BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF THE VILLAGE OF	)	AS 05-02
BENSENVILLE FOR AN ADJUSTED	)	(Adjusted Standard – Water)
STANDARD FROM	)	
35 ILL. ADM. CODE 620.410	)	
REGARDING CHLORIDE AND LEAD	)	

NOTICE OF FILING

To: Illinois Environmental Protection Agency
Attn: Melanie Jarvis
Division of Legal Counsel
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

PLEASE TAKE NOTICE that today I have filed with the Office of the Clerk of the Pollution Control Board **AMENDED PETITION FOR ADJUSTED STANDARD FROM GROUNDWATER QUALITY STANDARDS FOR CHLORIDE AND LEAD and MOTION TO ALLOW FILING OF LESS THAN NINE COPIES** in the above titled matter.

Copies of these documents are hereby served upon you.

VILLAGE OF BENSENVILLE

By: _____
One of its Attorneys

DATED: March 4, 2005

MCGUIREWOODS LLP
David L. Rieser
77 West Wacker Drive, Suite 4100
Chicago, Illinois 60601
(312) 849-8100

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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PETITION OF THE VILLAGE OF	)	AS 05-02
BENSENVILLE FOR AN ADJUSTED	)	(Adjusted Standard – Water)
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MOTION TO ALLOW FILING OF LESS THAN NINE COPIES

The Village of Bensenville, by and through its attorneys, McGuireWoods LLP, respectfully requests that the Board allow it to file less than nine copies of its Amended Petition for Adjusted Standard as required by 35 Ill. Adm. Code 101.302(h). The Amended Petition includes a large Landfill Gas Report. This level of detail was required since Bensenville waived its hearing and thus needed to submit its complete factual record. Bensenville has attached the original and three copies and submits that submitting six additional copies would be an unnecessary expense and a drain on the Board's own resources. Pursuant to the Board's order of January 20, 2005, Bensenville does not resubmit the six exhibits which were attached to its original Petition.

WHEREFORE, for the reasons stated in this motion, Bensenville respectfully requests that it be allowed to submit an original and three copies of its Amended Petition and Exhibits instead of the nine copies otherwise required by Board rules.

Village of Bensenville

By
One of its Attorneys

David L. Rieser
McGuireWoods LLP
77 W. Wacker Drive, Suite 4100
Chicago, IL 60601
312-849-8100

\\REA\254084.1

BEFORE THE
ILLINOIS POLLUTION CONTROL BOARD

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REGARDING CHLORIDE AND LEAD	)	

PROOF OF SERVICE

I, David L. Rieser, an attorney, hereby certify that I caused the attached pleadings to be served upon all parties listed on the attached Notice of Filing via first class U.S. mail from 77 West Wacker Drive, Chicago, IL, on March 4, 2005.

David L. Rieser

MCGUIREWOODS LLP
David L. Rieser
77 West Wacker Drive, Suite 4100
Chicago, Illinois 60601
(312) 849-8100

\\REA\254087.1

BEFORE THE
ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
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PETITION OF THE VILLAGE OF	)	AS 05-02
BENSENVILLE FOR AN ADJUSTED	)	(Adjusted Standard – Water)
STANDARD FROM	)	
35 ILL. ADM. CODE 620.410	)	
REGARDING CHLORIDE AND LEAD	)	

AMENDED PETITION FOR ADJUSTED STANDARD FROM GROUNDWATER QUALITY STANDARDS FOR CHLORIDE AND LEAD AT THE VILLAGE OF BENSENVILLE LANDFILL

The Village of Bensenville ("Bensenville"), by and through its attorneys McGuireWoods, LLP, submits this amended petition to the Illinois Pollution Control Board ("PCB") for adjusted groundwater standards for dissolved chloride and total lead at the Village of Bensenville Landfill located in Bensenville, Illinois. Bensenville submits this petition pursuant to Section 28.1 of the Illinois Environmental Protection Act (415 ILCS 5/28.1) and 35 Ill. Adm. Code 104, Subpart D. These amendments are in response to the PCB's order dated January 20, 2005 requesting additional information. These amendments also respond to certain questions submitted by the Illinois Environmental Protection Agency ("IEPA") after the filing of the original petition. A redlined copy of this Amended Petition, identifying the changes is attached hereto and incorporated herein as Exhibit 7.

I. INTRODUCTION

Bensenville seeks this relief for the Village of Bensenville Landfill ("Site") located at the northwest corner of Grand Avenue and County Line Road. Bensenville acquired the Site, which was closed in 1989, from John Sexton Filling and Grading Contractors Corporation ("Sexton") in 1997. Since 1997, Bensenville has worked with the IEPA to certify completion of post closure care. As will be described below, Bensenville has resolved all groundwater-related issues with the IEPA except for the current presence of elevated concentrations of dissolved chloride and some periodic, historical elevated concentrations of lead. Bensenville maintains and has demonstrated that the periodic, historic elevated concentrations of lead and the elevated levels of chloride are anthropogenic but not related to landfill impacts. The IEPA has taken the position that it cannot certify completion of post closure care for the Site when groundwater on the Site exceeds the PCB's groundwater quality standards. Bensenville seeks this relief in order to obtain its certification of completion of post closure care. As stated in this Petition, Bensenville believes this relief is justified because the conditions are different than those contemplated by the Groundwater Quality Regulations, the conditions create no impact to human health or the environment, and because compliance is not economically reasonable.

II. DESCRIPTION OF RELIEF

A. Standard from Which Adjusted Standard is Sought. (35 Ill. Adm. Code 104.406(a)).

Bensenville seeks relief from 35 Ill. Adm. Code 620.410(a) solely as it sets out a standard for chloride and lead. This regulation became effective November 25, 1991.

B. Statute Which Regulation is Intended to Implement.
(35 Ill. Adm. Code 104.406(b)).

The PCB adopted this regulation pursuant to the Illinois Groundwater Protection Act, 415 ILCS 55/1 et seq. and not to implement the requirements of the statutes listed at 35 Ill. Adm. Code 104.406(b).

