BEFORE THE MAINE BOARD OF ENVIRONMENTAL PROTECTION

Verso (formerly International Paper Company,) Jay, ME0001937 and W000623–5N–F–R	))))	ANDROSCOGGIN RIVER APPEALS

DIRECT TESTIMONY OF NEIL MCCUBBIN

(Note: This testimony applies to the Jay mill except where noted as applying to the general issue of oxygenation as well)

EXECUTIVE SUMMARY

My name is Neil McCubbin. I am a registered professional engineer in Canada and the principal of N. McCubbin Consultants, Inc. Canada, a consulting firm specializing in the pulp and paper industry with a focus on environmental protection issues. Several years ago, Maine's Department of Environmental Protection ("DEP") commissioned me to prepare a report on the Androscoggin pulp and paper mills in Jay, Rumford and Berlin, New Hampshire. Based on the specific knowledge of the Verso pulp and paper mill in Jay, Maine (the "Jay mill") gained in preparing this report, and over 40 years of experience working in the pulp and paper industry, I have been asked by the Natural Resources Council of Maine ("NRCM") to testify to the significant reductions in discharges of total suspended solids ("TSS"), biochemical oxygen demand ("BOD"), and phosphorus that the Jay mill could achieve using readily available, proven, and widely used technologies. The use of the technologies described below would not only dramatically reduce the Jay mill's output of TSS, BOD, and phosphorus, but would also increase the efficiency of the mill, reduce its manufacturing costs, and improve its long–term economic prospects.

In support of my testimony, I refer to a set of exhibits, identified below, which generally have also been incorporated in the attached set of PowerPoint slides, which summarize my testimony.

In brief, my testimony makes the following specific points:

- With cost–effective improvements to its existing waste treatment system, the Jay mill could reduce its discharges of TSS, BOD, and phosphorus dramatically in approximately two years. Thus, the 10–year compliance schedule contemplated by the current permits in place for the Jay mill is wholly unnecessary.
- The environmental performance of the Jay mill and the efficiency of the mill are correlated. At present, the Jay mill significantly underperforms well–run mills of comparable age and size, including the Rumford Paper Company mill (the "Rumford mill"), in environmental performance. The highly visible loss of expensive paper coating chemicals in the effluent, and the unusually high energy and chemical

consumption of the poorly designed effluent treatment system have a negative impact on the mill's financial performance

- The improvements to the waste treatment system proposed in my 2003 report to the DEP make economic sense for the Jay mill, because they would pay for themselves in a few years by reducing the mill's chemical and energy costs.
- The improvements described in my 2003 report to the DEP, if implemented, would modernize the Jay mill in ways that would improve its economic stability and improve the prospects of the mill remaining open in the long term, thereby preserving the jobs of the mill's current employees. It is well known that the American paper industry is in decline, with many mills having already been closed. It is widely accepted within the industry that only the more efficient ones, with lower operating costs, will survive.
- The improvements described in my 2003 report to the DEP, if implemented, would reduce the BOD, TSS, and phosphorus discharges from the Jay mill substantially; thereby reducing or eliminating the need for additional oxygenation in Gulf Island Pond, with the additional environmental benefit of reduced energy and chemical use.
- The current Aerated Stabilization Basin at the Jay mill is filled with phosphorus-containing sludge and is an environmental time bomb. The mill will never be able to deliver reliable, consistent environmental performance throughout the year, whatever promises or other improvements that the mill might make, until and unless it replaces the current sludge basin with a properly designed and sized aeration tank.

EXPERIENCE IN THE PULP AND PAPER INDUSTRY

As detailed in my *curriculum vitae*, attached as NRCM Exhibit 24, I have worked in the pulp and paper industry for over 40 years, and as a consultant to the industry for over 30 years. I have worked on detail design of pulp production, pollution prevention, and effluent treatment systems. I have also produced process and environmental studies, which have frequently been relied on by pulp and paper firms, regulatory agencies, and environmental advocacy groups in reaching consensus on environmental issues raised by the production and pollution prevention practices of particular mills.

