

APPROVAL

Province of Nova Scotia
Environment Act, S.N.S. 1994-95, c.1

APPROVAL HOLDER: Northern Pulp Nova Scotia Corporation

APPROVAL NO: 2011-076657-R03

EFFECTIVE DATE: January 30, 2015

EXPIRY DATE: January 30, 2020

Pursuant to Part V of the *Environment Act, S.N.S. 1994-95, c.1* as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Operation of a Bleached Kraft Pulp Mill and associated works, at or near 260 Granton Abercrombie Road, Abercrombie Point, Abercrombie, and operation of an Effluent Treatment System and associated works at or near 340 and 580 Simpson Lane, Pictou Landing, Pictou County, PID(s) 00864538 and 00801191, respectively, in the Province of Nova Scotia.

Administrator _____ Date Signed _____

The Minister has delegated his powers and responsibilities under the *Act* with respect to this Approval to the Administrator, as defined by this Approval. Therefore any information or notifications required to be provided to the Minister under this Approval can be provided to the Administrator unless otherwise advised in writing.

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TERMS AND CONDITIONS OF APPROVAL Nova Scotia Environment

Project: Northern Pulp Nova Scotia Corporation
Bleached Kraft Pulp Mill
260 Granton Abercrombie Road
Abercrombie Point, Abercrombie, and
Effluent Treatment System
340 and 580 Simpson Lane
Pictou Landing
Pictou County

Approval No: 2011-076657-R03

File No: 92100-30/PIC-06

PIDs: 00864538, 00801191

Reference Documents:

Application dated October 27, 2014, and supporting documentation as outlined in Appendix B.

1. Definitions

- a) “Act” means the *Environment Act* S.N.S. 1994-1995, c.1, as amended from time to time and includes all regulations made pursuant to the *Act*.
- b) “Administrator” means a person appointed by the Minister for the purpose of this Act, and includes an acting administrator.
- c) “Adverse Effect” means an effect that impairs or damages the environment or changes the environment in a manner that negatively affects aspects of human health.
- d) “Approval” means an Approval issued pursuant to the *Act* with respect to an activity.
- e) "Associated works" means any building, structure, processing facility, pollution abatement system or stockpiles associated with the Facility.
- f) “Biomass” means a renewable energy source comprised of biological material derived from living or recently living organisms, and for the purpose of this Approval, is limited to natural, untreated and uncoated wood and wood waste in the form of whole chips, chip fines, sawdust and bark. It also includes wood debris

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from the multiclones of the power boiler and the radiclone rejects and knots from pulping and does not include solid wastes from the effluent treatment system.

- g) “Brown Stock Washer” means an installation that removes spent cooking liquor from raw pulp to maximize chemical recovery and minimize carry over of cooking liquor into the bleaching plant.
- h) “Black Liquor” means a combination of spent “cooking liquor” (water solution of sodium sulfate and sodium hydroxide) and pulp wash water containing dissolved wood compounds which is the byproduct of cooking the wood chips at an elevated temperature and pressure.
- i) “Concentrated non condensable gases” (CNCG) means for the purpose of this Approval, a group of concentrated non condensable process gases that are high in concentrations of TRS and are collected from the digester and evaporator areas of the process, and incinerated in the recovery boiler. Generally, concentrated non condensable gases are high in concentration but low in volume.
- j) “Condensate Steam Stripper” means a multi-stage distillation unit that uses steam to remove organics and TRS compounds from process condensate streams.
- k) “Controlled Shutdown” means a systematic continuous shutdown of equipment over a scheduled period of up to six (6) hours, which eventually results in no production of pulp.
- l) “Dangerous Goods” has the meaning assigned thereto in the *Dangerous Goods Management Regulations (Nova Scotia)*, current edition.
- m) "Department" means Nova Scotia Environment. For the purpose of this Approval, located at the following address:

Nova Scotia Environment
Compliance Division
Northern Region, Pictou Office,
RR#3,
New Glasgow, Nova Scotia, B2H 5C6
Phone: (902) 396-4194
Fax: (902) 396-4765

- n) “Dilute Non Condensable Gas” (DNCG) means for the purpose of this Approval, a group of dilute non condensable process gases that are lower in concentrations of TRS, methanol and terpenes than CNCG and originate from the digester area, brownstock washers, filtrate tanks, knotters, liquor storage tanks and black liquor

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oxidation systems within the Facility. Generally, dilute non condensable gases are low in concentration but high in volume.

- o) “Domestic Solid Waste” means municipal type solid waste that originates in the Facility through office and cafeteria operations and includes waste types that are commonly accepted at municipal solid waste management facilities. Domestic solid waste does not include waste originating from industrial processes.
- p) “Effluent Treatment System” means a facility designed to remove impurities which have a detrimental effect on water quality by a combination of physical, chemical and biological processes.
- q) “Exceedance” means a breach of a regulatory requirement outlined in the *Act*, the Regulations made pursuant to the *Act* and/ or this Approval.
- r) “Facility” means the property, any building, structure, processing facility, pollution abatement system or stockpiles necessary in the operation and manufacture of Kraft Pulp, as produced by the digester, located at 260 Granton Abercrombie Branch Road, Abercrombie Point, Abercrombie, as well as the Effluent Treatment System (known as Boat Harbour effluent treatment system) located at 340 and 580 Simpson Lane, Pictou Landing, Pictou County.
- s) “Industrial Landfill” means the currently-used facility designed to receive the industrial solid wastes from the Facility associated with wood processing, pulping, pulp drying, recausticizing, utilities and the effluent treatment system. These wastes include bark, gravel, dirt, sawdust, wood slivers, tramp metal, boiler bottom and fly ash, clarifier dregs, settled lime and slaker rejects, lime grit and line mud impurities and effluent treatment System sludge.
- t) “Inspector” means any person who is appointed as an inspector by the Minister and includes any municipal or town police officer and any member of the Royal Canadian Mounted Police..
- u) "Minister" means the Minister of Environment.
- v) “Non Condensable Gas” means gases that cannot be liquefied, and for the purposes of this Approval, are comprised mainly of total reduced sulphur (TRS) compounds along with entrained levels of turpentine, methanol and other organic compounds. Non condensable gases are divided in to two categories: concentrated non condensable gases (CNCG) and dilute non condensable gases (DNCG).
- w) "NSE" means Nova Scotia Environment.

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- x) "Observer" means a visible emission reader who has been trained to read the opacity of emissions utilizing USEPA Method 9 - "Visual Determination of the Opacity of Emissions from Stationary Sources" or an alternative method deemed acceptable to the Department.
- y) "Opacity" means the degree to which visible emissions obstruct the passage of light.
- z) "Point 'A'" means the point identified as 'A' on diagram located in Appendix C.
- aa) "Point 'C'" means the point identified as 'C' on diagram located in Appendix C.
- ab) "Point 'D'" means the point identified as 'D' on diagram located in Appendix C.
- ac) "Pre-test plan" means a summary of the sampling protocols and testing to be employed by the Approval Holder during emission source testing.
- ad) "Reference Production Rate" means the daily production of finished product of a mill as defined by the Federal Pulp and Paper Effluent Regulations (SOR/92-269), as amended from time to time.
- ae) "Reconditioned oil" means used oil that has been recycled to remove insoluble contaminants and water which results in an oil that is usable as fuel.
- af) "Recaust Area" means the area of the Facility where the recausticizing process takes place.
- ag) "Recausticizing Process" means the process for producing cooking liquor for the digester from recycled inorganic chemicals generated in the recovery boiler and the lime kiln.
- ah) "Recovery Boiler" means an enclosed combustion device in which concentrated spent liquor is burned to recover sodium and sulfides, dispose of unwanted dissolved wood components and generate steam.
- ai) "Recovery Boiler Precipitator System" means, for the purpose of this Approval, a new dry-bottom dual chamber electrostatic precipitator to remove particulate matter from the flue gases of a conventional kraft chemical recovery boiler. The system includes all work necessary to replace the current wet bottom electrostatic precipitator while maintaining the existing MODO wet scrubber in service.
- aj) "Scheduled Total Mill Shutdown" means the period of time in which the Facility is not operating due to regularly scheduled maintenance.

