

ILLINOIS POLLUTION CONTROL BOARD

November 7, 2013

IN THE MATTER OF:)
)
PETITION OF CATERPILLAR INC.) AS 13-5
FOR AN ADJUSTED STANDARD FROM) (Adjusted Standard – PWS)
35 ILL. ADM. CODE 620.410(a) AND)
817.106(a))

OPINION AND ORDER OF THE BOARD (by C.K. Zalewski):

On June 27, 2013, Caterpillar Inc. (Caterpillar) filed a petition (Pet.) for an adjusted standard pursuant to Section 28.1 of the Environmental Protection Act (Act) and Part 104 of the Board’s procedural rules. *See* 415 ILCS 5/28.1 (2012); 35 Ill. Adm. Code 104.Subpart D. Caterpillar requests an adjusted standard from the Class I groundwater quality standard (GQS) for Total Dissolved Solids (TDS) found at 35 Ill. Adm. Code 620.410(a) of the Board’s rules for its on-site “potentially usable” waste landfill located at 8826 West Route 24, Mapleton, Peoria County.

On August 14, 2013, the Board received the Illinois Environmental Protection Agency’s (IEPA) recommendation (Rec.) that the Board grant Caterpillar’s request for an adjusted standard for TDS as it applies to leachate from the potentially usable waste landfill. No public hearing was requested or held.

For the reasons discussed below, the Board grants Caterpillar an adjusted standard from the Class I GQS for TDS found at Part 620 of the Board’s groundwater regulations and the TDS maximum allowable leaching concentration (MALC) found at Part 817 of the Board’s landfill regulations, subject to conditions. In this opinion and order, the Board first provides the procedural background before it describes the Caterpillar facility and sets out the background that led to Caterpillar’s petition. Next the Board discusses the groundwater standards that apply to the Caterpillar on-site landfill. The Board outlines the framework for granting an adjusted standard before discussing the unique circumstances at the Caterpillar on-site landfill. Consistent with the Board’s September 5, 2013 order, the Board has expedited decision in this matter at Caterpillar’s request.

BACKGROUND

Procedure

On June 27, 2013, Caterpillar filed the petition along with a motion for expedited review (Mot.). In the petition, Caterpillar requests an adjusted standard from the Class I GQS for TDS found at 35 Ill. Adm. Code 620.410(a) of the Board’s groundwater regulations. Caterpillar seeks the adjusted standard for its on-site potentially usable waste landfill that receives waste from Caterpillar’s foundry, located at the same site as the landfill in Mapleton, Peoria County (Site).

Caterpillar waived the public hearing afforded by Section 104.422 of the Board's rules. Pet. at 32.

Section 28.1 of the Act and Section 104.408 of the Board's procedural rules require publication of notice of an adjusted standard proceeding in a newspaper of general circulation in the area affected by the petitioner's activity. 415 ILCS 5/28.1 (2012); 35 Ill. Adm. Cod 104.408. The notice must be published within 14 days of filing a petition for an adjusted standard with the Board. See 35 Ill. Adm. Code 104.408(a). As required by Section 104.410, Caterpillar timely filed a certificate of publication with the Board on July 10, 2013. Notice of the petition was published in the *Peoria Journal Star* on July 5, 2013.

On August 8, 2013, the Board accepted the petition for adjusted standard and a hearing officer order was issued with clarifying questions to Caterpillar. On August 14, 2013, the Board received the IEPA's recommendation that the Board grant Caterpillar's request for an adjusted standard for TDS. On August 22, 2013, the Board received Caterpillar's response to hearing officer's order seeking additional information regarding Caterpillar's petition (Resp.). Also on August 22, 2013, the Board received Caterpillar's response (Resp. to Rec.) to the Agency's recommendation. Finally, in an order dated September 5, 2013, the Board granted Caterpillar's motion for expedited review consistent with available resources and decision deadlines. See 35 Ill. Adm. Code 101.512.

Caterpillar waived the public hearing in this matter, and the Board received no requests for a hearing. Therefore, no hearing was held. See 35 Ill. Adm. Code 104.408(b).

Facts

Caterpillar's petition is accompanied by a hydrogeological investigation conducted by Conestoga-Rovers & Associates (CRA) describing the Site (Pet. Exh. 2). The 80-acre Caterpillar foundry waste landfill is located south of the Village of Mapleton adjacent to the Illinois River approximately eleven miles downstream of the Peoria Lock and Dam. Pet. Exh. 2 at 3.¹ The landfill began operating in 1977 and receives potentially usable waste² from Caterpillar's foundry that manufactures engine blocks, cylinder heads, liners, and crankshafts used in heavy equipment. *Id.* at 3, 12. The landfill does not receive material from any off-site source. *Id.* at 1. The landfill waste consists primarily of

spent foundry sands from foundry casting production process, as well as varying amounts of other foundry wastes, including finishing waste (foundry sand mixed with metallic and metal pieces), metallic waste (steel shot, metal fines), metal

¹ The CRA Hydrogeological Investigation Report contains a table of contents with page numbers, but the document itself does not have page numbers. Therefore, citations within this opinion and order refer to the pages as numbered in the report's table of contents.

² "Potentially usable waste" means any solid waste from the steel and foundry industries that will not decompose biologically, burn, serve as food for vectors, form a gas, cause an odor, or form a leachate that contains constituents that exceed the limits for this type of waste as specified at 35 Ill. Adm. Code 817.106. See 35 Ill. Adm. Code 810.103.

pieces mixed with sand (less than 1%), foundry slag, dust collector wastewater treatment sludge, full dry dust collector super sacks, and used furnace refractory from the foundry casting production process, as well as varying amounts of other foundry wastes, including finishing waste (foundry sand mixed with metallic and metal pieces), metallic waste (steel shot, metal fines), metal pieces mixed with sand (less than 1%), foundry slag, dust collector wastewater treatment sludge, full dry dust collector super sacks, and used furnace refractory. Pet. Exh. 2 at 12.

The landfill was constructed over a clay layer with the compacted foundry sand making up the sloped sides. Pet at 17. Surface drainage from the landfill is directed to sedimentation ponds on the north and south sides of the landfill. The sedimentation ponds discharge to the Illinois River. *Id.* These discharges are regulated by Caterpillar's National Pollutant Discharge Elimination System (NPDES) permit. *Id.* That NPDES permit does not include an effluent limit for TDS. Pet. at 23.

The petition asserts that the Caterpillar landfill is unique in that it is the only landfill in Illinois subject to Part 817 of the Board's rules, entitled "Requirements for New Steel and Foundry Industry Wastes Landfills." Pet. at 3, 4; 35 Ill. Adm. Code 817. Pursuant to Part 817 of the Board's landfill regulations, and permit 1995-154-LFM, Caterpillar began monitoring the landfill leachate in 1997. Pet. at 4. Even at that time, leachate TDS results "consistently included sample results above the MALC limit of 1,200 mg/L." *Id.* at 5. According to CRA, "[b]eginning with the October 2009 leachate monitoring event, the concentrations of TDS in leachate wells monitored at the Site have caused exceedances of the MALC even with the statistical analysis," which is specified in permit 1995-154-LFM. Pet. Exh. 2 at 1.