Over the thirty–plus years I have worked as a consultant, approximately 70% of my work has been for paper industry clients. I have done work for industry clients in approximately 15 countries, including the United States. In addition to work in the United States, I have done considerable work consulting for industry clients in the large pulp and paper producing countries of South America, Argentina, Brazil, and Chile. Roughly 25% of my consulting work has been for regulatory agencies in the United States, Canada, and France, including the United States Environmental Protection Agency ("EPA") and the DEP. The remaining 5% of my consulting work has been for environmental advocacy groups in the United States.

EXPERIENCE WITH THE JAY MILL

My expertise is of particular relevance to this matter because I have analyzed the production, pollution prevention, and effluent treatment system of the Jay mill for EPA

(in addition to the work I did for the DEP summarized above and described in detail below). While the details of the EPA work are confidential, that analysis, including several visits to the Jay mill, gave me a good working knowledge of the mill in the 1990s. In 2001–2002, I was involved in EPA's discussions with the Jay mill, then owned by International Paper Company ("IP"), as part of project XL. I visited the Jay mill as part of my work on that project.

More recently, in 2003, I was hired by the DEP to perform two studies relating specifically to the discharges of the pulp and paper mills along the Androscoggin River, which included the now partially closed Berlin, New Hampshire mill (the "Berlin mill"), the Rumford mill, and the Jay mill (collectively, the "Androscoggin mills"). Photographs of the Rumford and Jay mills are attached as NRCM Exhibits 25 and 26. The first of these reports dealt with dioxin discharges by the three mills, and is not directly relevant to this proceeding except insofar as my work on that report required me to closely examine the production process and effluent treatment at the Jay mill.

The second report, entitled *Current Technology for Control of Phosphorus and BOD Discharges in Effluents from Three Kraft Pulp Mills on the Androscoggin River* (the "McCubbin Report"), was a study commissioned by the DEP to determine what reductions in the discharges of phosphorus, and the related pollutants TSS and BOD, could be achieved in the Androscoggin mills. Because TSS and BOD discharges are directly related to total phosphorus discharges, the McCubbin Report included a detailed discussion and analysis of TSS and BOD discharges from all three of the Androscoggin mills, including the Jay mill.

The purpose of the report was to identify and catalog proven and affordable methods for cleaning up these mills. I presented that report to the Department on December 12, 2003. A copy of this report is attached as NRCM Exhibit 27. In the McCubbin Report, I concluded that reductions of 40% to 50% in discharges of total BOD, TSS, and phosphorus are attainable for the Jay mill simply by using common and widely available technologies. These reductions would improve the environmental performance of the Jay mill significantly, putting the discharges of the Jay mill well below industry average, but not so low as the best–performing comparable mills in the United States and Europe.

As noted, I visited the Jay mill on several occasions in connection with the projects described above. I found one feature of my experience with the Jay mill notable because it was unusual. Although many paper companies are reluctant to provide detailed production numbers for individual product lines, fearing competitive disadvantage, it is commonplace within the industry to publish total production numbers for mill complexes. These numbers assist in the calculation of the costs of waste treatment systems because they allow the analyst to compare the mill's performance with similarly situated mills. Despite repeated requests, the Jay mill refused to provide total production numbers to me or my partner to assist our analyses. (By contrast, the Rumford and Berlin mills offered the data without even being asked). I cannot, of course, speak to the reason why the Jay mill refused to provide such data.

THE JAY MILL'S CURRENT EFFLUENT

The Jay mill's current effluent contains unnecessarily high levels of TSS, BOD, and phosphorus. The results of these pollution levels are readily apparent to anyone looking at the river. The excessive quantities of phosphorus create algae blooms, documented in the attached photographs, which are readily visible from the air and render the river un–swimmable. Two photographs of the algae blooms in the Androscoggin River are attached as NRCM Exhibits 17 and 18. The first, by photographer Charles Feil, was taken in 1995. The second, by DEP, was taken in 2004.

