

ILLINOIS POLLUTION CONTROL BOARD

April 2, 2009

IN THE MATTER OF:)
)
PROPOSED SITE SPECIFIC RULE FOR) R09-8
CITY OF SPRINGFIELD, ILLINOIS,) (Site Specific Rulemaking – Water)
OFFICE OF PUBLIC UTILITIES, CITY)
WATER, LIGHT and POWER and)
SPRINGFIELD METRO SANITARY)
DISTRICT FROM 35 ILL. ADM. CODE)
302.208(g): NEW 35 ILL. ADM. CODE)
303.446)

Proposed Rule. Second Notice.

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

On August 29, 2008, pursuant to Section 28 of the Environmental Protection Act (Act) (415 ILCS 5/28 (2006)), the City of Springfield (City), Office of Public Utilities, City Water, Light and Power (CWLP), and Springfield Metro Sanitary District (District) (collectively, Springfield) proposed a site-specific rulemaking seeking alternative water quality standards for boron in four river sections stretching approximately 75 miles from the outfall of the Spring Creek Sanitary Treatment Plant (Spring Creek STP) on the Sangamon River to 100 yards downstream of the confluence of the Sangamon and Illinois Rivers.

The Board heard testimony and received comments from Illinois Environmental Protection Agency (Agency), Prairie Rivers Network (Prairie Rivers), and Springfield. 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 Springfield is technically feasible and economically reasonable and is protective of human health and the environment. Therefore, the Board adopts the rule for second notice the rule as 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 August 29, 2008, Springfield filed the proposal and statement of reasons (Reasons), along with a Technical Support Document (TSD) in support of the proposal. Springfield also filed 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 101.220(g) and 101.512. The Board received no response to the motions and, pursuant to

101.500(d), deemed any objection to the granting of the motions waived. See 35 Ill. Adm. Code 101.500(d).

On September 16, 2008, the Board proposed for first notice the rule as proposed by Springfield without comment on the merits of the proposal, and granted the motions. The rule was published in the *Illinois Register* on October 10, 2008. See 31 Ill. Reg. 16303 (Oct. 10, 2008).

On September 18, 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. The Board received no response from DCEO. At the public hearing held on December 16, 2008 (Tr.2), the Board solicited comments on DCEO's decision not to conduct an economic impact study. No comments were offered. Tr.2 at 5-6.

The Board has conducted two public hearings, on November 3 (Tr.1) and December 16, 2008 in Springfield. At the hearings Springfield presented numerous witnesses in support of the proposal and the Agency presented testimony.

The Board received six public comments. Three public comments were received from Springfield (PC 1, PC 3, and PC 5), and two from the Agency (PC2 and PC 6). The Board also received a public comment from Prairie Rivers (PC 4).

PROPOSAL

Springfield is seeking to establish an alternative water quality standard for boron from the point of discharge at Outfall 007 from the District's Spring Creek STP to the Sangamon River, to the confluence with the Illinois River, and in the Illinois River 100 yards downstream from the confluence with the Sangamon River. Reasons at 1. Section 302.208(g) (35 Ill. Adm. Code 302.208(g)) of the Board's water quality rules sets a general use boron water quality standard of 1.0 milligrams per liter (mg/L) and Section 304.105 (35 Ill. Adm. Code 304.105)) of the Board's rules provides that the District's discharge cannot violate that standard. *Id.* The Board has not adopted an effluent standard for boron; nor has the Agency imposed an effluent limit on the District's discharge from Outfall 7 in the District's National Pollutant Discharge Elimination Permit (NPDES). Reasons at 2.

Springfield is seeking the site specific rule to enable the District to accept pretreated industrial effluent from CWLP's power plant. Reasons at 2. CWLP's power plant effluent causes increased boron levels in the effluent stream. *Id.* CWLP's power plant is necessary to meet the power needs for the City and surrounding communities and the site specific rule will allow CWLP to operate the power plants in compliance with the NPDES permits and State and Federal air regulations. *Id.*

The following paragraphs summarize the proposal, beginning with the language proposed by Springfield. Next, information regarding CWLP's facilities and adjusted standard will be detailed, including the proposed discharge to the District from CWLP. The next section will

describe the Spring Creek STP and the receiving stream. The proposal's discussion of toxicological effects of boron will be summarized next, followed by a summary of the alternative technologies reviewed by Springfield. The summary of the proposal will conclude with a discussion of the economic impact and other boron standards adopted by the Board.

Proposed Language

Springfield proposed the following language for the site specific rule:

Section 303.446 **Springfield Metro Sanitary District Spring Creek Treatment Plant Boron Discharge**

The general use water quality standard for boron set forth in Section 302.208(g) shall not apply to waters of the state that receive discharge from Outfall 007 of the Spring Creek Treatment Plant located at 3017 North 8th Street, Springfield, Illinois, owned by the Springfield Metro Sanitary District. Boron levels in such waters must meet the water quality standard for boron as set forth in this section:

1. 11.0 mg/L in an area of dispersion within the Sangamon River from Outfall 007 to 182 yards downstream from the confluence of Spring Creek with the Sangamon River;
2. 4.5 mg/L from 182 yards downstream of the confluence of Spring Creek with the Sangamon River to the confluence of Salt Creek with the Sangamon River, a distance of 39.0 river miles;
3. 1.6 mg/L from the confluence of Salt Creek with the Sangamon River to the confluence of the Sangamon River with the Illinois River, a distance of 36.1 river miles; and
4. 1.3 mg/L in the Illinois River from the confluence of the Illinois River with the confluence of the Sangamon River to 100 yards downstream of the confluence of the Illinois River with the Sangamon River. Reasons at 3.

The Board adopted the language as proposed by Springfield for first notice without change. *See Proposed Site Specific Rule for City of Springfield, Illinois, Office of Public Utilities, City Water, Light and Power and Springfield Metro Sanitary District from 35 Ill. Adm. Code 302.208 R09-8 (Sept. 16, 2008).*

CWLP's Facility

CWLP owns and operates two power stations (V.Y. Dallman Power Station and Lakeside Power Station) and a water treatment plant located in the City. Reasons at 3. The plants generate electricity for the City and provide potable water to the City and surrounding

communities. Reasons at 4. CWLP employs 186 people at the power plants and 19 at the water treatment plant. *Id.*

CWLP's Dallman power station has an electric generating capacity of 352 megawatts and is comprised of three coal-fired units. Dallman Unit 31 was placed in service in 1968, Dallman Unit 32 was placed into service in 1972, and Dallman Unit 33 was placed into service in 1978. *Id.* Each of the units is equipped with a flue gas desulfurization system (FGDS), which removes 90 % of the sulfur dioxide (SO₂). *Id.* In 2003, selective catalytic reduction (SCR) air pollution control systems for nitrogen oxides (NO_x) were added to all three Dallman units. *Id.* The SCRs are operated during the ozone season and remove approximately 90 percent of NO_x from the emissions; however starting in July 2009 the SCRs will be operated year round to assist with mercury emission reductions. *Id.*

The Lakeside Power Station began operation in 1935. Of the original eight boilers and seven turbines, only two boilers and two turbines are still in operation. Reasons at 4. Boiler 7-Turbine 6 began operation in 1959 and Boiler 8-Turbine 7 began operation in 1964. Reasons at 4-5. The boilers are identical cyclone coal-fired units with a combined generating capacity of 66 megawatts. The Lakeside Power Station will be retired in the near future. *Id.*

CWLP's total coal consumption averages 1.1 million tons per year and the ash handling practices at CWLP are typical for coal-fired power plants. Reasons at 5. Bottom ash and fly ash are sluiced from all existing units to ash ponds, and the raw lake water used for sluicing is obtained from the once-through cooling water systems for generator condensers. *Id.* Each of the Dallman units has separate ash transport systems, and typically all ash from those units goes to the north ash pond known as the Dallman Ash Pond. *Id.* The Dallman Ash Pond also receives wastewater treatment plant sludge and leachate collected from the scrubber sludge landfill adjacent to the ash ponds. *Id.*

The second ash pond operated by CWLP is the south ash pond and is known as Lakeside Ash Pond. Reasons at 5. The Lakeside Ash Pond has an earthen berm dividing the pond into east and west portions. *Id.* The Lakeside fly ash and bottom ash sluice water is normally discharged to the west portion of the Lakeside Ash Pond and the east portion receives lime sludge from the filter plant and miscellaneous water streams from the Dallman Power Station including FGDS effluent water. *Id.*

CWLP is constructing a new electric generation unit to be known as Dallman Unit 4 that includes a coal-fired boiler equipped with low NO_x combustion technology, SCR, a fabric filter, wet flue gas desulfurization, and wet electrostatic precipitator. Reasons at 5-6. Dallman Unit 4 will utilize a dry ash handling system. Reasons at 6.

The water treatment plant operated by CWLP has a capacity of 48 million gallons per day (mgd) and a conventional lime-softening/filtration/disinfection process is employed to produce potable water. Reasons at 6. The plant has five clarifiers and 12 filters in the treatment process to remove sediment and particulate matter from the raw lake water; thickened sludge and backwash water are discharged to the ash ponds. Reasons at 6. The volume of sludge and backwash water discharged to the ash ponds varies and is dependent upon production volume

and raw water characteristics. *Id.* During periods of warm weather powdered activated carbon is added to incoming lake water for control of pesticides and herbicides, while also helping with taste and odor control. The majority of the powdered activated carbon is removed by the clarifiers and disposed of in the ash ponds. *Id.*

Lake Springfield was constructed in 1934 by the impoundment of Sugar Creek with Spaulding Dam and is a 4,224-acre reservoir that provides cooling water for the CWLP complex. Reasons at 6. Lake Springfield is also the primary source of potable water for the City and surrounding communities. *Id.* Two major streams flow into the Lake, Sugar Creek and Lick Creek, that drain at the upper end of the Lake. *Id.* CWLP uses 3.9 million gallons of Lake water per day, primarily for ash sluicing water. *Id.* Supernatant from the two ash ponds flows into a clarification pond before discharging to Sugar Creek. Reasons at 6-7.