IEPA most recently modified permit number 1995-154-LFM, on March 11, 2013. Pet. Exh. 1. The permit modification exempted TDS from specified leachate sampling requirements in the permit. Pet. Exh. 1 at 1, 12. More specifically, the permit exempted TDS from leachate sampling requirements "during the 2nd and 4th quarters of 2010 through 2013 leachate sampling and evaluation events." *Id.* at 12. Caterpillar states that IEPA granted this permit relief "to allow Caterpillar the opportunity to analyze the issue and determine what steps were necessary to achieve compliance with the MALC." Pet. at 5. After obtaining IEPA permit relief, Caterpillar hired CRA to conduct the hydrogeological investigation of background groundwater quality at the landfill accompanying the petition and described below. *Id.*

CRA's Hydrogeological Investigation

The Hydrogeological Investigation Report (Pet. Exh. 2) was completed by CRA on June 26, 2012 and revised on May 28, 2013. In the report, CRA describes the background of the landfill and the geological context of the Site. The land use surrounding the landfill is described as "a mixture of industrial, agricultural, and open areas," with "no major population centers within a 3-mile radius of the Site." Pet. Exh. 2 at 3. Little LaMarsh Creek bisects the western portion of the Site and empties into the adjacent Illinois River. *Id.* at 4. The portion of the Illinois River that flows along the southern edge of the Site appears on the IEPA's Illinois Integrated Water Quality Report and 2010 Section 303(d) List as impaired for fish consumption.

Id. at 5; *see also*, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY BUREAU OF WATER, ILLINOIS INTEGRATED WATER QUALITY REPORT AND SECTION 303(d) LIST - 2010 (December 2011).

The geology underlying the Site consists of clays and silts to depths ranging from 2 to 13 feet below the ground surface underlain by granular deposits consisting of sand, gravel, and small boulders. Pet. Exh. 2 at 8. Bedrock underlying the Site consists of brown to gray shale and fine-grained gray sandstone. *Id.* The water flowing through the sand and gravel portions is known as the Sankoty Aquifer, which shares a hydraulic connection with the Illinois River. *Id.* at 7. The Illinois River serves as a major regional discharge point for groundwater and, therefore, groundwater flow under the Site is generally from north to south. *Id.* CRA found that a groundwater mound is present under the landfill, “resulting in radial flow from the landfill towards the west, east, and south.” *Id.* at 24.

According to the CRA Report, Caterpillar does not use the groundwater at the Site due to the poor quality of the water and, more specifically, the high TDS content. Pet. Exh. 2 at 10. CRA searched the Illinois State Geological Survey for water wells located on or near the Caterpillar property. *Id.* at 11. In addition to the monitoring wells already in place pursuant to the Board’s Part 817 landfill regulations, the database identified five water wells on adjacent properties. *Id.* Three of these wells were located east of the Site on the Evonik Industries property. The closest of these three wells is 4,000 feet east of the Site and the wells are used for domestic water, not specifically for drinking. *Id.* The other two wells were located on property west of the Site belonging to Growmark Industries. The database revealed that the closest of the Growmark Industries wells is 1,600 feet west of the Site. *Id.* Growmark Industries indicated to CRA that neither of the wells is used for drinking water. CRA reports that the “Mapleton municipal well is located approximately 3,000 feet north-northeast (upgradient) of the landfill” and “[o]ne other private well was reported . . . over a mile northwest of the landfill in the upland area not associated with the Sankoty Aquifer.” *Id.*

Establishing Background Groundwater TDS and Leachate TDS Levels

Because CRA was unable to find extensive data on the background groundwater at the Site, CRA sought to “better define background groundwater quality with respect to TDS and understand the potential source and causes of high TDS detections dating back to the initiation of leachate sampling in 1997, and as experienced more acutely in recent sampling events.” Pet. Exh. 2 at 17. The hydrogeological investigation required the installation of additional groundwater monitoring wells to those already installed at the Site pursuant to the Board’s Part 817 landfill regulations. The groundwater monitoring wells utilized by CRA at the Site include: ten groundwater monitoring wells already in place at the Site; and seven new groundwater monitoring wells installed in areas to the north and southwest of the landfill.

The ten existing monitoring wells (eight shallow and two deep) scatter the Site but were not sufficient to study the background groundwater at the Site, in CRA’s opinion. The seven additional wells (three shallow and four deep) installed by CRA were installed mostly north of the landfill footprint in order to capture the background groundwater. Pet. Exh. 2 at 18. As stated in the hydrogeological investigation report, “CRA selected the locations of the [new]

background monitoring wells to be a sufficient distance upgradient so as not to be influenced by radial flow from the [l]andfill.” *Id.*

The hydrogeologic investigation also involved evaluation of the landfill leachate. The five, existing leachate wells were used to collect “a mixture of leachate that percolates through the landfill and the groundwater underlying the landfill.” *Id.* at 20. Leachate wells were screened in the saturated zone beneath the landfill. *Id.* Five new lysimeters were installed to help CRA evaluate the leachate data by comparing leachate well data with lysimeter data. *Id.* Each lysimeter was paired with a leachate well. Rather than collecting water beneath the landfill, the lysimeters were installed above the leachate level observed in each of the respective leachate wells resulting in an installation depth of 20 to 25 feet below the landfill surface. *Id.* at 21.

Groundwater samples were collected from all groundwater monitoring wells during the weeks of April 4, 2011 and May 23, 2011. Pet. Exh. 2 at 21. Additional groundwater samples were collected from the new, CRA-installed, upgradient wells on September 21, 2011, November 29, 2011, and January 10 and 11, 2012. *Id.* at 21-22. CRA collected data from the lysimeters in two rounds: May 25 and May 31, 2011; and June 22, 2011. *Id.* at 22. All but one lysimeter (LS305 in the southeast corner of the landfill) produced two samples for analysis. *Id.* Pursuant to its NPDES permit, Caterpillar collected data from the leachate wells in May and October 2011. *Id.* The TDS concentrations ranged from 319 mg/L to 3,050 mg/L in the groundwater, non-detect to 2,200 mg/L in the leachate well samples, and 730 mg/L to 1,500 mg/L in the lysimeter samples. Pet. at 8.

Using the groundwater monitoring data collected, as described above, CRA performed an inter-group statistical comparison between the upgradient and downgradient wells and found that the TDS concentrations in the shallow and deep groundwater immediately downgradient of the landfill are similar to the TDS concentrations in the upgradient, background groundwater. Pet. Exh. 2 at 40. After conducting statistical analysis of the groundwater data, CRA concluded that the upgradient, background groundwater contains TDS at concentrations above the MALC (1,200 mg/L). *Id.* at 50. This finding was also supported by CRA’s lysimeter data because the TDS levels in the leachate samples collected by the lysimeters (measuring leachate within the landfill) were lower than the TDS levels in the leachate wells (measuring leachate mixed with groundwater beneath the landfill). *Id.* at 51.