Excessive solids and materials from the paper–coating process in the effluent create visible discharge effluent plumes, which have been recorded in photographs, even those displayed by Google Earth software. A recent Google Earth photograph of the Androscoggin River featuring the Jay mill discharge plume is attached as NRCM Exhibit 28. The image shows the change in color of the river far downstream from the Jay mill Also attached as NRCM Exhibits 29, 30, and 31 are DEP aerial photos of the Jay mill discharge plume from 2004, 2005, and 2006. These photos illustrate that the mill has known about the problem of these plumes for at least several years.

The fact that the effluent plume from the Jay mill has been seen as far downstream as ten miles has been confirmed by the DEP in a 2005 e-mail from Dave Silver to Brian Kavanah (both of the DEP), which is attached as NRCM Exhibit 32.

While a clear "black–coffee" like color is often the cause of visible discharge plumes at bleached kraft [1] pulp and paper mills, visual inspection of the mill and its effluent and other data suggest that losses of paper–coating materials in the production process are a major contributing factor, resulting in a discharge with the milky "white–coffee" color we see in the Jay mill's discharge plumes. Even a small flow of paper–coating chemicals causes a visible discharge because the particles are small, difficult to remove in the waste water treatment system, and designed to be visible (to coat the paper).

The operation of coating paper at the Jay mill is conceptually similar to applying a coat of white latex paint to millions of square feet of paper every day. Everybody who has ever washed a paint brush or roller knows how a little latex paint can turn a large quantity of water white. When this is stained by the above mentioned brown color for the pulping operations, the result is the color seen in the photographs. Losses of coating materials can be substantially eliminated by controlling them at the source through improving the management of the coating process and installing coating chemical recovery systems. I have visited a number of mills that produce coated paper and paper products that have reduced coating losses to the point that the coating materials are invisible in the effluent. For example, the Luke, Maryland mill illustrates how a

[1] The pulp manufactured at Jay is known as "bleached kraft" because it uses the kraft process, and the brown kraft pulp is bleached white. This is the normal way of producing pulp for copy paper, most papers that are used for printing books, and toilet tissue.

comparable mill can reduce their coating losses so that no coating materials are visible.

NRCM Exhibit 43. I will discuss this issue further in my later comments on the 2005 IP/Verso report on phosphorus control in the Jay mill. Reducing coating losses at the source is generally a profitable measure for mills to take because coating materials are rather expensive. The staff at Jay asserted that reducing the coating losses was impractical when I discussed the issue with them in 2003. At the time they also declined to provide data on the cost of the losses, but I have seen similar situations where mill staff estimated the losses at over $2,000,000 per year.

THE JAY MILL'S CURRENT PERFORMANCE RELATIVE TO COMPARABLE MILLS

The Jay mill is underperforming environmentally when contrasted with other pulp and paper mills throughout the country, including the Rumford mill. See NRCM Exhibit 42. The charts attached as NRCM Exhibits 33 and 34 reproduce recent data comparing the performance of the Jay mill and other, comparable mills in the United States and Europe.

The Glatfelter mill in Spring Grove, Pennsylvania is a particularly relevant comparison because it demonstrates that even a mill with serious built–in disadvantages can be a top environmental performer. The Glatfelter mill is both one of the oldest in the country and one of the best environmental performers, measured by its discharges of TSS, BOD, and phosphorus. The Glatfelter mill manufactures hardwood and softwood bleached kraft pulp (as Jay does) and makes a complex variety of papers on six paper machines. The Glatfelter mill was built around 1864 in Spring Grove, a small town along Codorus Creek. The water flow in the Androscoggin River at Jay is approximately 20 times that of Codorus Creek. The Glatfelter mill was designed and built at a time when mills were constructed without any regard for waste treatment. It was also designed and built to produce a few tons of paper per day, but now produces around 800 tons per day. Not surprisingly, the equipment required for this dramatic increase in production has resulted in severe space constraints for building effluent treatment systems and for modernizing the mill.

By contrast, the Jay mill was built within the last 40 years on a major river, on a site chosen under 20th century criteria, with an initial production rate of several hundreds of tons per day. It was designed and built with the intent of increasing production up to 2000 tons per day. It was designed and built with the knowledge that a waste treatment system was a necessary part of the mill. In addition, it was designed and built on a site that allowed, and still allows, for expansion of the mill's operations.