CWLP's Adjusted Standard

On December 1, 1994, the Board granted CWLP an adjusted standard from 35 Ill. Adm. Code 304.105 for process discharges into Sugar Creek (Outfalls 003 and 004). *See* Petition 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). The adjusted standard allows for boron concentrations in Outfalls 003 and 004 that are less than or equal to 11.0 mg/L from Outfall 003 to the District's Sugar Creek Plant Outfall 008, 5.5 mg/L to the confluence with the South Fork of the Sangamon River, and 2.0 mg/L from that point to 100 yards downstream of the confluence of the Sangamon River with Spring Creek. *Id.*, citing City of Springfield, AS 94-9. Springfield states that the adjusted boron water quality standard of 2.0 mg/L applies to the Sangamon River at the point of the District's Spring Creek STP discharge from Outfall 007 to 100 yards downstream of the confluence of the Sangamon River with Spring Creek. Reasons at 8. Thus, Springfield notes, an alternative water quality standard for boron already exists for portions of the surface waters at issue in the instant petition. *Id.*

Springfield states that historically CWLP has been able to operate while meeting the adjusted standard. Reasons at 9. However, with the addition of SCR air pollution control systems to the Dallman units in 2003, CWLP has had difficulty meeting the boron water quality adjusted standard. *Id.* The increased boron levels from the Dallman ash pond are below the adjusted standard, but when the boron content of the FGDS blowdown is added to the clarification pond, the boron concentration at Outfall 004 exceeds the adjusted standard in Sugar Creek. *Id.* The high boron content in the FGDS effluent is generated by air pollution equipment, so conversion to dry fly ash system will not eliminate high boron concentrations in the FGDS blowdown. *Id.*

CWLP Discharge to the District

CWLP proposes that rather than discharge the FGDS effluent to the ash ponds, the wastewater could be collected, pretreated and pumped to the District's Spring Creek STP. Reasons at 9. The average flow rate of this waste stream would be 187 gallons per minute (gpm) or about 270,000 gallons per day (gpd) with a boron concentration of 450 mg/L. *Id.* CWLP recommends constructing two 250,000 gallon holding tanks and a ClairConeTM solids contact

clarifier, with a 240 gpm capacity to pretreat the waste stream prior to pumping the water to Spring Creek STP for treatment. Reasons at 9-10. The ClairCone™ is designed to allow mixing, flocculation, and sedimentation to take place within a completely hydraulically-driven vessel. Reasons at 10. The conically shaped concentrator maximizes the FGDS blowdown discharge concentration and allows plant personnel to visually monitor FGDS blowdown discharge. *Id.* The pretreatment is not expected to significantly reduce boron concentrations, but the pretreatment will reduce solids sent to the Spring Creek STP. *Id.* For the purposes of calculating the boron concentration in this proceeding, CWLP is also not claiming any boron removal at the Spring Creek STP. Reasons at 36.

Spring Creek STP

The District's Spring Creek STP was constructed in 1928 with major improvements in the 1903s. The last major improvements to increase the capacity of the spring Creek STP were made in 1973. Reasons at 10. The Spring Creek STP treats wastewater and storm water from the southwest, west, and northern parts of the City and surrounding service areas. Reasons at 10. The Spring Creek STP serves a population of 90,300 based on the 2000 U.S. Census and has increased by just over one percent per year on average. *Id.* Spring Creek STP is an activated sludge treatment plant that provides treatment and removal of biochemical oxygen demand (BOD), total suspended solids (TSS), ammonia, and bacteria. Reasons at 10-11. The main unit processes include:

1. Screening for large solids removal
2. Grit removal for removing heavier sand and grit particles
3. Primary clarifiers for removing solids and biological matter
4. Aeration tanks for the main biological treatment process
5. Secondary clarifiers for removing the remaining fine solids particles; activated sludge is returned from these clarifiers to the aeration tanks
6. Disinfection, performed on a seasonal basis from May through October
7. Anaerobic sludge digestion to stabilize primary and secondary waste sludge, which is then stored; biosolids are land applied when weather permits
8. Excess flow clarifiers to provide primary treatment during high flow storm events. Reasons at 11.

Spring Creek STP operates 24 hours a day, seven days a week and is staffed by 7 full-time operators. Reasons at 12. In addition there is a separate maintenance crew on site eight hours per day, five days a week. *Id.* The average design capacity is 20 mgd and monthly flows in 2004 through 2006 have ranged from 11.8 mgd to peak flow of 50 mgd. *Id.* The design maximum flow is 50 mgd. *Id.*

Spring Creek STP discharges through a 72-inch diameter concrete pipe, constructed in 1973, into the Sangamon River at the confluence of Spring Creek. Reasons at 11. The 7-day 10-year low flow in the Sangamon River upstream of the Spring Creek discharge is 54.8 cubic feet per second (cfs) or 35 mgd. *Id.* The 7-day 10-year low flow at the Spring Creek STP discharge

is 17.5 cfs or 11.31 mgd. *Id.* On average the Spring Creek STP discharge is less than the 7-day 10-year low flow in the Sangamon River. Reasons at 12.

To calculate a boron level for this site specific rule, a 7-day 10-year low flow of 11.31 mgd was used. Reasons at 12, 14. Also a current plant influent for boron of 0.25 mg/L was used as background to calculate the new concentration of boron with the FGDS wastewater included in the flow stream. Reasons at 14. The calculation used a FGDS flow of 0.24 mgd with a boron concentration of 450 mg/L. *Id.* The calculation estimated that the maximum boron effluent concentration from the Spring Creek STP would be 11.0 mg/L and the downstream boron concentration in the Sangamon River is calculated to be 4.5 mg/L under this scenario. *Id.*

Receiving Stream

The Sangamon River watershed comprises approximately 5,419 square miles in central Illinois. Reasons at 19. The watershed is practically all tillable and generally cultivated. *Id.* The length of the Sangamon River is characterized by a series of pools and shoals, with five impoundments in the basin. *Id.* The general features of the Sangamon River downstream of the CWLP and District discharges are a low gradient, meandering stream. *Id.* Below the confluence of Salt Creek, the Sangamon River appears to have been channelized in the past and has scoured out a wider floodway in sandier soil. *Id.* There are three structures which have created riffle areas that provide oxygenation for the Sangamon River during low flows. *Id.* The mean flow of at the confluence with Spring Creek is 2,120 cfs and during high flow periods, stream discharge can exceed 7,000 cfs. Reasons at 20.

Sugar Creek empties into the South Fork of the Sangamon River four miles east of the City and approximately seven miles from Outfalls 003 and 004 of the CWLP plant. Reasons at 20. Above the Outfalls is the spillway for Spaulding Dam. *Id.* Sugar Creek is a series of pools and riffles, and the primary flow is the outflow of Lake Springfield. *Id.* Sugar Creek also receives discharge from CWLP's Outfall 003 and 004 and the District's Spring Creek STP. *Id.*

From the confluence of the Sangamon River and the South Fork of the Sangamon River downstream to the Illinois River, there are eight NPDES dischargers. Reasons at 20. Other uses for the Sangamon River include aquatic life habitat and recreation. *Id.* The reach of the Sangamon River that would be subject to the site specific rule is not used for irrigation of agricultural land, golf courses, or nurseries. *Id.*

The water quality data for boron in the Sangamon River at the closest monitoring station downstream of the CWLP discharge locations demonstrate that the 1.0 mg/L general boron water quality standard was exceeded nine percent of the sampling events over a period of four years. Reasons at 20. However, there were no exceedences of the 2.0 mg/L adjusted boron standard applicable to that reach of the stream. Reasons at 21. Based on IEPA's 2006 Section 303(d) List, the overall water quality for the Sangamon River segments at issue indicates that four segments are impaired for fish consumption due to polychlorinated biphenyls (PBC) from an unknown source. *Id.* Three segments are impaired for recreation, potentially for fecal coliform from an unknown source. *Id.* One segment is identified as impaired for aquatic life, potential causes being boron, nitrogen, phosphorus, silver, total dissolved solids, total suspended

solids from potential sources such as industrial and municipal point source discharges, runoff, crop production, dams or impoundments and stream bank modification/destabilization. *Id.*

The proposal relies on the intensive basin surveys of the Lower Sangamon River conducted by the Agency and the Illinois Department of Natural Resources (IDNR) in 1996 and 2003, to evaluate the water quality of the affected river segments. The Agency conducted macroinvertebrate survey, while the IDNR conducted the fisheries survey. Reasons at 22. Springfield asserts that the macroinvertebrate biotic index (MBI) scores determined by the Agency for the four sampling stations indicate that the Sangamon River fully supports aquatic life except for one upstream station based on the 2003 data. *Id.* Based on the IDNR's fish survey, Springfield states that the fish species collected were common for Midwestern streams relative to the stream size and did not include any endangered or threatened species. *Id.* Because the Sangamon River is considered an important resource for catfish fishing, IDNR conducted a survey of the Lower Sangamon River in 2003 which concluded the population of channel catfish and flathead catfish appear to maintain very good populations. *Id.*

Toxicological Effects of the Proposed Rule

Boron is an element that is widespread in the environment and has a high water solubility. Reasons at 24. Springfield indicates that the primary focus regarding the toxicological impact of boron concerns potential effects on early stages of aquatic species. Reasons at 25. USEPA classifies boron as a Group D element, which means that there is no evidence of human or animal carcinogenicity. *Id.* In mammal studies, no overt toxicosis was found in the one species exposed to 120 mg/L and 300 mg/L in drinking water. *Id.* Toxic effects of boron on birds were studied in ducks and chickens, with results showing no adverse effects. *Id.* On fish using a 24-hour bioassay procedure, boron compounds had a relatively non-toxic impact on species such as amphipods, rainbow trout, and guppies. *Id.* There are studies which indicate that boron levels of 30 and 33 mg/L are "safe" levels for game fish species. Reasons at 25-26. Amphibians were found to respond to boron at concentrations similar to fish. Reasons at 26.

