

ILLINOIS POLLUTION CONTROL BOARD

June 18, 2009

IN THE MATTER OF:)
)
CITY OF GALVA SITE SPECIFIC WATER) R09-11
QUALITY STANDARD FOR BORON) (Site-Specific Rulemaking - Water)
DISCHARGES TO EDWARDS RIVER AND)
MUD CREEK:)
35 ILL. ADM. CODE 303.447 AND 303.448)

Proposed Rule. Second Notice.

OPINION AND ORDER OF THE BOARD (by G.T. Girard):

On October 17, 2008, the City of Galva (Galva) filed a proposal for site-specific rulemaking pursuant to Section 28 of the Environmental Protection Act (Act) (415 ILCS 5/28 (2006)). The proposal (Prop.) seeks to establish a 3.0 milligram per liter (mg/L) alternative boron water quality standard to the generally applicable 1.0 mg/L boron water quality standard in 35 Ill. Adm. Code 302.208(g). The alternative standard for boron would apply to certain segments of an unnamed tributary to the South Branch of the Edwards River, the South Branch of the Edwards River, and the Mud Creek Run. These waters receive discharges from the two Sewage Treatment Plant (STPs) operated by Galva.

The Board heard testimony and received comments from Illinois Environmental Protection Agency (Agency) and Galva. The Board has taken these comments into consideration and finds that proceeding to second notice is appropriate. In this opinion, the Board finds the rule as proposed by Galva is technically feasible and economically reasonable and is protective of human health and the environment. Therefore, the Board adopts the rule for second notice as the rule was proposed for first notice making only nonsubstantive changes. The Board directs the Clerk to file the rule with the Joint Committee on Administrative Rules.

The Board will briefly describe the procedural background and then summarize the rule proposal. The Board will then summarize the relevant portions of the testimony and comments. Finally, the Board will discuss the reasons for proceeding to second notice.

PROCEDURAL BACKGROUND

On October 17, 2008, Galva filed the proposal along with a technical support document (TSD) and motions requesting the Board to waive the requirement for 200 signatures on the petition and to expedite consideration of the petition. *See* 415 ILCS 5/28 (2006); 35 Ill. Adm. Code 102.202(g) and 101.512. The Board received no responses to the motions and pursuant to Section 101.500(d), any objection to the granting of the motions was deemed waived. 35 Ill. Adm. Code 101.500(d).

On February 5, 2009, the Board proposed for first notice the rule as proposed by Galva without comment on the merits of the proposal. The Board also granted the motion to waive the signature requirement of Section 102.202(g); however, the Board denied the motion for expedited consideration. On March 6, 2009, the rule was published for first notice in the *Illinois Register*. See 33 Ill. Reg. 3898 (Mar. 6, 2009).

On February 19, 2009, in accordance with Section 27(b) of the Act (415 ILCS 5/27(b) (2006)), the Board requested that the Department of Commerce and Economic Opportunity (DCEO) conduct an economic impact study for this rulemaking. On March 4, 2009, the Board received a response from DCEO, indicating that no economic impact study would be performed. At the public hearing held on March 31, 2009, the Board solicited comments on DCEO's decision not to conduct an economic impact study. No comments were offered. Tr. at 3-4.

The Board held a public hearing on March 31, 2009, in Galva. At the hearing Galva presented witnesses in support of the proposal and the Agency presented testimony. The Board received two public comments, one from Galva (PC 2) and one from the Agency (PC 1).

PROPOSAL

The following paragraphs will summarize the proposal beginning with background on Galva. Next the Board will delineate the specific rule language and discuss Galva's drinking water system and treatment plants. Next the Board will summarize the issues regarding the effluent limitation and the receiving streams. The Board will conclude this section by discussing the potential treatment options, the economic reasonableness of the proposal and the potential environmental impact.

Background

Galva is a rural community with a population of 2,758 in south central Henry County. Prop. at 4. Galva owns and operates a sewage treatment system, which consists of two STPs and a potable water distribution system. *Id.* The Northeast STP is an activated sludge plant that ultimately discharges into an unnamed tributary of the South Branch of the Edwards River. Prop. at 2. The Southwest STP is an aerated lagoon system, discharging into Mud Run Creek, a tributary of Walnut Creek, which is a tributary of the Spoon River. *Id.* Galva's discharge from the two STPs contains boron in levels which exceed the water quality standard for boron found at 35 Ill. Adm. Code 302.208(g). Prop. at 8.

Boron is naturally occurring in the groundwater that surrounds Galva and is thus inherent in Galva's water supply. Prop. at 5. Boron is an inorganic element derived from compounds called borates which are found in oceans, sedimentary rocks, coal, shale, and some soils. *Id.* The boron in Galva's potable water and effluent is not a result of human activity but occurs naturally. *Id.*

Humans are exposed to boron through food and drinking water. Prop. at 6. Although the general use water quality standard for boron in surface waters is 1.0 mg/L, the groundwater quality standard for Class I: Potable Resource Groundwater is 2.0 mg/L. See 35 Ill. Adm. Code

620.410(a) Prop. at 5. There are no federal water regulations for boron. *Id.* Galva indicates that concentrations of boron of up to 30 mg/L have been reported as not harmful to humans and reports of toxicity in fish and livestock are at much higher levels. *Id.*

Rulemaking Language

Galva has proposed the following language for the site-specific rule:

Section 303.34X Unnamed Tributary of the South Branch Edwards River and South Branch Edwards River

The boron general use water quality standard of 35 Ill. Adm. Code 302.208(g) does not apply to the waters of the State that are located from the point of discharge of the POTW located at 523 NE 9th Street in Galva, known as the Galva Northeast Sewage Treatment Plant, to an unnamed tributary of the South Branch of the Edwards River, said point being located in Henry County, Township 14 North, Range 4 East, occupying portions of Sections 21, 26, 27, 28, 33, 34, and 35 in the Fourth Principal Meridian, Latitude N 41.175°, Longitude: W 90.035°, to the confluence of said unnamed tributary with the South Branch Edwards River; to the confluence with the Edwards River. Boron levels in such waters must meet a water quality standard for boron of 3.0 mg/L.

Section 303.40X Mud Run Creek

The boron general use water quality standard of 35 Ill. Adm. Code 302.208(g) does not apply to the waters of the State that are located from the point of discharge of the POTW located 1/2 mile South of BNSF RR and SW 4th Street in Galva, known as the Galva Southwest Sewage Treatment Plant, to Mud Run Creek, said point being located in Henry County, Township 14 North, Range 4 East of the Fourth Principal Meridian occupying portions of Sections 21, 26, 27, 28, 33, 34, and 35, Latitude 41.154°, Longitude 90.053°, to the confluence of Mud Run Creek with Walnut Creek. Boron levels in such waters must meet a water quality standard for boron of 3.0 mg/L. Prop. at 2.