Despite its comparative disadvantages, however, the Glatfelter mill is now a top environmental performer, and is often identified as the mill with the best quality effluent and best environmental management in the United States paper industry. Whether or not it is truly the absolute best performer in the United States depends on the parameters by which that judgment is made. I can say without equivocation, however, that the

Glatfelter mill is one of the top five environmentally performing mills in the United States despite its age and difficult location.

The Glatfelter mill has achieved this position not by investing in radical and innovative technology, but rather by using conventional, commercially available technology very well. The Glatfelter mill operates its systems with care and has excellent and well–operated spill control and recovery systems in place. The Glatfelter mill uses modern, efficient oxygen delignification in both fiber lines to reduce operating costs and pollution discharges.[2][2] The Jay mill does not have effective oxygen delignification so that the corresponding lignin is removed in the bleach plan and discharged with the mill effluent, increasing its BOD and color.. The Glatfelter mill has a conventional activated sludge treatment system including a properly–sized aeration basin. The Jay mill does not. These basic elements – careful operation, better spill control and recovery, oxygen delignification, and effective waste treatment through an excellently–operated AST system — account for Glatfelter's superior environmental performance, measured in terms of its TSS, BOD, and phosphorus discharges per ton product.
Several additional points about the Glatfelter mill should not be overlooked.

First, the Glatfelter mill undertook the improvements to its mill that have made it a top environmental performer in response to state regulatory action. It was one of the first paper mills in the United States to install a credible effluent treatment system, in the 1960s, when it was able to compete successfully with the hundreds of U.S. mills that did not have effluent treatment. *Second*, the introduction of a new waste treatment system and other process changes to the Glatfelter mill did not render the mill unable to operate at a profit. To the contrary, the Glatfelter mill, although small, has consistently generated significant profits for Glatfelter's shareholders. *Third*, the improvements undertaken by Glatfelter have allowed this 130–plus year old mill to remain competitive in the marketplace, thereby ensuring that the mill remains in operation and continues to employ local workers for the foreseeable future.

The Blue Ridge Paper Products mill, in Canton, North Carolina (the "Canton mill"), which is approximately 100 years old, is a similar example of an old facility that is also a strong environmental performer. Like Glatfelter, the Canton mill, because of its physical location, has serious space constraints that the Jay mill does not. Nonetheless, the Canton mill outperforms the Jay mill in its discharges of TSS, BOD, and phosphorus.

Over the past several years, the Rumford mill, although not consistently as good a performer as the Glatfelter mill, has also greatly improved its environmental performance for these parameters through application of well known measures. The Rumford mill uses a conventional activated sludge system, and the mill uses many, but not all, of the well–known internal measures for effluent control. In addition to being older, the Rumford mill has much more limited space than the Jay mill. However, comparison of data from the DEP of the last 12 plus years of monthly average BOD and TSS discharges from the Rumford and Jay mills graphically shows that Rumford performs much better

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[2] Oxygen delignification removes about half the lignin in the pulp before bleaching, and delivers it to the recovery boiler in the mill, where it is incinerated in an environmentally sound manner.

than Jay, particularly for TSS, making the point that older mills with space limitations can easily outperform the Jay mill. NRCM Exhibits 12, 13.

THE JAY MILL'S CURRENT EFFLUENT TREATMENT SYSTEM

If the Jay mill continues to operate with its current system, the mill will not be able to improve its environmental performance significantly over the long haul. The problems with the system are legion. *First*, the system was originally built to operate as an Aerated Stabilization Basin ("ASB") a widely–used process that is acceptable in nonsensitive situations, but can never attain the performance of the Activated Sludge Treatment ("AST") systems that are very widely used in the paper industry and for municipal sewage treatment. The system was converted to use the AST process by adding secondary clarifiers and recycling the biosludge collected.[3] Unfortunately, the mill owners decided to use the old ASB earthen basin as an aeration tank for the AST system, instead of building an appropriately–sized aeration tank. This decision was inappropriate, because the existing basin is far too large to serve as an effective substitute for a properly–designed aeration tank. The excessive size of the basin results in fine, lightweight, biological solids forming, which prevent the waste treatment system at the Jay mill from operating as a true AST system. Although one tends to assume that "bigger is better" in effluent treatment equipment, this is not necessarily true,[4] and I have seen a number of mills where this philosophy has failed, including Jay.