Boron is essential for the growth of plants and optimal growth occurs at 2 to 5 mg/L with toxic effects occurring at 5 to 12 mg/L. Reasons at 26. The reach of the Sangamon River that will be impacted by this rule is not used for irrigation. *Id.*

The proposal opines that the new boron water quality standard proposed will have no anticipated adverse effects on aquatic life. Reasons at 27. Springfield notes that in seeking the adjusted standard in 1994, Hanson Professional Services (Hanson) provided a study of the toxicological effects of boron at varying concentrations on the biological community for Sugar Creek and the Sangamon River. Reasons at 27, *see also* City of Springfield, AS 94-9. The overall results of that study indicate that the Sangamon River biological community will not be observably impacted by the proposed water quality standard for boron. Reasons at 27-28.

Alternative Technology

In 2003, when CWLP began experiencing exceedences of boron standards, CWLP met with the Agency and committed to investigation of exceedences. Reasons at 14-15. CWLP, with the assistance of Hanson, discovered that the FGDS effluent was the primary cause of high boron content. Reasons at 15. The FGDS is a means to remove chlorides and other contaminants that would otherwise buildup in the system and cause corrosion in the towers. *Id.* CWLP received a violation notice and in response continued working with Hanson, while keeping the Agency informed on ways to correct the exceedences. Reasons at 15-16. In 2004, CWLP committed to continuously operate Lakeside sluice pumps to provide additional flow to Outfall 004 to minimize the effect of the FGDS effluent. Reasons at 16.

In 2005, CWLP contacted Burns & McDonnell to perform a wastewater treatment study for existing and new generation facilities. Reasons at 16. The study investigated availability and feasibility of wastewater treatment options and identified a potentially feasible boron removal option. *Id.* The FGDS wastewater stream is expected to have a boron concentration of 450 mg/L at an average flow rate of 187 gpm. Wastewater treatment alternatives included brine concentrator followed by spray dryer, reverse osmosis followed by crystallizer and spray dryer, electrocoagulation, ion exchange, activated carbon, and chemical precipitation. Reasons at 30-33. The recommended option was a brine concentration/spray dryer system for treatment of CWLP's FGDS wastewater. *Id.* Burns & McDonnell was retained to design the system. *Id.* Aquatech was contracted to provide the equipment and technology for the wastewater treatment process. *Id.*

The process CWLP was developing was basically a large evaporator referred to as a brine concentrator that would boil the liquid down to a concentrated salt-water solution. Reasons at 16-17. The concentrated saltwater would be sent to a gas-fired Spray Dryer that would convert the solution into a powdered salt that would be removed to a landfill. Reasons at 17.

CWLP and Burns & McDonnell discovered that the Aquatech system would need to be supplemented with pretreatment to remove solids in order to prevent scaling from forming in the evaporators and preheaters. Reasons at 17. After months of evaluation, the system had grown to the extent that annual natural gas costs would be a considerable expense and finding a feasible location for the boron removal plant was difficult. *Id.* Further, as the engineering progressed, Burns & McDonnell and Aquatech realized the application of the brine concentrator / spray dryer system technology to CWLP's waste stream was a unique application since the technology had not yet been used to treat FGDS wastewater. The TSD notes that there are currently no known commercially-demonstrated processes for treating wastewaters with such boron levels. Reasons at 28. Burns & McDonnell and Aquatech encountered issues that required significant changes on a regular basis. *Id.* Due to dramatic cost escalations and operating issues, CWLP abandoned the process and explored other options. Reasons at 17-19.

Conversion to dry ash systems would also not resolve the boron exceedences. Reasons at 29. The wastewaters are produced as a part of the air pollution control system would not be eliminated by switching to dry fly ash. *Id.* Burns estimated that the costs to switch to dry ash would be \$10.2 million and added operation costs of \$19.5 million. *Id.* Also, Burns found that switching Units 31 and 32 was not technically feasible and conversion of Unit 33 was not favored. *Id.*

Use of western coal also was not feasible. Reasons at 34. CWLP does not have any reliable way to receive rail-delivered coal and the site is not large enough for unit train coal deliveries. *Id.* Other equipment such as limestone storage silo and feed system would also need to be added for use of western coal. *Id.* Burns also found that factors associated with western coal combustion “may make it impossible for CWLP to achieve continuous air compliance under all operating conditions” using western coal. *Id.*

Springfield asserts that of the alternatives evaluated, pumping CWLP’s FGDS wastewater to the Spring Creek STP is the only technologically feasible and economically reasonable alternative. Reasons at 28.

Economic Impact of Proposed Rule

Springfield detailed the costs of implementing the site specific rule. CWLP’s contract with the District to accept the FGDS wastewater will cost \$100,000 per month. CWLP will spend an estimated \$15.5 million in capital costs to develop the system to pretreat and transport the wastewater to the Spring Creek STP. Reasons at 39. The total annual operating costs are estimated to be \$1.6 million. *Id.* Including in annual escalation in some costs and interest, Springfield estimates the present value to be \$36,100,000 or \$544 per electric service. *Id.* Springfield maintains that with little to no adverse environmental impact, the proposed site specific rule is well below the costs of other alternatives. *Id.*

For comparative purposes, Springfield provided capital and operating costs for the other alternatives evaluated although none were found to be both technologically feasible and economically reasonable. Capital costs of the other alternatives ranged from \$6.1 million to more than \$40 million, and annual operating costs ranged from \$800,000 to \$14 million. Reasons at 29, PC 1 Att. G. When compared with the other alternatives, Springfield asserts that the proposed site specific rule will result in substantial savings to CWLP and CWLP’s customers.

Other Boron Standards

Springfield points out that the Board has previously noted that meeting the water quality standard for boron is problematic for utilities and industry using Illinois coal. Reasons at 38, 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 Regarding the Parameter Boron, AS 96-1 (May 2, 1996), slip op. at 5. Springfield states that there is no other Illinois utility burning Illinois coal that utilizes the same air pollution equipment as CWLP, the combination of which Springfield attributes to the cause of boron exceedences. Reasons at 39.

SPRINGFIELD’S TESTIMONY AND COMMENTS

Springfield presented testimony from several witnesses at hearing, seven of whom prefiled testimony. The seven who prefiled testimony were Dave Farris, Gregg Finigan, and Doug Brown all of CWLP; Don Schilling of Burns & McDonnell, William Brown of Crawford,

Murphy & Tilly, Inc. ; and Deborah Ramsey and Jeff Busher of Hanson Professional Services Inc. In addition, Gregg Humphrey and Bill Murray with the District, provided answers to questions posed. Springfield filed three public comments. The following paragraphs will summarize the testimony of the witnesses and then each of the public comments.

Dave Farris

Mr. Farris is the Environmental Health and Safety manager for CWLP with over 30 years of experience in the area of environmental health and safety. Exh. 2 at 1. Mr. Farris testified in support of the proposal, and in particular he described CWLP's facility, NPDES permits and limits, efforts for boron mitigation, and consideration of alternatives and alternative technology. Exh. 2 at 1-2. Mr. Farris's testimony set forth the details summarized above concerning CWLP's two power stations, locations and number of employees. Exh. 2 at 2. Mr. Farris also described the capacity of Dallman Units 31, 32, and 33 and the new electric generating units (EGUs) being constructed. Exh. 2 at 2-4. Mr. Farris provided information on AS 94-9 and then detailed how CWLP's discharge changed and could no longer meet the adjusted standard with the addition of the SCRs. Exh. 2 at 5-6.