Caterpillar states that CRA developed a “statistical representation of background TDS concentrations in groundwater in order to determine an appropriate value that could be proposed as an alternative to the current MALC for TDS.” Pet. at 8; Pet. Exh. 2 at 36-37. CRA established the upgradient groundwater background concentration for TDS by calculating the background threshold value (BTV). CRA considered the 95th percentile as the BTV, meaning that the BTV value is expected, “with 99 percent confidence, to be exceeded by no more than 1 in 20 [or 95 percent of] background samples.” Pet. Exh. 2 at 30. In its response to the Hearing Officer order, Caterpillar clarified that the BTV was calculated using USEPA’s ProUCL statistical software in accordance with Section 817.416(e) of the Board’s landfill regulations. Resp. Exh. A at 1-2. Relying on four quarters of data from the upgradient groundwater

monitoring wells, CRA calculated a BTV of 2,539 mg/L for background TDS levels in groundwater not impacted by the landfill. *Id.*

APPLICABLE TDS STANDARD

Caterpillar seeks an adjusted standard from the Class I GQS for TDS found at 35 Ill. Adm. Code 620.410(a) of the Board's rules for its on-site "potentially usable waste" landfill. The TDS GQS of 1,200 mg/L, found at Section 620.410(a) of the Board's rules, is applied to the landfill pursuant to Section 817.416(a) of the Board's landfill regulations. 35 Ill. Adm. Code 817.416(a). In its petition, Caterpillar provides evidence that background concentrations of TDS exceed the TDS MALC at the Site. Pet. at 10. Therefore, Caterpillar seeks an adjusted standard from the TDS GQS pursuant to Section 817.416(b) of the Board's landfill regulations.

Section 620.410(a) of the Board's groundwater rules provides:

Groundwater Quality Standards for Class I: Potable Resource Groundwater

a) Inorganic Chemical Constituents

Except due to natural causes or as provided in Section 620.450, concentrations of the following chemical constituents must not be exceeded in Class I groundwater:

Constituent	Units	Standard
.		
Total Dissolved Solids (TDS)	mg/L	1,200

Section 817.416 of the Board's landfill regulations provides:

Groundwater Quality Standards

a) Applicable groundwater quality standards:

- 1) Groundwater quality shall be maintained at each constituent's applicable groundwater quality standard at or beyond the zone of attenuation. The applicable groundwater quality standard established for any constituent shall be:
 - A) The Board established standard;
 - B) The Board established standard adjusted by the Board in accordance with the justification procedure of subsection (b) of this Section; or
 - C) For those constituents where no Board established standard exists, the background concentration.

- 2) Any statistically significant increase above an applicable groundwater quality standard established pursuant to subsection (a)(1) that is attributable to the facility and which occurs at or beyond the zone of attenuation within 100 years after closure of the last unit accepting waste within such a facility shall constitute a violation.
 - 3) For the purposes of this Part:
 - A) “Background concentration” means that concentration of a constituent that is established as the background in accordance with subsection (d).
 - B) “Board-established standard” is the concentration of a constituent adopted by the Board as a groundwater quality standard under 35 Ill. Adm. Code 620.
- b) Justification for adjusted groundwater quality standards:
- 1) An operator may petition the Board for an adjusted groundwater quality standard in accordance with the procedures specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106.410 through 106.416.
 - 2) For groundwater which contains naturally occurring constituents which do not meet the standards of 35 Ill. Adm. Code 620, the Board will specify adjusted groundwater quality standards, upon demonstration by the operator that:
 - A) The groundwater does not presently serve as a source of drinking water;
 - B) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;
 - C) The change in standards is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and
 - D) The groundwater cannot presently, and will not in the future, serve as a source of drinking water because:
 - i) It is impossible to remove water in usable quantities;
 - ii) The groundwater is situated at a depth or location such that recovery of water for drinking purposes is not technologically feasible or economically reasonable;

- iii) The groundwater is so contaminated that it would be economically or technically impractical to render that water fit for human consumption;
- iv) The total dissolved solids content of the groundwater is more than 3,000 mg/l (sic) and the water will not be used to serve a public water supply system; or
- v) The total dissolved solids content of the groundwater exceeds 10,000 mg/l (sic). 35 Ill. Adm. Code 817.416.

As stated in its petition, Caterpillar is seeking relief from the TDS GQS because TDS concentrations in the landfill leachate have been found to exceed the MALC for TDS established at Section 817.106(a). Further, as stated in Caterpillar’s petition, “Section 817.106(b) provides a mechanism for an operator of a Part 817 landfill to exceed a secondary MALC standard, such as TDS, by showing that the increase will not result in an exceedance of the GQSs in Section 817.416.

Section 817.106 of the Board’s landfill regulations provides:

Waste Classification Limits

- a) Maximum allowable leaching concentrations (MALCs) (concentrations in mg/L):

	Beneficially Usable Wastes	Potentially Usable Wastes	Low Risk Wastes
. . . .			
Total Dissolved Solids (TDS)	1,200	1,200	3,500

- b) The Agency, upon application by an owner or operator, may allow exceedences of any secondary standard provided that the applicant can make an adequate showing, using the groundwater impact assessment procedures of Section 817.413, that the limit increase will not result in an exceedence of the groundwater quality standards specified in Section 817.416. 35 Ill. Adm. Code 817.106.

Corresponding with the adjusted standard to the applicable GQS, Caterpillar seeks an increase to the MALC secondary standard for TDS pursuant to Section 817.106(b) and Section 817.413 of the Board’s landfill regulations. 35 Ill. Adm. Code 817.106(b), 817.413. Section 817.413 provides:

- a) Procedures for performing the groundwater impact assessment:

. . . .

- 3) The operator shall estimate the capability of the geology and hydrology beneath the unit to meet the groundwater quality standards of Section 817.416 at the edge of the zone of attenuation. The estimate shall be made in accordance with the following:
 - A) Determine the aquifer conductivity and gradient using the hydrogeologic information collected pursuant [to] Section 817.411. If the aquifer conductivity is 1×10^{-5} cm/sec or less, no further groundwater impact assessment is required;
 - B) Develop a conceptual groundwater flow model of the site to determine the soil units through which leachate constituents may migrate;
 - C) Determine the organic carbon content for soil units through which the leachate constituents may migrate;
 - D) Determine the retardation factor for constituents of interest based on traditional hydrogeological methods;
 - E) Determine MALC values for constituents of interest required to achieve compliance with the applicable groundwater quality standards specified at Section 817.416;
 - F) Compare the calculated MALC values to the leachate values for the expected waste streams to determine whether compliance with groundwater standards can be met.
- b) Acceptable groundwater impact assessment. The groundwater impact shall be considered acceptable if the leachate values for the expected waste streams are less than the MALC values calculated in accordance with subsection 817.413(a)(3)(F). 35 Ill. Adm. Code 817.413(a), (b).