Second, the existing aeration basin is partially filled with sludge, which interferes with the ability of the system to break down the pollutants in the effluent because much of the sludge is biologically active, and periodically floats and flows out with the effluent. The sludge also releases phosphorus to the system in an uncontrollable way, limiting the treatment plant operator's ability to apply effective control, as I discuss later when referring to the December 2005 report on the mill's phosphorus balance.

Third, the flow of water through the basin is higher than it needs to be. As a result, the Jay mill discharges approximately twice the effluent that it would with a well–designed water reuse system within the production process. The very fact that the water flow is high increases the quantities of suspended solids, phosphorus, and BOD carried

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[3] In the ASB process, the effluent is treated by being agitated and aerated in a large basin (normally much larger than the one at Jay) with nutrients and pH control chemicals added so that an appropriate mix of bacteria and other microbes develops. These convert most of the pollutants to carbon dioxide and water, thus reducing BOD and chemical oxygen demand ("COD"). Some biological solids formed are discharged with the effluent to the river. In the more advanced, and more popular, AST process, the aeration tank is *much smaller* than in ASB, and is controlled so that large, relatively heavy microbes form. These are settled out of the effluent in secondary clarifiers and returned to the aeration tank to further treat the effluent. An excess of these microbes, known as "waste activated sludge" or "biosludge", is removed and burned or otherwise disposed of. The AST process can achieve substantially better quality effluent than ASB. There is a recent trend among regulatory agencies to require all kraft mills to have an AST process or better to meet applicable environmental standards.

[4] Just think of the consequences for the American Revolutionary War if Paul Revere had chosen to deliver his warning on an elephant instead of a horse, because the elephant is bigger.

out to the river.

Fourth, there are a number of abandoned, broken down aerators floating upside down in the aeration basin, which probably have no measurable effect on the performance, but it is difficult to persuade employees that management takes operating of the effluent treatment system seriously when it is left littered with garbage, and the banks are overgrown with vegetation. Normal practice in the paper industry is to remove equipment that is no longer serviceable, and keep the area clean.

The other major components of the effluent treatment system at Jay (coarse screening, major piping systems, pump stations, primary clarifiers, secondary clarifiers and outfall structure) all appear to be quite adequate. Only the heart of the system, the aeration tank, is seriously deficient, so the cost of upgrading the mill to have an effective AST effluent treatment system would be modest, significantly less than the cost of an entirely new system.

ECONOMIC ADVANTAGES OF A NEW AERATION TANK AND IMPROVED POLLUTION PREVENTION

The Jay mill is paying for its inefficiency. The most obvious cost is in the amount the mill spends on chemicals and energy in the effluent treatment plant, and the loss of expensive coating chemicals. Although, as noted above, the Jay mill has not provided gross production figures or detailed quantities for its use of chemicals, it is well–known that they use relatively large quantities of polymers. An efficient waste treatment system would cut the Jay mill's chemical costs substantially. Improved operations, a coating recovery system, and better spill control would save the Jay mill additional funds now spent on excess chemicals in the production process and unnecessarily high water flow through the current system. High effluent flows cost money because the water must be heated, and excessive flows tend to cause fiber and chemical losses. Although the capital cost of these improvements is not small, in the order of $10 million or so, these improvements would nevertheless pay for themselves during the five–year lifetime of a discharge permit through energy savings and chemical savings. Such an investment makes economic sense for the Jay mill in any scenario in which the mill continues to operate beyond the immediate time horizon.