Potable Water System

Galva's potable water supply is drawn from Wells 4 and 5 that are placed in a deep aquifer system. Prop. at 4. Together the two wells pump an average of 400,000 gallons per day for Galva's residents. Prop. at 5. Well No. 4 was drilled in 1933 to a depth of 1,686 feet. The pump sits 450 feet below ground level and is driven by a 100 horsepower engine that has a nominal pumping capacity of 550 gallons per minute (gpm). Prop. at 4. Well No. 4 was lined a few years ago to exclude water with excessive radium concentrations and this changed the effective depth of the well to 834 feet while reducing the pumping capacity to 420 gpm. *Id.* Well No. 4 discharges water into a 600 gpm forced draft aerator, siting 20 feet above ground level mounted on top of a 43,000 gallon storage tank. *Id.*

Well No. 5 was drilled in 1988 to a depth of 1,770 feet. The pump sits 540 feet below ground level and is driven by a 125 horsepower motor that has a rated pumping capacity of 600 gpm. Prop. at 5. Well No. 5 was also lined a few years ago to exclude water with excessive radium which left the effective depth of the well at 794 feet with a pumping capacity of 420 gpm. *Id.* Well No. 5 discharges into a forced draft aerator mounted on top of a 20,000 gallon above ground tank. *Id.* Wells No. 4 and 5 pump an average of 400,000 gallons per day. *Id.*

Treatment Plants and Discharge

The Southwest STP is an aerated lagoon system that discharges into Mud Run Creek a tributary of Walnut Creek, which is a tributary of Spoon River. Prop. at 8. Southwest STP treats an average flow of 0.3 million gallons per day (mgd) and has a maximum design flow of 1.0 mgd. *Id.* Effluent from the Southwest STP travels approximately seven miles to Walnut Creek and then discharges to the Spoon River approximately 31.7 miles downstream. *Id.* The discharge from the Southwest STP is permitted by NPDES Permit No.IL0023647, which requires sampling and reporting for boron. The permit also includes an effluent limitation of 1.0 mg/L. *Id.* This permit also requires a compliance schedule for the boron effluent limitation. *Id.*

The Northeast STP is an activated sludge plant that discharges into an unnamed tributary of the South Branch of the Edward River, located in the Mississippi Central River Watershed. Prop. at 8. Northeast STP can treat an average flow of 0.385 mgd and has a maximum design flow of 0.867 mgd. *Id.* Effluent from the Northeast STP travels approximately 1.1 miles downstream to the South Branch of the Edward River and then flows approximately 15 miles downstream to meet the Edwards River. *Id.* The Northeast STP is covered by NPDES Permit No.IL0023644 and does not include sampling requirements or effluent limits for boron. Prop. at 9.

Galva discovered the boron concentration in the Galva discharge when monthly sampling was conducted at Mud Run Creek as a part of the Southwest STP effluent sampling requirements. Prop. at 8. During sampling, a maximum concentration of boron was detected at 3.0 mg/L, while the minimum concentration was 0.12 mg/L. *Id.*; Prop. Exh. A, Figure 7. Galva indicated that higher concentrations are attributed to drought conditions and corresponding low flows, while the lower concentrations of boron are correlated to increased rain fall which results in a dilution effect. Prop. at 9. Boron levels similar to the discharge levels from the Southwest STP were also discovered from the Northeast plant. Prop. at Exh. A at 3. Galva notes that testing conducted in July 2005 indicates a correlation between the discharges from the two STPs. *Id.*

Effluent Limitation and Boron Water Quality Standard

The Agency incorporated a permit condition in Galva's Southwest STP permit that sets an effluent standard for boron of 1.0 mg/L. Prop. at 9. The boron effluent limit is equivalent to the water quality standard for boron in the Board's rules at 35 Ill. Adm. Code 302.208(g). The Northeast STP discharges have boron levels similar to those discharged from the Southwest STP; although no effluent limit has been set for the Northeast STP discharge at this time. *Id.* The boron standard found in the Board's rules was adopted in 1972 to implement the requirements of

the Clean Water Act (33 U.S.C. §§1251 *et seq.*). *Id.* In adopting the boron standard the Board stated that the water quality standard was based on evidence that high levels of boron can harm irrigated crops. Prop. at 10, citing Effluent Criteria, R70-8; Water Quality Standards Revisions, R71-14; Water Quality Standards Revisions for Intrastate Waters (SWB-14), R71-20 (consld.) (Mar. 7, 1972).

Galva notes that the Agency applies the 1.0 mg/L boron standard as an effluent limit even though the Board declined to adopt an effluent limit. Prop. at 10. Further, Galva points out that the Board has neither changed nor examined the water quality standard for boron since the adoption of the standard in 1972. *Id.* Galva states that none of Illinois' neighboring States of Indiana, Iowa, Kentucky and Missouri has water quality standards for boron. *Id.*

Receiving Streams

The Southwest STP discharges into Mud Run Creek, a tributary of Walnut Creek, which is a tributary of Spoon River. Neither Mud Run Creek nor Walnut Creek are large enough to produce potable water for the surrounding communities. Prop. at 11. In addition neither Mud Run Creek nor Walnut Creek has been assessed by the Agency for the *Integrated Water Quality Report and Section 303(d) List (2006)*. *Id.* The Northeast STP discharges into an unnamed tributary of the South Branch of the Edward River, located in the Mississippi Central River Watershed. The South Branch of the Edwards River was rated as “fully supporting” of aquatic life and fish consumption by the Agency in the *Integrated Water Quality Report and Section 303(d) List (2006)*. *Id.* The report did note that the South Branch of the Edwards River was “not supporting” of primary contact use based on fecal coliform bacteria and the South Branch of the Edwards River is not a viable source for potable water for the surrounding communities. *Id.*

Galva collected stream flow data using the 7 Day 10 Year Low Flow (7Q10)¹ map for the Spoon River Region published by the Illinois State Water Survey (Survey) and using the Illinois Streamflow Assessment Model available online from the Survey. Prop. at 11. Galva used the minimum average monthly discharge data from Galva's sewage treatment plants, and assumed the maximum recorded boron concentration was occurring during low flow periods to calculate the boron water quality standard Galva could achieve with the discharge from the two STPs. Prop. at 12. Galva calculated the boron concentration that would result under a worst case scenario and the total distance necessary in the streams for the boron to be diluted to the general use water quality standard of 1.0 mg/L.

The receiving streams are used by landowners typically for drainage purposes only and the irrigation concerns expressed by the Board when adopting the boron water quality standard are not applicable, according to Galva. Prop. at 13. In addition, Galva's engineers found that not one of the 22 nurseries in Henry and Knox counties utilize the receiving streams for irrigation and there are no golf courses located directly along the waterways. Prop. 13. The Farm Bureau Directors from Knox and Henry counties have confirmed that they are unaware of any specialty crops being grown along the waterways that would require constant irrigation. Prop at 13-14.

¹ 7Q10 is the average seven-day low-flow hydrological conditions that are expected to occur once in every ten years.

Additionally, the Illinois Department of Natural Resources (IDNR) has indicated that there are no authorized permits for water withdrawal for these stream reaches. Prop. at 14. .

Treatment Options

Galva has investigated various compliance options, including treatment of the effluent to remove excess boron or obtaining alternative drinking water sources from neighboring cities of Kewanee and Galesburg. Specifically, Galva examined:

1. Ion Exchange Treatment at the STPs;
2. Potable Water Ion Exchange Treatment for Galva's water supply;
3. Potable Water Reverse Osmosis Treatment for Galva's water supply;
4. Drill New Drinking Water Well;
5. Drinking Water from City of Kewanee;
6. Drinking Water from City of Galesburg. Prop. at 23.

