorinated solvents. Efforts were directed at Tetrachloroethylene and their degradation products.



Inland Consultants, Inc. and Inland Environmental, Inc. assisted in the experimentation and the securing of a United States and Japanese patent for a mixture of electron acceptors, donors, and proprietary ingredients for a product known as DHC+, which promotes reductive de-chlorination. DHC+ is effective in degrading a wide range of halogenated compounds such as: carbon tetrachloride, chloroform,

methylene chloride, certain chlorinated pesticides/herbicides, dyes perchlorate, nitrate, nitroaromatic explosives, dyes CFCs, some metals and radionuclides

The use of DHC+ for reductive dechlorination did not result in the formation of large amounts of vinyl chloride (VC) and at some sites, VC did not accumulate, but was simultaneously degraded as it formed. Thus, there was no accumulation of VC as is common in reductive dechlorination of chlorinated solvents with other methods of remediation.

Chloroclean Inoculum,

Experiments conducted by Environmental Laboratories Inc. revealed that anaerobic bioremediation of halogenated compounds could be enhanced with the use of sludge from a sewage plant, operating an anaerobic digestion system. This sludge was pathogen free, contained a large consortium of microbes, and contained species of microbes known to facilitate complete dechlorination from DCE to ethene.

The sludge was used to bioaugment Dehalogenation Compound+Plus as an Inoculum for the remediation of a solvent dispensing and storage facility, Technical Products Company, Inc., located in Chicago, Illinois, which had been in operation since 1939. The total extractable organic halides (EOX) were extremely high, PCE was at 5,226 ppm in some locations. The site was remediated in 18 months to residential promulgated standards and received a No Further Remediation letter from the Illinois Environmental Protection Agency. Cultures were extracted from the site and further enriched to increase its ability to degrade halogenated compounds at those sites that are deficient in a large consortium of microbes containing Dehalogenation species.



Innovations in bioremediation

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BOC+

August 27,
2015

**Our Goal:
A Clean Environment**

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MATERIAL SAFETY DATA SHEET
BIOLOGICAL OXYGEN COMPOUND+PLUS™ (BOC+™)

BioRenova Remediation Products

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Manufacturer, Distributor

BioRenova
8130 W. Lawrence Ave.
Chicago, IL 60630
Emergency Phone: 24 hours 847-791-7779
Phone: 847-791-7779

Emergency Telephone Numbers:

CHEMTEC U.S. (800) 424-9300

U.S. Version Date: 07/12/2011

MSDS #A650

2. COMPOSITION (OSHA HAZARDOUS INGREDIENTS)

The specific identities of certain components of this formulation are withheld as trade secrets in accordance with 29 CFR 1910.1200.

Ingredients	Chemical Formula	CAS No.	Percentage
Calcium Peroxide	CaO ₂	1305-79-9	Min. 75.0
Calcium Hydroxide	Ca(OH) ₂	1305-62-0	Max. 25.0
Yeast Extract	NA	8013-01-3	NA
Alcohols, C12-15 Ethoxylated	NA	68131-39-5	NA
Ureaform	NA	9011-05-6	NA
Monopotassium Phosphate	KH ₂ PO ₄	7778-77-0	NA
Methyl Ester	NA	67784-80-9	NA

3. HAZARD IDENTIFICATION

HAZARD SUMMARY

White, free-flowing powder with no odor. Oxidizer/ Contain all spills. Non-flammable. See Sections 3,5,6.

HANDLING: Wear appropriate protective clothing. Avoid prolonged contact with skin and clothing. Avoid breathing product. After handling, always wash hands and clothing thoroughly with soap and water. Avoid contact with water or humidity.

STORAGE: Store in a cool, dry, well ventilated place away from direct sunlight, heat, cold, metals, sources of ignition, strong reducing agents and/or acids. Use approved equipment for transportation of drums to avoid puncturing or rupturing. Do not reuse drum or other containers.

B. EXPOSURE CONTROL/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use general room ventilation or local exhaust ventilation to keep airborne exposure below the TLV. If ventilation is not adequate to keep the airborne concentration below the TLV, wear a dust mask.

SKIN PROTECTION: Wear impervious gloves, boots and apron.

EYE PROTECTION: Use chemical safety goggles or a full face shield, as well as an eye wash shower, and washing facilities near the work area.

EXPOSURE GUIDELINES: Exposure guidelines have not been established for the product as a whole. The following are exposure guidelines for component(s) of this product:

COMPONENT	OSHA PEL-TWA	ACGIH TLV-TWA
Particulates, not otherwise classified	15 mg/m ³ (total dust)	10 mg/m ³ (inhalable particulate)

ENGINEERING CONTROLS: Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: White, free-flowing powder
ODOR: None
BOILING POINT: Not established
SOLUBILITY IN WATER: 140 g/L at 75°F to slightly soluble
SPECIFIC GRAVITY: 1.0 - 2.9 g/cc (bulk density)
MELTING POINT: Decomposes at 1221°F
% VOLATILE: None
pH (1% solution): 10.4 - 10.6, 12.0 - 13.0 in slurry form

10. STABILITY AND REACTIVITY

STABILITY: (CONDITIONS TO AVOID) Stable. Avoid excessive heat, sources of ignition, direct sunlight and moisture.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid contact with acids, bases, reducing agents, organic materials, flammable substances and metals (metallic ions).

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposition products include oxygen and heat.

11. TOXICOLOGICAL INFORMATION

Toxicological information is listed below.
 LD₅₀ (oral) rat: 1034 mg/kg
 LD₅₀ (dermal) rabbit: >2000 mg/kg
 LC₅₀ (1 hr.) rat: >4580 mg/m³

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE: Degradation products in water include sodium carbonate, carbon dioxide, bicarbonate, carbonate and hydrogen peroxide. Hydrolysis will occur in soil.

AQUATIC TOXICITY: Aquatic toxicity data is listed below.

LC₅₀ Pimephales promelas: 70.7 mg/L
 NOEC (96 hrs.) Pimephales promelas: 1 mg/L
 EC₅₀ Daphnia pulex: 4.9 mg/L
 NOEC (48 hrs.) Daphnia pulex: 1 mg/L

13. DISPOSAL CONSIDERATIONS

RCRA HAZARD CLASS: D001

WASTE MANAGEMENT INFORMATION: Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environmental agency for specific rules). Do not dump into sewers, on the ground or into any body of water.

NOTE: Chemical additions, processing, use or otherwise altering this product may render the disposal considerations invalid, inaccurate and otherwise inappropriate.

14. TRANSPORT INFORMATION

TRANSPORTATION AND HAZARDOUS MATERIALS DESCRIPTION

For domestic shipments:

DOT SHIPPING NAME: Oxidizing solid, n.o.s. (Contains sodium carbonate peroxyhydrate)

UN ID NO.: 1479

HAZARD CLASS, LABEL AND PACKAGING GROUP: 5.1 (Oxidizer); II

EMERGENCY RESPONSE GUIDEBOOK NO.: 140

15. REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200): According to the OSHA Hazard Communication Standard this product is considered hazardous because it contains Component A.

CERCLA/SUPERFUND (40 CFR 117, 302): This product contains the following regulated compounds: None.

SARA TITLE III, Section 302 Extremely Hazardous Substances (40 CFR 355, Appendix A): None.

SARA TITLE III, Section 311/312

Hazard Category (40 CFR 370.2): Immediate (acute) health hazard; fire hazard.

Substance: Calcium peroxide, calcium hydroxide and sodium carbonate peroxyhydrate

SARA TITLE III, Section 313 INFORMATION (40 CFR 372): This product contains the following regulated compounds subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986.

<u>COMPONENT</u>	<u>CAS NO.</u>	<u>WT. %</u>
None	Not applicable	Not applicable

TOXIC SUBSTANCES CONTROL ACT (TSCA): The ingredients of this product are all on the TSCA Inventory list.

CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986: Chemicals known to the State of California to cause cancer are NOT present in this product at levels which pose a Significant Risk@.