THE JAY MILL HAS AMPLE SPACE FOR A NEW AERATION TANK

As noted above, one of the Jay mill's advantages over the Glatfelter mill and the Rumford mill is that the Jay mill has available space to make improvements at modest cost, including installing a new, properly–sized aeration tank. The attached aerial photograph of the mill, attached as NRCM Exhibit 35, shows one possible location for such a system with an appropriately dimensioned aeration tank. The location identified is simply an example of where such a system could be built. The Jay mill could, of course, locate such a system in any available space, and could choose a different shape for the tank (longer and narrower, shorter and wider, or round). The tank would be open–topped with concrete walls and floor.

VERSO HAS THE IN–HOUSE TECHNOLOGY AND KNOW–HOW TO IMPROVE PERFORMANCE

The recommendations of the McCubbin Report for improvements to the Jay mill are not new or radical. Indeed, Verso currently owns and operates a mill that implements the technologies that would benefit the Jay mill: its mill in Quinnesec, Michigan (the "Quinnesec mill"). A photo of Quinissec mill attached as NRCM Exhibit 36. The Quinnesec mill implements the technologies discussed above, oxygen delignification and an AST system. Thus, not only are these technologies widely used commercially in the industry, but Verso itself has the internal know–how to operate these technologies effectively. The Quinnesec mill is a better environmental performer than the Jay mill, as shown in the PowerPoint slides attached as NRCM Exhibit 37.

PRODUCTION LEVELS DO NOT ACCOUNT FOR DECLINING ENVIRORNMENTAL PERFORMANCE

The Jay mill is now running an additional paper machine that it was not running during the 1990s. In the past, the Jay mill has suggested that the explanation for its deteriorating environmental performance between the 1990s and the present is an increase in production caused by the introduction of a new paper machine. The implication of this argument is, of course, that the *only* way for the Jay mill to improve its environmental performance is to reduce its production levels. Reduced production levels, the argument goes, entail a reduced need for workers in the mill.

This explanation is not credible. The introduction of a new paper machine has not altered the production characteristics of the Jay mill. The culprit for the Jay mill's poor environmental performance is its poorly–designed aeration basin, which is substantially filled with sludge, and would not be able to adequately treat effluent even from reduced production by the mill. Conversely, the Jay mill could keep its discharges of phosphorus, TSS, and BOD at low levels while maintaining current production levels if the mill installed a properly–designed aeration tank for its AST system, improved its spill control, and reduced its losses of coating materials.

GENERAL ISSUE OF OXYGENATION IN RIVERS

I also want to address the proposal that an additional oxygenation system could help offset the pollution discharges of the Androscoggin mills and other dischargers by releasing oxygen into the river. In my estimation, this is a high–cost, low–reward solution. The Jay mill in particular would be better off spending its money on improved pollution prevention and treatment to reduce its BOD, TSS, and phosphorus discharges, which would achieve a greater environmental benefit at a reduced cost.

As an alternative to the reduction of pollutant discharges, I understand that the DEP has proposed increasing the amount of oxygen injected into the river to counteract the negative effects of BOD, TSS, and phosphorus in Gulf Island Pond. A 2005 report

produced by Woodard & Curran on alternatives to achieve compliance with water quality standards in the Androscoggin River refers to costs of around $30 million over 15 years for oxygenation. It is not clear to me what share of this would be paid by the Jay mill, or what happens if one or more of the mills contributing to the costs is shut down (as has already happened partially in the case of the Berlin mill).

Oxygenation by direct injection is neither a new nor innovative approach to improving water quality, having been the subject of industry study for at least the 40–plus years of my career in the pulp and paper industry. Despite its fairly extensive study by the industry, oxygenation systems are rarely used in practice because of their high operating costs. Purchasing liquid oxygen from an industrial gas vendor, trucking it to the site and handling it makes less sense than using standard mechanical aeration systems in a properly–designed effluent treatment system to remove BOD, TSS, and phosphorus from the mill's effluent before they are discharged. When faced with a choice between paying for the installation of an oxygenation system and paying for improvements in a pollution prevention and waste treatment system, pulp and paper mills almost always choose the latter because it is a more cost–effective way of achieving the desired result.