Ion Exchange Treatment

This option involves the removal of boron from Galva's STP effluent prior to discharging into the receiving stream. Ion exchange is the process of selectively removing charged inorganic species from water by using an ion-specific resin. Prop. at 14-15. Boron ions would be replaced by charged ions on the resin surface. Prop. at 15. A properly operated ion exchange process would reduce boron concentrations by approximately 90%. *Id.* When the supply resin becomes saturated with water, the exchange media is backwashed and regenerated with an acid solution. *Id.* The backwash process generates a high boron concentration wastewater stream. If Galva were to implement an ion exchange system and treat 50% of the effluent approximately 5,000 gallons of wastewater would be produced at each STP. Prop. at 16-17. The wastewater would have a high concentration of boron and the wastewater would need to be transported to the Quad Cities or Peoria for treatment every four to five days. *Id.* Galva estimates the capital cost of ion exchange from both STPs to be \$2,016,410. Prop. at 17-18. Based on the technical and economic burdens associated with utilizing ion exchange, and the absence of a negative impact from adopting the proposed site specific rule, Galva asserts that ion exchange for treating STP effluent is neither technically feasible nor economically reasonable. Prop. at 18.

Potable Water Ion Exchange Process

Galva considered removing the boron from the potable water supply prior to distributing the water using the ion exchange process. Prop. at 15. Galva notes that the ion exchange process would need to be applied to the potable water supply on a daily basis. Prop. at 18. This process could reduce the boron content by 55% to 60%; however approximately 5,000 gallons of boron-concentrated wastewater would need to be disposed of by Galva. *Id.*

Galva notes that ion exchange process, either before distribution or as a treatment for effluent would create a larger problem with disposal than the treatment would be attempting to solve. Prop. at 18. The capital costs for the potable water ion exchange process are estimated at \$2,099,784. Prop. at 19.

Galva states that considering the technical and economic burden to utilize an ion exchange process and the absence of a negative impact from adopting the site-specific rule, ion exchange is not technically feasible or economically reasonable. Prop. at 19-20.

Potable Water Reverse Osmosis

Galva considered using reverse osmosis (RO) to remove excess boron from the drinking water supply before the water enters Galva's two STPs. Prop. at 15. RO utilizes a semi-permeable membrane which separates inorganic and microbial species from water. *Id.* In RO, the application of external pressure differentials causes fluid to flow against the membrane, producing water with fewer impurities. *Id.* Galva notes that RO treatment has demonstrated limited potential for boron removal. *Id.* Galva further notes that the USEPA reported the largest concentration of boron removal by RO was 15%. *Id.*

Galva pointed out that the RO process would present considerable waste disposal problems. Prop. at 21. According to Galva, the RO process would result in nearly 1/3 of treated water being sent to waste; 25% of all treated water would become mineralized waste concentrate, while additional wastewater would be produced from the rinsing of membranes between cycles. Prop. at 20. If 50% of Galva's potable water were treated using RO, approximately 100,000 gallons of wastewater would be produced each day. *Id.* To dispose of the RO waste, Galva would need to drill a deep injection well. *Id.* The total capital cost for the RO process is estimated at \$6,905,955, which includes over \$3 million for a new injection well. Prop. at 21. Galva believes that RO is not a technically feasible or financially reasonable option for reducing boron levels, particularly considering the negligible impact that the site-specific rule would have on the environment. Prop. at 21.

Drilling a New Well

Galva explored the possibility of drilling for a new, boron free water source. Prop. at 16. Since Galva's neighboring communities obtain water from deep aquifers with similar boron issues, Galva considered drilling shallow wells in sand and gravel deposits to discover boron free drinking water. *Id.* Such wells could only be drilled in the northeastern portion of Henry County, 20-25 miles from Galva. Prop at 21. Galva is not certain that the wells would produce an adequate water supply. *Id.* Cost for the initial drilling project is estimated at over \$100,000, and does not include the cost of drilling the well or constructing a water transmission pipeline to Galva. Prop. at 22. Galva opines that the capital costs and uncertainty associated with this option render it unreasonable, considering the negligible benefit that would result. *Id.*

City of Kewanee

Galva considered obtaining a potable water supply from the City of Kewanee, located 12 miles northeast of Galva. *Id.* In response to Galva's inquiry, Kewanee stated that obtaining water would not be feasible because Galva's future needs might exceed Kewanee's capacity. *Id.*

City of Galesburg

Galva considered obtaining a potable water supply from Galesburg, which is located approximately 22 miles southwest of Galva. Prop. at 16. Galesburg presented a report to Galva that discussed the technical issues associated with building a pipeline from Galesburg to Galva. Prop. at 22. According to Galesburg's estimates, Galva would be responsible for \$13.6 million of the pipeline's total estimated cost of \$16.1 million, which excludes operation and maintenance costs. Prop. at 22-23.

Economic Impact

Galva states that compliance with a 1.0 mg/L effluent water quality standard for boron would require Galva to pay staggering upfront costs as well as significant maintenance and operation costs. *Id.* Depending on the treatment method, Galva estimates that removing excess boron from its effluent would require Galva to spend upfront costs ranging from over \$2 million to more than \$6.9 million. *Id.* Galva argues that options for obtaining an alternative water supply are cost prohibitive because they would require Galva to build a large scale pipeline system to transport water from distant sources. *Id.* While Kewanee is not an available source, Galesburg submitted a proposal which would require Galva to spend an estimated \$13.6 million in upfront costs in order to obtain water from Galesburg. *Id.*

Galva is a small rural community which lacks the resources necessary to pay the costs of complying with the Agency's application of the current boron rule. *Id.* Galva's attempts to obtain funding to address the boron issue have failed, and government assistance remains unlikely due to the lack of environmental necessity for the current boron standard. *Id.* Without assistance, Galva predicts that "record level" user rate increases will be necessary to shoulder the cost of compliance. Prop. at 24.

Environmental Impact

Galva opines that there is no foreseeable environmental impact from adoption of the proposal. *Id.* Galva points out that the basis for the establishment of the current water quality standard for boron was boron's potential impact on selected irrigated crops, none of which are present in Galva. *Id.* Galva states that the proposed standard merely reflects the naturally occurring boron levels in Galva's drinking water. *Id.* Galva believes that the current water quality standard of 1.0 mg/L is "over-protective of aquatic life." *Id.*

Galva points out that the Board has previously granted relief standards for boron in other contexts. Prop. at 24-25, citing Petition of Illinois Power Company (Baldwin Power Plant) for an Adjusted Standard from 35 Ill. Adm. Code 302.208 and 35 Ill. Adm. Code 304.105, AS 96-1 (1996); Petition of Illinois Power Company (Duck Creek Station) for an Adjusted Standard from 35 Ill. Adm. Code 302.208 and 35 Ill. Adm. Code 304.105, AS 96-8 (1995); and Petition of the City of Springfield, Office of Public Utilities for an Adjusted Standard from Ill. Adm. Code 302.308(e), AS 94-9 (1994).

GALVA'S TESTIMONY AND COMMENT

Galva presented testimony from three witnesses at the hearing, all of whom prefiled testimony. The witnesses were Galva City Administrator David L. Dyer, Dr. Brian D. Anderson of the Illinois Natural History Survey (INHS)², and Stephen M. Bruner of the engineering firm Bruner, Cooper & Zuck, Inc. In addition, Larry Lawson, a licensed Wastewater and Treatment Operator for Galva, provided answers to questions posed by the Board. The Board received one public comment from Galva (PC 2). The Board will summarize each individual's testimony and then the public comment.