In addition to supporting the information in the proposal, Mr. Farris discussed the receipt by CWLP of a violation notice from the Agency for the boron exceedences. Exh. 2 at 6. CWLP responded to the Agency that CWLP was working with Hanson to investigate the causes of the boron exceedences and would continue to do so. *Id.* Mr. Farris stated that the Agency accepted the compliance commitment agreement (CCA) and required CWLP to present a report. *Id.* Mr. Farris indicated that in the report to the Agency, CWLP proposed a three-pronged approach to resolving the boron issue. Exh. 2 at 7. After investigating alternatives, Mr. Farris testified that in July 2007, CWLP presented a revised CCA to the Agency. Exh. 2 at 8. The revised CCA proposed pretreatment of the effluent at CWLP and a force main to send the wastestream to the District. *Id.*

Gregg Finigan

Mr. Finigan is the Superintendent of Production for CWLP and is responsible for operations of, and personnel for, the five EGUs operated by CWLP. Exh. 3 at 1. Mr. Finigan's testimony elaborated on the alternative and alternative technologies considered by CWLP to address the exceedences of boron. Exh. 3 at 2. Mr. Finigan testified that boron exists in natural sediments as borosilicates and is typically released into the environment slowly at low concentrations by natural weathering processes. *Id.* Mr. Finigan stated that boron is present in coal ash as various compounds and those compounds are captured in the sluiced coal ash and FGDS blowdown. *Id.* Mr. Finigan indicated that boron is very soluble in water and may remain in the process waters for long periods. *Id.*

Mr. Finigan testified that historically CWLP has been able to meet the adjusted boron standard in Sugar Creek. Mr. Finigan stated that prior to beginning operation of the SCRs in April of 2003, Outfall 004 showed minimal excursions beyond the adjusted standard boron limitation. Exh. 3 at 4. Mr. Finigan testified that in May 2003, during bi-monthly sampling at Outfall 004, the boron concentration was increasing and exceeded 11.0 mg/L. *Id.* Mr. Finigan

stated that CWLP was “fairly certain” based on the readings that the increase in the boron levels was a direct result of the SCRs operating. *Id.*

Mr. Finigan stated that after researching boron solubility a direct connection with ammonia having an affinity for boron compounds was established. *Id.* Apparently trace ammonia concentrations from the SCR operations resulted in increased boron solubility in the Dallman ash pond. Exh. 3 at 3. This then increased boron levels to CWLP’s clarification pond. *Id.* Mr. Finigan testified that the increased boron levels in the Dallman ash pond were below the 11.0 mg/L adjusted standard established in AS 94-9; however when the boron content of the FGDS blowdown is added to the clarification pond, the boron concentration at Outfall 004 is above the 11.0 mg/L adjusted standard in Sugar Creek. *Id.*

Of the alternatives evaluated, Mr. Finigan testified that the contribution of boron from the FGDS effluent would not be eliminated by conversion to dry fly ash system. Mr. Finigan pointed out that the FGDS effluent is generated by the air pollution control equipment and is not associated with the fly ash disposal system. Exh. 3 at 3.

Doug Brown

Doug Brown is the Projects Director for CWLP and has 14 years of experience in the field of electrical engineering and as an engineer with CWLP. Exh. 4 at 1. Doug Brown testified that over the past decade CWLP has worked with Burns & McDonnell to investigate alternatives to comply with the general water quality standard for boron. Exh. 4 at 2. Doug Brown indicated that CWLP together with Burns & McDonnell determined that pumping the FGDS wastewater to the District for treatment is the “only technologically feasible and economically reasonable alternative to address the boron exceedence problem in the wastewater stream.” *Id.*

Doug Brown stated that CWLP considered conversion to dry ash system, but the wastewater from the FGDS is generated by air pollution equipment and modifying the fly ash handling system would not affect the FGDS wastestream. Exh. 4 at 2. Doug Brown indicated that Burns & McDonnell estimated the costs to convert all of CWLP’s existing Dallman units to dry fly ash; however, he noted the conversion would not address boron generated by the FGDS. Additionally, he noted conversion would be infeasible at Units 31 and 32 and unfavorable at Unit 33. Doug Brown testified that CWLP also considered treatment options for the removal of boron from the FGDS wastewater, including 1) typical removal options, 2) brine concentrator followed by spray dryer, and 3) reverse osmosis followed by crystallizer and a spray dryer. Exh. 4 at 3-5.

Doug Brown testified that upon the recommendation of Burns & McDonnell, CWLP contracted with Aquatech to provide a zero liquid discharge plant for treatment of the FGDS wastewater consisting of two brine concentrators followed by two spray dryers. Exh. 4 at 5. CWLP invested in equipment and engineering for a pilot plant; however, the original scope of work and associated cost increased several times, approaching \$40 million in capital costs, resulting in CWLP abandoning the process. Exh. 4 at 6-7. At hearing, Doug Brown testified that CWLP purchased the equipment for the pilot plant, “So it wasn’t taken lightly to abandon the project.” Tr. 1 at 59.

Doug Brown stated that CWLP, at the suggestion of the Agency, investigated electrocoagulation for treatment. Exh. 4 at 8. For such a system, Burns & McDonnell estimated \$9.2 million in capital and \$14 million in annual operating costs. Additionally, Doug Brown indicated that on-site testing by the supplier was stopped due to equipment damaged by the aggressiveness of the FGDS wastewater and the testing was unable to show any reliability of boron removal. Exh. 4 at 9.

Doug Brown testified that CWLP also evaluated the use of western (Powder River Basin) coal in place of Illinois coal. Doug Brown elaborated that Powder River Basin coal is low in sulfur and low in boron compared to Illinois coal. Exh. 4 at 9-11. Doug Brown explained that among the problems of retrofitting of equipment, shipping delays, and railway modifications; the use of Powder River Basin coal may make it impossible for CWLP to achieve continuous air compliance. Exh. 4 at 10-11.

Doug Brown testified that in December 2006, Crawford, Murphy & Tilly prepared a preliminary study for CWLP to use the District's Spring Creek STP as an option. Exh. 4 at 8. Doug Brown stated that since then, CWLP has contracted with the District to accept the FGDS wastewater at a cost of \$100,000 a month. Exh. 4 at 11. CWLP intends to collect the wastewater in a 250,000 gallon holding tank with approximately 22 hours of holding time and then pretreat the wastewater for solids removal with a ClariConeTM solids contact clarifier. Exh. 4 at 11. Doug Brown opines that the pumping of FGDS wastewater will have a capital cost significantly lower than other options investigated by CWLP. Exh. 4 at 12.

Don Schilling

Mr. Schilling is a Senior Associate Chemical Engineer with Burns & McDonnell, and he provided testimony concerning studies done by Burns & McDonnell on boron treatment technologies, alternatives considered and the effectiveness of the alternatives. Exh. 5 at 1. Mr. Schilling testified that in March of 2004, Burns & McDonnell was contacted to investigate options available to treat FGDS wastewater to remove boron. Exh. 5 at 2. Mr. Schilling stated that the level of boron reduction required was significant, either requiring greater than 95% removal or zero liquid discharge from the FGDS. *Id.* Burns investigated options for boron removal processes including:

- 1) selective boron ion removal using activated carbon or chelating ion exchange resin,
- 2) precipitation/coagulation
- 3) reverse osmosis, and,
- 4) mechanical evaporation. Exh. 5 at 2-3.

Mr. Schilling stated that at the time of the study there was very little literature or experience regarding removal of boron from FGDS wastewater. Exh. 5 at 3.

After evaluating the options, Burns & McDonnell recommended the brine concentrator system from Aquatech and CWLP purchased the pilot plant system. Exh. 5 at 3-7. The brine

concentrator system included a spray dryer rather than crystallizer because of limited space and a desire not to generate additional solids. Exh. 5 at 8. Mr. Schilling testified that during the detailed design, more consideration was given to solids disposal and a determination was made that the solids would have a low density and the resulting volume of solids would be significantly larger than anticipated. *Id.* “The difficulty of handling and disposal of this waste product resulted in the abandonment of this treatment option.” *Id.*

William Brown

William Brown is a Senior Project Manager for Crawford, Murphy & Tilly with 28 years of experience in wastewater treatment, engineering, and management. Exh. 6 at 1. William Brown testified on behalf of the District, concerning the Spring Creek STP. *Id.* William Brown testified to the details of the Spring Creek STP including years of operation, population served, and the main unit processes. Exh. 6 at 2-3. William Brown stated that on average the discharge of Spring Creek STP is less than the 7-day 10-year low flow of the receiving stream. Exh. 6 at 3.

William Brown stated that, based on 2006 plant influent data, the influent to the Spring Creek STP contains carbonaceous biological oxygen demand (CBOD₅) concentrations from 157 mg/L to 214 mg/L with an average of 172 mg/L. Exh. 6 at 4. The removal efficiency of CBOD₅ after treatment is about 98% for an average effluent of CBOD₅ of approximately 3 mg/L. *Id.* The total suspended solids (TSS) concentrations in the influent range from 132 to 307 mg/L with an average of 198 mg/L for 2006. *Id.* The removal efficiency of TSS after treatment is 96%, with a discharge rate of 7.3 mg/L of TSS on average. *Id.* Spring Creek STP is not designed for nitrification, but through operational adjustments has been able to meet the seasonal ammonia nitrogen limits in the NPDES permit. Exh. 6 at 5. Phosphorus is not currently monitored at Spring Creek STP, and temperature of the treated wastewater leaving the Spring Creek STP ranges from a low of 50° to 78° in 2006. *Id.*

William Brown testified as to how the boron concentration was calculated using current boron influent data and a 7-Day low effluent flow combined with the FGDS wastewater flow. Exh. 6 at 5. William Brown explained that the influent boron is not expected to be significantly affected by the Spring Creek STP treatment process, nor is boron anticipated to adversely impact the treatment process. William Brown noted that the effluent boron is expected to mirror the influent boron. . *Id.*

Deborah Ramsey

Ms. Ramsey has 30 years of experience and is employed by Hanson Professional Services. Exh. 7 at 1. Ms. Ramsey’s testimony supports the proposal, and she is the principal author of the TSD. Exh. 7 at 1-2. Ms. Ramsey’s testimony described CWLP’s NPDES permits which regulate 16 outfalls. Exh. 7 at 2. Ms. Ramsey testified that Outfall 003 and 004 contain high concentrations of boron. *Id.* Ms. Ramsey noted that that through the adjusted standard AS 94-9 that CWLP received, an alternative water quality standard for boron already applies to portions of the surface waters impacted by this site specific rule. Exh. 7 at 2-3. Ms. Ramsey testified that the site specific rule would include an area of dispersion with boron concentrations:

ranging between 4.5 and 11.0 milligrams per liter (“mg/L”) from SMSD’s Spring Creek Sanitary Treatment Plant (“Spring Creek Plant”) Outfall 007 to 182 yards downstream in the Sangamon River; 4.5 mg/L in the Sangamon River from 182 yards downstream of the confluence of Salt Creek with the Sangamon River, a distance of 39.0 river miles; 1.6 mg/L in the Sangamon River from the confluence of Salt Creek with the Sangamon River to the confluence of the Sangamon River with the Illinois River, a distance of 36.1 river miles; and 1.3 mg/L in the Illinois River from the confluence of the Illinois River with the Sangamon River to 100 yard downstream of the confluence of the Illinois River with the Sangamon River. Exh. 7 at 3.