NO FLIGHT RISK

The argument that more stringent environmental standards will require Verso to consider reducing production or moving its operations outside the United States does not hold water. As already discussed, the kind of investment required to modernize the Jay mill's waste treatment system will reap Verso financial rewards in the forms of reduced energy costs and increased efficiency. The system would pay for itself during the five–year term of the Jay mill's current permit.
In addition, the production capacity of the Jay mill is not transferable out of the country without the same kind of investment in pollution prevention that the Jay mill currently requires. Put bluntly, the Jay mill would not be permitted to operate as it is in *any* of the major paper–producing countries of South America, including Argentina, Brazil, and Chile, all of which hold pulp and paper mills to higher standards than those in place in Maine.

It is a common misconception that the United States has a particularly strict regulatory regime overseeing the pulp and paper industry. That view is simply false. In Brazil, for example, the Veracel mill in Eunapolis, which I have visited, is a 100% bleached market kraft mill that produces approximately 2500 tons per day. The daily maximium BOD limit set by the discharge permit is equivalent to 3.8 pounds per ton, far stricter than that for the Jay mill. In fact, the mill's actual discharge is about 0.8 pounds per ton compared to 1.8 pounds per ton for the Jay mill. The Veracel mill is larger than the Jay mill, yet held to a stricter BOD standard, and Veracel easily meets this stricter standard. The Veracel mill's permit, in Portugese, is NRCM Exhibit 44.

Similarly, the Riocell mill in Guiba, Brazil, which I studied for the EPA in 2004, is held to stricter standards for TSS and phosphorus than the Jay mill, despite the fact that the Riocell mill had *no* wastewater treatment system in place when it was built (at the

same time as the Jay mill). The EPA Report of Visit to Riocell, SA is attached as NRCM Exhibit 38. Again, this mill's actual performance is far superior to that of the Jay mill.

The regulatory agencies charged with overseeing the pulp and paper industry in these South American countries conduct major enforcement actions against mills not meeting environmental standards. In a widely publicized example from February 2005 in Chile, the regulatory authority ordered a complete shut down of the flagship plant of Chile's largest paper company (the Valdivia mill) in order to protect river residents downstream from the facility and a rare species of black–necked swans with habitat down river from the plant. An article from the Santiago Times reporting the closure of the Valdivia mill is attached as NRCM Exhibit 39. This mill shut down was enforced despite the fact that it cost the mill over $1 million U.S. *per day* in lost revenue. To this day, the mill continues to operate at 80% capacity under direct order of the regulatory authorities to ensure that the mill meets applicable environmental standards. This is costing the owners several hundred thousand U.S. dollars per day. In addition, the company is being required to construct a 35–mile long effluent discharge line to the ocean. This is true even though the Valdavia mill is a far better environmental performer than the Jay mill. Its effluent looks like pure drinking water, as illustrated in the power point presentation attached as NRCM Exhibit 37.

DEVELOPMENTS IN PHOSPHORUS CONTROL AT THE JAY MILL

In late February 2007, I was provided with a copy of a report entitled "Mill-wide Phosphorus Study," attached as NRCM Exhibit 40, submitted by the former owners of the Jay mill, International Paper Company ("IP") to the Maine DEP on the 30th of December, 2005. It provides some interesting confirmations of my foregoing testimony (which was substantially written before I received the 2005 report).

First, the report estimates that up to 11,842,800 pounds of phosphorus is contained in the sludge in the existing aeration basin. I suspect that the true quantity is less, but still very substantial. This is an enormous quantity when one compares it with the current discharge of a few hundred pounds per day that already gives rise to algae blooms in the river. This huge basin of phosphorus–containing chemicals is a serious potential risk, because it is quite common for uncontrollable biological action in the sludge on the bottom of such a basin to cause a fraction of the material to float and be discharged with the effluent. The risk of this alone is sufficient to recommend de–commissioning the basin as soon as possible. If the quantity of phosphorus in the existing aeration basin is even as much as one tenth of the above quantity, it is an environmental time bomb.

Second, the report concludes that the discharge of phosphorus to the river is not affected by the mill's own phosphorus discharge, but by the mass of phosphorus in the basin. This confirms the concern that I expressed in my 2003 report for the DEP, and shows that the mill cannot hope to attain a high quality effluent with the present basin.