David L. Dyer

Mr. Dyer is the City Administrator of Galva and has served in this capacity since March, 2005. Exh. 1 at 1. Mr. Dyer oversees a budget of \$3.95 million, 24 employees, and 50 volunteers. *Id.* Mr. Dyer testified that Greg Thompson and Larry Lawson, STP operators for Galva, informed the City in 2005 of a "compliance issue" with boron discharged from its STPs. The boron was discovered during tests related to operations at the Dixline Corporation. Further testing confirmed the source of the boron was the City's water supply. Ex. 1 at 3. Mr. Dyer stated that Mr. Lawson suggested options to address the boron issue such as an alternate water supply, reverse osmosis, and ion exchange. Ex. 1 at 3. Based on Mr. Lawson's recommendations, Galva engaged Bruner, Cooper & Zuck to investigate various compliance options, including treatment of the effluent to remove excess boron or obtaining an alternative drinking water supply from Kewanee or Galesburg. *Id.* Mr. Dyer testified that Kewanee refused to commit any water capacity to Galva, and Galva was unable to obtain funding to construct a 25 mile pipeline to transport water from Galesburg. Exh. 1 at 3-4.

Mr. Dyer's testimony summarized capital cost data that Bruner, Cooper & Zuck provided for potential remedies other than the proposed site specific rule. Mr. Dyer listed the following capital cost estimates:

1. Ion Exchange - \$2 million
2. Reverse Osmosis - \$6.9 million
3. Water Transmission Main from Galesburg - \$16.1 million.
4. Water Transmission Main from Kewanee – cost not evaluated due to rejection.
5. Test Drilling Program – cost beyond initial search not obtained due to lack of suitable aquifer. Exh. 1 at 4.

² At the hearing, Galva noted that when Dr. Anderson was contracted by Galva, he had a prior position with Lincolnland Community College and had no role in the Agency/INHS boron study. Galva explained that upon transferring to the INHS, Dr. Anderson has excused himself from any involvement with the IEPA/INHS boron study, based on his involvement with Galva. Tr. at 15.

Mr. Dyer testified that operation and maintenance costs were never calculated because the upfront costs of these alternatives were beyond the financial capability of Galva. *Id.*

In addition, Mr. Dyer provided a brief overview of Galva's economic circumstances. Mr. Dyer described Galva as a small rural community composed of 2,758 citizens, three manufacturing businesses, and an in-land grain terminal. Exh. 1 at 2. Mr. Dyer stated that Galva's median home value is \$58,600, with Galva's median family and per capita income trailing the State medians by \$9,665 and \$5,939 respectively. *Id.* Mr. Dyer explained that Galva's population is aging faster than the State population, so Galva is pursuing an aggressive economic development strategy to stave off further economic stagnation and "youth flight." *Id.* Mr. Dyer indicated that the results of this strategy will not be apparent until after the 2010 census. *Id.*

Stephen M. Bruner

Mr. Bruner is CEO of the engineering firm Bruner, Cooper & Zuck, Inc.. Exh. 2 at 1. Mr. Bruner has been licensed as a Professional Engineer and Land Surveyor for over 27 years. Exh. 2 at 1. Mr. Bruner prepared the TSD. Exh. 2 at 2. Mr. Bruner testified that Galva engaged his firm to prepare a feasibility study regarding water transmission from Galesburg to Galva and a facilities plan detailing boron treatment options for the effluent of Galva's STPs. *Id.* Mr. Bruner's testimony described the source of Galva's excess boron and provided an overview of the compliance options detailed in the TSD, including:

1. Ion Exchange
2. Reverse Osmosis
3. Drilling New Wells
4. Transmitting Water from Kewanee
5. Transmitting Water from Galesburg. Exh. 2 at 3-7.

After evaluating the options, Mr. Bruner concluded that Galva's site specific rule is the most feasible option due to the complex waste disposal issues and high upfront costs associated with treatment, and the significant expense of obtaining an alternate drinking water supply. Exh. 2 at 9-10.

Mr. Bruner testified that the source of excess boron in Galva's STP discharges is the groundwater from aquifers that supply Galva's drinking water. Exh. 2 at 3. Mr. Bruner testified that Galva's municipal wells No. 4 and No. 5 naturally contain boron concentrations in excess of the 1.0 mg/L standard. *Id.* Mr. Bruner explained that Galva's potable water used in Galva is discharged as wastewater into Galva's sanitary sewer system and then transported to Galva's STPs. *Id.* Mr. Bruner stated that the presence of boron was determined through testing the potable water for boron and monitoring boron levels in the effluent of Galva's Southwestern STP. Tr. at 16-17. The boron was discovered while sampling for nickel and copper in the effluent from the Southwest STP as a requirement for the STP to accept industrial wastewater from a metal finishing facility, Dixline Corporation. Exh. 2 at 4. Mr. Bruner testified that Galva's water treatment processes do not alter the water's boron concentration. *Id.* Mr. Bruner described Galva's Northeast and Southwest STPs, and explained that the Agency imposed a 1.0

mg/L boron standard in the NPDES permit for Galva's Southwest STP after the discovery was made. Exh. 2 at 4.

Mr. Bruner stated that ion exchange could be used at each of Galva's two STPs to decrease boron levels in the effluent, but the process would produce 5000 gallons of highly mineralized wastewater at each STP every 8 to 9 days. Exh. 2 at 4. Mr. Bruner testified that the waste would need to be trucked to a larger STP for disposal into a major river or possibly disposed using evaporation. *Id.* Mr. Bruner estimated that the capital cost for this option would be \$2,016,410. *Id.* Alternatively, Mr. Bruner stated that one larger ion exchange plant could be built to treat potable water from Galva's wells before the water entered the STPs, at an estimated capital cost of \$2,099,784. Exh. 2 at 5. Mr. Bruner noted that both treatment options would produce similar disposal problems. Mr. Bruner predicted that long term operation and maintenance costs for ion exchange would be substantial, but did not evaluate them. *Id.*

Mr. Bruner testified that RO could be used to reduce boron in Galva's potable water supply, but up to 25% of treated water would be generated as waste concentrate. *Id.* Mr. Bruner testified that a deep injection well would be the only feasible option for disposal of such a large volume of waste. *Id.* Mr. Bruner estimated that the capital cost of RO would be \$6,905,955, taking into account the cost of a new injection well. *Id.*

Mr. Bruner further testified that shallow sand and gravel deposits along the Green River were investigated as these may offer Galva a boron free water supply. Exh. 2 at 6. However, Mr. Bruner noted that such a source would be 20 to 25 miles from Galva. Additionally Mr. Bruner asserted that, without spending over \$100,000 on a test drilling program, this option could not be investigated further. *Id.*

Mr. Bruner testified that the option of obtaining water from Kewanee was discarded after Kewanee determined that Kewanee's water supply could not meet the capacity required by Galva. *Id.* Mr. Bruner noted that Galesburg expressed a willingness to sell Galva an alternative water supply. *Id.* However, Mr. Bruner pointed out that the project would not be economically feasible due to the estimated \$16.1 million capital cost of building the necessary 25-mile water transmission pipeline from Galesburg to Galva. *Id.*

Mr. Bruner testified to the characteristics of the receiving streams affected by Galva's proposal. Exh. 2 at 7. Mr. Bruner pointed out that the South Branch of the Edwards River is rated as fully supporting of aquatic life and fish consumption, but not supporting of primary contact use based on fecal coliform bacteria from an unknown source. *Id.* Mr. Bruner stated that none of the receiving streams are large enough to serve as a source of potable water. Exh. 2 at 8. In addition, Mr. Bruner stated that no nurseries or golf courses are located close enough to the affected waterways to use them for irrigation. *Id.* Mr. Bruner noted that there are no structures permitted to draw irrigation water from the streams and, to his knowledge, no specialty crops are grown along the streams. *Id.* Considering these characteristics, Mr. Bruner opined that a site specific water quality standard will not affect future stream usage. *Id.* Mr. Bruner concluded that the adjusted site specific standard will yield no foreseeable environmental impact and should therefore be granted. Exh. 2 at 10.

