

Robert Currie
Director of Environmental Health and Safety Engineering
Baxter International Inc.
One Baxter Parkway
Deerfield, IL 60015-4625

December 6, 2004

Dear Mr. Currie:

Please find enclosed “Why Water Conservation at Baxter? It’s All in the Triple-Bottom Line,” a report arguing for Baxter Healthcare’s adoption of water conservation as one of its environmental performance goals for the year 2015.

The submission of this report is the final assignment for General Business 600: Environmental Strategy & Sustainability at the University of Wisconsin-Madison. On behalf of the course joint sponsors, the UW-Madison’s Institute for Environmental Studies and School of Business, we would like to thank Baxter for giving us the opportunity to provide our recommendations.

We would also like to commend and express our appreciation for Baxter’s continued commitment to environmental leadership and innovation. Socially responsible businesses like Baxter are essential players in creating a sustainable and just future.

If you have any questions regarding the report, please feel free to contact Paige Wilder at pewilder@wisc.edu or 608-241-1349.

Sincerely,

Andrew De Rocher Samantha Snider Chapin Storrar Michael Webster Paige Wilder

Why Water Conservation at Baxter? It's all in the Triple Bottom Line

Submitted by:

Students of General Business 600: Environmental Strategy and Sustainability
University of Wisconsin-Madison

December 6th, 2004

“Of all the social and natural crises we humans face, the water crisis is the one that lies at the heart of our survival and that of our planet Earth... No region will be spared from the impact of this crisis which touches every facet of life, from the health of children to the ability of nations to secure food for their citizens.”

-Koïchiro Matsuura, Director-General, United Nations Educational, Scientific & Cultural Organization¹

“The business case is building for companies to develop more coordinated and forward-looking water strategies. Water costs are increasing, business disruption risks are growing, and stakeholders are becoming more concerned about companies’ water-related performance.... Companies that understand the trends shaping the global business environment will be better positioned to identify new market opportunities, mitigate risk, develop sustainable water strategies, and create shareholder value.”

-Water Sustainability Work Group, Chaired by ConAgra Foods & The Coca-Cola Company²

Introduction

There are many pressing environmental and social concerns that Baxter will be considering when establishing its 2015 Environmental Performance Goals. Following is an argument for why adopting progressive water conservation measures will prove to be one of the most socially and environmentally responsible, as well as financially beneficial, of these choices.

High population growth and booming industrial demand are causing chronic freshwater shortages around the globe. With industry accounting for 59 percent of freshwater use in high-income countries and 23 percent worldwide, businesses have an incredible opportunity to become leaders in stemming this dangerous trend.³

The Social Dimensions of Water Consumption

Freshwater is fundamental to survival and is believed by many to be a basic human right – a belief affirmed by the United Nations Committee on Economic, Social and Cultural Rights in November 2002, who declared access to adequate amounts of clean water a fundamental human right of all people. Yet, 1.1 billion people around the globe currently lack access to clean water, a number which could grow to as many as seven billion by 2050.⁴

The most direct effects of water scarcity are on human health. According to the Pacific Institute for Studies in Development, Environment, and Security, people need, on average, 13 gallons of water for drinking, cooking, bathing and proper sanitation. In some countries people survive on much less; in Somalia the average daily allowance is only 2.3 gallons.⁵ This scarcity has a human cost. Water-related diseases are among the most debilitating and deadly, and are often exacerbated by water scarcity. Diseases such as hepatitis and dysentery may be caused by absent or inadequate wastewater treatment (one liter of wastewater pollutes about eight liters of freshwater¹), whereas poisoning may be attributed to high levels of toxins in overtaxed aquifers. These toxins occur naturally at levels safe for human consumption, but concentrations often increase with groundwater over drafting. These sorts of health concerns are not limited to water scarce regions; Waukesha, Wisconsin, once hailed “the Saratoga of the West,” has so severely overtaxed its aquifer that groundwater levels have dropped 500 feet and residents face dangerously high levels of radium and hard minerals in their drinking water.⁶ In 2000, 2.2 million people were estimated to have died from water associated diseases.⁴