IEPA Permit Relief

On March 11, 2013, IEPA issued the most recent modification of Caterpillar's landfill permit number 1995-154-LFM, "approving development and operation of an existing foundry waste landfill." In the permit modification, IEPA explains that the March 11, 2013 modification is similar to previous modifications of the leachate sampling provisions of the permit. Pet. Exh. 1 at 2. The modified portion of the permit states that, "TDS shall not be subject to the requirement of items a through f (provisions regarding leachate sampling and applicable MALC values) above during the 2nd and 4th quarters of 2010 through 2013 leachate sampling and evaluation events." *Id.* at 12.

The IEPA permit modification excused Caterpillar from the TDS groundwater standard for a limited time. Caterpillar states that IEPA issued this permit relief so that Caterpillar could "analyze the issue and determine what steps were necessary to achieve compliance with the

[TDS] MALC, including potential relief from the Board.” Pet. at 5. The permit relief from the TDS GQS expires at the close of the 4th quarter of 2013, or December 31, 2013.³

COMPLIANCE ALTERNATIVES

Caterpillar discusses three compliance alternatives in the petition pursuant to Section 104.406(e) of the Board’s rules. First, Caterpillar discusses the alternative of pumping the landfill leachate, treating that leachate, and then discharging it under an amended NPDES permit to the Illinois River. Caterpillar commissioned CRA to develop a conceptual treatment design and estimate the capital costs of executing this pump and treat plan. Pet. Exh. 3 at 1. The conceptual pump and treat plan created by CRA “would eliminate the possibility of exceeding the MALC” at the Caterpillar site. *Id.* Caterpillar’s landfill is not lined and does not have a leachate collection system in place. *Id.* at 2. Instead, in order to collect the landfill leachate, Caterpillar would have to alter the groundwater flow so that leachate, and the associated groundwater, could be collected in the ground under the landfill and pumped to a waste water treatment works. This retrofit of the landfill would require a network of leachate extraction wells along with a leachate conveyance system and a pumping mechanism. *Id.*

CRA explains that vertical leachate extraction wells would be necessary to “induce an inward gradient and collect a combination of leachate and groundwater beneath the landfill.” Pet. Exh. 3 at 2. Therefore, groundwater coming onto the landfill site and containing the elevated levels of TDS would also necessarily be collected by the leachate extraction wells. The conceptual design calls for Caterpillar to pump the groundwater and leachate combination to a waste water treatment plant designed to meet the requirements of Caterpillar’s NPDES permit to discharge to the Illinois River. As stated by CRA, although TDS levels are the driver of Caterpillar’s GQS compliance problem, “if the leachate instead were collected for discharge to the Illinois River, TDS levels would no longer be the primary regulatory consideration.” *Id.* Instead, the collected leachate/groundwater combination “could require treatment for several constituents including but not necessarily limited to iron, manganese, and fluoride.” *Id.* at 3.

Caterpillar describes two treatment methods as possibilities to treat the pumped leachate/groundwater combination after it is collected but before it is discharged pursuant to the NPDES permit. Reverse osmosis (RO) is described as an expensive, multi-step treatment method that reduces the effluent and requires disposal of a waste product. Pet. at 19. Chemical precipitation is a less complicated treatment alternative that Caterpillar describes as “using lime to remove metals and fluoride.” *Id.* According to Caterpillar, while chemical precipitation is less expensive it may not meet NPDES permit requirements. *Id.* Caterpillar indicates that the facility’s NPDES permit, with effluent limits for a number of parameters likely contained in landfill leachate but not necessarily the subject of this adjusted standard, may dictate which of the two methods would be chosen. *Id.*

CRA developed cost estimates of “\$11.1 million for the RO treatment alternative and \$6.8 million for the dual stage [chemical] precipitation alternative.” Pet. Exh. 3 at 5. CRA

³ There is no information in the record regarding what regulatory authority was used to make and include this permit modification.

indicates that the cost could be significantly higher, however, because the conceptual design did not include a redundant system to treat the leachate/groundwater combination in the event of a system failure. *Id.* The estimated annual operating costs of the systems are \$680,000 for the reverse osmosis system and \$580,000 for the chemical precipitation system. *Id.*

The second approach to compliance involves removing the contents of the landfill in order to install a liner and a leachate collection system (as described above) before resuming use of the landfill. This path to compliance would involve removing and storing the already landfilled waste while the liner was being installed and then replacing the foundry waste. Caterpillar states that this approach, “would require transport of some 200,000 truckloads of waste, which would likely require a decade or more to complete and multiple tens of millions of dollars to implement.” Pet. at 20-21. In addition, the reverse osmosis and chemical precipitation treatments, discussed above, would be a necessary part of treating the landfill leachate after Caterpillar was able to resume use of the Site.

The third compliance approach raised by Caterpillar is to close the landfill and find an alternative location for the disposal of the foundry waste. Caterpillar states in the petition that closing the landfill “could potentially require that Caterpillar meet the provisions applicable to a low-risk waste landfill, which . . . would require a liner and retrofit of a leachate collection system.” Pet. at 21. Caterpillar estimates the cost of shipping the foundry waste elsewhere at approximately \$8 million annually. *Id.* Caterpillar states that “[t]he Mapleton landfill is required for the continued operation of the Mapleton plant,” and “in absence of the requested regulatory relief, the profitability of the Mapleton plant operations could be threatened.” *Id.* at 26.

LEGAL FRAMEWORK FOR ADJUSTED STANDARD

The Act and the Board rules provide that a petitioner may request, and the Board may grant, an adjusted standard that is different from the generally applicable standard that would otherwise apply to the petitioner. *See* 415 ILCS 5/28.1 (2012); 35 Ill. Adm. Code 104.Subpart D.

After adopting a regulation of general applicability, the Board may grant, in a subsequent adjudicatory determination, an adjusted standard for persons who can justify such an adjustment consistent with subsection (a) of Section 27 of this Act. In granting such adjusted standards, the Board may impose such conditions as may be necessary to accomplish the purposes of this Act. The rule-making provisions of the Illinois Administrative Procedure Act and Title VII of this Act shall not apply to such subsequent determinations. 415 ILCS 5/28.1(a) (2012).

The general procedures that govern an adjusted standard proceeding are found at Section 28.1 of the Act and Section 104.Subpart D of the Board’s procedural rules. 415 ILCS 5/28.1 (2012); 35 Ill. Adm. Code 104.400 *et seq.* The Board’s procedural rules specify the required contents for the adjusted standard petition. *See* 35 Ill. Adm. Code 104.406, 104.416. After a petition for an adjusted standard is filed, the Agency must file its recommendation with the Board within 45 days after the filing of the petition or amended petition, or at least 30 days before any scheduled hearing, whichever is earlier. *See* 415 ILCS 5/28.1(d)(3) (2012); 35 Ill.