Mr. Bruner testified that violation of IEPA's current application of the boron water quality standard is inevitable, particularly during dry months when dilution is low. Exh. 2 at 9. Mr. Bruner stated that removing boron from a water source is not uncommon, however, the majority of the applications are generally industrial as opposed to municipal water or wastewater. *Id.* Mr. Bruner stated that alternative treatment options are accompanied by complex waste disposal issues and significant upfront costs, while obtaining an alternative water supply would be fraught with numerous technical, political, and financial obstacles. *Id.*

Mr. Bruner opined that the proposed adjusted standard of 3.0 mg/L is an adequate remedy. Tr. at 21. Mr. Bruner testified that, over a three year period, boron levels were usually less than 2.0 mg/L. Tr. at 17. Mr. Bruner further testified that the numbers used in the mass balance calculations were conservative and based on actual plant flows rather than 7Q10 flows and did not take into account other dischargers. Tr. at 21-23, 28. However, Mr. Bruner opined that boron contributions from other sources were unlikely to affect future compliance with the standard. Tr. at 21.

Brian D. Anderson

Dr. Anderson is currently the Director of INHS. Exh. 3 at 1. Dr. Anderson holds a Ph.D. in biology from the University of Louisville and an M.S. in Zoology from DePauw University. Exh. 3 at 1. Dr. Anderson testified that Galva retained him to evaluate the environmental consequences of the proposed site specific rule. *Id.* Dr. Anderson stated that the Agency's application of the general water quality standard for boron as an effluent standard was reasonable, since little mixing is available in the streams receiving effluent from Galva's STPs. Exh. 3 at 8. However, Dr. Anderson concluded that the Illinois standard for boron of 1.0 mg/L is over-protective of aquatic life, based on existing literature. *Id.*

Dr. Anderson's testimony explained the nature of boron. Exh. 3 at 2. Dr. Anderson testified that boron in North American surface water usually results from the weathering of rocks containing borate and borosilicate materials and occurs naturally at concentrations from 0.02 mg/L to as much as 360 mg/L. *Id.* Dr. Anderson stated that the typical boron concentration in surface waters is less than 0.1 mg/L, but the average in groundwater can be much higher as a result of leeching from borate and borosilicate minerals in local geology. *Id.*

Dr. Anderson summarized literature concerning the toxicity of boron. Dr. Anderson stated that boron is recognized as an essential element for plants, but not for mammals. Exh. 3 at 3. Dr. Anderson testified that boron has toxic effects in humans only at very high and sustained doses. *Id.* Dr. Anderson cited the results of a May 2008 United States Environmental Protection Agency (USEPA) Lifetime Health Advisory for boron which found that lifelong exposure to a boron concentration of 5.4 mg/L was unlikely to pose a health risk to adults, while long term exposure to 1.8 mg/L was unlikely to pose a risk to children. Exh. 3 at 3-4. Dr. Anderson noted that the No Observable Effect Level calculated for boron was 17.5 mg of boron per kilogram of body weight per day. Exh. 3 at 4.

With respect to aquatic species, Dr. Anderson testified that aquatic microorganisms showed no growth inhibition below boron levels of 7.6 mg/L, while aquatic macrophytes may be

affected by slightly lower levels of boron. Ex. 3 at 5. Dr. Anderson noted that submerged macrophytes are uncommon in turbid Illinois waters. *Id.* Dr. Anderson testified that studies describe freshwater invertebrates as relatively tolerant of high boron concentrations. *Id.* For freshwater vertebrates, Dr. Anderson asserted that, on the basis of median lethal concentrations, no species was found to be especially sensitive to boron, though some conflicting studies exist concerning the sensitivity of rainbow trout. Ex. 3 at 6. Dr. Anderson indicated that no trout populations are present in the Illinois waters affected by Galva's proposal. *Id.*

Dr. Anderson pointed out that the USEPA does not recommend the establishment of any water quality standards for boron, not even with drinking water, though USEPA guidelines recommend a 0.75 mg/L standard for long term irrigation of sensitive crops. Ex. 3 at 7. Dr. Anderson noted that Missouri is the only state surrounding Illinois that has a Drinking Water Standard and Irrigation Standard for boron which are set at 2.0 mg/L. *Id.*

Larry Lawson

Mr. Lawson has been the plant operator for Galva's STPs since 1980. Tr. at 24. Mr. Lawson holds a bachelors degree in chemistry and a master's degree in organic chemistry from Iowa State. Tr. at 25. Mr. Lawson testimony indicated that Galva's STP flows are typically higher than 7Q10 flow numbers. Tr. at 26. Mr. Lawson stated that the size of Galva's waste contributing population has remained relatively stable over the years. Tr. at 27.

Galva's Comment

Galva filed one public comment in this proceeding and simultaneously filed an "Addendum to Testimony of Stephen Bruner" (Addendum), which contained updated information and responses to technical questions posed to Stephen Bruner at the hearing. PC 2 at 2.

Galva urges the Board to approve the proposed site specific standard based on the evidence presented in the record and consistent with the standard set forth in Section 27 of the Act (415 ILCS 5/27 (2006)). PC 2 at 2. Section 27(a) of the Act provides, in part that:

In promulgating regulations under this Act, the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution. 415 ILCS 5/27(a) (2006).

Galva notes that the Board, the Agency, and the USEPA have recognized the applicability of Section 27(a) of the Act (415 ILCS 5/27(a) (2006)) and states that the Board should use this standard in evaluating the site specific rule. PC 2 at 3.

Galva summarizes the proposal, including the reasons for Galva to seek the site specific rule. PC 2 at 4. Galva restates the fact that Galva's STPs discharge into zero-flow streams and,

in the absence of a mixing zone, the Agency has applied the general use water quality standard of 1.0 mg/L as an effluent standard to Galva's discharge from the Southwest STP. PC 2 at 4. Galva reiterates that the site specific rule is necessary to ensure that Galva does not violate any relevant regulation or appropriate permit condition. PC 2 at 9. Galva notes that the petition and testimony demonstrate that treatment to achieve the general water quality standard for boron is not technically feasible or economically reasonable. PC 2 at 5-6. Galva summarizes the testimony and petition contents regarding the source of boron in the effluent and categorizes the current standard as overprotective. PC 2 at 4-6. Galva then restates the calculations used to develop the site specific standard and the characteristics of the receiving streams. PC 2 at 5-6.

In addition, Galva discusses the toxicological effects of boron and reiterates that the site specific standard will not have a negative impact on the receiving streams. PC 2 at 6-7. Galva notes that the site specific rule was provided to the Agency before submission to the Board and the Agency is in agreement with the rule proposal. PC 2 at 6. Galva emphasizes that the Agency believes a chronic standard of 3.0 mg/L of boron and possibly significantly higher is appropriate. PC 2 at 6-7.