Water scarcity also relates to food production. Water scarce regions face difficult decisions between irrigation and urban water provision. These dilemmas are often pushed off on future generations by drafting groundwater faster than it is naturally replenished. But farmers in water scarce regions such as Chomu and Amer, India are already facing the consequences of groundwater over drafting. Wells in used to bear water at 10 to 15 feet, but some farmers have been forced to go as deep as 125 feet. This results in rising input costs, falling productivity and lesser land being tilled.⁷ These problems will not

be limited to Third World countries. The estimated use of groundwater in the United States in 1950 was 34.3 billion gallons per day. By 1990 it was projected at 79 billion gallons per day, representing a 230 percent increase.⁸

The Environmental Dimensions of Water Consumption

If present consumption and population trends continue, humans will utilize about 90 percent of all fresh water by 2025, leaving only 10 percent for fish, wildlife and natural ecosystems. Already over half of the world's wetlands have been lost due to, in part, an over-abstraction of water. This overuse of water has resulted in losses of functional ecosystems and threatened over 3500 species worldwide.⁹ A dramatic example of such consequences can be seen in central Asia. The Aral Sea used to be the fourth largest freshwater lake in the world, but due to increased upstream irrigation its area has declined by 60 percent over the last 45 years and *all native fish species* have completely disappeared.¹⁰ Jordan's Azraq Oasis was once a 7,500 hectare wetland teeming with native aquatic and terrestrial species, and acclaimed internationally as a major station for migratory birds. Irrigation and demand from the nearby city of Aman has actually drained the Oasis dry in less than 25 years, and caused the complete collapse of the wetland's ecosystem.¹¹

Most examples of environmental degradation driven by over consumption of surface or groundwater are not so severe. They should not, however, be overlooked. Many freshwater fish spawn and lay eggs in near shore areas, so slight fluctuations in lake and stream water levels can have dramatic impact on species survival. Since the Endangered Species Act was passed in 1973 over 100 species of freshwater fish have been added to the threatened or endangered list and more than 250 freshwater fish species are in danger of disappearing despite conservation efforts. These losses are due in large part to lowered lake and stream levels, as well as wetland loss (nearly half of the continental United States had lost upwards of 50 percent of their wetlands by 1990). According to the United States Geological Survey, the total effects of human impacts in these areas is not fully understood, but their consequences, including habitat and species loss, can be linked to a net decline in freshwater availability.⁸

Business Justification

Water costs money; whether it is paying for the rights to extract water from an aquifer, paying to treat wastewater, paying for permits to discharge effluent, or paying for the energy required to move water around the facility. It should come as no surprise, then, that water conservation can lead to considerable cost savings. Several companies, such as Anheuser-Busch, Novartis AG, and Texas Instruments Incorporated have already reaped the financial benefits of water conservation, and their stories are suggestive of what Baxter can expect to accomplish. Point-of-use water reduction efforts throughout Texas Instruments' Attleboro, Massachusetts plant lowered annual treated wastewater discharges from 175 million gallons to less than 50 million. By installing a water recirculation process at their Fort Collins, Colorado brewery in 2002, Anheuser Busch cut water demand by 12 percent within a year.¹² In addition to economic gain directly from water savings, water conservation can indirectly boost production levels in cases where effluent discharge is a limiting factor. After installing a water recirculation unit Novartis AG was able to increase production levels by 53 percent while simultaneously decreasing their wastewater discharge from 130,000 to 73,000 gallons per day and improving water quality.¹³

In their May 2000 issue, *Fortune* magazine suggested that water "promises to be to the 21st century what oil was to the 20th."¹⁴ *Fortune* was alluding to water's emerging market potential, but as with the other precious liquid, access to freshwater promises to be a source of great political interest – and unrest. Consider Cochabamba, Bolivia, where street protests over water privatization-induced rate

increases led to riots and the death of six people in 1999, and the American southeast, where protracted legal battles are still being fought between the seemingly water-rich states of Georgia, Alabama and Florida over interstate river basin withdrawal rights.

These situations and others like them could be avoided through proper government regulation, but water quantity management has been historically under considered by policy makers worldwide. Unfortunately, this could leave businesses that are operating fully within the law, nonetheless wide-open to public outrage, which may result in consumer boycotts, business interruptions and even plant closures.