[22 CCR 12705 (b)].

16. OTHER INFORMATION

<u>NEPA Rating</u>		<u>HMS Rating</u>	
Fire	0	Health	2
Health	2	Flammability	0
Reactivity	1	Reactivity	1
Hazard	OX	Protection	E ¹

¹ The HMS Rating is intended to be established by the employer, as the employer is most aware of the employees use or application of the product, work environment and available personal protective equipment. This rating is intended for guidance only.

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and we expressly disclaim all warranties of every kind and nature, including warranties of merchantability and fitness for a particular purpose in respect to the use or suitability of the product. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.

REASON FOR ISSUE: New product.
 SUPERSEDES: Not applicable.
 PREPARED BY: Product Stewardship Coordinator
 TECHNICAL DEPARTMENT



P.O. Box 515429
Dallas, Texas 75075
Ph: (972) 669-3390
Fax: (469) 241-0896
Email: oseicorp@msn.com
Web: <http://www.osei.us>

OIL SPILL EATER II
May - 1993
GENERAL DESCRIPTION

OIL SPILL EATER II is a unique Biocatalytic System of preformed multi-enzyme liquid concentrate. OIL SPILL EATER stimulates and accelerates natural biological reactions. When combined with fresh or salt water and oxygen, OSE II will cause crude oil and other organic substances to rapidly decompose; eventually biodegrading them to carbon dioxide and water.

OIL SPILL EATER II is non-toxic to humans, animals, plants and marine life. It is nonpoisonous, even if accidentally ingested. It is non-irritating to the most sensitive skin. OSE II contains no known allergens to cause skin, respiratory or other allergic reactions. Birds bathed in OSE II should be quarantined until their own natural oils are restored.

OIL SPILL EATER II is 100% Biodegradable. OSE II has a 5 year shelf life when stored at temperatures below 120 degrees F. Freezing does not harm OSE II; however, cold temperatures can slow its reaction rate somewhat. The product is completely stable and reactive in a pH environment of 3.5 to 11.7.

OSE II contains no corrosive chemicals or metal trace elements, and will not damage electrical insulation or painted surfaces. No special protective clothing or safety equipment is required - as determined by OSHA - Anchorage, Alaska.

OSE II assists in controlling unpleasant odors associated with hydrocarbons. OSE II will destroy - not mask - odors through a natural Biodegradation process.

OSE II will reduce fire hazard once emulsification and the solubilization process is started. This process begins the instant OSE II is applied to crude oil, gasoline or spilled hydrocarbons.

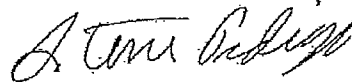
OSE II can be applied easily using a pumper-truck or fire hose, or even a pump-up hand sprayer. On water, OSE II can be applied by omni barge, helicopter, plane or any eductor system.

OSE II eliminates the need for skimmers and it eliminates the problem of disposal (cleans docks, driftwood, boats, rubber gear and shorelines) since No secondary cleanup is required because OSE II converts the hydrocarbons to CO2 and water.

OIL SPILL EATER II
May - 1993
GENERAL DESCRIPTION
(Continued)

AGE OF CONTAMINATED HYDROCARBONS

The older or more weathered hydrocarbon contamination increases the time for Bioremediation to occur. When contamination is exposed to the open air and weather, it can form a skin, similar to the way gelatin sets up. The older the hydrocarbon and the more it is exposed to the elements, the thicker the skin becomes; hence, eventually becoming asphaltene. The thicker this skin - the longer Bioremediation will take to reduce the contamination's TPH. Therefore, the sooner a contamination is addressed and mitigated, the contamination cleanup will be less expensive and less time consuming.



Steven R. Pedigo
CEO/ Chairman
OSEI Corporation

SRP/AJL



P.O. Box 515429
Dallas, Texas 75075
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Fax: (469) 241-0896
Email: oseicorp@msn.com
Web: <http://www.osei.us>

INTRODUCTION

This Technical Package contains a multitude of tests proving that "*OIL SPILL EATER II*" (OSE II) can rapidly and effectively mitigate hydrocarbons from Alaskan Crude Oil to BETX, as well as many other organic contaminants.

When comparing our product to competitors, we urge you to ensure you are comparing "*apples*" to "*apples*." Please consider that OSE II:

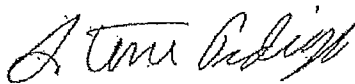
1. Is one of the ten biological products tested by the EPA at NETAC (National Environmental Technology Applications Center) listed at the University of Pittsburgh Applied Research Center. NETAC chose the ten best biological additives to test.
2. Has been tested by the EPA/NETAC as a biological agent and proved to biodegrade oil (hydrocarbons) and to be non-toxic. The attached EPA/NETAC Test Reports prove that OSE II does biodegrade oil (Alaskan Crude) and is non-toxic.
3. Does not just biodegrade "itself" and leave the hydrocarbon or contaminant. Many competitors are selling "soap" at \$600.00 per drum. OSE II does (in fact) biodegrade the contaminant.
4. Uses "indigenous" bacteria to biodegrade the hydrocarbon. OSE II grows indigenous bacteria rather than introducing foreign "bugs" into the local ecosystem.
5. Is not listed as a dispersant by the EPA, since a dispersant will simply break up the contaminant (oil) and sink the oil, but will not stimulate biodegradation.
6. Is not a fertilizer since "*OIL SPILL EATER II*" gives you the following benefits over using fertilizers:
 - A. COST CONTROL. We know how much "OSE II" is required on any given spill.
 - B. OWN CARBON SOURCE. OSE II contains its own carbon which aids in bacterial growth.

- C. BACTERIA, OSE II uses indigenous bacteria.
 - D. PRODUCT ADHERES TO OIL.
OSE II molecularly adheres to hydrocarbons.
 - E. CATALYST, OSE II enzymes are catalysts for breaking down hydrocarbon walls and rapid bacterial growth.
 - F. REDUCES FIRE HAZARD 3 minutes after being applied.
 - G. REDUCES hydrocarbon's adhesion properties.
7. Is not a bacterial product since:
- A. Fresh diesel or other hydrocarbons will kill bacterial products.
 - B. Bacterial products cannot determine how much product to use.
 - C. Foreign bacteria and indigenous bacteria will fight each other for the food source, and the U.S. EPA claims the indigenous bacteria will overtake the added non indigenous bacteria.
8. Last, but very important, how much product do you need (cost) to biodegrade a gallon or cubic yard of contaminant? With OSE II you know exactly because the information is published in our literature.

We hope this will assist you in your decision process in purchasing a bioremediation product that is time, cost and environmentally effective. We urge you to go with a proven product "OIL SPILL EATER II".

Thank you for your consideration.

Sincerely,



Steven Pedigo
Chairman/CEO
OSEI Corporation

OAL/eem

Material Safety Data Sheet
 May be used to comply with
 OSHA's Hazard Communication Standard,
 29 CFR 1910.1200. Standard must be
 consulted for specific requirements.

U.S. Department of Labor
 Occupational Safety and Health Administration
 (Non-Mandatory Form)
 Form Approved
 OMB No. 1218-0072

IDENTITY (As Used on Label and List)		<i>Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, to space must be marked to indicate that.</i>	
Section I OIL SPILL EATER II			
Manufacturer's Name OIL SPILL EATER INTERNATIONAL		Emergency Telephone Number (972) 669-3390	
Address (Number, Street, City, State, and ZIP Code) 13127 Chandler Drive		Telephone Number for Information same - FAX (972) 644-8359	
Dallas, Texas 75243		Date Prepared October 28, 1998	
		Signature of Preparer (optional) <i>Steven Lehig</i>	

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
No Hazardous Components (OSE II)	NO TLV	NO TLV	NONE	
H2O	NO TLV	NO TLV	NONE	
NITROGEN	NO TLV	NO TLV	NONE	
MOLASSES	NO TLV	NO TLV	NONE	
NON IONIC SURFACTANT	NO TLV	NO TLV	NONE	
SUGAR	NO TLV	10 mg. per Cubic M. drv	NONE	
PROTEASE	NO TLV	NO TLV	NONE	
PHOSPHORUS	NO TLV	NO TLV	NONE	
YEAST	NO TLV	NO TLV	NONE	
AMYLASE	NO TLV	NO TLV	NONE	
ANIONIC SURFACTANT	NO TLV	NO TLV	NONE	
MALT	NO TLV	NO TLV	NONE	

Section III - Physical Chemical Characteristics

Boiling Point	214 °F. *	Specific Gravity (H2O =1) 20 °C	1.05
Vapor Pressure (mm Hg.)		Melting Point	.0 °F.
Vapor Density (AIR = 1)	1.1	Evaporation Rate (Butyl Acetate =1)	
Solubility In Water 100%			
Appearance and Odor Amber with the smell of some ferment.			