In response to questions from the March 31, 2009 hearing, Galva clarifies that the flow rates used in mass balance calculations are the lowest average monthly discharge values for July 2006 at the Northeast STP, rather than the average flow rates and that these values were used rather than the published 7Q10 flows. PC 2 at 7; Addendum at 1. Galva notes that a typographical error was corrected in the TSD, where the concentration of Boron was incorrect and did not correspond with that listed in Figure 12. PC 2 at 7; Addendum at 1. Galva further notes that Figure 12 was updated to correct a typographical error regarding boron concentration near the confluence of Mud Run and Walnut Creek. PC 2 at 8; Addendum at 1.

As to concerns raised about meeting the site specific standard during drought conditions, Galva maintains that the standard is appropriate. Galva states that the standard was calculated based on actual plant flows rather than 7Q10 flows and did not take into account other dischargers. PC 2 at 5. However, Galva notes that testimony established that Galva's STP flows are typically higher than the 7Q10 flow numbers. PC 2 at 6. Galva adds that ambient water quality monitoring data from Indian Creek provided from the Agency to Mr. Bruner after the hearing suggests that background concentrations in receiving streams during drought conditions would be 0.140 mg/L rather than 0 mg/L, as the TSD assumes. PC 2 at 8; Addendum at 2-3. Additionally, another discharger to Walnut Creek was discovered after the hearing: the Village of Altona's STP. *Id.* However, Mr. Bruner concluded that, by using the "worst case" value of 0.14 mg/L background concentration and assumed 3.0 mg/L concentration from Altona's STP, his calculation suggests that dilution to a level of 1.0 mg/L and below is achieved at the same confluence points originally indicated in the TSD. *Id.*

Galva states that they have worked closely with the Agency over the past few years to address Galva's boron issues. PC 2 at 7. Galva maintains that it has demonstrated that compliance with the general water quality standard for boron is not economically reasonable or technically feasible for the portions of the streams at issue in this rulemaking. *Id.*

AGENCY'S TESTIMONY AND COMMENT

The Agency presented pre-filed testimony from Agency Toxicologist Brian Koch, and filed one public comment (PC 1). Below the Board summarizes first the testimony of Mr. Koch and then the public comment.

Brian Koch

Mr. Koch is an Agency toxicologist in the Water Quality Standards section of the Division of Water Pollution Control. Exh. 4 at 1. Mr. Koch's testimony discussed Galva's proposed site specific rule and the Agency's basis for agreement with the proposal. *Id.* Mr. Koch stated that prior to filing the proposal for a site specific rule, Galva submitted draft proposals to the Agency and met with the Agency to discuss boron treatment and removal options. *Id.* Mr. Koch indicated that the Agency agrees with Galva that the site specific rulemaking is necessary. Exh. 4 at 2. Mr. Koch testified that the rulemaking will cause no adverse impact to the environment. Exh. 4 at 3. Mr. Koch explained that existing boron standard of 1.0 mg/L was initially adopted to protect crops from boron in irrigation water. Mr. Koch further testified that the Agency is not aware of any irrigation from the affected waters. Based on a literature review, Mr. Koch testified that the rulemaking would be protective of aquatic life. *Id.* At hearing in response to a question regarding whether the establishment of a mixing zone would be a possible compliance mechanism, Mr. Koch explained that for zero flow streams, the Agency does not grant mixing. Tr. at 31-32.

Mr. Koch testified that after reviewing Galva's findings, the Agency agrees that the expenses and technical infeasibilities of the assessed alternatives render them unreasonable, "especially when considering the unanticipated risks associated with the proposed site-specific boron standard of 3.0 mg/L." Exh. 4 at 3. Mr. Koch stated that the Agency's conclusion stems in part from the fact that the waters associated with this rulemaking are not used for irrigation and the proposed rule would be protective of aquatic life in receiving waters. *Id.* Mr. Koch indicated that Galva's reliance on the Agency's existing boron toxicity database is sufficient to support Galva's conclusions. *Id.* However, Mr. Koch noted that the Agency is working with INHS to generate a supplemental boron toxicity database in order to derive a general use water quality standard that is protective of aquatic life under both acute and chronic exposures. *Id.*

Mr. Koch also testified that the Agency has been in contact with the USEPA regarding approval of the 3.0 mg/L site specific standard for Galva, and that USEPA is in agreement with the proposed standard being protective of aquatic life. Tr. at 34. Mr. Koch also indicated that the new standard would be incorporated into the STPs NPDES permits. Tr. at 33-34.

Agency's Comment

The Agency filed one public comment in this proceeding, in order to respond to the Board's request for information during the March 31, 2009, hearing. The Agency clarified that the receiving waters affected by the proposal are zero 7Q10 low flow streams and, as a result, are not included in the Agency's Ambient Water Quality Network (AWQMN) or monitored through

the Intensive Basin Survey Program. PC 1 at 1. As such, the Agency explains that it does not have any record of boron concentrations for the receiving waters. PC 1 at 2. In lieu of this data, the Agency stated that boron data from the AWQMN Station on Indian Creek was provided to Mr. Bruner to be used in updating Galva's mass balance calculations for the site specific standard. *Id.* The Agency noted that this data may not be representative of background conditions in receiving waters because three STPs are located upstream of the Indian Creek station. *Id.* The Agency noted that the 7Q10 flow of Indian Creek near the station is estimated at 0.20 cfs, which takes into consideration 0.17 cfs from the City of Toulon STP, the nearest upstream discharger. *Id.*

In response to the Board's question regarding the presence of other discharging facilities, the Agency stated that there are no other NPDES facilities that discharge effluent into the receiving waters of Galva's STPs. PC 1 at 3. However, the Agency noted that the Village of Altona STP discharges into Walnut Creek prior to its confluence with Mud Run, and this boron contribution was not considered in the initial mass balance calculations for the receiving waters. *Id.* Even so, the Agency points out that the Altona STP typically does not discharge during summer months and may not contribute boron during drought conditions calculated in the mass balance index. PC 1 at 3-4. The Agency commented that, assuming a maximum boron discharge of 3.0 mg/L in 0.01 cfs of effluent during droughts, the Altona STP boron source would not alter the boron water quality in Walnut Creek. PC 1 at 4.

In response to the Board's question regarding the August 31, 2009 expiration of the NPDES permits for Galva's two STPs, the Agency stated that it would modify renewed permits to reflect the site specific standard if the Board adopted Galva's proposal. *Id.*

DISCUSSION

The Board's discussion will begin with a brief analysis of the Board's authority to adopt rules under the Act. The Board will then address the technical feasibility and economic reasonableness of treatment options for removing boron and options for obtaining an alternative drinking water supply. The Board will conclude by discussing the environmental impact of the proposed rule.

Board's Rulemaking Authority

The Board adopts rules under Title VII of the Act (415 ILCS 5/26-29 (2006)). The Board's authority is primarily derived from Section 27 of the Act (415 ILCS 5/27 (2006)), which allows the Board to adopt substantive regulations that can include "different provisions as required by circumstances for different contaminant sources and for different geographical areas." 415 ILCS 5/27(a) (2006). Section 27(a) of the Act also provides that,

In promulgating regulations under this Act, the Board shall take into account the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic

reasonableness of measuring or reducing the particular type of pollution. 415 ILCS 5/27(a) (2006).

Thus, the Board considers whether the rule is economically reasonable and technically feasible in reducing the particular type of pollution. The Board's review in rulemakings is the same whether the rule is specific to one region or discharger or the rule is of generally applicable State wide. Therefore, the Board must determine that the proposed rule is technically feasible and economically reasonable.