Ms. Ramsey testified as to the basis of the site specific boron water quality standards, and described the stream flow data used to develop the standards. Exh. 7 at 3. Ms. Ramsey discussed the current influent concentration of boron to the District and described how the FGDS effluent data was added to estimate a maximum boron concentration in the discharge of the Spring Creek STP of 11.0 mg/L was necessary. Under the same scenario, Ms. Ramsey testified that the boron concentration 182 yards downstream is estimated to be 4.5 mg/L. Exh. 7 at 6.

Ms. Ramsey’s testimony elaborated on the proposal concerning the character of the Sangamon River watershed including listing all the NPDES dischargers to the Sangamon River from the confluence of the South Fork of the Sangamon River to the Illinois River. Exh. 7 at 4. Ms. Ramsey also testified that all four stream segments at issue are impaired based on water quality data: all four are impaired for fish consumption, 3 are impaired for primary contact recreation, and one is impaired for aquatic life. Of the potential causes of aquatic life impairment, Ms. Ramsey indicated IEPA’s 2006 303(d) List identified boron, nitrogen, phosphorus, silver, TDS and TSS. Exh. 7 at 5-6.

Jeff Busher

Mr. Busher is an Environmental Biologist with Hanson Professional Services and has fifteen years of experience in the environmental health, water and wastewater treatment, and environmental/engineering consulting. Exh. 8 at 1. Mr. Busher drafted a part of the TSD. *Id.* Mr. Busher testified that the proposed site specific water quality standard for boron can be granted without any anticipated adverse effects to either aquatic life uses or other known uses of the Sangamon River. Exh. 8 at 2.

Mr. Busher states that the methodology and approach used by Hanson in preparing the analyses included review of existing water quality data, biological studies and stream flow information obtained from several agencies, and exiting published literature on the possible toxicological effects of boron. Exh. 8 at 2. In addition, Mr. Busher indicated that Hanson relied on materials prepared for CWLP and Central Illinois Light Company of Peoria for use in adjusted standard and variance proceedings before the Board. *Id.* In addition, Mr. Busher testified that he conducted a field survey with another Hanson biologist in October 2007 to characterize the general features of the Sangamon River downstream of the CWLP plant. *Id.* Based on that survey, Mr. Busher reiterated the stream characteristics of the Sangamon River previously testified to and included in the proposal. Exh. 8 at 3-5. Those characteristics that Mr.

Busher discussed included the NPDES permits for discharge to the Sangamon River and the impairment of the Sangamon River segments. *Id.*

Mr. Busher noted that boron is an element that is widespread in the environment and is widely distributed in surface and groundwater. Exh. 8 at 5. Mr. Busher stated that most boron occurs in fresh water due to the high water solubility of all boron compounds, especially boron-containing laundry products and sewage. *Id.* Mr. Busher testified that another source of boron is coal ash as many commercially mined coal seams contain significant concentrations of boron. *Id.*

Mr. Busher testified that Hanson reviewed existing literature documenting boron's effects on various biota, but the TSD primarily focused on freshwater biota. Exh. 8 at 5. Mr. Busher stated that USEPA classifies boron as a Group D element, which means that there is no human or animal evidence of carcinogenicity. *Id.* Mr. Busher's testimony detailed the findings concerning the toxicological effects of boron on mammals, fish, birds, and amphibians. Exh. 8 at 5-6. Mr. Busher states that based on the reviews of existing toxicity studies, documents and reports, and previous Hanson documents, there are no adverse effects anticipated from the site specific water quality standard for boron. Exh. 8 at 8.

Public Comments 1, 3, and 5

Springfield filed three public comments in this proceeding. The first public comment was filed to add to the record in this proceeding information requested by the Board at the first hearing and to clarify a citation in the TSD. Springfield provided information on studies and evaluations referenced in the TSD and prefiled testimony of petitioners, data on the constituents in the FGDS wastewater, the agreement between CWLP and the District, summary table of boron mitigation options, coordinates of the affected stream segments, and a corrected table for the TSD. *See generally* PC 1. The second public comment was a report requested by Prairie Rivers entitled, "Investigation of Mitigation Strategies for Boron Increase at Outfall 004," prepared for CWLP by Hansen Professional Services, Inc. *See generally* PC 3. The final public comment included responses to questions posed at the second hearing and a summary of the information in the record. *See generally* PC 5. The following paragraphs will summarize portions of PC 5.

Public Comment 5

Springfield urged the Board to apply the standard set forth in Section 27 of the Act (415 ILCS 5/27 (2006)) to determine whether or not Springfield has demonstrated that a site specific rule should be adopted. PC 5 at 4. 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).

Springfield notes that the Board and the courts have recognized the applicability of Section 27(a) of the Act (415 ILCS 5/27(a) (2006)) and the Board should use this standard in evaluating the site specific rule. PC 5 at 5.

Springfield summarizes the proposal including the reasons for Springfield to seek the site specific rule. PC 5 at 5. Springfield notes that the petition and testimony demonstrate that treatment of boron to the general water quality standard is not technically feasible or economically reasonable. PC 5 at 6. Springfield reiterates the facts surrounding CWLP's operations and the Spring Creek STP. PC 5 at 8-16. Springfield summarizes the testimony and petition contents regarding CWLP's prior relief and boron mitigation efforts and why the site specific rule is the solution that was sought. PC 5 at 16-31. Springfield restated the calculations used to develop the standards and the characteristics of the receiving stream. PC 5 at 31-35.

Springfield discusses the toxicological effects of boron and reiterates that the site specific standard will not have negative impact on the receiving stream. PC 5 at 36-39. Springfield 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 5 at 39-40.

In response to questions from the December 16, 2009 hearing, Springfield states that CWLP is not aware of any seepage from the unlined ash ponds or that groundwater is impacted by the ash ponds. PC 5 at 43. Springfield adds that CWLP does not collect data characterizing the groundwater beneath and adjacent to the ash ponds. *Id.* Springfield also responded to questions regarding treatment other than dilution for the FGDS effluent at the Spring Creek STP, indicating that inorganics such as boron, chlorides and sulfates will pass through the STP, most likely oxidizing in the aerobic digester and ending up in the sludge. PC 5 at 44.

As to concerns raised about meeting the site specific standard during drought conditions, Springfield states that the standard was calculated utilizing the 7Q10 and is thus based on drought conditions. PC 5 at 44. Springfield also responded to a question concerning the sufficiency of the holding tank and noted that the holding tank has about 4.7 days of capacity if CWLP limits pumping during periods of drought. Springfield added that historically such low flow from drought conditions does not last for several consecutive days, hence the 7-day low flow number of 11.3 MGD. PC 5 at 44-45.

Springfield states that they have worked closely with the Agency over the last several years to address the CWLP's boron issues. PC 5 at 47. Springfield maintains that Springfield has demonstrated that 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 COMMENTS

Mr. Robert Mosher testified on behalf of the Agency. Tr.1 at 14. Mr. Mosher is the manger of the Water Quality Standards Unit. Exh. 10 at 1. Mr. Mosher stated that prior to filing the proposal for site specific rule, CWLP met with the Agency on several occasions to discuss both boron treatment and removal options. Exh. 10 at 1-2. Mr. Mosher indicated that the

Agency agrees with Springfield that the site specific rulemaking is necessary. Exh. 10 at 2. Mr. Mosher stated that the rulemaking will cause no adverse impact to the environment and meets the requirements of Section 27 and 28 of the Act (415 ILCS 5/27 and 28 (2006)). *Id.*

Mr. Mosher testified that after reviewing the findings of CWLP, the Agency agrees that boron cannot be removed without significant monetary and energy expenditures that are not technically feasible and economically reasonable. Exh. 10 at 4. Mr. Mosher stated that the Agency's conclusions stem in part from "the fact that boron is not toxic to aquatic life at these concentrations." *Id.* Mr. Mosher notes that Springfield's supporting documents to the petition for site specific rule cite to several studies supporting the safety of boron at these concentrations to aquatic life. *Id.*

Mr. Mosher indicated that the Agency agrees that the boron concentrations discharged will not cause aquatic life toxicity in the Sangamon River. Exh. 10 at 4. Mr. Mosher further stated that human health will not be endangered because the boron in the river will be diluted below any estimation of drinking water concerns before the concentrations reach the nearest drinking water supplier, 185 miles downstream of the Springfield discharge. *Id.* Mr. Mosher notes that the existing general use water quality standard for boron was initially adopted to protect crops from excess boron in irrigation waters and that the Agency is not aware of any significant use of the Sangamon River for irrigation. Exh. 10 at 4-5.