Third, the report suggests that the mill is embarking on a project to reduce losses of the paper–coating chemicals that cause much of the visible discoloration of the river.

See NRCM Exhibit 40 at 9. IP had asserted in 2003 that reduction of coating losses was impractical. If it is true that Verso will install an effective coating recovery system, I congratulate the mill on this initiative, and trust that it will use the best technology available. However, I again point out that photos from 2004, 2005, and 2006 (NRCM Exhibits 29, 30, and 31) illustrate that the mill has known about its coating losses for along time, and as of last summer had not yet addressed them.

Fourth, the mill staff is to be congratulated for finding a way to cease using phosphoric acid in one of the paper machines, thus reducing phosphorus discharge. See NRCM 40 at 4. When we recommended this is our 2003 report, we were advised by the mill staff that such a move was impossible for proprietary technical reasons.

A NEW SYSTEM CAN BE INSTALLED DURING THE LIFE OF THE EXISTING PERMIT

The improvements identified in the McCubbin Report and described above can be implemented during the five–year life time of the Jay mill's existing permit. As a reference point, an entirely new pulp and paper mill, including advanced effluent treatment, can be constructed in approximately two years. Accordingly, a new aeration tank could be installed in a similar period of time. As noted above, finding space for the new system is not an issue for the Jay mill. Also as noted, Verso owns a mill with a properly–sized aeration tank and modern pollution prevention technologies, such as oxygen delignification: the Quinnesec mill. Technical support and the necessary equipment are also available from many commercially competitive American companies.

There is no impediment that would prevent the Jay mill from improving its performance dramatically. Monthly average BOD and TSS levels should be at least as strict as 2300 pounds per day and 7700 respectively, (and the mill should be able to have actual performance levels significantly lower than these). This could be achieved within the space of two years, let alone the five–year life of the permit. Certainly, the limits in the September 2005 permit are absurdly generous, and even the DEP's proposed modification for the Verso permit, which contained a summer monthly average limit of 4500 pounds per day for BOD and a winter monthly average of 8000 pounds per day for BOD is not at all stringent. It should be noted that the BOD limits in the proposed modification are simply based on the numbers IP asked for in its 1999 application to renew its discharge permit (the cover letter for which is attached as NRCM Exhibit 41).

Given these facts, I cannot see any rational basis for the DEP to set a 10–year compliance schedule for meeting the Jay mill's discharge limits for any of the parameters at issue here: phosphorus, TSS, or BOD. Indeed, there is no basis in fact for the conclusion of the current permit that the Jay mill needs 10 years, or even 5 years, to make changes that it can readily make in two. Normal regulatory practice around the world is to request mills to make whatever improvements are judged necessary within the minimum time reasonably attainable, using conventional engineering and construction procedures.

From the mill's perspective, the only reason to request such a long period of time

to come into compliance with discharge limits would appear to be for short–term financial savings. Under the existing regime, Verso can run the mill as it is currently configured, paying unusually high operating costs to compensate for the inefficiencies of the production process and waste treatment system, but avoiding capital costs to modernize the mill for future use. This strategy makes some financial sense if Verso's goal is to squeeze every ounce of use out of the mill over the next few years, and then simply shut down the mills. If there is no long–term vision for the mill, then Verso will not engage in the long–term planning necessary to keep the Jay mill competitive

If Verso has no long–term vision for the mill, however, then the mill has no long term future in Maine. That vision of the future creates two direct harms: harms to the workers whose jobs remain insecure so long as the mill is not modernized, and harms to Gulf Island Pond, the Androscoggin River, and Merrymeeting Bay, which will all suffer environmental degradation as the result of the Jay mill's continuing environmental underperformance.

From the vantage of the regulating agency, the DEP, the least desirable scenario for the river is also the least desirable economic scenario for the State of Maine — a scenario in which Verso (or any subsequent owner) squeezes the Jay mill dry, leaving the mill a decaying relic, the mill workers unemployed, and the State to pick up the tab for any environmental remediation required. In this scenario, economic and environmental losses dovetail for the state.