C. Level of Justification.
(35 Ill. Adm. Code 104.406(c)).

The Groundwater Quality Regulations do not specify a level of justification for seeking an adjusted standard of an individual groundwater quality standard, although they do specify a standard for seeking the reclassification of a given groundwater. 35 Ill. Adm. Codes 620.450. The PCB's regulations applicable to landfills which continued to be in operation after 1990 (and not applicable to the Site) contain justification for adjusted groundwater standards at 35 Ill. Adm. Code 811.320(b)(4). Although the Part 811 standards do not apply to this Site, the regulations for adjusting groundwater quality standards provide a useful framework for justifying this relief.

III. DESCRIPTION OF PETITIONER'S ACTIVITY
(35 Ill. Adm. Code 104.406(d))

Bensenville attaches and incorporates as Exhibit 1 the Groundwater Summary Report dated December 21, 2004 prepared by Environmental Information Logistics, LLC (EIL), Bensenville's environmental consultant. The Site description and environmental information included in this Petition is taken from that document and its attachments.

A. Location of Site.

The Site is located in the Village of Bensenville in DuPage County at the northwest corner of Grand Avenue and County Line Road. The landfill covers 53 acres,

41 of which are filled. The landfill is bordered by the River Forest Golf Club to the west, Grand Avenue and the Mount Emblem Cemetery to the south (City of Elmhurst), County Line Road and Interstate 294 to the east (City of Northlake), and a residential area to the north (Village of Bensenville). A map showing the location of the Site is attached hereto and incorporated herein as Exhibit 2. The area east of County Line Road and Interstate 294 is industrial and is located in the City of Northlake within Cook County. There are no schools, hospitals, or churches located within the residential area north of the landfill. The Village is served by a municipal drinking water supply that obtains water from Lake Michigan.

B. Past Operations.

Prior to operation as a landfill, the Site, owned by John Sexton Filling & Grading Contractors Corp. (Sexton), was used as a borrow pit for materials utilized in the construction of Interstate 294. From May 31, 1973 through July 24, 1987, Sexton operated the Site as a landfill, accepting demolition debris, concrete rubble, foundry sands, and logs, brush, and debris generally derived from the landscaping industry. To the best of Bensenville's knowledge, Sexton did not design or construct any features such as a liner, leachate collection system, or landfill gas control system but simply used the existing borrow pit to dispose of the construction, demolition, and landscaping debris. The Site also accepted ash generated by an on-Site, permitted air curtain destructor (ACD) that operated intermittently from March 1974 to October 1985. The ACD consisted of a subsurface rectangular structure with concrete walls used to burn landscaping debris. At no time was the Site authorized to accept either hazardous or general domestic wastes.

C. Closure/Post-Closure Care History

Sexton completed closure activities, including the decommissioning of the ACD, on October 4, 1989. Sexton submitted documentation of these activities to the IEPA on October 30, 1989. On January 29, 1990, the IEPA issued Supplemental Permit No. 1989-305-SP beginning the required five-year minimum post-closure care period. On March 27, 1997, Sexton submitted a supplemental permit application (SPA) (IEPA Log No. 1997-116) demonstrating that the post closure care requirements for the facility had been met. Due to the then pending transfer of the property to Bensenville, however, Sexton requested that this SPA be withdrawn in a letter received by the IEPA November 25, 1997.

The permit was transferred from Sexton to Bensenville by the IEPA on December 23, 1997. Bensenville acquired the Site with a grant provided by the IEPA. Bensenville sought the Site to develop it for use as open space. In accordance with the IEPA's grant, and consistent with its post-closure care permit, the Village constructed a golf course, which was opened to the public in the spring of 2003.

As stated above, Sexton did not install any pollution control equipment to control leachate or landfill gas. With respect to leachate control, pursuant to its post-closure care permit, Sexton constructed a landfill cap consisting of two feet of clay and six-inches of topsoil, with additional soil and vegetation installed by Bensenville above the cap in order to support the golf course. With respect to landfill gas, Bensenville submitted a plan to investigate landfill gas in August, 1998 and the Agency accepted the plan in October of 1998. In June, 1999, Bensenville submitted its report documenting that landfill gas was not being generated in sufficient quantities to cause concern with regard

to landfill gas migration, greenhouse gas issues, or impacts to human health and the environment. During a meeting with Bensenville on February 17, 2000 the IEPA agreed that the landfill gas concerns were satisfactorily addressed by the report. A copy of this report is attached hereto and incorporated herein as Exhibit 8.

The IEPA issued Supplemental Permit 1998-166-SP on June 12, 1998 in response to a SPA requesting placement of soils on the cap and that the landfill's name be changed from the "County Line Landfill" to the "Village of Bensenville Landfill." Bensenville's consultant, EIL, prepared and submitted a SPA on August 31, 2000 to satisfy the IEPA's request for further Site groundwater assessment. After EIL responded to a draft denial, the IEPA issued Supplemental Permit No. 2000-321-SP on February 13, 2001 approving the scope of the groundwater assessment monitoring plan.

EIL conducted the groundwater investigation and submitted the results to the IEPA as a SPA (Log No. 2001-174) on May 1, 2001, as required. The results of the investigation indicated that there were no organic compounds in Site groundwater. The results also indicated that there were some inorganic constituents in Site groundwater, including chloride and lead, but at concentrations that were below permit-specified criteria or were attributable to background or non-landfill anthropogenic conditions (see discussion at pages 13-15). The conclusion presented in the SPA, therefore, was that the landfill had not caused any impacts to groundwater beneath the Site. On this basis Bensenville again requested that the IEPA release the Site from post-closure care.

From October, 2001, through September, 2004, Bensenville and the IEPA exchanged correspondence regarding the completion of post closure care for the Site. The IEPA submitted several draft denial letters and Bensenville answered the IEPA's

concerns until the only remaining issues were the current presence of chloride, and the periodic presence of lead in the Site groundwater at concentrations exceeding their respective Illinois Class I groundwater quality standards and not attributable to naturally occurring conditions. No other constituent concentration in Site groundwater currently exceeds Illinois Class I groundwater quality standards.