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- ak) "Site" means the lands owned and/or occupied by Northern Pulp Nova Scotia Corporation where the kraft pulp mill and effluent treatment system and associated works are located.
- al) "Stripper off gases" (SOG) means for the purpose of this Approval, the gases that are produced by the condensate steam stripper which are incinerated in the lime kiln.
- am) "Source Testing Event" for Particulate Matter means a phase of performance testing activities that involves the site set-up and the actual testing. For each source the test consists of a preliminary survey, and at least three repetitions of appropriate source testing methodologies.
- an) "Total Reduced Sulfur" (TRS) means any compound of sulfur in a reduced state discharged from a Kraft Pulp Mill consisting primarily of hydrogen sulfide, methyl mercaptan, dimethyl sulfide and dimethyl disulfide.
- ao) "Waste Dangerous Goods" means dangerous goods that are no longer in use for their original purpose or materials which have become waste dangerous goods through handling including dangerous goods intended for treatment, disposal or recycling, but does not include dangerous goods returned directly to the manufacturer or supplier of the dangerous goods for reprocessing, repacking or resale and does not include consumer paint products as defined in the *Solid Waste Resource Management Regulations*.

2. Scope of Approval

- a) This Approval (the "Approval") relates to the Approval Holder and their applications and supporting documentation, as listed in the reference documents above, to operate the Facility, situated at or near PID(s) # 00864538 and 00801191 situated at 260 Granton Abercrombie Road, Abercrombie Point, Abercrombie, and 340 and 580 Simpson Road, Pictou Landing, Pictou County (the "Site").
- b) The Facility and Site shall not exceed the area as outlined in the application and supporting documentation.
- c) The Approval Holder shall operate the Facility in accordance with the terms and conditions of this Approval.

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3. General Terms and Conditions

- a) The Approval Holder shall operate and reclaim the Facility in accordance with provisions of the most recent version of:
 - i) *Environment Act* S.N.S. 1994-1995, c.1, as amended from time to time; and
 - ii) Regulations pursuant to the above *Act*.
- b) No authority is granted by this Approval to enable the Approval Holder to construct or operate the Facility on lands which are not in the control or ownership of the Approval Holder. It is the responsibility of the Approval Holder to ensure that such a contravention does not occur. The Approval Holder shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization will result in this Approval being null and void.
- c) If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.
- d) The Minister may modify, amend or add conditions to this Approval at anytime pursuant to Section 58 (2) of the *Act*.
- e) This Approval is not transferable without the written consent of the Minister.
- f)
 - (i) If the Minister or Administrator determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister or Administrator may cancel or suspend the Approval pursuant to subsections 58A (1) and 58A (2) of the *Act*, until such time as the Minister is satisfied that all terms and conditions have been met.
 - (ii) Despite a cancellation or suspension of this Approval, the Approval Holder remains subject to the penalty provisions of the *Act* and regulations.
- g) The Approval Holder shall notify the Department prior to any proposed extensions or modifications of the Facility, including the active area, process changes or waste disposal practices which are not granted under this Approval. An amendment to this Approval may be required before implementing any change. Extensions or modifications to the Facility may be subject to the Environmental Assessment Regulations.
- h) Pursuant to Section 60 of the *Act*, the Approval Holder shall submit to the Minister any new and relevant information respecting any adverse effect that actually results, or may result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder after the issuance of the Approval.

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- i) The Approval Holder shall immediately notify the Department of any incidents of non-compliance with this Approval.
- j) The Approval Holder shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.
- k) Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analyzed, by qualified personnel, in accordance with recognized industry standards and procedures.
- l) Unless written approval is received otherwise from the Minister, all samples required by this Approval shall be analyzed by a laboratory that meets the requirements of the Department's "Policy on Acceptable Certification of Laboratories" as amended from time to time.
- m) The Approval Holder shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.
- n) The Approval Holder shall ensure that this Approval, or a copy, is kept on Site at all times and that personnel directly involved in the Facility operation are made fully aware of the terms and conditions which pertain to this Approval.
- o) All equipment shall be installed, operated, maintained and calibrated as specified by the manufacturer's instructions.

4. Facility Production/ Maintenance

- a) The Facility is restricted to a maximum production of 310000 air dried bleached metric tonnes of pulp per year
- b) Notwithstanding Condition 4(a), should the Approval Holder wish to increase the maximum daily production rate above the Approved level, the Approval Holder shall provide a minimum of one year notice, in writing, to the Department prior to implementation of the increase and undertake a study to determine the impact of the proposed increase on all emissions (air and water) from the Mill. This study shall be submitted no later than six months from the date of notification.

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- c) Should the Facility exceed the maximum production rate outlined in Condition 4 (a), the Approval Holder shall notify the Department within 15 days of the end of the calendar year.
- d) The Approval Holder shall report daily production rates on a monthly basis by no later than one week following the end of the month being reported.
- e) The Approval Holder shall notify the Department a minimum of sixty days prior to a scheduled shutdown event. Any changes to the schedule after notification has been submitted shall be provided to the Department with the reason for the schedule change.
- f) The Approval Holder shall provide a list of all maintenance/ repair/ equipment replacement projects proposed to be completed during the scheduled shutdown as part of the notification required in Condition 4(e).
- g) The Approval Holder shall provide to the Department, no later than September 10, 2015, a report outlining the projected life expectancy of all equipment which could potentially impact environmental performance of the Facility in the event of malfunction or failure. This report shall be prepared by a third party with expertise in the subject area.
- h) The Approval Holder shall ensure any waste dangerous goods generated during maintenance activities, including but not limited to tank bottom sludges, boiler chemical cleaning wastes, etc., shall be disposed of at a facility approved to treat the particular waste. Disposal or discharge of these wastes to the Effluent Treatment Facility is strictly prohibited.
- i) The Approval Holder shall provide a list of all maintenance/repair/equipment replacement projects which were completed during the scheduled shutdown together with the location of disposal of all wastes generated, within thirty (30) days of the end of the scheduled shutdown period.

5. Water Use Reduction

- a) The Approval Holder shall operate and maintain a continuous flow meter to measure total flow into the Facility (i.e. total volume of water withdrawn from the environment to service the Mill).

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- b) The measurements recorded from the flow meter required in Condition 5 (a) shall be submitted to the Department on a Monthly basis. This data will be used to develop a baseline maximum allowable water consumption rate for the Facility following a cycle of seasonal fluctuation.
- c) The Approval Holder shall achieve the following milestones:
- i) a 10% reduction from the baseline maximum rate of water consumption by no later than July 30th, 2016.
 - ii) a 20% reduction from the baseline maximum rate of water consumption by no later than July 30th, 2018.
 - iii) a 30% reduction from the baseline maximum rate of water consumption by no later than July 30th, 2019.
 - iv) a 40% reduction from the baseline maximum rate of water consumption by no later than July 30th, 2020.

A list of projects planned for each reduction milestone, together with the anticipated quantity of water which will be reduced by each project, shall be submitted no later than 1 year (12 months) prior to the deadline for completion of the reduction. Following review of the list of projects, the Department may require submission of the detailed engineering plan for the reduction.