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used) * fire In excess - 7000° F - retardant	Flammable Limits NON FLAMMABLE	LEL NA	UEL NA
Extinguishing Media NONE - FIRE RETARDANT * METHOD-ASTM-D56			
Special Fire Fighting Procedures NONE - FIRE RETARDANT			

Unusual Fire and Explosion Hazards
 NONE

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid Temperature above 120°F can reduce enzyme activity, avoid acidic conditions below 3.5PH strong bases over 11.7. strong bases over 11.7.
	Stable	X	
Compatibility (Materials to Avoid)			
Hazardous Decomposition or Byproducts NONE (By-products CO2 and water).			

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section V - Health Hazard Data

Route(s) of Entry	Inhalation? Non-toxic	Skin? Non-toxic	Ingestion? Toxic if more than one
Health Hazards (Acute and Chronic) Toxicity tests - Inhalation, skin sensitization, (1) quart inhaled, ocular, and ingestion show virtually no toxicity.			

Carcinogenicity	None	NTP? No listing.	IARC Monographs? None
-----------------	------	----------------------------	---------------------------------

Hazards and Symptoms of Exposure **N/A**

Special Conditions
Cancer Potentially Aggravated by Exposure **NONE**

Emergency and First Aid Procedures
Wash eyes thoroughly. Use good hygienic practices.

Section VII - Precautions for Safe Handling and Use

Steps To Be Taken In Case Material Is Released or Spilled
can be washed into sewer systems, or absorbed by earth.

Special Disposal Method
to special disposal.

Precautions To Be Taken In Handling and Storage
Handling - none. Do not store where temp. exceeds 120°F./5 Year Shelf Life

Other Precautions **NONE**

Section VIII - Control Measures

Respiratory Protection (Specify Type)
None Required

Ventilation	Local Exhaust	Not Required.	Special	None
	Mechanical (General)	Not Required.	Other	None
Protective Gloves	Not Required.		Eye Protection	Not Required.
Other Protective Clothing or Equipment None				
Work/Hygenic Practices Use good normal hygienic practices.				



Using THE POWER OF MICROBES

ENVIRONOC 101 Liquid Inoculant- Petroleum Hydrocarbon Bioremediation

- Over 25 Strains of Fresh, Viable, and Natural Microbes selected for their capabilities for Bioremediation of Petroleum Hydrocarbons- Oil, Paraffin, Gasoline, Diesel, Fuel Oil, and more
- High count microbial inoculant with efficacy across a number of environmental applications.



Using The Power of Microbes for Environmental Applications



Capabilities: Aliphatic hydrocarbon degradation from hexane to paraffin, VOA hydrocarbon degradation BTEX, and MTBE.

Applications: Bioremediation of petroleum hydrocarbon contamination in soil, sludge, surface water and groundwater. Treatment of oily washwater from heavy equipment, truck, bus and auto washing operations. Treatment of producing oil wells experiencing problems associated with paraffin accumulation. Reduction of hydrogen sulfide in gas wells



Who is Biodyne-Midwest?



- Located in Indiana, Biodyne-Midwest is the exclusive partner of Biodyne Inc. We are an innovative Environmental Biotechnology firm, intent on harnessing the power of naturally occurring microbes for environmental applications
- Biodyne-Midwest cultivates and distributes the highest quality liquid microbial inoculant to customers throughout the USA
- ENVIRONOC microbes are comprised of 100% naturally occurring (not genetically modified) bacteria / fungi that have been selected for their special degradation or biostimulation abilities

Email: info@biodyne-midwest.com Visit: www.biodyne-midwest.com Call: 1-888-970-0955



SAFETY DATA SHEET

According to U.S. 29 CFR 1910.1200 and Directive 2001/58/EC



Biodyne Midwest, LLC
 4211 Clubview Drive
 Ft. Wayne, IN 46804
 Phone 888-970-0955
 E-mail info@biodyne-midwest.com

SECTION 1: PRODUCT IDENTIFICATION

Product Name: ENVIRONOC 101 Liquid
 Harmonized Tariff Code: 3002 90 10 00
 Product Use: Bioremediation agent, for petroleum hydrocarbons
 Manufacturer Address: *Biodyne Midwest LLC*
 4211 Clubview Drive
 Ft. Wayne, IN 46804
 Telephone/Email: 1-888-970-0955/ info@biodyne-midwest.com



SECTION 2: HAZARDS IDENTIFICATION

Emergency Overview: This product is not considered to be hazardous to animals, plants, humans or the environment. The microbes have not been genetically modified. This product has very low toxicity via ingestion, skin/eye contact or inhalation.

Possible Routes of Entry: Ingestion, eyes and skin.

Potential Health Effects from Over-exposure:



Acute:
 Skin/Eye Irritation: Direct contact with skin or eyes may cause mild irritation in some individuals.
 Ingestion: May cause nausea and diarrhea in some individuals.
 Chronic:
 Symptoms: Available data does not suggest any long term symptoms from exposure.
 Aggravation: Available data does not suggest any aggravation of existing conditions.

Section 3 Notes: In the unlikely event that over-exposure occurs, follow first aid measures in section 4.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredient:</u>	<u>CAS No.</u>	<u>Percent:</u>
Liquid mixture of microbial strains	Not applicable	4.37% (nominal)
Ferment residue (non-animal)	Not applicable	0.2% (nominal)
Water	Not applicable	95.43% (nominal)
Section 2 Notes:	This preparation contains no hazardous ingredients per Directive 67/548/EEC. (European Union - Dangerous Goods)	

SECTION 4: FIRST AID MEASURES

General: Remove from source of exposure. If irritation or other signs of exposure occur, seek medical attention.

Eyes: Remove contact lenses if present and flush with water for 15 minutes.

Skin: Remove contaminated clothing. Wash thoroughly with soap and rinse with water.

Ingestion: Do not induce vomiting. Give water if able to swallow.

Note to Physicians and First Aid Providers: This product has low oral, dermal and inhalation toxicity. Direct contact with eyes may cause temporary irritation. Provide symptomatic and supportive care as necessary.

SECTION 5: FIRE FIGHTING MEASURES

General: Use methods and protective gear that are appropriate for the conditions and size of the fire.

Extinguishing Media: Use appropriate media for underlying cause and combustibles involved in the fire.

Special Equipment: Self-contained breathing apparatus and full protective gear according to the conditions and size of the fire.

Section 5 Notes: This material is not explosive and does not constitute a fire hazard.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear suitable protective clothing such as long-sleeved shirt, pants, waterproof gloves and shoes with socks.

Methods for Clean Up: Carefully mop or sweep up spill and place in a closed container for disposal. Rinse area with water.

Section 6 Notes: Refer to section 8 for personal protection and section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

Handling: Use handling procedures that minimize exposure to the product.

Storage: Store in a refrigerator or alternatively a cool location in original container.

Section 7 Notes: Avoid contact with skin, eyes and clothing. Wash any contamination from skin or eyes immediately. Wash hands and exposed skin before eating, drinking, smoking or using the toilet.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

General: Protective clothing should be selected according to the conditions likely to be encountered in the workplace. Ensure good ventilation. No exposure limits have been established.