Again, consider the situation in Chomu and Amer, India, where non-governmental organizations and local residents are protesting the operation of a Coca-Cola bottling plant they blame for sharply declining groundwater levels and resulting agricultural losses.¹⁵ By paying small annual fees to the government, Coca-Cola is legally entitled to withdraw as much groundwater as it can, but angry farmers are not taking it. According to Nandlal Master, a protest organizer from Lok Samiti and the National Alliance of People's Movements, "Coca-Cola is stealing our water, our land and getting away with it legally. And they are calling our struggle for our livelihoods, our existence, illegal. We do not accept this, and our struggle with prevail."¹⁶ Such public pressure has actually forced local government to rescind Coca-Cola and Pepsi's withdrawal licenses in Kerala, and Coca-Cola recently announced that it may permanently close its plant because it hasn't been able to regain its license.¹³

Lest we think the intensity of public pressure over water quantity concerns is or will be relegated to politically unstable and/or water scarce regions, consider the situation in Mecosta County, Michigan, where The Nestlé Corporation has been issued a court order to shut down pumps at its \$100 million Ice Mountain water bottling plant. Nestlé bought their pumping permits fair and square (as did Coca-Cola and Pepsi in India), but plaintiffs successfully argued that the plant's large-scale withdrawals violated a state environmental law declaring groundwater to be held in public trust for the benefit of Michigan citizens. Nestlé's protest that the plant's withdrawals were miniscule in comparison to those made for residential and agricultural purposes "held no water" when private profit was pitted against public welfare.¹⁷

Projections of freshwater access and related public concern (whether justified by current/anticipated scarcity or not) will result in stricter water conservation regulations around the world. Already, authorities in Beijing, China are vetoing new water-intensive businesses and requiring beverage, plastic and pharmaceutical manufacturers to meet new water conservation restrictions.¹⁸ In 2003, a bill (HB No. 55) was introduced into the Louisiana state legislature that would have made it *illegal* for potable water to be used for non-potable uses, including industrial uses. In the Great Lakes region, state and provincial authorities are working on a binding agreement requiring all new large-scale water withdrawals within the *entire* Great Lakes drainage basin to include all realistic and feasible water conservation measures and to actually *enhance* (let alone not harm) the quality of the Great Lakes, their tributaries and groundwater resources.

Changing regulations will also affect water supply costs. According to the United States Environmental Protection Agency, "water supply clearly is a *rising-cost* industry." Due to stricter safe drinking water standards, aging water delivery infrastructure and population growth. Rising costs are forcing water utilities to "reexamine their cost allocation and rate design practices."¹⁹ Indeed, over the past ten years, North Carolina municipalities have made notable shifts away from traditional "declining block" rate structures to alternatives such as "uniform" and "increasing block."²⁰

To date, most water regulations have been focused on the “back-end” of the process, applying to water and wastewater discharge. Businesses are familiar with these regulations and decisions are made to abide by them and their costs are factored into business plans. The problem will come however, when regulations, like those listed above, start applying to the “front-end” water use. As many businesses are not prepared for the increased costs of conforming to these regulations, the large capital investment to reach compliance could be financially serious. However, by starting early and getting in front of the regulatory curve, the impact will be minor, and the capital investment can be spread over a much longer time period. It is also beneficial to be ahead of the regulatory curve because various government incentives may be available for companies looking to reduce their water consumption. Just as solar technology is subsidized for consumers willing to install it, increasingly water-conscious governments could begin offering incentives for voluntary reduction.

Finally, demonstrating “beyond compliance” improves corporate image by signifying concern for pertinent social issues. Unfortunately, water conservation is not an accomplishment easily relayed to customers implementing environmentally preferable purchasing programs. But by implementing progressive water conservation goals Baxter may become eligible for the Stockholm Industry Water Award, the United Nations’ Champions of the Earth Program and many other high profile water conservation awards.¹³ Such positive, third-party, recognition is very beneficial for public perception and corporate image.

Recommendations

Our recommendations are tailored to Baxter’s medical delivery division and the Marion, NC plant was studied to develop specific suggestions. However, many recommendations will be applicable to all of Baxter’s divisions.