Messrs. Michael Hirt and Jay Corgiat of EIL met with Mr. Paul Eisenbrandt and Ms. Gwenyth Thompson of IEPA on June 9, 2003 to discuss the May 9, 2003 IEPA draft denial letter and the IEPA's concern regarding the elevated chloride and lead concentrations. During the meeting EIL summarized the previously submitted documentation that suggested an off-Site source of chloride (e.g., road salt) and presented the results of new evidence (comparison of sodium to chloride molar ratios in groundwater and leachate) that further strengthened the non-landfill chloride source argument.

The IEPA responded that because the sources of chloride and lead are believed to be anthropogenic, non-landfill sources and not due to naturally occurring, background variability, and because the current chloride and periodic lead concentrations in Site groundwater exceeded Illinois groundwater standards, the Village would have to obtain a Site-specific adjusted standard for dissolved chloride and total lead from the PCB before the IEPA will agree to release Bensenville from the requirements of post-closure care at the Site. As a result, Bensenville submitted this Petition in order to obtain this release.

IV. DESCRIPTION OF GROUNDWATER CONDITIONS AND LACK OF ENVIRONMENTAL IMPACT
(35 Ill. Adm. Code 104.406(g))

A. Geology

The near surface geology of this area is generally characterized by a varying thickness of glacially-derived soils overlying Silurian Age dolomite bedrock. Based on the findings of investigations conducted when the facility closed, the glacially-derived soils at the Site range in thickness from approximately 55 feet, below Addison Creek, to over 70 feet. These consist of, in descending order, an upper silty clay unit (5 to 25 feet thick), an upper water bearing unit comprised of silty sands (10 feet thick), a middle unit consisting of clayey till (5 to 20 feet thick), a lower water bearing unit consisting of silty sand (<5 to 20 feet thick), and at some locations a lower silt and clay unit (5 to 15 feet thick). The lower water bearing unit is commonly referred to as a basal outwash, a term that is based on its physical connection with the underlying Silurian Age dolomite bedrock. This basal outwash is the only water-bearing unit at the Site that the IEPA requires to be monitored.

The results of more recent investigations suggest that the glacially-derived soils overlying bedrock may be less than 60 feet thick outside the perimeter of the landfill. These glacially-derived soils tend to vary significantly in thickness, texture, and continuity in northern Illinois. In fact, the glacially-derived soils completely "pinch out" approximately four miles to the southeast at the former Hillside rock quarry and approximately two miles to the southwest at the current Elmhurst rock quarry (Piskin, K, 1975, Illinois State Geological Survey Circular 490, *Glacial Drift in Illinois: Thickness and Character*), both of which were/are used to mine Silurian Age dolomite bedrock

where it essentially outcrops at the ground surface (i.e., where there is no glacially-derived soil overburden material). Based on regional information, the Silurian Age dolomite bedrock under the Site may be greater than 200 feet thick and contains a relatively large amount of fissures, fractures, and solution cavities.

B. Hydrogeology

Groundwater in the upper and lower water bearing units generally occurs as a function of recharge derived from vertical infiltration of runoff and precipitation from the surface through the glacial deposits. The upper water bearing unit is highly discontinuous and heterogeneous across the Site based on existing borehole information. As such, it yields minimal amounts of groundwater. The IEPA previously allowed groundwater monitoring in the upper water bearing unit to be discontinued.

On a regional basis, the lower water bearing unit is discontinuous and is entirely absent a few miles downgradient of the Site (Piskin, K, 1975, Illinois State Geological Survey Circular 490, *Glacial Drift in Illinois: Thickness and Character*). Groundwater yield in the lower water bearing unit is generally related to the degree of connectivity with the underlying Silurian Age dolomite bedrock. The yield potentials tend to be much higher at locations where the lower water bearing unit is in direct hydraulic connection with the underlying Silurian Age dolomite bedrock (ISWS Circular 149, 1981).

The lower water bearing unit, or basal outwash, has been monitored during the post closure care period since 1990 via a network of six monitoring wells. Of these, one well (G114) is located hydraulically upgradient of the Site. The remaining five wells (G115/R115, G116, G117, G118/R118, and G117/R117) are located downgradient of the landfill. Depths to groundwater in the lower water bearing zone currently range from

approximately 20 feet to 35 feet below ground surface. Horizontal groundwater flow in the lower water bearing unit at the Site has been consistently from northwest to southeast. Unretarded, horizontal groundwater flow rates are on the order of approximately four meters per year, based on a calculated gradient of 0.003 feet per feet (EIL, 2004, *Annual Assessment of Groundwater Flow and Hydraulic Gradients*), an estimated hydraulic conductivity of 1×10^{-3} cm/sec (Fetter, C., 1980, *Applied Hydrogeology*), and an assumed porosity of 0.25 (Fetter, C., 1980, *Applied Hydrogeology*). [1]

Chloride is a conservative constituent in terms of its mobility in groundwater, meaning that it generally travels unretarded in groundwater and, therefore, horizontal travel times for chloride would be expected to be on the order of four meters per year, or 1300 feet per 100 years. Lead, however, is significantly retarded compared to chloride. Lead is typically modeled in Illinois as retarded by a factor of 18 (IEPA, *Appendix C to LPC-PA2, Instructions for the Groundwater Protection Evaluation for Putrescible and Chemical Waste Landfills*, rev. 10/21/92). That is, lead is expected to migrate in groundwater at a rate approximately 18 times slower than conservative constituents, such as chloride. As such, horizontal travel times for lead would be on the order of 0.22 meters per year, or 75 feet per 100 years.