- d) The Approval Holder shall ensure when reducing water consumption, the following potential concerns are addressed:
- (i) scaling due to buildup of ions such as calcium, barium, aluminum and silica
 - (ii) Recovery Boiler plugging due to increased chloride and potassium concentrations.
 - (iii) pitch deposits due to increased concentrations of calcium and resin acids
 - (iv) corrosion due to buildup of ions such as chloride
 - (v) equipment scouring and erosion due to suspended solids buildup
 - (vi) increased biological growth in cooling water and white water circuits
 - (vii) product contamination or odour due to dissolved solids carry-over
 - (viii) increased chemical consumption
 - (ix) increased wastewater temperatures
 - (x) imbalance of sodium and sulfur in kraft liquor cycle due to recovery of bleaching chemicals
 - (xi) increased emissions of air pollutants
- e) The Approval Holder shall ensure water use reduction projects do not negatively impact the quality of the effluent discharged from Effluent Treatment Facility through modeling of the predicted impacts to final effluent quality with each

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reduction milestone. This shall include impacts to both chemical and physical parameters. Modeling shall be submitted with the list of planned projects required under Condition 5 (c). Modeling shall be verified and validated to the satisfaction of the Department.

- f) Should the modeling required under Condition 5(e) predict a final wastewater effluent quality that will not meet the requirements of Table 2, Appendix A, using only the Effluent Treatment Facility, the Approval Holder shall submit a plan for an alternative effluent management and/or treatment. The implementation of the plan shall coincide with the deadline for completion of the reduction. This plan shall be submitted with the modeling required under Condition 5(e) and be to the satisfaction of the Department.
- h) The alternative effluent management and/or treatment required under Condition 5 (g) shall be designed to meet the requirements of Table 2A.

6. Effluent Generation/Collection/Transmission

Effluent Generation

- a) The Approval Holder shall achieve the following milestones:
 - i) a 10% reduction from the maximum flow rate of 90,000 m³/day* by no later than July 30th, 2016.
 - ii) a 20% reduction from the maximum flow rate of 90,000 m³/day* by no later than July 30th, 2017.
 - iii) a 30% reduction from the maximum flow rate of 90,000 m³/day* by no later than July 30th, 2019.
 - iv) a 40% reduction from the maximum flow rate of 90,000 m³/day* by no later than July 30th, 2020.

A list of projects planned for each reduction milestone, together with the anticipated quantity of wastewater flow which will be reduced by each project, shall be submitted no later than 1 year (12 months) prior to the deadline for completion of the reduction. Following review of the list of projects, the Department may require submission of the detailed engineering plan for the reduction.

- To be verified by data required to be submitted under Condition 7(d), one year of data shall be averaged and compared to previous studies.

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- b) The Approval Holder shall measure the concentration of Total Reduced Sulphur (TRS) in the wastewater at Point A to establish a baseline concentration and shall include measurements from periods of high flow and periods of low flow. This data shall be submitted to the Department by no later than January 15, 2016.
- c) The Approval Holder shall ensure water and/or wastewater flow reductions do not increase the concentrations of TRS above baseline concentrations determined under Condition 6(b).
- d) The Approval Holder shall ensure water use reduction or wastewater flow reduction projects do not negatively impact the quality of the effluent discharged from Effluent Treatment Centre through modeling of the predicted impacts to final effluent quality with each reduction stage. This modeling shall be verified and validated to the satisfaction of the Department. This shall include impacts to both chemical and physical parameters. Modeling shall be submitted with the list of planned projects required in Condition 6 (a).
- e) Should the modeling required under Condition 6(d) predict a final wastewater effluent quality that will not meet the requirements of Table 2, Appendix A, using only the Effluent Treatment Facility, the Approval Holder shall submit a plan for an alternative effluent management and/or treatment. The implementation of the plan shall coincide with the deadline for completion of the reduction. This plan shall be submitted with the modeling required under Condition 6(a) and be to the satisfaction of the Department.
- f) The alternative effluent management and/or treatment required under Condition 6 (e) shall be designed to meet the requirements of Table 2A.

Effluent Transmission Pipeline

- g) The Approval Holder shall undertake a visual internal inspection in accordance with TAPPI Standard TIP-0402-28, Best Practice for Inspecting Used Fibre-Reinforced Plastic (FRP) Equipment, as amended from time to time, to determine the current conditions and integrity of the FRP pipeline components. The results of this inspection shall be submitted to the Department no later than September 15, 2015.
- h) The Approval Holder shall undertake the inspection outlined in Condition 6 (g) on a maximum 5 year basis unless the results of the inspection conducted under Condition 6 (g) indicate a more frequent schedule is required.

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- i) The Approval Holder shall conduct a feasibility study of Acoustic Emission Testing (AET) of the FRP portion of the pipeline. This study shall be submitted to the Department no later than August 10, 2015.
- j) The Approval Holder shall conduct an external inspection the effluent pipeline, on an annual basis, for erosion, scouring, seepage, siltation, effluent plumes. This shall be conducted by air (for those portions which are submerged under the East River) and through an on the ground inspection (for areas on land and those sections which transition from land to water and vice versa). The results of these inspections shall be submitted with the annual report for the Facility.

7. Effluent Treatment System

Effluent Treatment

- a) The effluent treatment System has been classified as a **Class III wastewater treatment System**. The day-to-day operations of the effluent treatment System shall be supervised directly by a certified operator who holds an equivalent certification under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations*.
- b) The Approval Holder shall conduct a receiving water study to determine the assimilative capacity of the receiving water body for all parameters indicated in Table 2A as “to be determined (TBD)”. This shall be submitted to the Department with the plan required under Conditions 5(e) and 6(e). This information will inform new discharge limits for these parameters.

Effluent Monitoring & Reporting

- c) Effluent discharged from the final aeration basin, identified as Point C, shall be monitored continuously for flow, pH and conductivity . Effluent discharged at Point C shall be monitored 5 days per week for dissolved oxygen. This data shall be tabulated and submitted in the quarterly report.

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- d) The Approval Holder shall monitor the flow at Point A, the end of the effluent transmission pipe, on a continuous basis. This data shall be tabulated and submitted in the quarterly report.
- e) The Approval Holder shall submit a feasibility study for the installation of real time data collection monitoring equipment which is designed to notify the Approval Holder in the event of a reduction or loss of flow. This study shall be submitted to the Department by no later than November 30, 2015.
- f) The Approval Holder shall ensure all monitoring equipment is calibrated and maintained in accordance with manufactures specifications. Records of calibration and maintenance performed shall be maintained for not less than three (3) years and shall be made available upon request to the Department.
- g) The Approval Holder shall analyze samples of the effluent discharged from the System at Point C, to the environment for the parameters outlined in Table 2 of Appendix A. The Approval Holder shall comply with the monitoring frequency and discharge limits as outlined in Table 2 of Appendix A. Results of the effluent monitoring at Point C shall be submitted to the Department on a monthly basis.
- h) The Approval Holder shall dredge the aerated settling basin and the settling ponds, to minimize odour generation at the effluent treatment System, in accordance with the schedule outlined in the document entitled *Effluent Treatment System Dredging* submitted June 23, 2011.
- i) The Approval Holder shall submit monthly reports which contain the following information:
 - i) Total quantity of BOD, in kilograms, discharged for the days testing was conducted.
 - ii) Total quantity of BOD discharged for each month, as tested, this information shall be compared to applicable discharge limits.
 - iii) Total quantity of Suspended Solids, in kilograms, discharged from the System.
 - iv) Total quantity of Suspended Solids discharged each month, this information shall be compared to applicable discharge limits.
 - v) Results of acute toxicity testing.
 - vi) Daily flow, reported in cubic meters.

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- vii) Daily production of finished product, reported in tonnes.
- viii) Results of dioxins and furans testing.

Stabilization Basin

- j) The Approval Holder shall, together with the Department of Internal Services, develop a plan for long term environmental management and/or rehabilitation, in accordance with the Nova Scotia Ministerial Protocols for Contaminated Sites, of the area formerly utilized as a stabilization basin for the Effluent Treatment System known as Boat Harbour. This plan shall be to the satisfaction of the Department and submitted for approval by no later than December 31, 2015.
- k) The Approval Holder shall continue to monitor Point D for the parameters outlined in Table 2 , Appendix A, unless otherwise authorized in writing by the Minister. The results of this monitoring shall be submitted to the Department on a monthly basis.