Engineering Controls: There are no specific engineering controls for this product.

Personal Protective Equipment:

Respiratory: If liquid is sprayed, use an approved droplet mask.

Eyes and Face: Chemical safety goggles or safety glasses with side shields.

Hands/Skin: Impermeable gloves of neoprene, vinyl, rubber or nitrile may be used to avoid contact.

Other Clothing: Wear suitable protective clothing such as long-sleeve shirt, pants and shoes with socks.

Hygienic Practices: Wash hands and exposed skin before eating, drinking, smoking or using the toilet.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Tan to flesh colored

Form: Liquid

Odor: Creamed corn

Melting Point: Not applicable

Boiling Point: Not applicable

Solubility in Water: Easily dispersible in water

Incompatibility: None known

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable, material is non-reactive.

Conditions to Avoid: None that are known.

Materials to Avoid: None that are known.

Hazardous Decomposition Products: None that are known.

Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Possible Routes of Entry: Eyes and skin.

Potential Health Effects from Over-exposure:

Skin/Eye Irritation: Direct contact with skin or eyes may cause slight irritation in some individuals.

Inhalation: N/A

Section 11 Notes: None of the components of this product are listed as carcinogenic by NTP, IARC or OSHA. While no toxicological studies have been performed on this product, no reports of toxicity have been reported in over 25 years of use. The microbial components are naturally occurring and are non-pathogenic for animal and plants. They have not been genetically modified.

INFORMATION - SDS - Environoc 101 Liquid

Biodyn Midwest, LLC

SECTION 12: ECOLOGICAL INFORMATION

Ecological Information: With regard to environmental fate and behavior, this product is not expected to impose any environmental risk. Without continuous application, populations revert to pre-inoculation numbers with no lasting impact on the environment and indigenous populations.

Ecotoxicity Information: This product has been in use for over 25 years for surface water, groundwater and land applications and has never been reported to be toxic to animals or plants.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Method: If this product becomes a waste, it does not meet the criteria of a hazardous waste. As a non-hazardous solid waste, it can be disposed of in an industrial waste landfill in accordance with government regulations.

Empty Container: The empty container can be disposed of as a non-hazardous solid waste or alternatively returned to the vendor for recycle.

Section 13 Notes: Regulatory requirements are subject to change and acceptable methods of disposal may vary by location. The appropriate agencies should be contacted for advisement prior to disposal.

SECTION 14: TRANSPORT INFORMATION

Land:	ADR / RID Class:	European transport of dangerous goods (Road / Rail)	Not controlled under ADR
Water:	IMDG Class:	Transport of hazardous materials by vessel	Not controlled under IMDG
Air:	IATA - DGR Class:	International Air Transport Assoc. (Dangerous Goods)	Not controlled under IATA
Other:	U. S. DOT:	U. S. Department of Transportation	Not Regulated

Section 14 Notes: This product may require importation permits in some countries

SECTION 15: REGULATORY INFORMATION

Labeling According to EC Directives:

Symbol:	Not Required		
R-phrases:	Not Required		
S Phrases: (Recommended)	S 2	Keep out of reach of children	
	S 20/21	When using do not eat, drink or smoke	
U.S. EPA SARA: (Title III Classification)	No acute or chronic health hazards, No fire, release of pressure, or reactivity hazards.		
U.S. EPA:	No registration required.		

SECTION 16: OTHER INFORMATION

User's Responsibility: This safety data sheet provides health and safety information. This product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations.

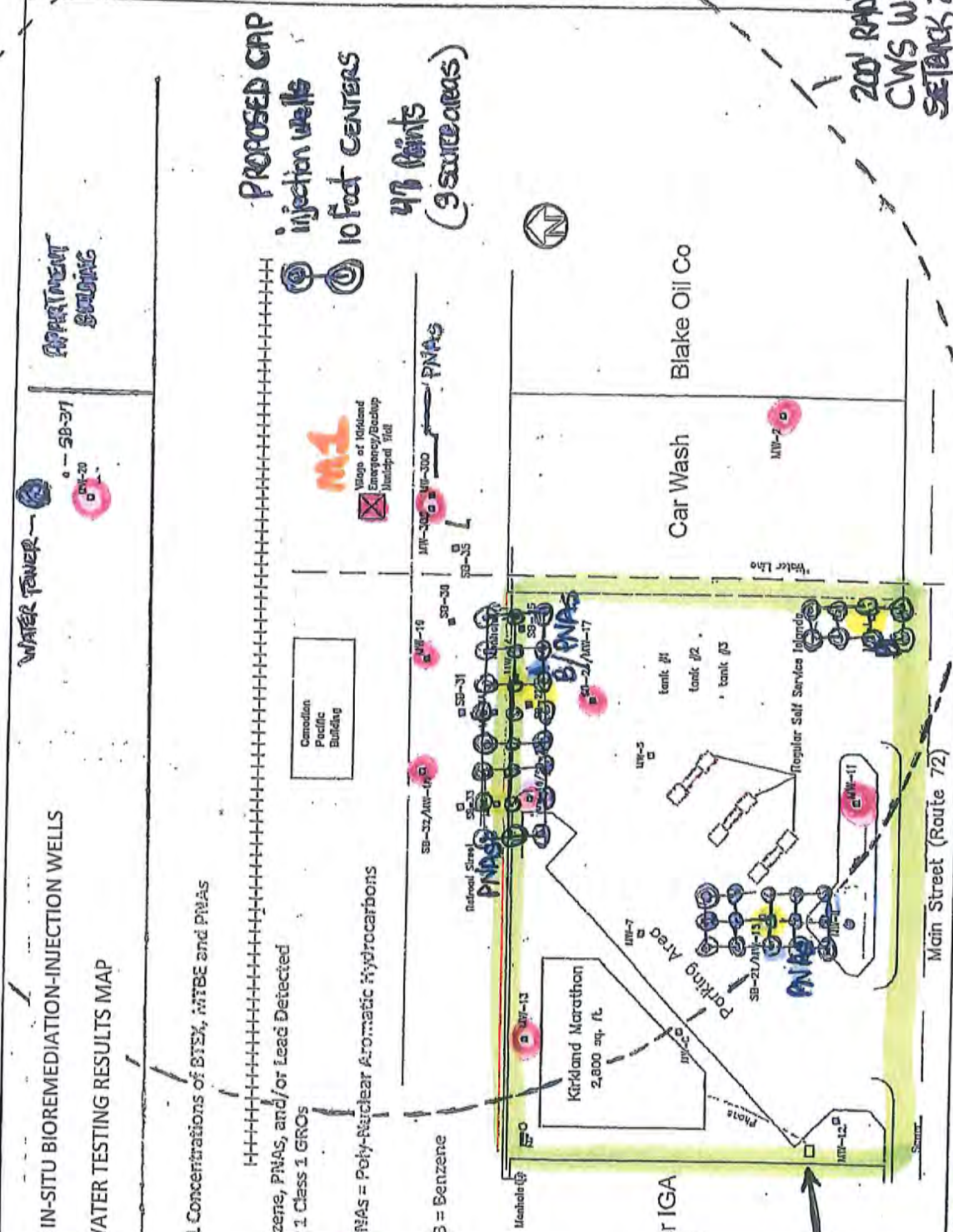
Date of last SDS revision: 01 June 2015 Replaces all previous editions

FIGURE 5

ENHANCED IN-SITU BIOREMEDIATION-INJECTION WELLS
-GROUNDWATER TESTING RESULTS MAP

- 8DL Concentrations of BTEX, MTBE and PNAS
- Benzene, PNAS, and/or Lead Detected > Tier 1 Class 1 GROs

PNAS PNAS = Poly-Nuclear Aromatic Hydrocarbons
B B = Benzene



PROPOSED CAP
injection wells
10 Foot CENTERS
4 1/2 Points
(3 source areas)

200' RADIUS
CWS WELL
SETBACK ZONE

GeoThink
 Drawn By: Cody Lonas
 Project #: TE06-057
 Scale: 1" = 50'
 Date: June 30, 2015

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	Task	Revised/Original	Approved
5-29-05	Original	MJW	MJW
5-25-09	Revised	MJW	MJW
5-30-15	Revised	MJW	MJW

FIGURE 5-PROPOSED CAP

APPENDIX B

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

Appendix B

Right-Of-Entry and Testing License Agreement

And

IEPA Eligibility and Deductible Determination Letter

And

SWAP and ISGS Well Search Results

RIGHT OF ENTRY AND TESTING LICENSE AGREEMENT

This Right of Entry and Testing License Agreement ("Agreement") is made as of the 4th 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.