Groundwater in the Silurian Age dolomite bedrock occurs in joints, fissures, and solution cavities. The groundwater yield within the bedrock varies considerably based on the distribution and connectivity of the joints, fissures, and solution cavities, but tends to be most productive in the upper portion of the bedrock where it is more densely fractured. The Silurian Age dolomite bedrock is recharged directly from the overlying glacial

[1] EIL believes that these values are conservative based on field experience, including the generally slow recovery rate of the monitoring wells (four of the six wells, including G114, G116, G117, and R121 are typically bailed dry prior to sampling).

deposits, or directly from precipitation where the bedrock is exposed at the surface. In general, the Silurian Age dolomite bedrock is capable of yielding significant volumes of water compared to the lower water bearing unit. For example, based on a 1981 Illinois State Water Survey report (ISWS Circular 149, 1981), "Groundwater withdrawals from the shallow aquifers in DuPage County averaged 36.7 mgd [million gallons per day] during the past 13 years; 34.3 mgd was from the [Silurian Age] dolomite and 2.4 mgd was from the sand and gravel." As such, less than 10 percent of the DuPage County groundwater budget was historically (from the late 1960s through the early 1980s) provided by the unconsolidated glacially-derived units. These numbers have likely decreased in recent years with the increased availability of municipally-supplied Lake Michigan water.

Groundwater flow within the Silurian Age dolomite bedrock is generally from west to east. However, this flow is significantly affected on a local basis by dewatering activities associated with numerous local rock quarries. There is no Site-specific groundwater flow information in the Silurian Age dolomite bedrock.

C. Groundwater Quality – Silurian Age Dolomite Bedrock

Groundwater quality in the Silurian Age dolomite bedrock near the Site and elsewhere in the region is well documented and is known to be high in chloride and other inorganic constituents (ISWS Circular 149, 1981). In general, concentrations of total dissolved solids (TDS), hardness (as CaCO3), sulfate, chloride, sodium, and total iron are high and, in many cases, several times higher than applicable drinking water standards. The greatest concentrations of these constituents tend to be found in areas that are more densely developed by human activity, such as near the Site (ISWS Circular 149, 1981).

These constituents include the highest total dissolved solid concentrations in the LaGrange-McCook and the Elmhurst-Bensenville-Northlake areas, the highest chloride concentrations in the Elmhurst-Berkley-Bensenville area, and the highest sodium concentrations in the Elmhurst-Berkley-Bensenville and the Burr Ridge-Hinsdale areas. Concentration contour maps of chloride in the Silurian Age dolomite bedrock from ISWS Circular 149 are included as Exhibit 3. Revised contour maps showing the location of the Site, Interstate 294, and O'Hare airport are attached as Exhibit 9. In fact, chloride concentrations in the Silurian Age dolomite bedrock near the Site were observed to be similar to those observed in Site groundwater collected from the lower water bearing unit.

The Illinois State Water Survey attributed the high chloride concentrations in the Silurian Age dolomite bedrock to heavy road salt applications along major roads, including Interstate 294 (ISWS Circular 149, 1981), that infiltrates through the overlying glacial units, including the lower water bearing unit. Based on information provided by the Illinois State Toll Highway Authority (http://www.illinoistollway.com/portal/page?_pageid=135,41314&_dad=portal&_schema=PORTAL), the Authority applied an average of 56,665 tons of salt annually during the past eight years to their 274 miles of toll roads. This is equivalent to 207 tons of salt per mile of road per year, or 34.5 tons of salt per lane-mile for a six lane highway. As previously indicated, Interstate 294 runs north-south adjacent to the east boundary of the Site. In addition, Grand Avenue and County Line Road (which border the Site to the south and east, respectively) are also salted during the winter months by both Bensenville and DuPage County road crews.

In addition to surface infiltration of contaminants, significant dewatering activities, such as those associated with nearby rock quarries in Elmhurst (two miles to the southwest) and Hillside (four miles to the southeast), have changed the redox conditions in the Silurian Age dolomite bedrock, resulting in increased concentrations of some dissolved constituents (ISWS Circular 149, 1981).

D. Groundwater Quality – Lower Water Bearing Unit

Groundwater quality in the lower water bearing unit at the Site is well documented on the basis of nearly 14 years of quarterly post closure care monitoring and statistical reporting. During the 14-year time period there have been no confirmed detections of organic compounds in Site groundwater.

Based on the information collected at the Site and on the regional information regarding the Silurian Age Dolomite bedrock, Bensenville can document that the groundwater quality issues observed in the lower water bearing unit for which this petition seeks relief are not landfill related.[2] With respect to chloride, as discussed above, the 1981 ISWS Circular identified regional chloride impacts in the Silurian Age dolomite which are consistent with the impacts in the lower water bearing unit. Groundwater investigations at the Site indicated generally higher chloride concentrations further from the landfill waste boundary, adjacent to the roadways. This is not consistent with a possible leachate release.

Similarly, the concentrations of lead do not reflect landfill impacts. As demonstrated by the concentration time trends for total and dissolved lead in

[2] Bensenville acknowledges that this conclusion has been the subject of extensive discussion with the IEPA. While Bensenville asserts it can fully document and support its position, it also notes that the Board can grant this relief without resolving this debate. As is demonstrated below, identified control measures would be economically unreasonable and there is no environmental impact associated with the relief.

downgradient groundwater monitoring wells in Exhibit 10, the concentrations of total lead are extremely erratic over time, and exhibit no discernible trend that would be typically associated with a release from the landfill. The widely varying concentrations are generally indicative of sample turbidity in the case of a metal, such as lead. These metals adhere strongly to minute, suspended soil particles that are contained in turbid groundwater samples typically associated with relatively fine-grained, silty aquifers such as the lower water bearing unit at the Site. Therefore, the total lead concentrations will tend to vary directly with the groundwater sample turbidity, independent of and unrelated to a possible landfill release.

The concentration of dissolved lead is a much better indicator of leachate impacts than total lead because dissolved lead concentrations are not as biased by the presence of sediment/turbidity in the sample. As shown on the concentration time trends for dissolved lead, this parameter has only been detected a few times, specifically during the period between 2000 and 2001. Since that time, dissolved lead has not been detected. Dissolved lead has never been detected in Site leachate and, therefore, it is improbable that the source of lead in groundwater is Site leachate.