8. Pulping Liquor

- a) The Approval Holder shall develop a proactive pulping liquor management plan that uses NCASI Technical Bulletin 276 as guidance and shall include but not be limited to :
 - Management of process operations to minimize variability to the maximum extent possible;
 - Operator awareness and training (operators are required to address spent pulping liquor losses);
 - Preventive maintenance programs for spent pulping liquor equipment;
 - Automated spill detection and spent pulping liquor recovery systems in the pulping and recovery areas that are maintained and operated by pulping and recovery personnel;
 - Secondary containment and/or high-level alarms on weak and strong spent pulping liquor tanks;
 - Frequent operator surveillance of spent pulping liquor equipment and tanks, and immediate repairs to this equipment;
 - Capacity for the storage of spilled materials and planned liquor diversions;
 - Systems to recover fiber and spent pulping liquor from knotting and screening operations; and
 - Secondary monitoring and diversion systems for all major mill sewers that serve pulping, recovery, and recausticizing areas.

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This plan shall be to the satisfaction of the Department and submitted no later than November 15, 2015.

- b) Following approval of the plan required under Condition 8(a), the Approval Holder shall develop an implementation schedule for the plan. This schedule shall be submitted to the Department for approval by no later than 30 days following receipt of Department approval of the plan.
- c) The Approval Holder shall collect 24-hour composite samples and analyze the samples for a measure of organic content (e.g., Chemical Oxygen Demand (COD) or Total Organic Carbon (TOC)) as well as measure conductivity continuously and average over 24 hours.
- d) Monitoring for parameters required under Condition 8 (e) must be conducted at the point influent enters the effluent treatment system.
- e) The Approval Holder may select additional monitoring point(s) in order to isolate possible sources of pulping liquor, soap, or turpentine from other possible sources of organic wastewaters that are tributary to the effluent treatment facility (e.g., bleach plants, paper machines and secondary fiber operations).
- f) The Approval Holder shall complete an initial six-month monitoring program as required under Condition 8 (d) to establish *initial action levels* based on the results of that program. An effluent treatment influent action level is a pollutant loading determined by a statistical analysis of six months of daily measurements. The action levels must consist of a *lower action level*, which if exceeded will trigger the investigation requirements described in Condition 8 (g), and an *upper action level*, which if exceeded will trigger the corrective action requirements described in Condition 8(g).
- g) The Approval Holder shall report to the Department the results of the daily monitoring conducted under Condition 8(c). Reports shall include a summary of the monitoring results, the number and dates of exceedances of the applicable action levels, and brief descriptions of any corrective actions taken to respond to such exceedances. This data shall be presented in a tabular form as well as plotted in chart form. Submission of this information is required on a monthly basis within 15 days of the end of the calendar month.
- h) Based on the results of the corrective action taken and a review of the previous six months of monitoring data, the Approval Holder shall establish *revised action levels*. The initial action levels shall remain in effect until replaced by revised action levels. This review shall, at a minimum, take place on an annual basis.

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- i) Each monitoring point shall undergo the same iterative procedure based on an initial six month monitoring program.
- j) Whenever monitoring results exceed the *lower action level* for more than 48 hours, the Approval Holder shall conduct an investigation to determine the cause of the exceedance.
- k) Whenever monitoring results exceed the *upper action level* for more than 24 hours, the Approval Holder shall undertake corrective action to bring the effluent treatment system influent mass loading below the *lower action level*.
- l) The Approval Holder shall submit the corrective action plan required in Condition 8(k) with the timeline for implementation within 72 hours of the *upper action level* exceedance.

9. Ambient Air and Air Emissions

Compliance with Air Quality Regulations

- a) The Approval Holder shall ensure that emissions from the facility do not contribute to an exceedance of the maximum permissible ground level concentrations specified in Schedule A of the Air Quality Regulations.
- b) For the purpose of determining compliance with Schedule A of the Air Quality Regulations, the measurement of Total Reduced Sulphur (TRS) at the ambient monitoring stations shall be considered to be a measurement of hydrogen sulphide (H₂S).
- c) The Approval Holder shall ensure that fine particulate (PM_{2.5}) emissions from the facility do not contribute to an exceedance of the ambient air quality standards for fine particulate indicated in the following Table:

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Ambient Air Quality Standards for Fine Particulate

| Pollutant | Averaging Time | Standards ($\mu\text{g}/\text{m}^3$)* | | Metric |
|-------------------|---------------------------|---|------|--|
| | | 2018 | 2020 | |
| PM _{2.5} | 24-hour (calendar day) | 28.0 | 27.0 | The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations |
| PM _{2.5} | annual (calendar year) | 10.0 | 8.8 | The 3 year average of the annual average concentrations |

*micrograms per cubic meter

- d) The Approval Holder shall demonstrate compliance with Condition 9 c) by utilizing the data from the ambient monitor(s) to complete calculations in accordance with procedures outlined in the “Guidance Document on Achievement Determination Canadian Ambient Air Quality Standards for Fine Particulate Matter and Ozone”, dated 2012, prepared by Canadian Council of Ministers of the Environment (CCME), as amended.
- e) The Approval Holder must be able to demonstrate compliance with condition 9 a), b) and c) through the development, implementation and maintenance of an ambient air monitoring and reporting program. The air monitoring and reporting program may include, but is not limited to:
- (i) Ambient air monitoring;
 - (ii) Continuous Emissions monitoring;
 - (iii) Source testing; and
 - (iv) Dispersion modelling.

Ambient Air Monitoring Network

- f) The Approval Holder shall operate and maintain ambient air quality stations and monitors in accordance with the Monitoring Protocol, dated for the following contaminants at the following locations:

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Pictou Landing

- i) 1-hour and 24-hour rolling average concentration of Total Reduced Sulphur (TRS) in parts per billion;
- ii) 24 hour (calendar day) average concentration in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) of total suspended particulates (TSP);
- iii) 1-hour and 24-hour (calendar day) continuous fine particulate ($\text{PM}_{2.5}$) in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$); and
- iv) Meteorological data: wind speed, wind direction, ambient temperature, barometric pressure and humidity.

Greenhill

- i) 1-hour and 24-hour rolling average concentration of Total Reduced Sulphur (TRS) in parts per billion;
- ii) 24 hour average (calendar day) concentration in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$) of total suspended particulates (TSP); and
- iii) Meteorological data: wind speed, wind direction and ambient temperature.

Emissions

- g) The Approval Holder submit the reference production rates and daily production rates based on pulp production by the digester for each calendar year by no later than January 1st of the following year.
- h) The Approval Holder shall ensure that major point sources are operated such that stack emissions from the Recovery Boiler, Lime Kiln, Smelt Dissolving Tank and Power Boiler shall comply with the limiting criteria set out in Table 1, Appendix A.
- i) When the power boiler scrubber is inoperational in excess of a continuous 24 hour period, the Approval Holder shall either shutdown the operation of the power boiler or switch the fuel to natural gas.
- j) The Approval Holder shall ensure that the recovery boiler precipitator system, is constructed, installed, commissioned and operational by May 30th, 2015.
- k) Until the recovery boiler precipitator system is operational, the Approval Holder shall ensure that the existing wet bottom electrostatic precipitator and Flakt-Modo scrubber are maintained and functioning at all times, while the recovery boiler is operational.

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- l) Upon installation, the Approval Holder shall ensure that both electrostatic precipitator chambers of the recovery boiler precipitator system are operational at all times while Recovery Boiler emissions are generated.
- m) Notwithstanding Condition 9 l) of this Approval, the Approval Holder may operate a single electrostatic precipitator chamber while conducting maintenance of the second electrostatic precipitator chamber of the Recovery Boiler.