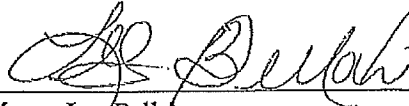
6. Prior to each entry, Entrant shall contact the Village's Public Works Director and apprise him of the reason for the entry and any work to be done, which work shall be subject to his reasonable review and approval. Further, prior to the installation of monitoring wells, the parties shall agree in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

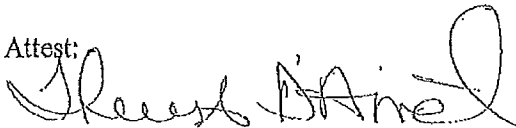
7. Entrant shall pay all of the Village's personnel costs for review and construction oversight, along with the Village's engineering and attorneys' fees for reviewing plans and otherwise administering this Agreement.

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.

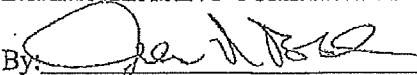
IN WITNESS WHEREOF, the undersigned have hereunto set their hands and seals as of the date first above written.

VILLAGE OF KIRKLAND

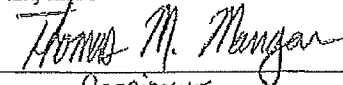
By: 
Mayor Les Bellan

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



Office of the Illinois
State Fire Marshal
"Partnering With the Fire Service to Protect Illinois"

CERTIFIED MAIL - RECEIPT REQUESTED #7012 3460 0002 9026 4376

AMENDED

December 3, 2014

Blake Leasing Company, LLC - Real Estate Series
P.O. Box 98
Stillman Valley, IL 61084

In Re: Facility No. 1-014986
IEMA Incident No. 89-1717
Kirkland Marathon
411 West Main Street
Kirkland, De Kalb Co., IL

Dear Applicant:

The amended Reimbursement Eligibility and Deductible Application received on December 1, 2014 for the above referenced occurrence has been reviewed. The following determinations have been made based upon this review.

You have filed an "Election to Proceed as Owner" and have received acceptance from the Illinois Environmental Protection Agency. It has been determined, therefore, that you are eligible to seek payment of costs in excess of \$15,000. The costs must be in response to the occurrence referenced above and associated with the following tanks:

Eligible Tanks

Tank 3 1,000 gallon Diesel Fuel
Tank 6 500 gallon Gasoline

You must contact the Illinois Environmental Protection Agency to receive a packet of Agency billing forms for submitting your request for payment.

An owner or operator is eligible to access the Underground Storage Tank Fund if the eligibility requirements are satisfied:

1. Neither the owner nor the operator is the United States Government,
2. The tank does not contain fuel which is exempt from the Motor Fuel Tax Law,
3. The costs were incurred as a result of a confirmed release of any of the following substances:

"Fuel", as defined in Section 1.19 of the Motor Fuel Tax Law

1035 Stevenson Drive • Springfield, IL 62703-4259

Printed on Recycled Paper

Aviation fuel

Heating oil

Kerosene

Used oil, which has been refined from crude oil used in a motor vehicle, as defined in Section 1.3 of the Motor Fuel Tax Law.

4. The owner or operator registered the tank and paid all fees in accordance with the statutory and regulatory requirements of the Gasoline Storage Act.
5. The owner or operator notified the Illinois Emergency Management Agency of a confirmed release, the costs were incurred after the notification and the costs were a result of a release of a substance listed in this Section. Costs of corrective action or indemnification incurred before providing that notification shall not be eligible for payment.
6. The costs have not already been paid to the owner or operator under a private insurance policy, other written agreement, or court order.
7. The costs were associated with "corrective action".

This constitutes the final decision as it relates to your eligibility and deductibility. We reserve the right to change the deductible determination should additional information that would change the determination become available. An underground storage tank owner or operator may appeal the decision to the Illinois Pollution Control Board (Board), pursuant to Section 57.9 (c) (2). An owner or operator who seeks to appeal the decision shall file a petition for a hearing before the Board within 35 days of the date of mailing of the final decision, (35 Illinois Administrative Code 105.504(b)).

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

Clerk
Illinois Pollution Control Board
State of Illinois Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601
(312) 814-3620

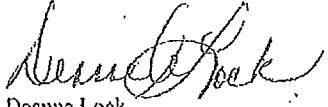
The following tanks are also listed for this site:

Tank 1 2,000 gallon Gasoline
Tank 2 1,000 gallon Gasoline
Tank 4 5,000 gallon Gasoline
Tank 5 5,000 gallon Gasoline
Tank 7 500 gallon Gasoline
Tank 8 500 gallon Gasoline
Tank 9 500 gallon Gasoline
Tank 10 300 gallon Gasoline
Tank 11 10,000 gallon Gasoline
Tank 12 4,000 gallon Gasoline
Tank 13 6,000 gallon Diesel Fuel
Tank 14 3,000 gallon Gasoline

Your application indicates that there has not been a release from these tanks under this incident number. You may be eligible to seek payment of corrective action costs associated with these tanks if it is determined that there has been a release from one or more of these tanks. Once it is determined that there has been a release from one or more of these tanks you may submit a separate application for an eligibility determination to seek corrective action costs associated with this/these tanks.

If you have any questions, please contact our office at (217) 785-5878.