The total lead concentrations measured in groundwater have been higher than those measured in leachate. For example, the total lead concentrations in leachate well L302 (also known as L2), which is located in the southeast corner of the Site closest to the monitoring wells at which total lead concentrations have exceeded Class I standards (see Petition, Exhibit 1, Volume 3, Attachment 2), ranged from 14 to 17 ug/L, less than the total lead concentrations detected in nearby groundwater monitoring wells G117 (24 ug/L) and G121/R121 (23 ug/L). If landfill leachate were the source of the total lead,

then we would expect that landfill leachate would contain higher, not lower, concentrations of total lead when compared to groundwater.

Finally, and perhaps most tellingly, the CPT boring samples, which were positioned between the monitoring wells and the adjacent roads, almost all contained significantly higher total and dissolved lead concentrations than their respective monitoring well pair samples. This was especially apparent for the total lead concentrations. The lead concentrations were generally *higher* closer to the roads adjacent to the landfill. This is also entirely inconsistent with a landfill source of lead. Since the Site-specific data suggests that the "lead gradient" is generally from the adjacent roads towards the landfill, we believe this is strong evidence for an off-Site source of lead.

E. Groundwater Usage

In order to evaluate the impact of the proposed change, EIL evaluated groundwater usage and monitoring wells within one half-mile of the Site. Bensenville previously obtained all of its water from deep wells (ISWS Circular 149, 1981), and currently obtains its water from Lake Michigan. Bensenville also maintains a private well use restriction (Bensenville Municipal Code 8-7-23), included as Exhibit 4, that states:

> *"From and after July 6, 1984, it shall be unlawful for any person to install a well, cistern, or other groundwater collection device to be used to supply any water supply system if a water main constituting a part of the Village's public water supply system is within two hundred feet (200') of the nearest property line of the*

property upon which the well, cistern, or other groundwater collection device would be drilled or connected."

Based on communications with personnel in the Bensenville public works department and DuPage County Public Health Department, well database information obtained from the Illinois State Geological Survey (ISGS) and the Illinois State Water Survey (ISWS), and a reconnaissance performed on December 2, 2004, there are no known private wells or monitoring wells in Bensenville located within one half-mile of the Site that are screened in the lower water bearing unit, with the exception of the Site monitoring wells.

Based on that same reconnaissance, there are no wells screened in the lower water bearing unit in the City of Northlake located adjacent to and east (downgradient) of the Site. Northlake, as shown in the map in Exhibit 5, does not currently maintain a private well use restriction. The majority of properties located within one half-mile of the Site are industrial/commercial in nature. In addition, there is a small residential area located due east of and within one half-mile of the Site. Based on discussions with the Northlake public works department, Cook County Public Health Department, and a number of residents in the residential area, well database information obtained from ISGS and ISWS, and a reconnaissance performed on December 2, 2004, the various industries/commercial operations within one half-mile downgradient of the Site obtain their water from either deep bedrock wells or from Lake Michigan. The homeowners within the small residential area are connected to the Northlake municipal water supply that is sourced from Lake Michigan and there are no known private wells or monitoring wells located in Northlake within one half-mile downgradient of the Site that are screened in the lower water bearing unit.

There were, however, a few monitoring wells previously located within one half-mile of the Site associated with a former Leaking Underground Storage Tank (LUST) site (Leon Parent Trucking, LUST incident number 961459). Those monitoring wells were abandoned based on discussions with the property owner and field observations during the December 2, 2004 reconnaissance. There was also a private well previously located east of the Site on what is now property owned by National Trucking. Based on ISGS well records, the well was screened in the underlying Silurian Dolomite bedrock. Company representatives of National Trucking indicated that the well was previously abandoned. The abandonment was evident during the December 2, 2004 field reconnaissance.

The City of Elmhurst, located adjacent to and south (downgradient) of the Site, maintains an ordinance (Elmhurst Municipal Code MCO-1-2003), included in Exhibit 4, that prohibits the use of groundwater for potable use within the city limits except via well points operated by a city, those private wells in existence prior to the ordinance date (not including those in need of repair), and private irrigation wells equipped with a backflow prevention device. The ordinance was approved subject to a memorandum of understanding (MOU) between Elmhurst and the IEPA. The MOU was completed on December 4, 2003. Elmhurst provides municipal water service sourced from Lake Michigan to its residents.

Mt. Emblem Cemetery is the only property in Elmhurst that is located within one half-mile downgradient (south to southeast) of the Site, as shown on the map included as Exhibit 5. There are no other industrial/commercial facilities or residential areas located in Elmhurst within one half-mile downgradient of the Site. Based on communications

with personnel in the Elmhurst public works department, Mt. Emblem Cemetery, and DuPage County Public Health Department, well database information obtained from the ISGS and ISWS, and a reconnaissance performed on December 2, 2004, there are no known private wells or monitoring wells in Elmhurst located within one half-mile downgradient of the Site that are screened in the lower water bearing unit.

There were, however, a number of monitoring wells previously installed in Mt. Emblem Cemetery that were associated with a LUST incident (LUST incident number 913205). These wells have since been abandoned based on discussions with the Mt. Emblem Cemetery property manager and observations during the December 2, 2004 reconnaissance. In addition, there were a number of private wells that were located approximately one half-mile south of the Site, likely within the confines of the cemetery. However, based on well records obtained from the ISWS and ISGS, these wells were screened in the underlying Silurian Age dolomite bedrock. The Mt. Cemetery property manager had no knowledge of the existence of these wells and there was no evidence that they are still in existence based on the December 2, 2004 reconnaissance.