Facility Emissions Cap

- n) The Approval Holder shall measure or estimate annual emissions of total particulate matter and sulphur dioxide from the following main sources of emissions:
 - i) Power Boiler;
 - ii) Recovery Boiler;
 - iii) Smelt Dissolving Tank; and
 - iv) Lime Kiln.
- o) Starting in 2016, the Approval Holder shall submit an annual emissions report to the Department by June 30th of each year. This report shall include the methodologies used to measure or estimate emissions for each main source identified in Condition 9n).
- p) Starting January 1st, 2016, the Approval Holder shall limit total annual facility emissions of sulphur dioxide and total particulate matter from main facility sources identified in Condition 9 n) to:
 - i) 2.0 kilograms of total particulate matter (TPM)/tonne of production
 - ii) 4.0 kilograms of sulphur dioxide/tonne of production
- q) Calculations to be used in the annual emissions report, to demonstrate compliance with Condition 9 (p), shall be conducted in accordance with methods identified in the “Code of Practice for the Management of Air Emissions from Pulp and Paper”, prepared by Environment Canada, dated October 2013, as amended.

********Note if the Code of Practice has not been published prior to issuance of Approval, the reference will have to be removed and calculation appendices will have to be added to the Approval.***

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- r) If the total annual facility emissions exceed the limit of an air pollutant described in Condition 9 q) of this Approval, the Approval Holder shall conduct a study to identify improvement opportunities for consideration by the Department. The Approval Holder shall submit this Study Report and recommendations, which meet the satisfaction of the Department, for approval within 1 year of submitting the annual report under Condition 9 o). Upon approval of the recommendations by the Department, the Approval Holder shall implement the recommendations.

Continuous Emission Monitors

- s) The Approval Holder shall operate a continuous emission monitor (CEM), that will monitor, on an hourly basis, the Total Reduced Sulphur (TRS) concentration in parts per million by volume being released from the Recovery Boiler exhaust gas stack and the Lime Kiln exhaust gas stack (upon installation) to the atmosphere.
- t) The Approval Holder shall install a continuous emission monitor (CEM), that will monitor, on an hourly basis, the Total Reduced Sulphur (TRS) concentration in parts per million by volume being released from the Lime Kiln exhaust gas stack to the atmosphere by July 1st, 2016.
- u) The Approval Holder shall ensure that the continuous emission monitor(s) for Total Reduced Sulphur (TRS) are installed, calibrated, maintained, operated and tested in accordance with the “Continuous Emission Monitoring System (CEMS) Code”, published by Alberta Environmental Protection, dated May, 1998, as amended from time to time.
- v) The Approval Holder shall ensure that the continuous emission monitor(s) used to monitor the concentration of the Total Reduced Sulphur (TRS) released from the Recovery Boiler exhaust stack and the Lime Kiln exhaust stack(when installed), are equipped with sufficient data logging capabilities to provide a 4-hour rolling average.
- w) The Approval Holder shall operate a continuous emission monitor system(s) (CEM), to measure the percent oxygen and temperature of the power boiler flue gas, while the power boiler is in operation.
- x) The Approval Holder shall ensure that the continuous emission monitor system(s) described in Condition 9 w) of this Approval are calibrated, maintained, operated and tested in accordance with the “Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions From Thermal Power Generation”, (Report EPS 1/PG/7), dated December 2005, published by Environment Canada.

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- y) The monitoring results from the CEMs shall be recorded and maintained on file for a period of not less than 2 years and made available to an inspector upon request.

Source Testing

- z) Each year the Approval Holder shall undertake two source testing events to determine the Particulate Matter (PM) emission rate in grams per second and the concentration released to the atmosphere from the following point source exhaust gas stacks in the following units of concentration:

| Exhaust Gas Stack | Concentration Unit |
|-----------------------|--------------------|
| Lime Kiln | kg/adubmt |
| Smelt Dissolving Tank | kg/adubmt |

kg - kilograms

adubmt - reference production rate in air dried unbleached metric tons

- aa) Each year, testing events described in Condition 9 z) of this Approval shall include, one test conducted during January 1st to June 30th and the second test conducted during July 1st to December 31st with at least 120 days between the first and second source testing event.
- ab) Each year the Approval Holder shall undertake four source testing events to determine the Particulate Matter (PM) emission rate in grams per second and the concentration released to the atmosphere from the following point source exhaust gas stacks in the following units of concentration:

| Exhaust Gas Stack | Concentration Unit |
|-------------------|--------------------|
| Recovery Boiler | mg/Rm ³ |
| Power Boiler | mg/Rm ³ |

mg - milligrams

Rm³ - reference cubic meter (ie. the volume of gas at 25°C and 101.3 kpa corrected to 11% Oxygen)

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- ac) Each year, testing events described in Condition 9 ab) of this Approval shall include, one test conducted during January 1st to March 31st, the second test conducted during April 1st to June 30th, the third test conducted during July 1st to September 30th and the fourth test conducted during October 1st to December 31st, with at least 60 days between each source testing event.
- ad) The Approval Holder shall undertake source testing in accordance with Condition 9 ab), of the Recovery Boiler emissions, following the commissioning of the recovery boiler precipitator system. This testing shall be completed by June 30th, 2015, to confirm compliance with the particulate stack emission limit of Table 1, Appendix A. Within 30 days of completion of testing, the Approval Holder shall ensure that a Final Report on Source testing is completed and submitted to the Department.
- ae) Each year, the Approval Holder shall undertake one source testing event to determine the fine particulate (PM_{2.5}) emission rate in grams per second and the concentration released to the atmosphere from the following point source exhaust gas stacks in the following units of concentration:

| Exhaust Gas Stack | Concentration Unit |
|---------------------------|---|
| Recovery Boiler | mg/Rm ³ |
| Power Boiler | mg/Rm ³ |
| Lime Kiln | mg/Rm ³ |
| Smelt Dissolving Tank | mg/Rm ³ |
| REFERENCE SAMPLING METHOD | Environment Canada EPS 1/RM/55 or an alternative method acceptable to the Department |

mg - milligrams

Rm³ - reference cubic meter (ie. the volume of gas at 25 °C and 101.3 kpa corrected to 11% Oxygen)

- af) Each year the Approval Holder shall undertake two source testing events to determine Total Reduced Sulphur (TRS) concentrations in parts per million by volume, at stack conditions, released to the atmosphere from the following point source exhaust gas stacks:
- (i) Lime Kiln (continuous over 24 hour period, until continuous emission monitor has been installed);
 - (ii) High Level Roof Vent (continuous over 24 hour period); and
 - (iii) Smelt Dissolving Tank (continuous over 24 hour period).

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- ag) Each year testing events described in Condition 9 af) of this Approval shall include, one test conducted during January 1st to June 30th and the second test conducted during July 1st to December 31st with at least 120 days between the first and second source testing event.
- ah) Each year the Approval Holder shall undertake a source testing event to determine the chlorine and chlorine dioxide concentration in micrograms per cubic meter and emission rate in grams per second released to the environment from the Bleach Plant vents and/or stacks, utilizing National Council for Air and Stream Improvement (NCASI) test methodology.
- ai) Within 60 days of completion of testing, the Approval Holder shall ensure that a Final Report on Source testing is conducted and submitted in accordance with conditions 9 z), 9 ab), 9 ad), 9ae), 9 ag) and 9 ah) of this Approval.

Opacity

- aj) The opacity of visible emissions, as measured by an observer, from any point source shall be limited to 20% except that the opacity may increase to 40 % for a period totaling not more than four minutes in any one half hour period.
- ak) Notwithstanding Condition 9(aj) of this Approval, every time a fire is started in the combustion process equipment, the opacity of the visible emissions, as measured by an observer, may be greater than 40%, but not greater than 60% for a period totaling not more than 3 minutes during each quarter hour.