Sincerely,

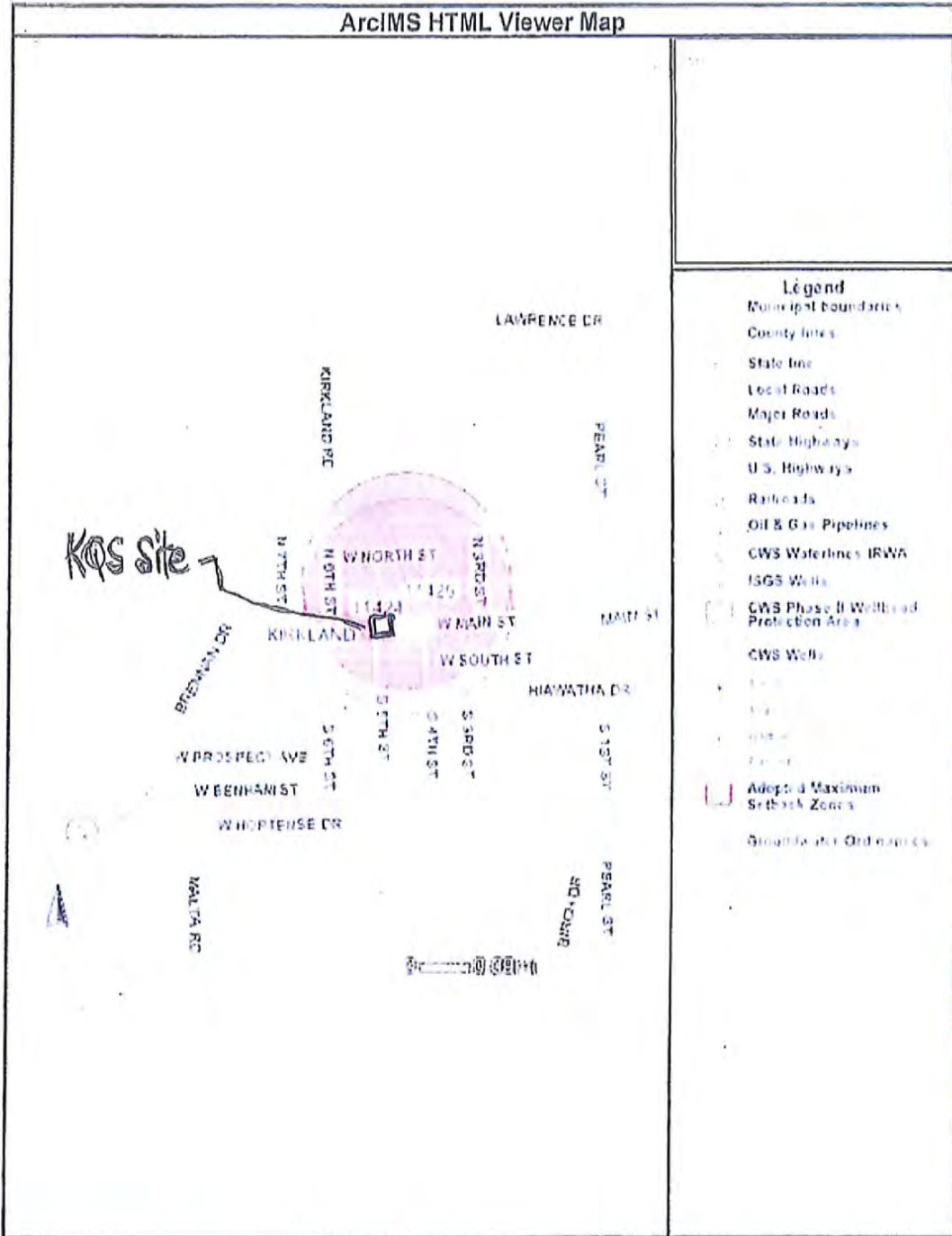


Deanne Lock
Administrative Assistant
Division of Petroleum and Chemical Safety

cc: IEPA

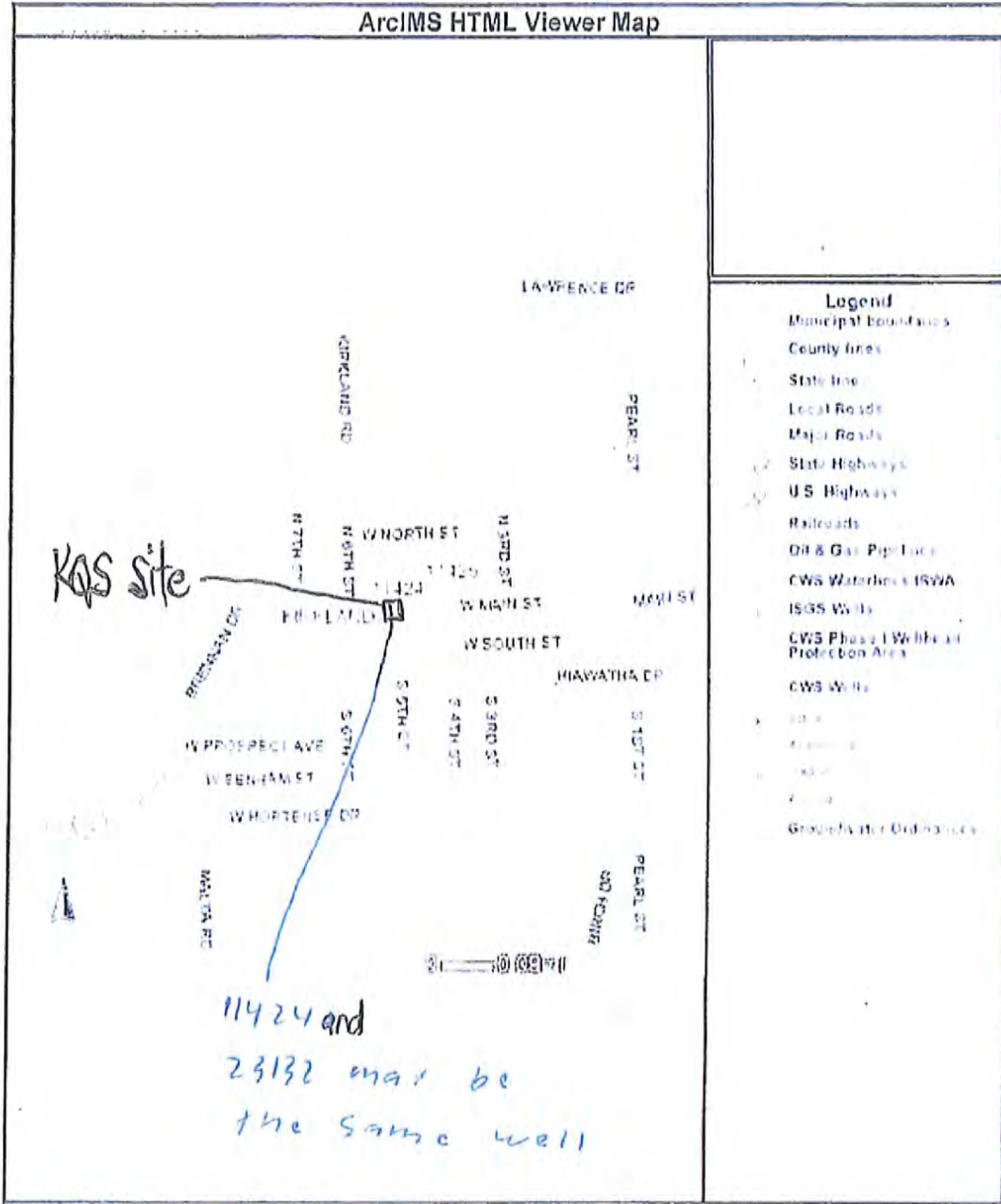
SWAP

Information and data presented were obtained from various Federal, State, and local agencies and are subject to revision.