In summary, based on discussions with the public works departments of Bensenville, Northlake, including some local residents, and Elmhurst, including personnel at Mt. Emblem Cemetery, and with the DuPage and Cook County Public Health Departments, well database information obtained from the ISGS and ISWS, and a reconnaissance of the area within a one half-mile downgradient of the Site, there is no evidence to suggest that the lower water bearing zone is used as a source of drinking water in Bensenville downgradient of the Site, or the adjacent (downgradient) communities of Northlake and Elmhurst within one half-mile of the Site. These

communities obtain their public drinking water supplies primarily, or solely, from Lake Michigan. Some deep wells were identified from well logs as screened in the Cambrian-Ordovician aquifers underlying the Maquoketa Formation that, in turn, underlies the Silurian Age dolomite bedrock. It is not known whether these wells are currently in use. In any event, the Cambrian-Ordovician aquifers are physically and hydraulically isolated from the Silurian Age dolomite bedrock.

V. DESCRIPTION OF COMPLIANCE EFFORTS AND IMPACT OF EFFORTS TO COMPLY

(35 Ill. Adm. Code 104.406(e))

Bensenville evaluated the estimated costs for actions necessary to bring the groundwater into compliance with the Board's standards. While it is not clear that any action would achieve compliance with the Board regulation, a basic approach would be to construct a cut-off wall around the lower water bearing unit, to isolate Addison Creek (which receives wastewater treatment plant and other discharges), to pump groundwater with elevated chloride and lead from the lower water bearing unit, and to treat this groundwater in an on-Site treatment unit. The costs, including hydraulic isolation of the lower water bearing unit around the Site, hydraulic isolation of Addison Creek where it crosses the Site, groundwater extraction, and construction of an on-Site reverse osmosis treatment facility to treat the affected groundwater would be on the order of **$19,150,000**. These costs are summarized in Exhibit 6 and are discussed below.

The costs assume that hydraulic isolation of the lower water bearing unit would be achieved through the installation of a bentonite-soil slurry wall with "leap-frogging" overlapping panels 2.4 meters in width. The length of the wall would be 6,100 feet, the approximate perimeter length of the property. The depth of the wall is assumed to be 75

feet, 60 feet in soil overburden material and an additional 15 feet in the underlying fractured Silurian dolomite bedrock to minimize potential seepage. The depth estimates are based on current site information. The estimated cost of the slurry wall would be $10,350,000 based on discussions with Layne GeoConstruction out of Butler, Pennsylvania, a qualified contractor with experience in the construction of slurry cut-off wall systems.

The bottom of Addison Creek, a possible source of contaminants, is separated from the top of the lower water bearing unit by approximately 25 feet of soil material. Contaminants in Addison Creek could potentially migrate through these soil materials and impact the lower water bearing unit. Therefore, the cost estimate includes hydraulic isolation of Addison Creek via a concrete bed liner along the approximately 1,600 length of creek-bed across the Site. The concrete bed liner would be six-inches thick and an average of 25 thick wide, based on the current configuration of the creek. The estimated cost of the creek bed liner would be $200,300 based on the calculated volume of concrete and estimated installation costs.

Groundwater extraction would be achieved via a series of twenty extraction wells installed on 300-foot centers and connected via a pipeline. Each well would be installed to an approximate depth of 65 feet and would be fitted with a submersible pump. An additional well pair would be installed adjacent to each extraction well, one inside the cut-off wall and one outside the cut-off wall. The purpose of the well-pairs would be to monitor the performance of the cut-off wall. The total estimated cost of the extraction system is $854,000, $625,000 of which represents well installation costs.

The estimated costs are also based on-Site groundwater pre-treatment utilizing reverse osmosis. Such a system would cost approximately $25,000 and would be capable of achieving the anticipated discharge standards required by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). Such pre-treatment discharge standards would be established with the MWRDGC during the permitting process.

Engineering, permitting, and construction quality assurance costs associated with the system elements described above were estimated to be 15 percent of the capital costs, or $1,714,000.

Finally, the annual operation and maintenance cost was estimated to be $40,000. This includes assumed annual costs to replace one extraction pump, hourly technician costs to maintain the on-Site reverse osmosis unit, disposal and required analytical costs associated with discharge to the MWRDGC, and system power consumption. The total estimated operation and maintenance cost assuming a 150-year groundwater extraction, treatment, and disposal period is $6,004,000. The 150-year period is based on the assumed horizontal flow velocity of 0.22 meters per year (for lead using a flow velocity of 4 meters per year and a retardation factor of 18) and a contaminated groundwater flow path of 100 meters from the southeast quadrant of the landfill near the southeast edge of waste to the southeast property boundary. Clearly, the groundwater extraction, treatment, and disposal period would increase dramatically if Site hydraulic conductivities were found to be lower (a strong possibility) and if the theoretical landfill leakage was occurring, or was assumed to be occurring, somewhere other than in the southeast corner of the landfill. For example, the contaminant flow path would increase from 100 meters to 400 meters if the theoretical leakage was assumed to be from the middle of the landfill.

This would effectively quadruple the estimated operation and maintenance period and associated costs.

Such costs are economically unreasonable and not justified from any perspective. The lack of economic reasonableness is apparent from the facts described in this Petition. There are no groundwater receptors or potential human health impacts since users within one half-mile downgradient of the Site obtain their drinking water supplies from sources other than the lower water bearing unit. Further, despite the program outlined above, Bensenville cannot control or eliminate the sources of chloride and lead. Even if Bensenville implemented some type of groundwater isolation, extraction, and treatment program, the source of chloride is ongoing and not subject to control by Bensenville. State and county highway departments apply the salt surrounding roads and Interstate 294 as a means of ensuring driving safety during snow and ice events and these separate government entities are expected to continue this application in the future. The source of lead has also been demonstrated to be from an anthropogenic, off-Site, non-point source(s) and is, therefore, beyond the ability of Bensenville to control. As a result, Bensenville cannot describe the conditions that would occur if it were to comply with the groundwater standards since the non-compliance is not as a result of its actions and there is no action it can take which could result in compliance.