Reporting

- al) The Approval Holder shall submit monthly summary reports containing the following information:
 - i) a summary of any air quality related emergency and non-emergency incidents pursuant to the Environment Act, the Air Quality Regulations or this Approval, including the date and time of the incident(s).
 - ii) a summary of any operational problems related to the continuous air emission monitoring devices, environmental control equipment and/or the ambient air monitor(s), including the date and time of the incident(s).
 - iii) a summary of the quality assured, quality controlled (QA/QC) ambient air quality data from the ambient air monitor(s) identifying the one hour averages and 24 hour rolling averages of total reduced sulphur in parts per billion, the 24 hour averages of total suspended particulate in

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micrograms per cubic meter, the one hour averages and 24 hour averages (calendar day) of continuous fine particulate (PM_{2.5}) data in micrograms per cubic meter, hourly average wind speed, wind direction, ambient temperature, barometric pressure and humidity including the dates used to calculate the averages. In addition, the Approval Holder shall submit the average annual geometric mean ground level concentration of total suspended particulate for the previous year, in the first monthly report of each year. The monthly summary reports shall include electronic spreadsheets of the quality assured, quality controlled (QA/QC) air quality data.

- iv) a table showing the 4-hour rolling average of total reduced sulphur emissions from the recovery boiler stack and lime kiln stack (upon installation of the continuous emission monitor), including the date and time covered by the average. The table shall also include the percentage of time during the month that the recovery boiler was compliant with the limit of Table 1, Appendix A, of this Approval.
 - v) a summary of any complaints received from the public and how they were responded to by the Approval Holder, including the date and time of the complaint.
 - vi) the number of incidents of direct venting to atmosphere of untreated Concentrated Noncondensable Gases (CNCGs), Dilute Noncondensable gases (DNCGs), and Stripper Off Gases (SOGs), including the date, time and duration of each discharge, the total amount of time that CNCG, DNCG and SOG has been emitted for the month, the percentage of operating time the gases are released, and the suspected reason for each discharge.
- am) Each monthly report shall be submitted within 60 days of the end of the calendar month.
- an) Complaints shall be recorded and maintained on file for a period of not less than 2 years. All complaints of an opacity nature received by the Facility directly from the public shall be reported to the Department immediately between 08:30 and 16:30 Monday to Friday, excluding Holidays, after stipulated hours 1.800.565.1633, otherwise reporting shall be in accordance with Condition 3 (i) of this Approval.

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10. Fuels

Primary Fuels

- a) Fuel for the power boiler is limited to biomass, natural gas, No. 2 fuel oil, No. 6 fuel oil, and reconditioned fuel oil.
- b) Reconditioned fuel oil utilized in the Power Boiler shall comply with the following concentration limits:

| | |
|-----------------------------------|------------|
| PCBs | 2 mg/kg |
| Total organic halogen as chlorine | 1000 mg/kg |
| Cadmium | 2 mg/kg |
| Chromium | 10 mg/kg |
| Lead | 100 mg/kg |
- c) The Approval Holder shall maintain fuel consumption records for a period of at least 2 years to demonstrate compliance with Condition 10b) of this Approval. These records shall be submitted to the Department upon request.

Alternate Fuels

- d) Test burns of alternate fuels may be approved by Letter of Authorization on a case-by-case basis provided the following information has been submitted to the Department and deemed acceptable:
 - i) written notification of the intent to test the use of an alternate fuel identifying the type, volume, source and rate of consumption;
 - ii) analytical data identifying trace metals and/or contaminants in the proposed fuel;
 - iii) identification of potential air contaminants resulting from combustion of the fuel and the anticipated change to emissions for the proposed fuel combustion scenario;
 - iv) proposed feed rate and feed method;
 - v) identification of test methods proposed to confirm that air emissions are acceptable;
 - vi) identification of air quality standards proposed for comparison during testing; and
 - vii) proposed testing scenarios to demonstrate that testing will be conducted for the cases when the highest concentration of air contaminants would occur.

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- e) Should a Letter of Authorization be issued by the Department for a test burn of an alternate fuel, the Approval Holder shall be required to submit:
 - i) A schedule to conduct the test burn. The maximum duration of the test burn shall be 120 hours (unless otherwise approved in writing by the Department); and
 - ii) Submission of a Final Report outlining the results of the test burn. This report shall include, but not be limited to, the test methods and analytical results, air quality standards used, the feed rates, quantity and quality of fuel used, monitoring data from the CEMs and any other operational data deemed pertinent during the test burn, summary of any equipment problems or failures, and the overall effectiveness of the material as an alternate fuel.

11. Air Emissions Process Control

Concentrated Noncondensable Gas (CNCG) Emissions

- a) The Approval Holder shall ensure that all Concentrated Noncondensable Gases (CNCGs) are collected and directed to the Recovery Boiler for incineration.
- b) When the Recovery Boiler becomes inoperable, the Approval Holder shall undertake a controlled shutdown of the evaporator(s) and digester(s) to ensure the release of Concentrated Noncondensable Gases (CNCGs) is minimized.
- c) By July 1st, 2017, the Approval Holder shall limit direct venting or release to atmosphere of untreated CNCGs to a maximum of 1 percent of mill operating time.

Dilute Noncondensable Gas (DNCG) Emissions

- d) Dilute Non Condensable Gases (DNCGs) resulting from emissions of the chip bin, first stage filtrate tank, Number 2 brown stock washer filtrate seal tank, digester vent seal tank, and pressure filter filtrate tank shall be collected and directed to the Recovery Boiler for incineration.
- e) By July 1st, 2017, the Approval Holder shall limit direct venting or release to atmosphere of untreated dilute noncondensable gas streams identified under Condition 11 d) of this Approval, to a maximum of 4 percent of mill operating time.

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- f) The Approval Holder shall replace the evaporator ejector system associated with the evaporator vacuum system. This replacement evaporator ejector system shall be operational by July 1st 2016.
- g) The Approval Holder shall submit a study, which meets the satisfaction of the Department, to collect and direct the dilute noncondensable gas streams from the hood over the brown stock washers number 1 and 2, hood on the brown stock thickener, the brown stock thickener seal tank, the black liquor oxidizer and the washed stock storage tank to the Recovery Boiler for incineration. This study shall include an implementation schedule for the collection and treatment of these DNCG streams and be submitted to the Department for approval by July 1st, 2017. Upon receipt of approval from the Department, the Approval Holder shall implement this project based on the approved schedule.

Condensate Stripper Off Gas (SOG) Emissions

- h) The condensate steam stripper off gases shall be collected and directed to the lime kiln for incineration.
- i) The Approval Holder shall limit direct venting or release to atmosphere of untreated SOGs to a maximum of 1 percent of mill operating time.
- j) The foul condensate steam stripper shall be operated and maintained in accordance with the Foul Condensate Stripping System CNCG and SOG Collection and Incineration System Report, regarding operation and maintenance, prepared by AH Lundberg Systems Limited dated April 23, 2012.

Foul Condensates and Black Liquor Spill Control

- k) The Approval Holder shall conduct operations with the objective of limiting daily loading of total reduced sulphur compounds in the water entering the wastewater treatment system to the following levels:
 - (i) 0.98 kilograms of total reduced sulphur compounds per air dried unbleached metric tonnes of pulp (kg/adubmt) by July 1st, 2016;
 - (ii) 0.658 kilograms of total reduced sulphur compounds per air dried unbleached metric tonnes of pulp (kg/adubmt) by July 1st, 2017; and
 - (iii) 0.335 kilograms of total reduced sulphur compounds per air dried unbleached metric tonnes of pulp (kg/adubmt) by July 1st, 2021.

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- l) The Approval Holder shall conduct an assessment of total reduced sulphur levels in wastewater to determine compliance with the performance objectives established in Condition 11k) of this Approval. Monitoring of total reduced sulphur in wastewater shall be conducted in accordance with Table 2 of Appendix A of this Approval. The Approval Holder shall submit an annual report of wastewater total reduced sulphur loading results for the previous year to the Department by June 30th each year.
- m) If the Approval Holder is unable to achieve the objectives established in Condition 11 k) of this Approval, the Approval Holder shall submit a plan , which meets the satisfaction of the Department, by October 30th, 2016, detailing a program to comply with the objectives. This plan shall also include a proposed schedule for the program. Upon receiving approval from the Department, the Approval Holder shall implement the program based on the approved schedule.