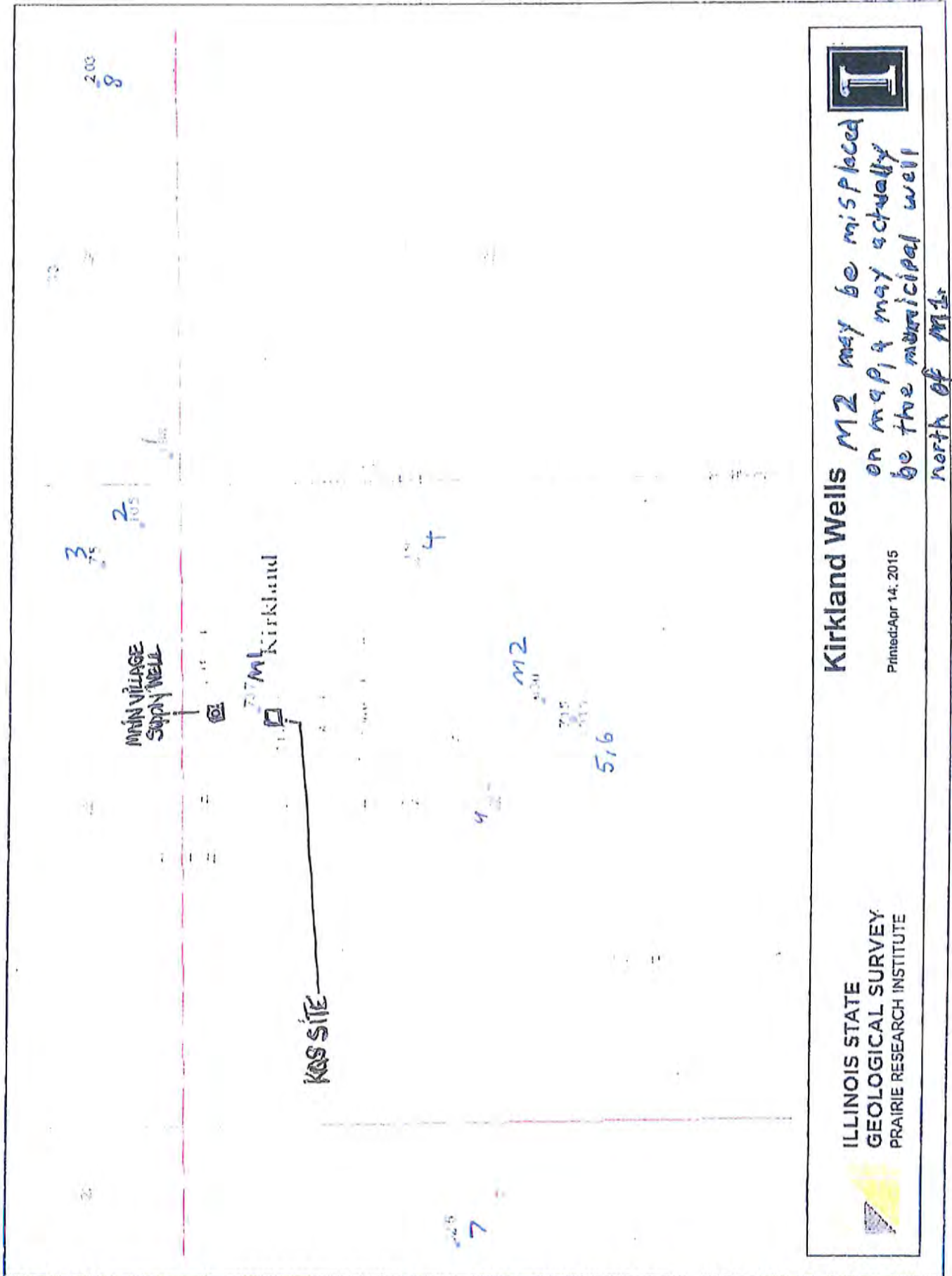
SWAP

Information and data presented were obtained from various Federal, State, and local agencies and are subject to revision.



11424 and
23132 may be
the same well

(municipal well @ RR tracks)
↑
backup



Kirkland Wells M2 may be misplaced on map, & may actually be the municipal well north of M1s

Printed: Apr 14, 2015

ILLINOIS STATE
GEOLOGICAL SURVEY
PRAIRIE RESEARCH INSTITUTE



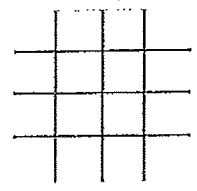
Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Top	Bottom
top soil	0	2
clay	2	12
hard pan	12	90
clay	90	95
quick sand	95	143
gravel	143	175
yellow lime rock	175	198
Total Depth		198

Casing: 5" GALV. STEEL CASING from 0' to 175'
 Size hole below casing: 5"
 Water from yellow lime at 175' to 198'.
 Static level 6' below casing top which is 0' above GL
 Pumping level 16' when pumping at 10 gpm for 3 hours

Remarks: 1st farm on left East of Kirkland Rt 72
 Driller's Log filed
 Owner Address: ,
 Location source: Platbook verified

Permit Date: Permit #:
 COMPANY owner
 FARM Ault, Fred
 DATE DRILLED January 1, 1961 NO. 1
 ELEVATION 778TK COUNTY NO. 00562
 LOCATION 75'S line, 420'E line of SW SW SW
 LATITUDE 42.095255 LONGITUDE -88.840664
 COUNTY DeKalb API 120370056200



24 - 42N - 3E

2

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Private Water Well	Top	Bottom
top soil	0	5
sandy clay loam	5	35
limestone	35	105
Total Depth		105

Casing: 5" T & C 14#/FT from 0' to 40'
 Size hole below casing: 5"
 Water from rock at 40' to 105'.
 Static level 30' below casing top which is 1' above GL
 Pumping level 40' when pumping at 10 gpm for 4 hours
 Permanent pump installed at 50'
 on June 20, 1984, with a capacity of 10 gpm
 Owner Address: R. R. #1 Kirkland, IL
 Add'l loc. info: Lot: 19 Subdivision: Lawrence & Decker
 Location source: Location from permit

Permit Date: May 16, 1984

Permit #: 112399

COMPANY Hinkle, James A.

FARM Cordes, Marion

DATE DRILLED June 12, 1984

ELEVATION 0

LOCATION SE SE SE

LATITUDE 42.095933

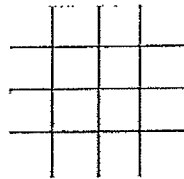
COUNTY DeKalb

NO.

COUNTY NO. 22149

LONGITUDE -88.842978

API 120372214900



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3

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Top	Bottom
top soil	0	1
red clay & gravel mix	1	16
gravel	16	17
lime rock	17	75
Total Depth		75

Casing: 5" A-53 from 0' to 40'
 Size hole below casing: 5"
 Water from rock at 0' to 0'.
 Static level 45' below casing top which is 1' above GL
 Pumping level 60' when pumping at 10 gpm for 2 hours
 Permanent pump installed at 70'

Remarks: Submersible pump
 Driller's Log filed
 Owner Address: Lot 15, Lawrence & Decker Sub.
 Add'l loc. info: Lot: 15 Subdivision: Lawrence & Decker

Location source: Platbook verified

Permit Date: March 14, 1977 Permit #: 57730

COMPANY Livingston, Lowell

FARM Schrader, Russ

DATE DRILLED May 10, 1977

NO. 65-77

ELEVATION 0

COUNTY NO. 21493

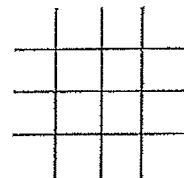
LOCATION SE SE

LATITUDE 42.096824

LONGITUDE -88.844205

COUNTY DeKalb

API 120372149900



23 - 42N - 3E

4

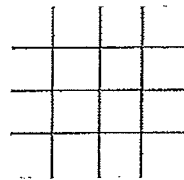
Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Municipal Water Supply	Top	Bottom
C #7076	0	0
silty clay, loessal, organic, no s and gvl	0	4
tl, lm, ox, clac, f/med gvl&s, calc, orn-brn	4	15
sty s, f/crs s, sts, ox, f gvl&crs s, cln, ox	15	19
Total Depth		19

Driller's Log filed
 Company Sample Study filed
 Core #C 7076 (4' - 19') Received: March 1, 1969

Owner Address: ,
 Location source: Flatbook verified

Permit Date: Permit #:
 COMPANY owner
 FARM Kirkland School Addition
 DATE DRILLED January 1, 1969 NO. B-1
 ELEVATION 780TM COUNTY NO. 21505
 LOCATION SE NE
 LATITUDE 42.089588 LONGITUDE -88.844071
 COUNTY DeKalb API 120372150500



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Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Monitoring	Top	Bottom
silty clay-brown & gray	0	8
silty sand w/gravel-brown	8	12
well sorted sand-brown	12	15
Total Depth		15
Casing: 2" SCH 40 PVC from 1' to 4'		
Screen: 10' of 2" diameter .01 slot		
Grout: NEAT CEMENT from 0 to 1.		
Grout: BENTONITE from 1 to 3.		
Size hole below casing: 8.5"		
Water from drift at 4' to 14'.		
Static level 8' below casing top which is 0' above GL		

Owner Address: c/o Kirkland Quick Stop Gas St 411 W. Main St. Kirkland,
 Location source: Location from the driller

Permit Date: Permit #: none

COMPANY Fishe Enterprises
 FARM Johnson, Lloyd & Janis

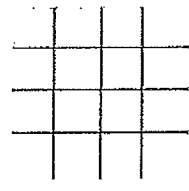
DATE DRILLED November 14, 1994 NO. MW-3A

ELEVATION 0 COUNTY NO. 22743

LOCATION NW SE

LATITUDE 42.085919 LONGITUDE -88.848867

COUNTY DeKalb API 120372274300 26 - 42N - 3E



6

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Monitoring	Top	Bottom
brown silty clay	0	5
brown sandy silt	5	6
silt & sand w/gravel-gray	6	10
well-sorted, med grained sand-gray	10	12
sand & silt w/gravel-gray	12	15
well-sorted, med grained sand-brown	15	16
sand & silt w/gravel-brown	16	17
Total Depth		17