- Recycle Cooling Water: More than half of the Marion facility’s daily water is used “once through” primarily for equipment cooling and then sent to the waste-water treatment plant (this is not specific to the healthcare industry either, as 90% of water used by industry is in cooling operations). We recommend that the once-through cooling water system be examined thoroughly for implementation of a closed loop system, or recycling the used cooling water for other uses in the plant. Though on a much smaller scale the Textron Automotive Company in Port Hope, Ontario, saves about \$77,000 a year in water costs due to in-plant reuse and recycling of cooling water from injection molding machines.²¹
- Reclaim and Reuse Treated Wastewater: Reuse of the treated wastewater effluent in the cooling system or for other uses would also save significant amounts of water and money. This recommendation would be applicable to many of Baxter’s facilities, as more than half of company wide wastewater is treated onsite. On the effluent end, water is treated and pumped regardless of whether it is discharged to a river or if it returns to the plant, so little extra energy would be required. In addition, energy would be saved because the groundwater pumps would not be working as hard due to the reduced volume. Issues such as deposit build up and temperature would need to be addressed, though studies have shown that up to ten cycles of concentration are viable before deposits are a problem in cooling equipment.²² Mixing the recycled water with “fresh” groundwater could also help to remedy this problem and would lower the temperature as well. Additionally, there are technologies continually being developed that improve the quality of recycled water by removing dissolved solids and other water conditioning measures. The treated effluent can also be used for landscaping purposes,

saving water for more pertinent uses. Baxter has already implemented this idea at the Round Lake campus²³; and company wide implementation would have a significant impact.

- Perform Regular Water System Maintenance: Other steps for water conservation include fixing leaks promptly so that no water is wasted unnecessarily. As part of their conservation efforts, Anheuser-Busch eliminated steam, water, and condensate leaks and optimized their cleaning processes in all of their facilities, reducing 1991 water demand by 17 percent by 2003 (adjusted for production changes).¹² Johnson Controls reduced water usage by 22% at its Johnson City Medical Center by implementing a simple program of enhancing plumbing technology and metering water-cooled mechanical equipment.²⁴
- Install Low Flow Water Fixtures: United Technologies Corporation has estimated that for every \$1,000 they invest in low-flow faucets, toilets, and shower heads and other types of water conservation devices, they save \$11,000 per year in associated water costs.¹³ These improvements will be particularly beneficial in facilities like Baxter's with large work forces. Additionally, as other, higher cost, pieces of equipment wear out, they should be replaced with water-efficient models.²⁵
- Create An Employee Incentive Program: Include everyone in the entire company in water conservation efforts, from top to bottom. Employee incentives, such as personal awards, and continuous educational programs have been shown to greatly impact a company's ability to fulfill their goals.²⁶ Anheuser-Busch attributes much of their success to a training program that enhances employee education and awareness and an incentive program that promotes water-saving ideas.¹²

As in any project, downsides exist for our recommendations. Perhaps the most noticeable is the up-front capital costs that would be involved in moving forward with the recommendations. However, as we have shown there is much to be gained financially over the long term, and because we are certain Baxter wants to continue providing its excellent services, there needs to be a focus on the future. Another issue is that many of the easiest things may already be accomplished. This "low-hanging-fruit" is certainly the most appealing and results are often seen more immediately. Nevertheless, this is an issue in nearly all of Baxter's environmental initiatives and as a forward looking and sustainably focused company Baxter must strive to go beyond the easiest steps. Finally, because water issues have yet to supersede energy and packaging efficiency and other issues that are currently the focus of legislators and the populace, Baxter's initial efforts may not be as apparent or recognized by those people. However, as we have shown, there is increasing concern for water conservation and it is only a matter of time before it is the main focus of the world community.

Conclusion

Baxter has already proven it is a leader in the environmental field and efforts made at furthering a sustainable ideal are necessary to retain that reputation.^{13, 23} From the Sustainability Report available on the Baxter website, there are examples of water saving measures even though there is no formal water conservation plan in place; making it obvious that water conservation is something that Baxter is concerned with. By examining the recommendations made in this report, we hope Baxter realizes that there exist many opportunities for further money savings and environmental protection by focusing on water conservation.

References:

- 1 United Nations Educational, Scientific & Cultural Organization (UNESCO), "Political inertia exacerbates water crisis, says World Water Development Report First UN system-wide evaluation of global water resources," press release, 3 May 2003, http://portal.unesco.org/en/ev.php-URL_ID=10064&URL_DO=DO_TOPIC&URL_SECTION=201.html (3 December 2004).
- 2 Business for Social Responsibility (BSR), Water Issues, 11 November 2004 <http://www.bsr.org/CSRResources/IssueBriefDetail.cfm?DocumentID=49620> (11 November 2004).
- 3 UNESCO, "The United Nations World Water Development Report," 3 May 2003, http://www.unesco.org/water/wwap/facts_figures/water_industry.shtml (4 December 2004).
- 4 Common Dreams, <http://www.commondreams.org/headlines03/0305-05.htm> (30 November 2004).
- 5 Pacific Institute for Studies in Development, Environment, and Security, "Water: Facts, Trends, Threats & Solutions" 22 March 2002, http://www.pacinst.org/reports/water_fact_sheet/water_factsheet.pdf, (4 December 2004).
- 6 Andrew Noikiforuk, "Political Diversions: Annex 2001 and the Future of the Great Lakes," Munk Centre for International Studies at the University of Toronto, June 2004.
- 7 Indian Resource Center (IRC), "Anti-Coca-Cola Agitation Picks up in Kaladera, Rajasthan," 24 September 2004, <http://www.indiaresource.org/campaigns/coke/2004/risingstruggles.html> (11 November 2004).
- 8 United States Geological Survey, <http://biology.usgs.gov/s+t/SNT/noframe/wu108.htm> (30 November 2004).
- 9 American Rivers, <http://www.amrivers.org/index.php?module=HyperContent&func=display&cid=985> (30 November 2004).
- 10 Ralph Pentland & James Olson, "Decision Time: Water Diversion Policy in the Great Lakes Basin," Canada Institute of North American Issues, 2004.
- 11 International Water Management Institute, "The Global Groundwater Situation: Overview of Opportunities and Challenges," <http://www.iwmi.cgiar.org/pubs/WWVisn/GrWater.htm> (4 December 2004).
- 12 Anheuser-Busch Companies, "Water and Wastewater", 2004, <http://www.abehsreport.com/docs/water.html> (2 December 2004).
- 13 Business for Social Responsibility, 2003, "Water Issues," <http://www.bsr.org/AdvisoryServices/Environment.cfm>, (17 November 2004).
- 14 Shawn Tully, "Water, Water Everywhere," *Fortune Magazine*, 15 May 2000, 42-54.
- 15 India Resource Center; <http://www.indiaresource.org> (4 December 2004)
- 16 India Resource Center, "Police Attack Coca-Cola Protest, Over 350 Arrested," press release, 25 November 2004, <http://www.indiaresource.org/press/2004/mehdiganjattack.html> (4 December 2004).
- 17 We Are Michigan, "A New Front Emerges in the Battle for Michigan Water," June 2002, <http://wearemichigan.com/environment/news/Jun02.htm> (11 November 2004).
- 18 Pacific Institute, "Businesses Risks of Water Fact Sheet" 15 August 2004, http://www.pacinst.org/reports/business_risks_of_water/business_risks_of_water_fact_sheet.pdf (11 November 2004).
- 19 "Consolidated Water Rates: Issues and Practices in Single-Tariff Pricing" September 1999. US EPA & National Association of Regulatory Utility Commissioners, p 31-32.
- 20 Division of Pollution Prevention and Environmental Assistance and the Division of Water Resources of the North Carolina Department of Environment and Natural Resources, and Land-of-Sky Regional Council, "Water Efficiency Manual for Commercial, Industrial and Institutional Facilities," August 1998, <http://www.p2pays.org/ref/01/00692.pdf> (11 November 2004).
- 21 Environment Canada-Green Lane, "Pollution Prevention: Canadian Success Stories," <http://www.ec.gc.ca/pp/en/storyoutput.cfm?storyID=63> (27 November 2004)
- 22 Ernst Schmidt, "Water Recycling and Reuse," EET Corporation <http://www.eetcorp.com/corporate/lts-h20.pdf> (19 November 2004).
- 23 Baxter International Inc., "Sustainability at Baxter," http://www.baxter.com/about_baxter/sustainability, (17 November 2004).
- 24 GEMI Water Sustainability Tool, <http://www.gemi.org/water/johnson.htm> (4 December 2004).
- 25 U.S. Environmental Protection Agency Office of Water, www.epa.gov/ow, (5 December 2004).
- 26 Bob Doppelt, Leading Change Toward Sustainability: A Change-Management Guide for Business, Government, and Civil Society (Sheffield, UK: Greenleaf Publishing, 2003), 26.

Appendix:**Resources:**

The list below, though not comprehensive, provides resources for the private sector in the areas of water conservation and corporate-social responsibility.

- Global Environmental Management Initiative – www.gemi.org/water
- American Water Works Associations Waterwiser Program – www.awwa.org
- Pacific Institute for Studies in Development, Environment, and Security – www.pacinst.org
- Rocky Mountain Institute – www.rmi.org
- U.S. Environmental Protection Agency Office of Water – www.epa.gov/ow
- Water Environment Federation – www.wef.org