Mr. Mosher pointed out that the Board has previously granted relief from the general use water quality boron standard to CWLP and other permit holders on the basis that higher discharges of boron are not toxic to aquatic life and treatment is not technically feasible or economically reasonable. Exh. 10 at 5. Mr. Mosher testified that the Agency anticipates the filing of other petitions for relief from the general use boron water quality standard. *Id.* Mr. Mosher stated that because there is a need for relief and studies have shown that discharges of higher concentrations of boron are not toxic to aquatic life, the Agency believes that the general water quality standard for boron should be amended. *Id.*

Mr. Mosher indicated that during recent discussions with United States Environmental Protection Agency (USEPA) about the boron standard, USEPA suggested that the Agency generate new aquatic life toxicity data for derivation of a State-wide water quality standard. Exh. 10 at 5. Mr. Mosher testified that the Agency will work with the Illinois Natural History Survey to generate the necessary supplemental aquatic life toxicity data to derive a general use water quality standard that is protective to aquatic life under both acute and chronic exposures. *Id.* Mr. Mosher stated that the amended boron water quality standard will also be protective of human health and domestic water uses at public water supply intakes. *Id.*

At the first hearing, Mr. Mosher was asked several questions about the monitoring of Sugar Creek and the Sangamon River, including whether the 11 mg/L adjusted standard was being met in Sugar Creek. *See* Tr.1 at 26-30. Mr. Mosher agreed to provide additional water quality data on Sangamon River and Sugar Creek, if the Agency had such data. Tr.1 at 34. Mr. Mosher also indicated that the Agency was searching for additional materials such as studies on boron toxicity but that those materials would be used in an Agency proposal to amend the general use water quality standard for boron. Tr.1 at 35-36.

On November 24, 2008, in PC 2, the Agency provided the data Mr. Mosher testified would be made available. Specifically, discharge monitoring reports data for CWLP Outfall 004 from January 2002 through September 2008 were submitted. PC 2 at 2. Also, the Agency provided ambient water quality monitoring and intensive basin survey data for total boron within Sugar Creek, segment EOA-01 from 1999-2007. PC 2 at 1. This station is maintained by the Agency and is approximately one mile below CWLP's Outfall 004. *Id.* This segment of the stream is listed as impaired for aquatic life uses and the impairment causes are boron, dissolved oxygen, total phosphorus, and total suspended solids. PC 2 at 1-2.

The Agency also provided ambient water quality monitoring and intensive basin survey data for total boron in the Sangamon River, segment E-26, from 1999-2007. PC 2 at 2. The Agency maintains this sampling station which is below the confluence of the South Fork of the Sangamon River with the Sangamon River and therefore is the first sampling station that is influenced by the existing CWLP discharge. *Id.* The station is approximately 8 miles from the CWLP Outfall 004 discharge. *Id.* The stream segment is listed as impaired for aquatic life, fish consumption, and primary contact uses on the draft 2008 303(d) List. The listed causes for impairment are boron, total phosphorus, silver, TSS, PBCs, and fecal coliform. *Id.* The Agency states that boron was inappropriately included in the listed causes for impairment as no sample exceeded the adjusted standard in this stream segment. *Id.*

At the second hearing, Mr. Mosher was asked about evidence concerning the impact of boron on aquatic life in the Sangamon River, given the Agency's claim that boron was inappropriately included in the listed causes for impairment. Tr.2 at 39-40. Mr. Mosher responded that a more complete answer would be included in comments, but that the biologists first look at the biology of the stream and assess macroinvertebrates and fish. Tr.2 at 40-41. If the aquatic life is not as healthy as it should be, the biologist look to see what is causing impairment. If the water quality standard is being met, then that constituent is not considered a cause for impairment. Tr.2 at 41.

Mr. Mosher was also asked to comment on how the proposed new standard for boron would affect the catfish population in the Sangamon River. Mr. Mosher testified that the Agency would respond in the final comment.

On February 2, 2009, the Agency filed a second and final public comment. PC 6. As to the question concerning catfish, the Agency stated that the proposed site specific rule for boron will be protective of catfish and other aquatic organisms in the streams and rivers impacted by this rulemaking. PC 6 at 1. The Agency noted that one study in the technical support document had lowest observable effect concentrations (LOEC) at 1.0 - 25.9 mg/L. *Id.* However, the Agency states that this one study's results are not consistent with other studies and that the study's design and methodology have been questioned. PC 6 at 1-2. The Agency commented that based on the other studies and the other "valid acute and chronic tests in the literature", the Agency is confident that catfish will not be adversely affected by boron under this site specific rule. PC 6 at 2.

The Agency has provided data on macroinvertebrates from the stream sections of both Sugar Creek and the Sangamon River; data collected both before and after the adoption of the adjusted standard in AS 94-9. PC 6 at 2-4. The macroinvertebrate Biotic Index (MBI) is one tool used by the Agency to summarize and evaluate macroinvertebrate sample data. PC 6 at 4. Based on available literature and field experience the Agency assigns a pollution tolerance rating to each taxon. *Id.* Pollution tolerance ratings range from zero to eleven with zero being high water quality and eleven being severely polluted or disturbed. *Id.*

The Agency indicated that EOA-01 has the most potential to reflect effects of the ash pond discharges. PC 6 at 4. A second monitoring station on Sugar Creek (EOA-06) is located at the Mechanicsburg Road bridge one mile downstream from the District's Spring Creek STP discharge point. PC 6 at 4-5. Data provided for 1989 indicates that the conditions were fair at EOA-01 and conditions were poor at EOA-06. PC 6 at 5. However, 1996 data indicated good conditions at both sites. *Id.* Water samples collected in conjunction with the macroinvertebrate data indicate boron concentrations were similar in 1989 and 1996 and based on ambient data from EOA-01 boron concentrations averaged 3,118 µg/L between 1980 and 2005. *Id.*

Sugar Creek's habitat profile in the summer is characterized by long pools with substrates comprised primarily of silt/mud and plant detritus. PC 6 at 5. Coarse substrates are typically only present in and around road crossings where rip-rap is added to stabilize banks. *Id.* Submerged logs and brush provide in-stream cover for macroinvertebrates. *Id.*

In the Sangamon River, in addition to samples from E-26, two other stations have been sampled. PC 6 at 5. Station E-RV-C2 is located at the US Route 54 Bridge along northwest part of Riverton and Station E-50 is located north of the Springfield near the railroad bridge on the downstream portion of Riverside Park. *Id.* The Agency commented that the MBI values indicated good water quality from all samples collected. *Id.* Based on ambient data from station E-26, boron concentrations averaged 319 µg/L between 1980 and 2005. *Id.*

PRAIRIE RIVERS COMMENTS

Prairie Rivers participated in both hearings, prefiled questions for the December 16, 2008 hearing, planned to present a witness at the second hearing but later withdrew (Tr. 2 at 11), and submitted public comment (PC 4). PC 4 lists Prairie Rivers' reasons for opposing the petition.

The following paragraphs will summarize the reasons articulated by Prairie Rivers for the opposition to the rule. The Board will first address technical feasibility of alternative treatments, then the economic reasonableness of those options. Next the Board will summarize Prairie Rivers' concerns that the proposed rule's environmental impact was not fully assessed. The Board will then delineate Prairie Rivers' concerns about consistency with federal law.

Springfield Has Failed to Demonstrate That Treatment of Boron to Meet the Illinois Water Quality Standard is Technically Infeasible

Prairie Rivers stated that Springfield has not shown the technical infeasibility of meeting the current adjusted standard for boron by implementing: 1) dry ash disposal and 2) purchasing

additional equipment so that Springfield could use the brine concentrator with a spray dryer as a means to creating a zero-liquid discharge (ZLD) system. PC 4 at 1-8; *citing* TSD at 6-3 to 6-8¹.

Turning to the first alternative, Prairie Rivers stated that although switching to a dry fly ash or bottom ash disposal system would not affect the boron levels in the FGDS system, such a change would reduce the amount of boron that is eventually flushed to Sugar Creek and the Sangamon River. PC 4 at 2. Prairie Rivers further stated that CWLP “may have intentionally foreclosed the option of dry bottom ash handling.” PC 4 at 3. On this point, Prairie Rivers noted that Springfield may have relied upon studies that no longer accurately portray the costs of switching to a dry ash system. PC 4 at 3. For example, Prairie Rivers stated that current renovations to the water treatment plant could allow more space for ash, even though the studies in TSD, which are dated from 2003 to 2005, suggest that the cost and space limitations made dry bottom ash an unfavorable option. PC 4 at 3; *citing* TSD at 6-5. Further, Prairie Rivers stated that the leaching of boron (and other pollutants) at the current ash pond could occur with continued fly ash sluicing. PC 4 at 5. Prairie Rivers Network is concerned that boron and other pollutants might be lost to the groundwater, lowering the effluent concentration from the ash ponds and underestimating boron levels in the evaluation of mitigation and treatment options. PC 4 at 3-4.

As to the brine concentrator, Prairie Rivers stated that there is evidence the technology is technically feasible for Springfield. PC 4 at 5. Prairie Rivers noted that CWLP had contracted with Aquatech to purchase the brine concentrator and spray dryer, but then abandoned the project. PC 4 at 5-6. Prairie Rivers also noted that CWLP chose the spray dryer option but could have decided to go with Aquatech’s advice and purchase a softener/crystallizer instead. *Id.* Responding to Springfield’s claims that the technology is yet unproven, Prairie Rivers noted that Aquatech’s systems were in use in five locations in Italy and that one was going to be used at a plant in Kansas City, Missouri in 2009. PC 4 at 6-7.

Springfield Has Failed to Show that Treatment of Boron to Meet the Illinois Water Quality Standard is Economically Unreasonable

Prairie Rivers stated that the estimated costs of the Springfield’s proposed handling and treatment system for sending the FGDS wastewater to Spring Creek STP is the second most expensive option CWLP evaluated and does not treat or remove any pollutants other than suspended solids. PC 4 at 8-9. Prairie Rivers opined that CWLP squandered \$7 million by purchasing the “brine concentrator and spray dryer” system and abandoning the technology. Prairie Rivers contends that CWLP requested a spray dryer instead of the crystallizer which Aquatech proposed to produce a solid waste stream that would be easier to handle. PC 4 at 9.