Technical Feasibility and Economic Reasonableness of Alternatives

The source of excess boron in Galva's STP discharges is the groundwater from aquifers that supply Galva's potable water. TSD at 2. The Agency has incorporated the 1.0 mg/L boron general use water quality standard into Galva's NPDES Permit as an effluent standard. Exh. 4 at 1. Galva investigated various compliance alternatives, including treatment to remove excess boron from the potable water supply, the effluent from the STPs, a new potable water well, or obtaining alternative drinking water sources from neighboring cities of Kewanee and Galesburg. The treatment options evaluated included ion exchange and RO.

The TSD stated that ion exchange treatment could reduce boron but would create considerable waste disposal problems. TSD at 6. If 50% of the effluent from the STPs were treated, the report estimated that 5000 gallons of wastewater containing approximately 3100 mg/L of boron would be produced every 4-5 days, requiring disposal. *Id.* The report stated that the most reasonable disposal option would be to pump or truck the wastewater approximately 50 miles to a large treatment facility in Quad Cities or Peoria. *Id.* The report also noted that the same waste disposal issues would result if a single larger ion exchange plant were used to treat Galva's potable water supply. TSD at 7. Galva argues that the application of the ion exchange process, either before potable water distribution or as a treatment for effluent, would create a larger problem with disposal than the treatment would be attempting to solve. Prop. at 18. Further Galva has estimated the capital costs of ion exchange system for treating potable water or the effluent would be over two million dollars.

The evidence presented by Galva indicates that ion exchange might reduce boron in the effluent; however the process will result in substantial waste disposal issues. Thus, Board finds that the technical burden and substantial cost of ion exchange along with the associated waste disposal issues establish that though technically feasible, ion exchange is not an economically reasonable option for Galva's use in the removal of boron from the effluent.

Regarding RO of potable water, the TSD states that "RO presents a much larger waste disposal issue than the ion exchange option." TSD at 11. The report noted that, for every 100 gallons of water treated using RO, 25 gallons of waste concentrate would be generated. *Id.* The report further noted that additional wastewater would be produced from the rinsing of membranes, resulting in about 1/3 of all treated water being sent to waste or about 100,000 gallons per day. *Id.* Since the quantity of RO waste precludes other disposal methods, the TSD states that drilling a deep injection well would be Galva's only option. Galva estimates the

capital cost of installing the RO system and drilling an injection well to be close to seven million dollars.

As with ion exchange, disposal of the waste from RO presents Galva with additional problems both economically and technically. Therefore, the Board finds that RO is not a technically feasible or economically reasonable option for reducing Galva's boron effluent levels.

With regard to obtaining an alternative water supply, the TSD indicated that obtaining water from Galesburg was technically feasible but far too costly. TSD at 14. The TSD found that water transmission from Galesburg to Galva would require the construction of a transmission pipeline between the two municipalities, which are over 22 miles apart. *Id.* A report prepared by Galesburg determined that Galva would be required to pay approximately \$13.6 million of the \$16.1 million total estimated project cost for this option. *Id.* Galva states that its attempts to obtain federal and state funding have failed and, without assistance, Galva could only fund the project by "record level" user rate increases. Prop. at 23.

Testimony indicated that the option of obtaining water from Kewanee was rejected after Kewanee indicated that their municipality did not have the capacity to supply water to Galva. Exh. 1 at 3-4; Exh. 2 at 6.

The Board is cognizant of the economic struggles a small rural community such as Galva faces. Although, technically an option for Galva, the cost of building a pipeline is not economically reasonable. The Board finds that these circumstances support Galva's conclusion that obtaining an alternative water supply from Galesburg is economically unreasonable and that water from Kewanee is not an option.

Galva also explored drilling a new shallow well to avoid boron found in the deep aquifers, however, Galva was confronted with the dilemma of spending over \$100,000 on an initial drilling project that might reveal an adequate water supply is not available. Exh. 1 at 4.

As with the potential pipeline from Galesburg, drilling shallow wells is cost prohibitive. Especially as there is no guarantee that the well will produce sufficient water with a lower boron rate. Therefore, the Board finds that the testimony and information regarding these options supports Galva's conclusion that these options are not technically feasible at this time.

In summary, each of the options explored by Galva presents technical challenges. The evidence presented by Galva indicates that treatment by ion exchange or RO might reduce boron in the effluent or potable water supply; however the processes will result in substantial waste disposal issues. Drilling a new shallow well presents the uncertainty of finding an adequate water supply. Sharing a potable water supply with neighboring Galesburg would entail a substantial construction project for the 20 to 25-mile water transmission line. In addition to the technical challenges, Galva faces estimated capital costs ranging from \$2 million to \$13.6 million.

The evidence of the capital costs necessary for any of the compliance alternatives as well as the technical difficulties of the alternative exemplify that the alternatives are not technically feasible and economically reasonable given the lack of significant economic impact as discussed below. Therefore the Board finds that of all the alternatives evaluated, the proposed site specific standard of 3.0 mg/L for boron is the only technically feasible and economically reasonable alternative.

Environmental Impact of Proposal

Both the Agency and Galva provided testimony that the toxicological impact of boron on the receiving streams would not be significant. Galva presented expert testimony in support of Galva's conclusion that the Board's 1.0 mg/L boron water quality standard is "over-protective of aquatic life." Prop. at 25, and 26-29. For example Dr. Anderson cited to studies of boron toxicity in the literature that looked at a variety of terrestrial and aquatic species and specifically addressed human health, aquatic life, and sensitive crops. Exh. 3 at 3-8. The Agency also conducted a literature review, finding that a chronic boron standard of 3.0 mg/L and possibly significantly higher is protective of aquatic life and appropriate based on currently available data. Exh. 3 at 3. Thus, the record includes sufficient literature information and water quality data to support the adoption of the proposed boron standard on a site specific basis. *See generally* Exh. 3 at 3-6. In addition, Galva and the Agency provided testimony that no crops are irrigated using water from the receiving streams and the receiving streams are not a viable source of drinking water. Both Galva and the Agency further indicated that human health would not be impacted by the site specific rule.

The record in this proceeding provides substantial information indicating that the proposed rule will not negatively impact either aquatic life or human health. Further, with no irrigation along the streams that will be impacted by the site specific rule, there is no negative impact to plant life. Therefore, the Board finds that the proposed site specific rule will not negatively impact human health or the environment and should be adopted.

This finding is consistent with the Board's numerous precedents granting adjusted standards and site specific rules for boron. See Petition of City of Springfield Office of Public Utilities for an Adjusted Standard from 35 Ill. Adm. Code 302.208(e), AS 94-9 (Dec. 1, 1994); Petition of Illinois Power Company (Baldwin Power Plant) for an Adjusted Standard from 35 Ill. Adm. Code 302.208 and 35 Ill. Adm. Code 304.105 Regarding the Parameter Boron, AS 96-1 (May 2, 1996); Petition of Central Illinois Light Company (Duck Creek Station) for Adjusted Standard From 35 Ill. Adm. Code 302.208 and 35 Ill. Adm. Code 304.105 Regarding The Parameter Boron, AS 96-8 (June 20, 1996).