Adm. Code 104.416. The adjusted standard proceeding is adjudicatory in nature and therefore is not subject to the rulemaking provisions of the Illinois Administrative Procedure Act (5 ILCS 100/1-1 *et seq.* (2012)). *See* 415 ILCS 5/28.1(a) (2012); 35 Ill. Adm. Code 101.202 (defining “adjudicatory proceeding”).

The burden of proof in an adjusted standard proceeding is on the petitioner. 415 ILCS 5/28.1(b), (c) (2012); 35 Ill. Adm. Code 104.426. Once granted, the adjusted standard, instead of the rule of general applicability, applies to the petitioner. 415 ILCS 5/28.1(a) (2012); 35 Ill. Adm. Code 101.202, 104.400(a). In granting adjusted standards, the Board may impose conditions necessary to accomplish the purposes of the Act. 415 ILCS 5/28.1(a) (2012); 35 Ill. Adm. Code 104.428(a).

IEPA RECOMMENDATION & CATERPILLAR RESPONSE

The IEPA filed its recommendation in this matter on August 14, 2013. In it, the IEPA “recommends that the Board grant the adjusted standard request with the understanding that a change in the TDS MALC would only be applicable to the Landfill leachate.” Rec. at 1. The IEPA acknowledges the historically high TDS levels detected in Caterpillar’s leachate, stating that “[b]ecause of these exceedances, the Petitioner is not in compliance with the terms of [their] permit.” *Id.* at 2. IEPA raised a concern about what data (upgradient “groundwater uninfluenced by the landfill” vs. “landfill leachate values”) Caterpillar and CRA used to calculate the BTV for TDS that Caterpillar requests the Board use for the adjusted standard. *Id.* at 3.

IEPA analyzed Caterpillar’s petition using the factors of Section 104.406 of the Board’s rules. 35 Ill. Adm. Code 104.406. Section 104.406 sets out the content requirements for a petition for adjusted standard. IEPA explains that pre-petition communications between IEPA and Caterpillar cleared up a number of issues with regard to Caterpillar’s petition. Rec. at 3. IEPA contemplated the increase in TDS MALC for the Site when it stated, “[i]f the proposed adjusted standard is granted, the [MALC] for TDS could be adjusted from 1,200 mg/L to 2,539 mg/L.” Rec. at 1. In response to Section 104.406(f) that requires the petitioner to give “[a] narrative description of the proposed adjusted standard as well as proposed language for a Board order that would impose the standard,” IEPA expressed concern that, if granted, the adjusted standard would allow Caterpillar to dispose of waste streams that exceed MALC for potentially usable waste. In order to address this concern, the IEPA “recommends that if relief is granted, the [Board’s] findings indicate that the adjusted groundwater standard and/or MALC of 2,539 mg/L is only applicable to leachate and not to potentially usable waste.” *Id.* at 5.

Caterpillar filed a response to IEPA’s recommendation on August 22, 2013. To address IEPA’s question on calculation of the BTV value for TDS at the Site, Caterpillar stated that the proposed adjusted standard was based on statistics using upgradient groundwater data and not landfill leachate values. Resp. to Rec. at 2. In addition, Caterpillar edited its proposed adjusted standard language to reflect the IEPA’s concern that the adjusted standard would apply only to landfill leachate.” *Id.*

STANDARD OF DECISION

The Board has authority to grant an adjusted standard, pursuant to Section 28.1 of the Act, for persons who can justify an adjustment in one of two ways. 415 ILCS 5/28.1 (2012). If the Board has specified the level of justification for an adjusted standard in the rule of general applicability, then that level of justification shall apply. 415 ILCS 5/28.1(b) (2012). However, if a rule of general applicability does not provide a level of justification, the Board will use the factors set out in Section 28.1 of the Act in granting an adjusted standard. 415 ILCS 5/28.1(c) (2012).

As discussed above, Caterpillar has requested an adjusted standard from the Class I GQS for TDS found at Section 620.410(a) of the Board's groundwater rules. 35 Ill. Adm. Code 620.410(a). Section 620.410(a) is the applicable GQS because Section 817.416(a)(1)(A) of the Board's landfill rules dictate that the Class I GQS for TDS is applicable for Part 817 landfill sites. Part 817 of the Board Rules provides a specific level of justification for the issuance of an adjusted standard. Therefore, pursuant to Section 28.1(a), the level of justification in Part 817 applies to Caterpillar's petition.

Section 817.416(b)(2) of the Board's landfill regulations set out the justification factors for an adjusted standard from GQSs at the Caterpillar site. Those factors require that Caterpillar demonstrate that:

- A) The groundwater does not presently serve as a source of drinking water;
- B) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;
- C) The change in standards is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and
- D) The groundwater cannot presently, and will not in the future, serve as a source of drinking water because:
 - i) It is impossible to remove water in usable quantities;
 - ii) The groundwater is situated at a depth or location such that recovery of water for drinking purposes is not technologically feasible or economically reasonable;
 - iii) The groundwater is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;

- iv) The total dissolved solids content of the groundwater is more than 3,000 mg/l and the water will not be used to serve a public water supply system; or
- v) The total dissolved solids content of the groundwater exceeds 10,000 mg/l.

DISCUSSION

As stated in the CRA hydrogeologic investigation report, submitted in support of the petition, “statistical evaluations of the upgradient groundwater data sets completed by CRA demonstrate that the upgradient background groundwater quality, which is unaffected by the Landfill, contains naturally occurring constituents, including TDS, at concentrations above the MALC.” Pet. Exh. 2 at 50. Thus, Caterpillar seeks an adjusted standard from the Class I GQS for TDS found at Section 620.410(a) of the Board’s groundwater rules (35 Ill. Adm. Code 620.410(a)) due to elevated levels of TDS in the upgradient, background groundwater at the Site. In lieu of the Class I GQS for TDS of 1,200 mg/L, Caterpillar requests that the Board base the GQS for TDS and the adjusted MALC for TDS on the Site’s TDS BTV of 2,539 mg/L. Caterpillar, consistent with IEPA’s request, narrows the requested adjusted standard to the MALC for TDS in the landfill leachate. This discussion section will apply the facts presented by Caterpillar to the factors set out in Section 817.416(b)(2) of the Board’s landfill regulations to justify the Board’s issuance of the adjusted standard. This section will conclude by addressing additional justifications provided by Caterpillar.

Adjusted TDS Groundwater Quality Standard

Caterpillar seeks an adjusted standard from the TDS GQS pursuant to Section 817.416(b) of the Board’s landfill regulations. 35 Ill. Adm. Code 817.416(b). Below, the Board will address the justification factors under Section 817.416(b)(2) along with the proposed alternative TDS GQS before making the Board’s findings on the requested adjusted TDS GQS.