¹ Section 6 of the TSD includes analyses of several modifications at CWLP that evaluated to reduce boron levels. While Prairie Rivers focused on the two alternatives enumerated above, Prairie Rivers also briefly stated that two alternatives, which involve the re-use of bottom ash sluice water in the FGDS system and the cooling tower, respectfully, warrant further consideration. (*See* PC at 3, stating that “[t]hese options are viable and must be considered by CWLP.”) Also, the Board notes that Prairie Rivers sites to pages from the TSD based on the electronic pages, while the Board’s citations are to the page numbers on the TSD.

Also, Prairie Rivers stated that Springfield unnecessarily increased the cost of boron treatment by failing to implement water conservation measures. PC 4 at 9-10.

Springfield Has Failed to Provide and Accurate Assessment of the Environmental Impacts of the Proposed Site-Specific Standard for Boron

Prairie Rivers stated that under the Springfield's proposed course of action, the FGDS waste stream would contain more than just boron, such as sulfates, TDS, TSS, nitrate, ammonia, selenium, iron, cadmium, mercury, and manganese. PC 4 at 10. Further, Prairie Rivers noted that all four segments at issue are already considered "impaired" by the Agency and thus unable to support some of their designated uses. *Id.* Despite the presence of these additional pollutants, the waste stream from CWLP would not receive any additional treatment besides dilution under the proposed rule. PC 4 at 11.

Prairie Rivers stated that Springfield's studies of aquatic plants (macrophytes) may be insufficient to determine how critical macrophytes are in the growth, reproduction, and survival of aquatic and riparian life. PC 4 at 11. Prairie Rivers' concern is that although the Springfield conducted a macrophyte study by using three different Agency monitoring sites, the information provided on the study did not indicate the square footage examined. PC 4 at 11. Specifically, Prairie Rivers stated that 100 miles of river length would be affected by the proposed site-specific standard, and that Springfield had most likely surveyed less than three percent of that length. Additionally, Prairie Rivers adds that Springfield has not conducted a wetland survey in the 100-mile length and suggests that the petitioners complete a survey to avoid destroying plants that are sensitive to low levels of boron. PC 4 at 11.

Also, despite the fact that the current adjusted boron standard has been in effect for almost 15 years, Prairie Rivers contends the Agency has not taken up the opportunity to study the effects of the adjusted standard. PC 4 at 12. Further, Prairie Rivers stated that the Springfield's 1994 studies of Sugar Creek consist of mere predictions, and the petitioners have not studied the actual effects of increases in boron in the river system in question since then. PC 4 at 12.

Prairie Rivers notes that the Agency stated that the current boron water quality standard was adopted to protect irrigated crops sensitive to boron and questioned the Agency's position that the current boron standard is overprotective for aquatic life. PC 4 at 13. Prairie Rivers suggests the rationale behind establishing the boron water quality standard has not changed. Prairie Rivers suggested that going forward with the site-specific standard would foreclose the possibility of irrigating from the 100 mile stretch of affected river in some of the State's most important farmland. PC 4 at 13. Further, Prairie Rivers commented on the Agency's intention to work with the Illinois Natural History Survey (INHS) to further develop the boron toxicity database to revise the boron standard. PC 4 at 13. Prairie Rivers asserts the boron water quality standard be upheld and applied as enacted, until IEPA completes the literature review and Illinois Natural History Survey completes additional toxicity work. PC 4 at 13.

The Board Cannot Grant a Site-Specific Water Quality Standard That is Inconsistent With Federal Law

Prairie Rivers stated that CWLP's wastewater stream sent to the Spring Creek STP and discharged to the Sangamon River would contain some of the same pollutants for which the river is already impaired: TSS, TDS, total phosphorus, and total nitrogen. PC 4 at 15. Prairie Rivers suggests further study is needed to assure the diverted waste stream will not cause or contribute to the impairments in the Sangamon River or a violation of the water quality standard. PC 4 at 14-15; *citing* 40 C.F.R § 122.4. Prairie Rivers also raised the issue of compliance with the State's anti-degradation rules, stating that petitioners have not adequately demonstrated existing uses will be protected. PC 4 at 15; *citing* 35 Ill. Adm. Code § 302.105.

Further, Prairie Rivers expressed concerns that during times of drought, sufficient water might not be available for dilution. Prairie Rivers points to CWLP's proposal to collect the FGDS wastewater in a 250,000 gallon holding tank that would provide 22 hours of holding time with an additional two days when water is cycled. Prairie Rivers comments that the storage time seems inadequate given that drought conditions often persist for weeks or months. PC 4 at 16-17. Prairie Rivers cautions that during drought conditions, when the proposed boron standard is unlikely to be met, is when the river water may be used for irrigation. PC 4 at 16.

CWLP Should Have Anticipated and Remedied This Problem Years Ago

Prairie Rivers concluded by reiterating that: 1) CWLP has been monitoring for boron in Outfalls 003 and 004 since 1993, 2) CWLP had knowledge that the boron levels resulting from the FGDS blow-down and from the ash pond discharge would exceed the water quality standard, and 3) CWLP should have remedied the problem several years ago with a more sophisticated solution than dilution. PC 4 at 17.

DISCUSSION

The Board's discussion will begin with a brief analysis of the Board's authority to adopt rules under the Act. As Prairie Rivers has voiced opposition to the Board's adopting the site specific rule proposal from Springfield, the Board will address each of the concerns raised by Prairie Rivers, beginning with the technical feasibility of alternative technologies such as dry ash conversion and the use of a brine concentrator. The Board will then discuss the economic reasonableness of the alternatives. The Board will also discuss the environmental impact of the proposed rule and the consistency with federal law. The Board concludes by describing nonsubstantive changes made to the rule language.

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 of Alternative Technologies

CWLP currently has an adjusted standard for the boron water quality standard for discharges to Sugar Creek from Outfalls 003 and 004. See City of Springfield, AS 94-9. The record indicates that CWLP historically met the adjusted standard until the operation of SCRs used to help control air emissions at the Dallman Units were placed in operation. Reasons at 9; Exh. 2 and 3. CWLP investigated several alternatives to alleviate the boron concentration of the effluent. Reasons at 28; Exh. 5. Wastewater treatment options evaluated included: typical removal options, brine concentrator followed by spray dryer, reverse osmosis followed by crystallizer and spray dryer, electrocoagulation, ion exchange, activated carbon, and chemical precipitation. Reasons at 29-33. Other alternatives evaluated included: conversion to a dry ash system and use of western coal instead of Illinois coal. Reasons at 29-30.

Prairie Rivers maintains that if CWLP were to switch to dry ash handling or complete the brine concentrator project, CWLP could operate under the current adjusted standard and further relief would not have been necessary. In support of this position, Prairie Rivers commented that even though converting to a dry ash system will not affect the boron concentration in the FGDS wastewater, the change would reduce or eliminate boron in the ash ponds that is eventually flushed to Sugar Creek and the Sangamon River. Prairie Rivers also believes that the brine concentrator CWLP evaluated is a technically feasible alternative if the softener / crystallizer option is used to replace the spray dryer used in the pilot plant. In response to Springfield's assertions that the technology is yet unproven, Prairie Rivers states the same equipment is being used successfully at five power plants in Italy, with two more scheduled for Italy and Kansas City in 2009.

With regards to the feasibility of converting to a dry ash system, the TSD refers to the "Water Conservation Study" by Sargent & Lundy, April 2004. The report noted that conversion of Dallman Units 31 and 32 is not feasible since both boilers "produce a molten slag requiring a water impounded tank to quench the slag and form smaller particles for disposal." TSD at 6-5. The report also stated that although a bottom ash system could be used for Dallman Unit 33, "the cost was significant, and the experience with this technology in the United States is limited." *Id.* Burns & McDonnell concurred with this opinion, noting that the cost-benefit ratio was expected to be unfavorable. *Id.* As further support, Springfield emphasizes that the source largely

responsible for the exceedences in the discharge is the high boron concentrations in the FGDS wastewater which will not be alleviated by switching to a dry ash system. The Board finds that these issues of infeasibility, unfavorable cost-benefit ratio, and lack of attention to the FGDS boron source support Springfield's demonstration that conversion to a dry ash system is neither a technically feasible nor economically reasonable option.

With regards to the brine concentrator, there was extensive testimony and discussion concerning the investigation by Springfield, and CWLP in particular, of the brine concentrator. CWLP expended substantial funds to develop the treatment option and only reluctantly abandoned the project. At the November 2008 hearing Ms. Barkley asked if the \$7 million for the Aquatech brine concentrator pilot plant had already been spent, and Doug Brown testified that the equipment was purchased, "So it wasn't taken lightly to abandon the project." Tr. 1 at 58-59.

Although Prairie Rivers raised examples of other systems in Italy and Kansas City at the November 2008 hearing, Mr. Schilling clarified that none of the facilities referenced by Prairie Rivers had gone into service yet, although some are "right on the doorstep of commissioning." Mr. Schilling testified that "we're watching those with Aquatech very closely to see what the results are." Tr. 1 at 58. Mr. Schilling reiterated, "Actually, there's been no brine concentrator system in service right now that we can monitor on FGDS wastewater." At the hearing, Ms. Ramsey further differentiated these applications from CWLP's, based on the concentration of boron and other ions in the waste stream, noting that she has not seen any commercial application for boron concentrations in the range of 400 – 500 ppm. Tr. 1 at 57.

Based on the recommendation of Burns & McDonnell, CWLP committed substantial finances and resources to investigating the brine concentrator option. Only after struggling with the nuances of the system and projecting costs surpassing \$40 million did CWLP abandon the project to evaluate other options. The Board finds that the poor experience with the pilot plant coupled with the lack of similar systems treating boron with concentrations in the 400-500 mg/L range supports Springfield's assertion that this option is neither technically feasible nor economically reasonable.