Other Emission Sources

- n) The Approval Holder shall operate and maintain scrubbers to treat chlorine dioxide emissions at the chlorine dioxide towers and chlorine dioxide generator

12. Hydrology and Hydrogeology

Mill Site Hydrogeological Monitoring Network

- a) The Approval Holder shall maintain the existing thirty-seven (37) groundwater monitoring wells on the Site, including: the Industrial Landfill Monitoring Network (1A, 1B, 1C, 2A, 2B, 3A, 3B, 3C, 4A, 4B, 4C, 5A, 5B, 6A, 6B, 7A, 7B, 7C, 8B, 9A, 9C, 09-1A, 96-1B, 96-2B, 09-2C, 09-3B and 96-3C), the Mill Monitoring Network (MW12-1, MW12-2, MW12-3, MW12-4, MW12-5, MW12-6), and the Cardlock Facility Wells (A, B, C, and D). The location of the thirty-seven (37) groundwater monitoring wells are as identified on Figure 3-2, entitled *Surface Water and Monitoring Well Locations*, dated March 2014 included in the Northern Pulp Nova Scotia Corporation 2013 Annual Monitoring Report, prepared by Dillon Consulting, dated March 2014.
- b) Any new or existing well at the Facility that has been damaged or “abandoned” (i.e. is not being used or maintained for present or future use) shall be sealed in a manner acceptable to the Department.

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- c) Prior to implementation of any modification, (addition, deletion or replacement), to the Monitoring well network, the Approval Holder shall submit a written request together with justification for the modification. The justification for the change shall be prepared by a qualified professional, licensed to practice in the Province of Nova Scotia by APGNS or APENS.
- d) The request for modification outlined in Condition 12(c) shall be submitted a minimum of ninety (90) days prior to the proposed implementation date and must be approved in writing, by the Department, prior to implementation.
- e) The Approval Holder shall maintain the following production wells: Construction Gate and Scalehouse.
- f) The Approval Holder shall implement all modifications to the monitoring network as deemed necessary by NSE and within timeframes approved by the Department .
- g) The Approval Holder shall maintain records for all groundwater monitoring wells and production wells at the Facility, including but not limited to borehole logs and construction details, and maintenance records for the life of the facility.

Mill Site Hydrogeological Monitoring

- h) The Approval Holder shall measure static water levels at all groundwater monitoring wells prior to sample collection.
- i) The Approval Holder shall collect groundwater samples from the following industrial landfill monitoring wells on a semi-annual basis, during spring and fall: 1B, 2A, 2B, 4A, 4B, 09-1A, 96-1B, 96-2B, 09-2C, 09-3B, 96-3C.
- j) The Approval Holder shall collect groundwater samples from the following industrial landfill monitoring wells on an annual basis, during the low flow period: 1A, 1C, 3A, 3B, 3C, 4C, 5A, 5B, 6A, 6B, 7A, 7B, 7C, 8B, 9A and 9C.
- k) The Approval Holder shall collect groundwater samples from the Mill monitoring wells (MW12-1, MW12-2, MW12-3, MW12-4, MW12-5, and MW12-6) on a semi-annual basis.
- l) The Approval Holder shall collect groundwater samples from the four cardlock facility wells (A, B, C, and D) on an annual basis.
- m) The Approval Holder shall collect groundwater samples from the following production wells semi-annually: the Construction Gate Well and the Scale House Well.

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- n) The Approval Holder shall ensure all groundwater samples shall be collected in a consistent manner in accordance with established industry standards and best practices.
- o) The Approval Holder shall analyze all groundwater samples from all industrial landfill monitoring wells for general inorganic chemistry and metals as listed in Table 4, Appendix 'A'.
- p) The Approval Holder shall analyze the groundwater samples collected from the following industrial landfill monitoring wells for volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) on an annual basis, during the low flow period: 09-1A, 96-1B, 96-2B, and 09-2C
- q) The Approval Holder shall analyze groundwater samples collected from the following industrial landfill monitoring wells for total petroleum hydrocarbons (TPH) and Benzene, Toluene, Ethyl benzene, and Xylene (BTEX) on an annual basis, during the low flow period: 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, and 7C.
- r) The Approval Holder shall analyze groundwater samples collected from the following industrial landfill monitoring wells for mercury on an annual basis during the low flow period: (09-1A, 96-1B, 96-2B, 09-2C, 09-3B, 96-3C, 7A, 7B and 7C).
- s) The Approval Holder shall analyze groundwater samples collected from the Mill monitoring wells (MW12-1, MW12-2, MW12-3, MW12-4, MW12-5, and MW12-6) for general inorganic chemistry and metals as listed in Table 4, Appendix 'A'. Once annually, during the low flow period, all six (6) Mill monitoring wells shall be analyzed for TPH and BTEX, and the following five (5) Mill monitoring wells shall be analyzed for PAHs: MW12-1, MW12-2, MW12-4, MW12-5, and MW12-6.
- t) The Approval Holder shall analyze groundwater samples collected from the four cardlock facility wells (A, B, C, and D) for the parameters listed in Table 4, Appendix A.
- u) The Approval Holder shall analyze groundwater samples collected from the Construction Gate Well and Scale House Well for the general chemical and metal parameters listed in Table 4, Appendix A. Once annually, during the low flow period, samples collected from the Scale House Well shall be analyzed for VOCs and PAHs.
- v) The Approval Holder shall maintain records of the approved groundwater monitoring program for the life of the Facility. Records shall include, but not limited to: groundwater quality results, water levels, sampling procedures, sampling schedules, and annual reports.

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- w) The Approval Holder shall review the groundwater quality monitoring data as it is collected in order to identify potential changes in water chemistry associated with mill activities. Any change in groundwater quality or quantity shall be reported immediately to the Department.
- x) The Approval Holder shall submit an Annual ground water monitoring report to the Department by April 1st of each calendar year. The Annual Report shall:
 - (i) include, but is not limited to a review of field methodologies, including sampling techniques; a description of the groundwater monitoring network; a review of the current groundwater monitoring program and recommendations for modifications, as applicable; current and historical static water level data in tabular format; current and historical groundwater quality data in tabular format; laboratory certificates of analysis; a detailed interpretation of the groundwater quality data including an analysis of spatial and temporal trends; and the identification of any adverse impacts to groundwater as a result of mill activities and associated recommendations, as applicable.
 - (ii) be prepared by or under the direction of a Professional Hydrogeologist licensed to practice in Nova Scotia by the Association of Professional Geoscientists of Nova Scotia (APGNS) or the Association of Professional Engineers of Nova Scotia (APENS).

Mill Site Hydrological Monitoring Network

- y) The Approval Holder shall maintain the twelve (12) surface water monitoring stations at the Site: SW2, SW4, SW5, SW6, SW9, SW10, SW11, SW12, SW13, SW12-1, SW12-2, and SW12-3.
- z) The location of the twelve (12) surface water monitoring stations are identified on Figure 3-2, entitled *Surface Water and Monitoring Well Locations*, dated March 2014 included in the Northern Pulp Abercrombie Pulp Mill 2013 Annual Report, prepared by Dillon Consulting, dated March 2014.

Hydrological Monitoring (All locations)

- aa) The Approval Holder shall ensure that the following discharge limits for suspended solids are met for any water which is discharged from the Site to a watercourse or wetland at the Site:

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Clear Flows (Normal Background Conditions):*

- (i) Maximum increase of 25 milligrams/litre from background levels for any short term exposure (24 hours or less)
- (ii) Maximum average increase of 5 milligrams/litre from background levels for longer term exposure (inputs lasting between 24 and 30 days)

High Flow (Spring Freshets and Storm Events):*

- (i) Maximum increase of 25 milligrams/litre from background levels at any time when background levels are between 25 milligrams/litre and 250 milligrams/litre
- (ii) Shall not increase more than 10% over background levels when background is > 250 milligrams/litre

*CCME Environmental Quality Guideline for Aquatic Life, 2002.