Although Bensenville, DuPage and Cook Counties, and the Illinois Department of Transportation could, in theory, cease further road salting along the adjacent roads, the potential health effects as they are related to road safety would be significant. In fact, a significant increase in the frequency of automobile accidents, many resulting in severe injury and some with resulting fatalities, would surely be attributed to increased road

hazards associated with snow and ice if the application of road salt were to cease during the winter months. Road salt has long been the material of choice in northern Illinois for snow and ice melting because of its relative abundance, cost effectiveness when compared with alternative materials, and minimal impact to the environment.

Furthermore, there are no known significant health risks associated with the ingestion of groundwater with the current level of chloride concentrations found in the Site groundwater. A Federal Highway Administration (FHWA) study concluded that the major objection to high concentrations of sodium and chloride in public water supplies arises from the taste preference of consumers (Winters, et al., 1985, *Environmental Evaluation of CMA,* Report FHWA-RD-84-095, FHWA, USDOT). In other words, the consumption of such groundwater would be objectionable to the consumer. The Ohio Local Technical Assistance Program (LTAP), associated with the Federal Highway Administration, Ohio Department of Transportation, and the Ohio State University reported that "Chloride [from road salt] affects taste, but has no effect on [human] health at the levels possible from road salt." (Ohio LTAP Quarterly, 1998, Volume 13, No. 1). Finally, the Environment Canada (Canada's equivalent of the USEPA) found that, although high chloride concentrations in groundwater could result in some adverse environmental effects to plant and aquatic life, "The principal problem for humans from road salt is its adverse effect on taste..." and that "Road salts are not dangerous to humans." (Environment Canada, 2000, *Priority Substances Assessment Report: Road Salts*) there are no known health risks associated with the ingestion of groundwater with elevated chloride concentrations. Therefore, there would be no health and environmental

benefits associated with potentially meeting existing groundwater standards by stopping the use of road salt.

There are commonly known health effects associated with the ingestion of lead. The main target for lead toxicity is the nervous system, both in adults and in children. Long-term exposure of adults to lead has resulted in decreased performance in some tests that measure functions of the nervous system. Lead exposure may also cause weakness in fingers, wrists, or ankles. Some studies in humans have suggested that lead exposure may increase blood pressure. Lead exposure may also cause anemia. At high levels of exposure, lead can severely damage the brain and kidneys in adults or children (USEPA, 2004, *Health Effects of Lead*). In spite of the potentially toxic effects of lead exposure, there are no known groundwater receptors and, if there were, they would be unlikely to ingest the water willingly because of the poor taste associated with the high chloride concentrations.

VI. JUSTIFICATION FOR RELIEF
(35 Ill. Adm. Code 104.406(h))

Again, while Bensenville is not bound by the standards of 35 Ill. Adm. Code 811.320(b)(4), Bensenville will look to these standards as a useful framework for justifying the relief it seeks here.

a) The groundwater from the lower water bearing unit does not presently serve as a source of drinking water.

As described above, Bensenville has documented that the groundwater from the lower water bearing unit does not serve as a source of drinking water for municipal or private wells in Bensenville, or the downgradient communities of Northlake (to the east) and Elmhurst (to the south) within one half-mile downgradient of the Site.

b) The change in standards will not interfere with or become injurious to, any present or potential beneficial uses for such waters.

As stated above, there are no current beneficial uses being made of these waters and municipal ordinances in Bensenville and Elmhurst would preclude the use of this groundwater as a potable water source in the future in those communities. More significantly, the Village and the adjacent communities of Northlake and Elmhurst obtain their drinking water supplies from Lake Michigan. There are no known industrial or residential uses of the specific groundwater downgradient and within one half-mile of the Site.

c) The change is necessary for economic or social development.

The proposed change will advance economic and social development by allowing Bensenville to complete the golf course contemplated by the IEPA grant encouraging Bensenville to develop additional open space. In addition, the change would relieve Bensenville from a significant financial burden insofar as the required quarterly monitoring and reporting are concerned. These costs account for approximately $35,000 to $40,000 per year (as documented in Exhibit 11), an amount that could be allocated to beneficial community development, beautification, or recreation projects.

The proposed change will not affect human health because groundwater from the lower water bearing unit is not utilized for human consumption within one half-mile downgradient of the Site.

d) The groundwater does not presently and will not in the future serve as a source of drinking water.

Although it is technically feasible to eliminate or reduce the chloride and lead concentrations in Site groundwater, it is not economically reasonable to eliminate or reduce the chloride and lead concentrations in Site groundwater because the cost is extremely high and there is no evidence to suggest that Site groundwater is used for human consumption or any known industrial purposes within one half-mile downgradient from the Site. In order to ensure that groundwater at the Site will not be used for potable purposes, Bensenville will record an ELUC to preclude such use. There are no known human health impacts associated with the consumption of groundwater with chloride concentrations similar to those measured in Site groundwater. While there are human health impacts associated with the ingestion of lead, its migration rate would be on the order of only 0.22 meters per year (or approximately 75 feet per 100 years) and, therefore, it would take a few hundred years before lead impacted groundwater from the Site would be expected to migrate off-Site to the nearest downgradient property. It is also unlikely that a person would willingly ingest such groundwater because of its offensive taste associated with the high chloride concentration. Bensenville and adjacent communities obtain their drinking water from Lake Michigan. Since the groundwater is not used for human consumption, it must be concluded that the safety benefits to motorists of using road salt (ice-free roads) far outweigh any potentially beneficial impact of reducing chloride concentrations in Site groundwater by eliminating the application of road salt to heavily traveled Grand Avenue, County Line Road, and Interstate 294 adjacent to the Site. It is possible, however, that existing groundwater quality will be maintained as a function of the quantity of road salt applied during upcoming years.

This Petition also meets the statutory requirements set out at Section 28.1(c) of the Illinois Environmental Protection Act (415 ILCS 5/28.1(c)) for justifying an adjusted standard. There are numerous factors which establish that the Bensenville situation is substantially and significantly different from those the Board considered in adopting the Ground Water Quality standards. First, Bensenville has sought this change to complete the project of turning a private landfill into a public open space resource pursuant to IEPA funding. The groundwater issues represent conditions which originated from other sources and which cannot be resolved by any reasonable action that Bensenville can take. Finally there will be no environmental impact associated with the Board's granting of this adjusted standard and no impact on public health since the public is not consuming this groundwater and not likely to in the future for reasons which do not relate to the activities for which the Petitioner seeks relief. Finally, as is stated below, this relief can be granted consistently with federal law. For all these reasons, the adjusted standard sought by Petitioner is justified.