Of all the alternatives evaluated, Springfield asserts pumping CWLP's FGDS wastewater to the Spring Creek STP is the only technologically feasible and economically reasonable alternative. Based on the record in this rulemaking at this time, the Board agrees with Springfield's assertion. Thus, a site specific standard is necessary to address the exceedence of the boron water quality standard in the affected river segments.

Economic Reasonableness of Proposal

As noted above, the only technically feasible option available to Springfield to address the boron discharge from Outfall 004 is to pump CWLP's FGDS wastewater to the Spring Creek STP, as proposed in the site specific rule. Springfield detailed the costs of implementing the site specific rule. CWLP's contract with the District to accept the FGDS wastewater will cost \$100,000 per month. CWLP will spend an estimated \$15.5 million in capital costs to develop the system to pretreat and transport the wastewater to the Spring Creek STP. Reasons at 39. The

total annual operating costs are estimated to be \$1.6 million. *Id.* Including in annual escalation in some costs and interest, Springfield estimates the present value to be \$36,100,000 or \$544 per electric service. *Id.* Springfield maintains that with little to no adverse environmental impact, the proposed site specific rule is well below the costs of other alternatives. *Id.*

For comparative purposes, Springfield provided capital and operating costs for the other alternatives evaluated although none were found to be both technologically feasible and economically reasonable. Capital costs of the other alternatives ranged from \$6.1 million to more than \$40 million, and annual operating costs ranged from \$800,000 to \$14 million. Reasons at 29, PC 1 Att. G.

Prairie Rivers stated that the estimated costs of the Springfield's proposed handling and treatment system for sending the FGDS wastewater to Spring Creek STP is the second most expensive option CWLP evaluated. PC 4 at 9-10. Prairie Rivers argues that both the dry ash or brine concentrator options are economically reasonable and less costly than the handling and treatment options proposed in the site specific rule. The Board notes that while the cost of the dry ash or brine concentrator options may be lower, these alternatives were found to be technically infeasible.

According to Springfield, the switch to a dry ash system would cost \$10.2 million in capital and \$19.5 million in annual operation. Even though a dry ash system has a lower capital cost than Springfield's proposed option, the annual costs quickly surpass any initial savings. Additionally, the switch to dry ash is considered technologically infeasible for two units and will not alleviate the boron concentrations in the FGDS wastewater.

As to the brine concentrator, CWLP pursued the brine concentrator option based on the recommendation of Burns & McDonnell and the initial cost estimates for capital of \$8,222,000 million and annual operating cost of \$798,539. CWLP proceeded to invest significant finances in equipment and engineering for a pilot plant; however, the original scope of work and associated cost increased several times, approaching \$40 million in capital costs. Based on the record, the Board recognizes that the pilot plant was not successful in efficiently treating CWLP's FGDS wastewater and that a full-scale operation is not economically reasonable for Springfield at this time.

Springfield asserts that of the alternatives evaluated, pumping CWLP's FGDS wastewater to the Spring Creek STP is economically reasonable. Other than costs associated with the options for boron mitigation, no other cost information has been presented on the impact of the proposed site specific rule. Based on the record before the Board, the Board finds the site specific rule is economically reasonable.

Environmental Impact of Proposal

As noted above, Prairie Rivers expressed concerns regarding the adverse environmental impacts of the proposed site specific rule on the receiving segments. Prairie Rivers reminded the Board that the four stream segments are listed as impaired, including E-26 which is impaired for aquatic life. PC 4 at 10. Prairie Rivers is concerned that Springfield has not accurately assessed

the stream segments for environmental impact. *Id.* Prairie Rivers noted that the wastewater will not contain just boron but also other pollutants such as TDS, TSS, nitrate, ammonia and manganese. *Id.* Prairie Rivers pointed out that the record does not indicate how much square footage of stream and river beds were examined in the macrophyte study nor is there evidence that a wetland survey was conducted.

Prairie Rivers also takes issue with the Hanson study and Mr. Mosher's statements about studying the impact of boron. PC 4 at 12. Prairie Rivers urges the Board to uphold the current boron standard until additional literature reviews and toxicity work can be completed. PC 4 at 13.

The Board appreciates the concerns raised by Prairie Rivers. Both the Agency and Springfield provided testimony that the toxicological impact of boron on the stream is not significant. The record includes sufficient literature information and water quality data to support the adoption of the proposed boron standards on a site specific basis. The studies included in TSD, and those discussed by the Agency indicate that the proposed boron standard of 11 mg/L is protective of aquatic life. Additionally, IEPA's macroinvertebrates data from sections of both Sugar Creek and the Sangamon River that was collected both before and after the adoption of the adjusted standard in AS 94-9 supports the proposed site specific boron standard. The Macroinvertebrate Biotic index (MBI) values for the stream sites affected by the boron discharge from the CWLP's ash ponds indicates good conditions at the stream sites impacted by the higher level boron discharge from the CWLP's ash ponds. Further, Mr. Mosher indicated that the one stream segment listed as impaired and listing boron as a cause was incorrectly listed for boron. Both Springfield and the Agency indicated that human health would also not be impacted by the site specific rule. Therefore, the Board finds that the site specific rule will be protective of the uses of the streams and will not negatively impact human health or the environment.

This finding is consistent with the Board's numerous precedents granting adjusted standards and site specific rules for boron. See *Petition 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); *Petition of AKZO Chemicals, Inc., for an Adjusted Standard From 35 Ill. Adm. Code 304.105 and 302.208*, AS 93-8 (Sept. 1, 1994).

Regarding the ongoing review of boron toxicity by IEPA and INHS, as noted by the Agency, the review is being done to support a revision of the state-wide general use boron water quality standard. The results of IEPA/INHS study is expected to bolster the scientific justification for the revision of the general use boron standard. If the IEPA/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

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.*

Consistency with Federal Law

Prairie Rivers argues that the Board's adoption of this site specific rule would be in consistent with federal law because the discharge would violate the antidegradation provisions of the Clean Water Act. PC 4 at 15. Prairie Rivers' argument is premised on the argument that the site specific rule does not protect existing uses. As discussed above, the Board is convinced that the site specific rule will not adversely impact the fish, wildlife and plant life in the affected streams. Furthermore, the Board believes that all existing uses will be protected. Therefore, the Board does not agree that granting the site specific relief will be inconsistent with federal law.

Revisions to Rule Language

The Board has made some non-substantive changes to the rule language proposed at first notice to make it consistent with the existing format of the site-specific water quality standards set forth in Part 303. These changes clarify that the site-specific boron water quality standards apply to segments of the Sangamon River and the Illinois River instead of the discharge from the wastewater treatment plant. In addition, the Board has added the coordinates provided by the petitioner to identify the stream segments. See PC 1, Exh. H. Finally, the proposed rule reflects the Errata Sheet changes submitted by the petitioner at the first hearing. See Exhibit 1.

CONCLUSION

The Board finds that the site specific rule is economically feasible and technically reasonable. Further, 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 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	<u>Boron Water Quality Standard for segments of the Sangamon River and the Illinois River Springfield Metro Sanitary District Spring Creek Treatment Plant Boron Discharge</u>

SUBPART D: THERMAL DISCHARGES

Section	
303.500	Scope and Applicability
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 ____ Ill. Reg. _____, effective _____.

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

Section 303.446 Boron Water Quality Standard for segments of the Sangamon River and the Illinois River Springfield Metro Sanitary District Spring Creek Treatment Plant Boron Discharge

The general use water quality standard for boron set forth in Section 35 Ill. Adm. Code 302.208(g) shall not apply to segments of the Sangamon River and the Illinois River (described below) waters of the State that receive discharge from Outfall 007 of the Spring Creek Sewage Treatment Plant located at 3017 North 8th Street, Springfield, Illinois, owned by the Springfield Metro Sanitary District. Boron levels in those river segments waters must meet the following water quality standards for boron-as set forth in this section:

- a) 11.0 mg/L in an area of dispersion within the Sangamon River from Outfall 007 (Latitude: 39° 51' 37.234" North, Longitude: 89° 38' 30.082" West) to 182 yards downstream from the confluence of Spring Creek with the Sangamon River (Latitude: 39° 51' 42.595" North, Longitude: 89° 38' 30.089" West);
- b) 4.5 mg/L in the Sangamon River from 182 yards downstream of the confluence of Spring Creek with the Sangamon River (Latitude: 39° 51' 42.595" North, Longitude: 89° 38' 30.089" West) to the confluence of Salt Creek with the Sangamon River (Latitude: 40° 7' 33.009" North, Longitude: 89° 49' 40.224" West), a distance of 39.0 river miles;
- c) 1.6 mg/L in the Sangamon River from the confluence of Salt Creek with the Sangamon River (Latitude: 40° 7' 33.009" North, Longitude: 89° 49' 40.224" West) to the confluence of the Sangamon River with the Illinois River (Latitude: 40° 7' 33.009" North, Longitude: 89° 49' 40.224" West), a distance of 36.1 river miles; and
- d) 1.3 mg/L in the Illinois River from the confluence of the Illinois River with the confluence of the Sangamon River (Latitude: 40° 7' 33.009" North, Longitude: 89° 49' 40.224" West) to 100 yards downstream of the confluence of the Illinois River with the Sangamon River (Latitude: 40° 1' 20.197" North, Longitude: 90° 26' 3.205" West).

IT IS SO ORDERED.

I, John T. Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on April 2, 2009, by a vote of 5-0.



John T. Therriault, Assistant Clerk
Illinois Pollution Control Board