Groundwater Not a Source of Drinking Water

According to the hydrogeological investigation report, groundwater at the Caterpillar site generally flows from north to south toward the Illinois River. Pet. Exh. 2 at 8, 24. The mounding effect of shallow groundwater around the landfill diminishes “within a few hundred feet of the landfill due to the effect of the regional hydrogeological gradient towards the Illinois River.” *Id.* at 24. The Caterpillar site extends west from the landfill for over 1,500 feet. *Id.* Pond Lilly Lake extends over a mile to the east of the landfill, eliminating the opportunity for groundwater use in that direction. *Id.* These features cover the area of “a few hundred feet” affected by mounding of shallow groundwater surrounding the landfill.

Land use surrounding the facility is “a mixture of industrial use, agricultural use, and open space.” Pet. at 18. Caterpillar indicates that residential use occurs only in areas north of the Site, with “the land immediately north of the Plant . . . wooded,” and “no major population centers within a three-mile radius of the Plant. *Id.* The CRA report identified the Mapleton

municipal well and one other private drinking water well near the Site in Illinois State Geological Survey materials. Both of these wells are north and upgradient of the Site. Pet. Exh. 2 at 11. First, the Mapleton municipal well is located “approximately 3,000 feet north-northeast of the landfill.” *Id.* Second, the private well “is located over a mile northwest of the landfill” and does not tap the Sankoty Aquifer as its source. *Id.* Finally, the Illinois River, which receives the impacted groundwater of the Sankoty Aquifer, borders the Caterpillar site to the south so that no potential groundwater users exist between the landfill and the terminus of the aquifer. As Caterpillar states in the petition, “the groundwater impacted by the landfill is limited to Caterpillar’s property where the . . . landfill [is] located.” Pet. at 25.

The groundwater impacted by the landfill is under land controlled by Caterpillar, and the record demonstrates that Caterpillar is currently the only entity able to use the impacted groundwater resource as a drinking water source or any other purpose. Caterpillar has assured the Board that it does not currently use the groundwater at the Site as a source of drinking water and has no intent of doing so in the future. Pet. at 25. Further, Caterpillar agrees to obtain an environmental land use control (ELUC) as a part of the adjusted standard to restrict use of the groundwater to only industrial/commercial purposes into perpetuity. *Id.* In response to a Hearing Officer question concerning approvability of an ELUC, the petitioner stated that the IEPA is fully supportive of the proposal in the petition to record an ELUC. *See In re Petition of Caterpillar, Inc.*, AS 13-5 (Aug., 8, 2013). Caterpillar submitted a draft ELUC application including the approximate map of the area to be covered by the ELUC in its response. Resp. at 2.

In this unique circumstance, the Board finds that the record demonstrates the groundwater is not currently a source of drinking water. Further, the Agency’s approval of Caterpillar’s ELUC will ensure that groundwater underlying the Site will not be used for potable purposes in the future. In this regard, the Board has included a condition requiring the petitioner to submit an ELUC to the IEPA for approval within 60 days of the date of this Board order and file the IEPA-approved ELUC with the Office of the Recorder or Registrar of Titles for Peoria County within six months of the date of this order pursuant to Section 742.1010(b) of the Board’s waste disposal regulations. 35 Ill. Adm. Code 742.1010(b).

A Change in the GOS Will Not Interfere with Any Present or Potential Beneficial Uses for the Groundwater

Many of the same facts, discussed above, are applicable to the potential beneficial uses for groundwater at the Caterpillar site. Caterpillar states that the groundwater potentially impacted by the landfill leachate is not currently used for any purpose. Pet. at 25. There are no other potential users of the potentially impacted groundwater, therefore Caterpillar controls the use of the groundwater as long as it remains the owner of the Site. Finally, the ELUC Caterpillar has agreed to obtain as a part of the adjusted standard will limit the use of the groundwater to industrial/commercial purposes in perpetuity. Caterpillar reminds the Board that while the adjusted standard will result in a change to the TDS standard, the elevated levels of TDS in the groundwater have been present for a number of years with no documented harm resulting to the environment.

In its evaluation, the Board is employing the current, upgradient levels of TDS in the groundwater as a frame of reference. Caterpillar, as the only current, potential user of the groundwater affected by this adjusted standard, has found it impracticable to use the groundwater for anything other than industrial or commercial purposes. In the petition, Caterpillar states, “[t]here is no current usage of groundwater for any purpose and, based on the poor groundwater quality and Caterpillar’s current and anticipated future operations at the Site, it is unlikely that groundwater would be used in the future.” Pet. at 23. The hydrogeologic investigation report also references the availability of the Illinois River as a source of water, stating that in developing the Site, Caterpillar tested the groundwater and found “the groundwater quality to be poor because of elevated TDS content and chose to use surface water from the Illinois River for potable and industrial water supply at the Site.” Pet. Exh. 2 at 10.

The Board notes that CRA also evaluated the impact of the landfill leachate and naturally occurring TDS levels of the Sankoty Aquifer (in the location of the Site) on the Illinois River. As a part of the hydrogeologic investigation, CRA took water samples from the Illinois River upstream and downstream of the landfill. Pet. at 22. Two rounds of sampling results revealed no remarkable difference between upstream levels of TDS and downstream levels. *Id.* In fact, in one of the two rounds of sampling, the downstream result included a lower TDS level. *Id.* CRA also evaluated how dilution would affect the TDS levels entering the Illinois River at the southern border of the Site. The hydrogeologic investigation revealed “a dilution factor of over 75,000, meaning that the concentration of TDS in the shallow groundwater discharging to the Illinois River would have to be increased by 75,000 mg/L in order to increase the concentration of TDS in the Illinois River by 1 mg/L. *Id.* at 22-23.

The Board finds that Caterpillar has demonstrated that granting the adjusted standard will not affect Caterpillar’s current use or any potential future use, by Caterpillar or another entity, of the groundwater resource and the Illinois River.

Change in Standards is Economically and Socially Necessary

Without the requested adjusted standard, Caterpillar would be required to comply with the existing TDS GQS of 1,200 mg/L despite the elevated levels of TDS in the upgradient groundwater at the Site. Caterpillar’s petition shows that the upgradient groundwater, without the influence of the landfill leachate, exceeds the applicable GQS. As described above, Caterpillar asked CRA to design a conceptual leachate collection and treatment system that would bring the landfill into compliance with the applicable GQS. Pet. Exh. 3 at 1. Caterpillar elaborates on the compliance alternatives to the adjusted standard in the petition. All alternatives require Caterpillar to mitigate the TDS level of upgradient groundwater, as incident to landfill leachate, and take measures to eliminate leachate from entering the Sankoty Aquifer.

First, Caterpillar discusses the alternative of pumping the landfill leachate, treating that leachate, and then discharging it under the facility’s NPDES permit to the Illinois River. In order to collect the landfill leachate, Caterpillar would have to alter the groundwater flow so that leachate, and the associated groundwater, could be collected in the ground under the landfill and pumped to a treatment works. While elevated TDS levels would not cause a problem with NPDES permit compliance, other constituents of the leachate/groundwater combination would

force Caterpillar to alter its waste water treatment process to maintain compliance with a NPDES permit designed to address the discharge of landfill leachate. Therefore, under this compliance scheme, Caterpillar would be placed in the inequitable position of mitigating leachate and groundwater for parameters other than TDS due to the elevated TDS level in background groundwater at the approximate initial cost of \$11.1 million or \$6.8 million and an annual cost of \$580,000 to \$680,000 depending upon the treatment method selected. Pet. Exh. 3 at 5.