Casing: 2" SCH 40 PVC from 1' to 4'
 Screen: 10' of 2" diameter .01 slot
 Grout: NEAT CEMENT from 0 to 1.
 Grout: BENTONITE from 1 to 3.
 Size hole below casing: 8.6"
 Water from drift at 4' to 14'.
 Static level 9' below casing top which is 0' above GL

Owner Address: c/o Kirkland Quick Stop Gas St 411 W. Main Kirkland, IL
 Location source: Location from the driller

Permit Date:

Permit #: none

COMPANY Fische Enterprises

FARM Johnson, Lloyd & Janis

DATE DRILLED November 15, 1994

NO. MW-8

ELEVATION 0

COUNTY NO. 22748

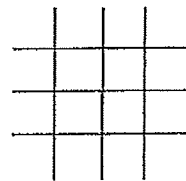
LOCATION NW SE

LATITUDE 42.085919

LONGITUDE -88.848867

COUNTY DeKalb

API 120372274800



26 - 42N - 3E

7

Private Water Well	Top	Bottom
clay	0	8
gravel	8	20
clay	20	42
gravel	42	60
clay	60	137
gravel	137	147
clay	147	188
gravel	188	200
clay	200	253
gravel	253	273
limestone	273	325
Total Depth		325

Casing: 6" STEEL from -1' to 278'

Grout: BENTONITE from 0 to 0.

Size hole below casing: 6"

Water from rock at 6' to 0'.

Pumping level 0' when pumping at 100 gpm for 0 hours

Permanent pump installed at 80'

on March 21, 1991, with a capacity of 50 gpm

Owner Address: R.R. #12 Kirkland, IL

Location source: Location from permit

Permit Date: December 26, 1990

Permit #: 4937

COMPANY Stone, Ronald

FARM Bunger Soil Service

DATE DRILLED February 28, 1991

NO.

ELEVATION 0

COUNTY NO. 22506

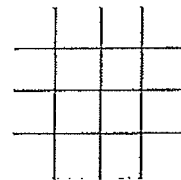
LOCATION SW SE NE

LATITUDE 42.088469

LONGITUDE -88.864742

COUNTY DeKalb

API 120372250600



27 = 42N - 3E

§

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

Water Well	Top	Bottom
drift	0	134
limestone	134	203
Total Depth		203
Pumping level 17' when pumping at 30 gpm for 0 hours		

Driller's Log filed

Owner Address:

Permit Date:

Permit #:

COMPANY owner

FARM Grimm

DATE DRILLED

ELEVATION 770TM

LOCATION SW SE

LATITUDE 42.096962

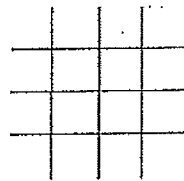
COUNTY DeKalb

NO.

COUNTY NO. 00068

LONGITUDE -88.829534

API 120370008800



24 - 42N - 3E

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

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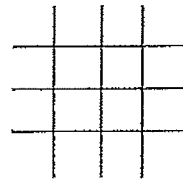
Engineering Test	Top	Bottom
C #7077 (4'-14')	0	0
Total Depth		14

Core #C 7077 (4' - 14') Received: March 1, 1969

Owner Address: .

Permit Date: Permit #:

COMPANY owner
 FARM Kirkland Schools, Hiawatha
 DATE DRILLED NO. 2
 ELEVATION 0 COUNTY NO. 22725
 LOCATION
 LATITUDE 42.097704 LONGITUDE -88.851343
 COUNTY DeKalb API 120372272500



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Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

M1 EMERGENCY
Backup well

Municipal Water Supply	Top	Bottom
no record	0	737
Total Depth		737
Casing: 7" CASING from 0' to 33'		

~ 75' Ft Northeast of
KQS site

Static level 6' below casing top which is 0' above GL
Pumping level 8' when pumping at 200 gpm for 1 hour

Permit Date:

Permit #:

COMPANY

FARM Kirkland, Village of

DATE DRILLED January 1, 1966

NO.

ELEVATION 775

COUNTY NO. 23132

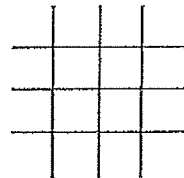
LOCATION 650'S 1850'W NE/4

LATITUDE 42.093177

LONGITUDE -88.848557

COUNTY DeKalb

API 120372313200



26 - 42N - 3E

Page 1 ILLINOIS STATE GEOLOGICAL SURVEY

M2

MAIN SUPPLY WELL

Municipal Water Supply	Top	Bottom
soil, silty, dark brown, silt, yish orange	0	5
gvl (1/2"), sand, calc, clayey, yish orn/gry	5	30
till, calc, sy, sty, yish orn / gry orange	30	50
till, calc, sty, gry orange to olive green	50	60
dol, yish orn / lgt yish gry, f / coarse	60	130
dolomite, cherty, yish orn, fine / coarse	130	147
dol, slgtly sy, yl gry, f / crs, few dk spks	147	165
dol, sy, yish gry, f / crs, dk speckled	165	175
dol, gry yl, f / crs, ptly dk spkld, f / crs	175	180
dol, gray yl / yish gray, fine to medium	180	205
dol, yish gry / pale yish brn, f / medium	205	215
dol, yish orn, f / med; dol, gry, f, slgtly fosf	215	225
dol, lgt yish brn / gray, fine to medium	225	245
dol, yish gry/gry, f / med, scctrd orn&dk spk	245	260
dol, ptly argil, gry/yish gry, f, dark spks	260	270
dol, yish gry/orn, f / med, scctrd dk&orn apk	270	290
dol, ptly argil, yish orn, fine to medium	290	295
dol, sy, yish gry to yellowish orange, fine	295	300
sh, dolc, grn/gry grn, fr; ss, gry, crs, incoh	300	305
dol, sy, argil, yl/grn-gry, vy f, ss, f / crs	305	310
sandstone, gray, fine & coarse, incoherent	310	315
dol, sy, argil, yl/grn-gry, very fine	315	340
ss, partly dol, gry, vy f / crs, incoherent	340	350
ss, gray, fine / crs, incoh, silty, at base	350	420

Permit Date:

Permit #:

COMPANY owner

FARM Kirkland, Village Of

DATE DRILLED October 1, 1950

NO. 1

ELEVATION 775TM

COUNTY NO. 00792

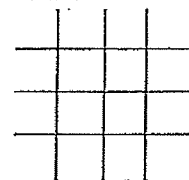
LOCATION 2219'S line, 1819'E line of SE

LATITUDE 42.086613

LONGITUDE -88.848295

COUNTY DeKalb

API 120370079200



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Shown @ south side of town, may have been marked @ wrong location on ISGS map.

(likely MAIN WELL north of RR tracks, south of North St.)

mz

Page 2 ILLINOIS STATE GEOLOGICAL SURVEY

sandstone, silty, light gray, f / crs, incoh	420	430
sandstone, light gry, fine to coarse, incoh	430	495
ss, lgt ysh gry, fine / medium, incoherent	495	555
ss, sty, lgt ysh gray, fine to crs, incoh	550	590
ss, light yellow, fine / medium, incoherent	590	600
ss, lgt gry, pinkish tint, fine to coarse	600	620
cht, yl, pink, ss, yl-gry, f/crs; ss, silic, yl	620	630
St Peter	350	
Knox	350	
Total Depth		630
Casing: 13" I.D. from 0' to 69'		
8" I.D. from -2' to 152'		
Static level 15' below casing top which is 0' above GL		
Pumping level 24' when pumping at 200 gpm for 0 hours		

Driller's Log filed
 Strip Log filed
 Survey Sample Study filed
 Sample set # 20714 (0' - 630') Received: January 1, 1950

Owner Address: .
 Location source: Flatbook verified

owner
 COUNTY DeKalb

Kirkland, Village Of)
 API 120370079200 26 ~ 42N - 3E