The Board notes that Mr. Koch indicated that the Agency is cooperating with the INHS to generate additional boron toxicity studies to supplement the current database. Such data would help to ensure that boron general use standards proposed in the future would be protective of aquatic life. Exh. 4 at 3. The results of the Agency/INHS study is expected to bolster the scientific justification for the revision of the general use boron water quality standard. If the Agency/INHS study results in new boron toxicity information that raises any concerns with the site specific standards or renders such standards as moot, the Board expects the Agency to

address those concerns as a part of its proposal to revise the general use standards. The Board notes that in the past, the Board has revised existing site specific rules to make them consistent with the adopted revisions 28 to the rule of general applicability. *See Proposed New and Updated Rules for Measurement and Numerical Sound Emissions Standards Amendments to 35 Ill. Adm. Code 901 and 910, (R03-9) March 2, 2006.*

CONCLUSION

The Board finds that Galva's site specific rule is economically feasible and technically reasonable. Further, the Board finds that the record establishes that the site specific rule will be protective of human health and the environment. Therefore, the Board finds that proceeding to second notice with this rule is appropriate.

ORDER

The Board directs the Clerk to cause the filing of the following rule for second notice with the Joint Committee on Administrative Rules.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 303

WATER USE DESIGNATIONS AND SITE-SPECIFIC WATER QUALITY STANDARDS
SUBPART A: GENERAL PROVISIONS

Section	
303.100	Scope and Applicability
303.101	Multiple Designations
303.102	Rulemaking Required

SUBPART B: NONSPECIFIC WATER USE DESIGNATIONS

Section	
303.200	Scope and Applicability
303.201	General Use Waters
303.202	Public and Food Processing Water Supplies
303.203	Underground Waters
303.204	Secondary Contact and Indigenous Aquatic Life Waters
303.205	Outstanding Resource Waters
303.206	List of Outstanding Resource Waters

SUBPART C: SPECIFIC USE ~~DESIGNATIONS~~ DESIGNATIONS AND SITE
SPECIFIC WATER QUALITY STANDARDS

Section	
303.300	Scope and Applicability

303.301	Organization
303.311	Ohio River Temperature
303.312	Waters Receiving Fluorspar Mine Drainage
303.321	Wabash River Temperature
303.322	Unnamed Tributary of the Vermilion River
303.323	Sugar Creek and Its Unnamed Tributary
303.326	Unnamed Tributary of Salt Creek, Salt Creek, and Little Wabash River
303.331	Mississippi River North Temperature
303.341	Mississippi River North Central Temperature
303.351	Mississippi River South Central Temperature
303.352	Unnamed Tributary of Wood River Creek
303.353	Schoenberger Creek; Unnamed Tributary of Cahokia Canal
303.361	Mississippi River South Temperature
303.400	Bankline Disposal Along the Illinois Waterway/River
303.430	Unnamed Tributary to Dutch Creek
303.431	Long Point Slough and Its Unnamed Tributary
303.441	Secondary Contact Waters
303.442	Waters Not Designated for Public Water Supply
303.443	Lake Michigan Basin
303.444	Salt Creek, Higgins Creek, West Branch of the DuPage River, Des Plaines River
303.445	Total Dissolved Solids Water Quality Standard for the Lower Des Plaines River
303.446	Boron Water Quality Standard for Segments of the Sangamon River and the Illinois River
303.447	<u>Unnamed Tributary of the South Branch Edwards River and South Branch Edwards River</u>
303.448	<u>Mud Run Creek</u>

SUBPART D: THERMAL DISCHARGES

Section	
303.500	Scope and Applicability
303.501 303.502	Lake Sangchris Thermal Discharges
303.APPENDIX A	References to Previous Rules
303.APPENDIX B	Sources of Codified Sections

AUTHORITY: Implementing Section 13 and authorized by Sections 11(b) and 27 of the Environmental Protection Act [415 ILCS 5/13, 11(b) and 27].

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 27, p. 221, effective July 5, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended at 5 Ill. Reg. 11592, effective October 19, 1981; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161, effective September 7, 1982; amended at 7 Ill. Reg. 8111, effective June 23, 1983; amended in R87-27 at 12 Ill. Reg. 9917, effective May 27, 1988; amended in R87-2 at 13 Ill. Reg. 15649, effective September 22, 1989; amended in R87-36 at 14 Ill. Reg. 9460, effective May 31, 1990; amended in R86-14 at 14 Ill. Reg. 20724, effective December 18, 1990; amended in R89-14(C) at 16 Ill. Reg. 14684, effective September 10, 1992; amended in R92-17 at 18 Ill. Reg. 2981, effective February 14, 1994; amended in R91-23 at 18 Ill. Reg. 13457, effective

August 19, 1994; amended in R93-13 at 19 Ill. Reg. 1310, effective January 30, 1995; amended in R95-14 at 20 Ill. Reg. 3534, effective February 8, 1996; amended in R97-25 at 22 Ill. Reg. 1403, effective December 24, 1997; amended in R01-13 at 26 Ill. Reg. 3517, effective February 22, 2002; amended in R03-11 at 28 Ill. Reg. 3071, effective February 4, 2004; amended in R06-24 at 31 Ill. Reg. 4440, effective February 27, 2007; amended in R09-8 at 33 Ill. Reg. 7903 effective May 29, 2009; amended in R09-11 at _____ Ill. Reg. _____, effective _____.

SUBPART C: SPECIFIC USE DESIGNATIONS AND SITE SPECIFIC WATER
QUALITY STANDARDS

Section 303.447 Unnamed Tributary of the South Branch Edwards River and South Branch
Edwards River

The general use water quality standard for boron at 35 Ill. Adm. Code 302.208(g) does not apply to the waters of the State that are located from the point of discharge of the publicly owned treatment works located at 523 NE 9th Street in Galva, known as the Galva Northeast Sewage Treatment Plant, to an unnamed tributary of the South Branch of the Edwards River (the discharge point being located in Henry County, Township 14 North, Range 4 East, occupying portions of Sections 21, 26, 27, 28, 33, 34, and 35 in the Fourth Principal Meridian, Latitude N 41.175°, Longitude: W 90.035°) to the confluence of unnamed tributary with the South Branch Edwards River; to the confluence with the Edwards River. Boron levels in these waters must meet a water quality standard for boron of 3.0 mg/L.

(Source: Added at 33 Ill. Reg. _____, effective _____)

Section 303.448 Mud Run Creek

The general use water quality standard for boron set forth at 35 Ill. Adm. Code 302.208(g) does not apply to the waters of the State that are located from the point of discharge of the publicly owned treatment works located at ½ mile South of the Burlington Northern Santa Fe Railroad and SW 4th Street in Galva, known as the Galva Southwest Sewage Treatment Plant, to Mud Run Creek (the point is located in Henry County, Township 14 North, Range 4 East, occupying portions of Sections 21, 26, 27, 28, 33, 34 and 35 of the Fourth Principal Meridian, Latitude: N 41.154°, Longitude W. 90.053°) to the confluence of Mud Run Creek with Walnut Creek. Boron levels in these waters must meet a water quality standard for boron of 3.0 mg/L.

(Source: Added at 33 Ill. Reg. _____, effective _____)

IT IS SO ORDERED.

Board Member Shundar Lin abstained.

I, John T. Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on June 18, 2009, by a vote of 4-0. Member Lin abstained.

A handwritten signature in black ink that reads "John T. Therriault". The signature is written in a cursive style with a long horizontal flourish extending to the right.

John T. Therriault, Assistant Clerk
Illinois Pollution Control Board