The second approach to compliance involves removing the contents of the landfill in order to install a liner and a leachate collection system before resuming use of the landfill. This path to compliance would involve an extreme logistic expense of removing, storing, and then replacing the foundry waste while the liner was installed. In addition, the reverse osmosis and chemical precipitation treatments, discussed above, would be a necessary part of treating the landfill leachate after Caterpillar was able to resume use of the Site.

The third compliance approach raised by Caterpillar is to close the landfill and find an alternative location for the disposal of the foundry waste. Caterpillar states in the petition that closing the landfill “could potentially require that Caterpillar meet the provisions applicable to a low-risk waste landfill, which . . . would require a liner and retrofit of a leachate collection system.” Pet. at 21. Caterpillar estimates the cost of shipping the foundry waste elsewhere at approximately \$8 million annually. *Id.* Caterpillar states that “[t]he Mapleton landfill is required for the continued operation of the Mapleton plant,” and “in absence of the requested regulatory relief, the profitability of the Mapleton plant operations could be threatened.” *Id.* at 26.

When determining if an adjusted standard is justified, the Board considers the costs associated with compliance, and the potential economic effect those costs could have on jobs and the local economy. See 35 Ill. Adm. Code 817.416(b)(2)(C). Caterpillar’s Mapleton location currently employs approximately 567 salaried and hourly employees aside from providing a significant source of tax revenue to the surrounding area. Pet. at 16. The record makes clear that, without the adjusted standard, Caterpillar must mitigate a number of contaminants in the landfill leachate to a level meeting NPDES permit effluent limits only because of TDS levels in background groundwater. Due to the lack of a TDS water quality standard for surface waters, as pointed out by CRA, there would not be a TDS effluent limit in Caterpillar’s NPDES permit for discharge into the Illinois River. Pet. Exh. 3 at 2. However, the Board observes that, were Caterpillar to employ any one of the compliance alternatives described above, the TDS levels discharged to the Illinois River could be the same or greater than those received by the Illinois River via groundwater under the *status quo*.

The Board emphasizes that Caterpillar controls the use of the impacted groundwater at this site and will ensure groundwater use is limited into perpetuity through an ELUC. In addition, the existing TDS levels of the Sankoty Aquifer have been shown by CRA, on behalf of Caterpillar, to cause no change in the water quality of the Illinois River. Further, there are no downgradient drinking water wells within a half-mile radius of the landfill. Together, these considerations severely undercut any environmental benefit of compliance with the existing regulation. Based on this record, the Board concludes that Caterpillar has demonstrated an adjusted standard is economically and socially necessary.

Groundwater Cannot and Will Not Serve as a Source of Drinking Water

As the Board previously found, Caterpillar is in control of the groundwater impacted by the proposed adjusted standard. Caterpillar asserts that it does not presently use the groundwater for any purpose, has no intention of doing so in the future, and has agreed to obtain an ELUC to prevent the use of the impacted groundwater for all but industrial/commercial purposes. Pet. at 25-26. Finally, there are no downgradient drinking water wells within a half-mile of the landfill. Accordingly, the Board finds that the record demonstrates that the groundwater underlying the Site cannot and will not serve as a drinking water source.

Requested Alternative TDS GQS

Caterpillar proposes that the Board specify an alternative TDS GQS of 2,539 mg/L for the Site in lieu of the Class I GQS found in Part 620 of the Board's groundwater regulations. As noted above, the proposed alternative standard is based on the BTV calculated using four quarters of TDS data from upgradient groundwater wells uninfluenced by the landfill. Since the background TDS concentration is above the Class I GQS, the Board finds that the proposed alternative standard based on the TDS BTV of 2,539 mg/L is appropriate for the Site.

The Board finds that Caterpillar has demonstrated that the petition for the adjusted TDS GQS satisfies the justification requirements of Section 817.416(b). Further, the Board finds that the proposed alternative TDS GQS of 2,539 mg/L is appropriate for the Site. Therefore, the Board grants Caterpillar an adjusted standard for TDS of 2,539 mg/L at the Mapleton site in lieu of the Class I TDS GQS of 1,200 mg/L.

Justification Pursuant to Section 104.426 Unnecessary

In addition to justifying the adjusted standard pursuant to Section 817.416(b)(2) of the Board's landfill regulations, Caterpillar also provides information in support of an adjusted standard pursuant to Section 104.426 of the Board's rules. 35 Ill. Adm. Code 104.426. Section 104.426(a) provides, "[i]f the regulation of general applicability does not specify a level of justification required of a petitioner to qualify for an adjusted standard, the Board may grant individual adjusted standards whenever the Board determines," that the burden of proof has been met under the four factors specifically listed. *Id.* The same section also reminds the petitioner that "[i]f the regulation of general applicability specifies a level of justification for an adjusted standard, the Board may adopt the proposed adjusted standard, if the petitioner proves the level of justification specified by the regulation of general applicability." 35 Ill. Adm. Code 104.426(b).

The Board finds that Caterpillar's proof under Part 104 of the Board's rules is unnecessary. Section 817.416 of the Board's landfill regulations is more specifically tailored to address the adjusted standard sought by Caterpillar. Caterpillar seeks relief from the Class I GQS established in Part 620 of the Board's groundwater regulations, but expressly referred to as "[t]he Board established standard" in Section 817.416(a)(1)(A). 35 Ill. Adm. Code 817.416(a)(1)(A). Section 817.416 goes on to guide the petitioner seeking relief from the GQS set in Section 817.416(a)(1)(A) with the next subsection. Section 817.416(a)(1)(B) states the

alternative GQS as “[t]he Board established standard adjusted by the Board in accordance with the justification procedure of subsection (b) of this Section.” 35 Ill. Adm. Code 817.416(a)(1)(B). Therefore, the Board finds justification under Section 817.416(b) directly applicable to Caterpillar’s petition.

Adjusted MALC for TDS

Incorporated in Caterpillar’s petition is a request that the Board adjust the TDS MALC to correspond with the adjusted standard from the applicable TDS GQS found at Part 620 of the Board’s groundwater regulations. Pet. at 3, 7, and 29. As Caterpillar indicates in the petition, “the Part 817 MALC limit for TDS was derived directly from the Part 620 groundwater quality standard for TDS,” and “the default TDS MALC . . . is ill-suited for application to the Mapleton landfill.” Pet. at 7. Section 817.106 of the Board’s landfill regulations sets the MALC for TDS, and refers to Section 817.413, entitled “Groundwater Impact Assessment” for relief from those MALCs listed as “secondary standards”. 35 Ill. Adm. Code 817.106; *see also* 35 Ill. Adm. Code 817.413. TDS is listed as a secondary standard under Section 817.106 (35 Ill. Adm. Code 817.106).