VII. THIS RELIEF CAN BE GRANTED CONSISTENT WITH FEDERAL LAW
(35 Ill. Adm. Code 104.406(i))

The closure of this Site is not controlled by any federal law and no federal law sets standards for groundwater which is not used as a potable water supply. Neither the municipal solid waste landfill regulations nor the hazardous landfill regulations adopted under the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.) apply to this Site. Therefore, this relief can be granted consistent with federal law.

VIII. STATEMENT OF RELIEF REQUESTED
(35 Ill. Adm. Code 104.406(g))

Bensenville requests that the Board adopt the following adjusted standard:

The dissolved chloride standard in 35 Ill. Adm. Code 620.410 shall be adjusted from the existing standard of 200,000 ug/L to 728,963. The total lead standard in 35 Ill. Adm. Code 620.410 shall be adjusted from the existing standard of 7.5 ug/L to 47.8 ug/L. These adjusted standards shall apply to groundwater within the lower water bearing unit down to the top of the Silurian dolomite bedrock beneath the former Village of Bensenville Landfill Site located at:

Address: Northwest corner of Grand Avenue and County Line Road, Bensenville, Illinois.

Legal Description:
Parcel 1 (Pin Number 03255200004): *That part of the northeast quarter of Section 25, Township 40 North, Range 11 East, of the third principal meridian described by commencing in the north line of said section at a point 1019.04 feet east of the northwest corner of said northeast quarter; thence southeasterly along the easterly line of property described in document 388417, 1573.55 feet to the centerline of Grand Avenue, thence easterly on the centerline of Grand Avenue 700.0 feet for a place beginning; thence northerly 1602.1 feet to a point in the section line which is 1865.04 feet of the northwest corner of said northeast quarter; thence east along the north line of said northeast quarter 768.8 feet to the northeast corner thereof; thence south along the east line of said northeast quarter 1641.55 feet to the centerline of Grand Avenue; thence westerly along the centerline of Grand Avenue 692.28 feet to the place of beginning (except therefrom the rights of the public all existing roads and streets), in DuPage County, Illinois.*

Parcel 2 (Pin Number 0325200003): *That part of the northeast quarter of Section 25, Township 40 North, Range 11 East, of the third principal meridian described by beginning in the north line of said section at a point 1019.04 feet east of the northwest corner of said northeast quarter; thence southeasterly along the easterly line of property described in document 388417, 1573.55 feet to the centerline of Grand Avenue; thence easterly on the centerline of Grand Avenue, 700 feet; thence northerly 1602.1 feet to a point in the section line which is 846.0 feet east from the place of beginning; thence west 846.0 feet to the place of beginning, except therefrom that part thereof described as follows: the west 200 feet (as measured along the centerline of Grand Avenue) north of the south 400 feet (as measured on the easterly line of property described in document 388417) lying northerly of the northerly line of Grand Avenue (said northerly line of Grand Avenue being 40 feet northerly of and parallel with the centerline of Grand Avenue; in DuPage County, Illinois.*

Parcel 3 (Pin Number 0325200002): *The west 200 feet (as measured along the center-line of Grand Avenue) of the south 400 feet (as measured*

on the easterly line of property described in document 388417) lying northerly of the northerly line of Grand Avenue (said northerly line of Grand Avenue being 40 feet northerly of and parallel with the centerline of Grand Avenue) of that part of the northeast quarter of section 25, Township 40 North, Range 11, east of the third principal meridian, described by beginning in the north line of said section at a point 1019.04 feet east of the northwest corner of said northeast quarter; thence southeasterly along the easterly line of property described in document 388417, 1573.55 feet to the centerline of Grand Avenue; thence easterly on the centerline of Grand Avenue, 700 feet, thence northerly 1602.1 feet to a point in the section line which is 846.0 feet east from the place of beginning; thence west 846.0 feet to the place of beginning, in DuPage County, Illinois.

A Site map showing these boundaries is attached as Exhibit 12.

IX. HEARING WAIVER
(35 Ill. Adm. Code 104.406(j))

Bensenville waives a hearing for this Adjusted Standard.

X. CONCLUSION

The Village requests an adjusted standard for chloride and lead in Site groundwater so that the IEPA will release Bensenville from further post-closure care monitoring at the Site. The Site is currently used as a public golf course, and is located within a highly developed area that consists primarily of industrial and commercial properties downgradient of the Site. Bensenville and adjacent communities are served by municipal water supplies that are sourced by Lake Michigan and, therefore, are not dependent upon groundwater obtained from the glacial materials beneath the Site.

The request for the adjusted standards are supported by a significant amount of Site-specific data, summarized herein, that demonstrates that the Site does not represent a threat to human health or the environment. The data indicate that an off-Site source, probably road salting on adjacent roads, is likely responsible for the relatively high chloride concentrations observed in some Site groundwater from the lower water bearing

unit. The data also indicate that unknown off-Site anthropogenic sources are responsible for the periodic, historical elevated lead concentrations observed in Site groundwater. Reviews of regional studies indicate that both the glacial materials and the underlying Silurian Age dolomite bedrock have been significantly influenced by human activity, resulting in high chloride concentrations, among others. However, human consumption of Site groundwater will not occur because the public drinking water in Bensenville and the adjacent (downgradient) communities of Elmhurst and Northlake are sourced from Lake Michigan. Furthermore, Bensenville and Elmhurst maintain local ordinances that restrict the private use of groundwater from the glacial materials, including the lower water bearing unit.

WHEREFORE, for the reasons stated herein, the Village of Bensenville requests that the Illinois Pollution Control Board grant this adjusted standard.

VILLAGE OF BENSENVILLE

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