Caterpillar provides information in response to the Section 817.413(a)(3) (35 Ill. Adm. Code 817.413(a)) of the Board’s landfill regulations in its petition. It states that because the leachate TDS values obtained by CRA as a part of the hydrogeologic investigation “are less than the proposed adjusted groundwater quality standard and adjusted MALC of 2,539 mg/L, Caterpillar will be able to comply with the applicable groundwater quality standard and corresponding MALC, and the groundwater impact assessment is acceptable pursuant to Section 817.413(b).” Pet. at 29-30. However, Caterpillar addressed the following factors of Section 817.413(a)(3)(A) through (a)(3)(F) because the hydraulic conductivity of water bearing units underlying the Site and downgradient of the Site is greater than 1×10^{-5} centimeters per second.

Aquifer Conductivity

Caterpillar indicates that the hydraulic conductivity of the water bearing units underlying the landfill exceeds the 1×10^{-5} centimeters per second, and therefore the other factors under Section 817.413(a) are applicable. Pet. at 30.

Conceptual Groundwater Flow Model

In response to this factor, Caterpillar states, “[l]andfill leachate flows downward from the [l]andfill and commingles with the groundwater present in the shallow alluvial water bearing unit beneath the [l]andfill. The alluvial water bearing unit consists of a Upper Sand Unit (shallow) separated from a Lower Sand Unit (deep) by an Intermediate Clay Aquitard.” Pet. at 30. Caterpillar anticipates that the greater effect of the leachate to occur “in the Upper Sand Unit beneath and downgradient of the [l]andfill.” *Id.*

Organic Carbon Content of Affected Soil Units

In response to this factor, Caterpillar states, “[b]ased on the hydrogeological investigation, the organic carbon content of the soil at the Site ranged from 2 to 4.5%, with an average of 3.2%.” Pet. at 30.

Retardation Factor for TDS

Caterpillar explains that CRA used a retardation factor of zero in the hydrogeologic investigation, because “[r]etardation of TDS in the permeable sand units during advection is not expected to be significant.” Pet. at 31.

MALC Values for TDS to Achieve Compliance with the Applicable GQS

Caterpillar requests a TDS MALC value of 2,539 mg/L consistent with the adjusted GQS. Pet. at 31. This value reflects the background value of TDS in the upgradient groundwater at the Caterpillar site. *Id.*

Comparison of the Calculated MALC Value to the Leachate Value

Caterpillar used the BTV for TDS of 2,539 mg/L derived from CRA’s hydrogeologic investigation at the Site to arrive at the calculated TDS MALC. Pet. at 31. Caterpillar states, the “BTV provides a value for which there is 99% confidence that 95% of new data (*i.e.*, future leachate samples) will not exceed the value if it is representative of background conditions.” *Id.* In its response to the Hearing Officer order, Caterpillar clarified that the BTV was calculated using USEPA’s ProUCL statistical software pursuant to Section 817.416(e) of the Board’s landfill regulations. Resp. Exh. A at 1-2. In addition, the IEPA’s recommendation contemplates the increase in TDS MALC, with the caveat that the change in TDS MALC apply only to landfill leachate and not to potentially usable waste. Rec. at 1.

Requested Alternative MALC for TDS

In the petition, Caterpillar describes its ultimate objective as obtaining an adjusted TDS MALC of 2,539 mg/L for the Site. The Board notes that Caterpillar is not seeking a TDS MALC that is greater than the level of TDS found in the upgradient groundwater at the Caterpillar site. Pet. Exh. 2 at 37. Based on the Section 817.413(a) factors and the Section 817.413(b) groundwater impact assessment, the Board finds that an increase in the TDS MALC would not result in an exceedance of the adjusted GQS at the Site. The Board, therefore, grants Caterpillar an adjusted TDS MALC of 2,539 mg/L, subject to the conditions outlined in the order, below.

CONCLUSION

The Board finds that Caterpillar has provided sufficient justification in response to the factors set out in Section 817.416(b) of the Board’s landfill regulations for an adjusted standard from the Class I TDS GQS set out in Part 620 of the Board’s regulations. The Board also finds that Caterpillar has demonstrated, pursuant to Sections 817.106(b) and 817.413 of the Board’s

landfill regulations, that an increase in the TDS MALC from 1,200 mg/L to 2,539 mg/L will not result in the exceedance of the adjusted TDS GQS. The Board therefore grants Caterpillar an adjusted standard from the TDS GQS and TDS MALC, subject to the conditions laid out in the order, below, for the potentially usable foundry waste landfill at the Mapleton, Peoria County site. The relief is effective on the date of this order.

This opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

Pursuant to Section 28.1 of the Act (415 ILCS 5/28.1) (2012)) and Section 817.416 of the Board's landfill regulations (35 Ill. Adm. Code 817.416), the Board grants Caterpillar, Inc. (Caterpillar), an adjusted standard from the Class I groundwater quality standard (GQS) for total dissolved solids (TDS) found at 35 Ill. Adm. Code 620.410(a). The Board also grants Caterpillar an adjusted TDS maximum allowable leaching concentration (MALC) of 2,539 mg/L pursuant to Sections 817.106(b) and 817.413 of the Board's landfill regulations. Both the adjusted TDS GQS and the adjusted MALC are applicable to Caterpillar's Mapleton Landfill (permit 1995-154-LFM), located at 8826 West Route 24, Mapleton, Peoria County.

1. In lieu of the Class I GQS for TDS found at 35 Ill. Adm. Code 620.410, the GQS for TDS applicable to the Mapleton landfill, pursuant to 35 Ill. Adm. Code 817.416, is 2,539 mg/L.
2. In lieu of the MALC for TDS found at 35 Ill. Adm. Code 817.106(a), the MALC for TDS applicable to the Mapleton landfill, pursuant to 35 Ill. Adm. Code 817.106(b), is 2,539 mg/L.
3. The adjusted GQS and MALC granted herein shall apply to the Mapleton landfill only with respect to the TDS in the landfill leachate. The adjusted standard shall in no way change, modify, or alter any permit or other regulatory obligations of Caterpillar relating to the nature, character and composition of the waste material accepted for disposal at the landfill.
4. Caterpillar must submit an Environmental Land Use Control (ELUC) prohibiting the use of groundwater at the Mapleton landfill for potable purposes for Illinois Environmental Protection Agency (IEPA) approval within 60 days of the effective date of this order pursuant to 35 Ill. Adm. Code 742.1010.
5. The IEPA-approved ELUC must be filed with the Office of the Recorder or Registrar of Titles for Peoria County within 6 months of the date of this order pursuant to Section 742.1010(b) of the Board's waste disposal regulations. 35 Ill. Adm. Code 742.1010(b).

IT IS SO ORDERED.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2012); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, and 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. S.C.R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, and 102.702.

I, John T. Therriault, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on November 7, 2013 by a vote of 4-0.



John T. Therriault, Clerk
Illinois Pollution Control Board