- ab) The Approval Holder shall ensure surface water discharge from the Site meets the limits outlined in Table 3 of Appendix A

Mill Site Hydrological Monitoring

- ac)
 - (i) The Approval Holder shall collect surface water samples from SW5, SW6, SW9, SW12, SW12-1, SW12-2, and SW12-3 on a quarterly basis.
 - (ii) The Approval Holder shall collect surface water samples from SW2, SW4, SW10, SW11, and SW13 on a semi-annual basis, during spring and fall.
 - (iii) The Approval Holder shall collect a leachate sample from the leachate collection manhole on a quarterly basis.
 - (iv) All surface water and leachate samples shall be collected in a manner consistent with established industry standards and best practices.
- ad) The Approval Holder shall ensure the following surface water stations are analyzed for parameters listed in Table 3 and 4, in Appendix A, as well as total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD): SW1, SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW11, SW12, and SW13. Once annually, during the low flow period, all surface water samples shall be analyzed for mercury.

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- ae) The Approval Holder shall ensure all surface water samples collected from SW2 and SW10 are analyzed for the parameters in Table 4, in Appendix A, as well as total suspended solids (TSS), biological oxygen demand (BOD) and chemical oxygen demand (COD). Once annually, during the low flow period, all surface water samples shall be analyzed for mercury.
- af) The Approval Holder shall ensure leachate samples are analyzed for the parameters listed in Table 3 and 4 of Appendix A as well as mercury, TSS, COD, and BOD.
- ag) The Approval Holder shall monitor SW 12-3 for phenanthrene on a semi-annual basis, during a period of high flow and a period of low flow for a minimum of two (2) years, at which time the Approval Holder may apply to reduce the monitoring frequency for this parameter. A trend analysis shall be included in the annual report.
- ah) The Approval Holder shall evaluate the surface water monitoring program annually to determine whether modifications to the program are required. Requests to modify the surface water monitoring program must be submitted to the Department in writing complete with adequate justification prepared by a qualified professional licensed to practice by APGNS or APENS. Any changes to the program must be approved in writing by the Department prior to implementation.
- ai) The Approval Holder shall maintain records of the surface water monitoring program for the life of the Facility. Records shall include, but are not limited to: surface water quality data, sampling techniques, sampling schedule, and locations.
- aj) The Approval Holder shall review the surface water quality data as it is collected in order to identify potential changes in water chemistry associated with Mill activities. Any change to surface water quality or quantity shall be reported immediately to the Department.
- ak)
 - (i) The Approval Holder shall submit an Annual surface water monitoring report to the Department by April 1st of each calendar year.
 - (ii) The Annual Report shall include, but is not limited to, the following: a review of field methodologies, including sampling techniques; a description of the surface water monitoring network; a review of the current surface water monitoring program and recommendations for modifications, as applicable; current and historical surface water and leachate quality data in tabular format; laboratory certificates of analysis; a detailed interpretation of the surface water quality and leachate data including an analysis of spatial and temporal trends; the identification of any adverse impacts to surface water as a result of mill activities and associated recommendations, as applicable.

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- (iii) The Annual Report shall be prepared by or under the direction of a qualified Hydrologist.

Effluent Treatment System Hydrogeological Monitoring Network

- al) The Approval Holder shall assess and recommend the appropriate siting of a groundwater monitoring network for the Effluent Treatment Facility. This assessment shall be completed by a qualified professional licensed to practice in Nova Scotia by the Association of Professional Geoscientists of Nova Scotia (APGNS) or the Association of Professional Engineers of Nova Scotia (APENS). This evaluation shall be submitted to the Department no later than July 15, 2015.
- am) The Approval Holder shall install the groundwater monitoring network recommended in Condition 12(al), within six months of receipt of approval written from the Department.

Effluent Treatment System Hydrogeological Monitoring

- an) The Approval Holder shall maintain records for all groundwater monitoring wells at the Facility , including but not limited to borehole logs and construction details, and maintenance records for the life of the Facility.
- ao) The Approval Holder shall measure static water levels at all groundwater monitoring wells prior to sample collection.
- ap) The Approval Holder shall submit a recommended monitoring program, including a monitoring schedule, for the monitoring wells proposed under Condition 12(al), this recommendation shall be prepared by a qualified professional licensed to practice in Nova Scotia by the Association of Professional Geoscientists of Nova Scotia (APGNS) or the Association of Professional Engineers of Nova Scotia (APENS). Submission to the Department for approval is required no later than July 15, 2015.
- aq) All groundwater samples shall be collected in a consistent manner in accordance with established industry standards and best practices.
- ar) The Approval Holder shall implement the approved monitoring program required under Condition 12(ap) in accordance with the approved frequency, locations, and parameters by no later than October 15, 2015..

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- as) The Approval Holder shall review the groundwater quality monitoring data as it is collected in order to identify potential changes in water chemistry associated with mill activities. Any change in groundwater quality or quantity shall be reported immediately to the Department.
- at) The Approval Holder shall submit an Annual ground water monitoring report to the Department by April 1st of each calendar year. The Annual Report shall:
 - (i) include, but is not limited to a review of field methodologies, including sampling techniques; a description of the groundwater monitoring network; a review of the current groundwater monitoring program and recommendations for modifications, as applicable; current and historical static water level data in tabular format; current and historical groundwater quality data in tabular format; laboratory certificates of analysis; a detailed interpretation of the groundwater quality data including an analysis of spatial and temporal trends; and the identification of any adverse impacts to groundwater as a result of mill activities and associated recommendations, as applicable.
 - (ii) be prepared by or under the direction of a Professional Hydrogeologist licensed to practice in Nova Scotia by the Association of Professional Geoscientists of Nova Scotia (APGNS) or the Association of Professional Engineers of Nova Scotia (APENS).

Effluent Treatment Facility Hydrological Monitoring Network

- au) The Approval Holder shall assess and recommend the appropriate locations for surface water monitoring locations at the Effluent Treatment Facility. This assessment shall be based on the recommendations of the *Hydrogeological and Hydrological Evaluation for the Boat Harbour Treatment Facility Report*, prepared by Stantec Consulting Limited, dated April 30, 2012 and be completed by a qualified professional licensed to practice in Nova Scotia by the Association of Professional Geoscientists of Nova Scotia (APGNS) or the Association of Professional Engineers of Nova Scotia (APENS). This evaluation shall be submitted to the Department for approval no later than July 15, 2015
- av) The Approval Holder shall establish the surface water monitoring locations recommended in Condition 12(au), within two months of receipt of approval written from the Department

Effluent Treatment Facility Hydrological Monitoring

- aw) The Approval Holder shall collect surface water samples from locations approved locations on a quarterly basis

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- ax) All surface water samples shall be analyzed for parameters listed in Table 3 and 4, in Appendix A as well as total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD), mercury, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs).
- ay) The surface water monitoring program shall be evaluated annually to determine if modifications to the program are required. Requests to modify the surface water monitoring program must be submitted to the Department in writing complete with adequate justification prepared by a qualified professional licensed to practice in Nova Scotia by APGNS or APENS. Any changes to the program must be approved in writing by the Department prior to implementation.
- az) All surface water and leachate samples shall be collected in a manner consistent with established industry standards and best practices
- ba) The Approval Holder shall maintain records of the surface water monitoring program for the life of the Facility. This shall include, but is not limited to: surface water quality data, sampling procedures, and locations.
- bb) The Approval Holder shall review the surface water quality data as it is collected in order to identify potential changes in water chemistry associated with mill activities. Any change to surface water quality or quantity shall be reported immediately to the Department.
- bc)
 - (i) The Approval Holder shall submit an Annual surface water monitoring report to the Department by April 1st of each calendar year.
 - (ii) The Annual Report shall include, but is not limited to, the following: a review of field methodologies, including sampling techniques; a description of the surface water monitoring network; a review of the current surface water monitoring program and recommendations for modifications, as applicable; current and historical surface water and leachate quality data in tabular format; laboratory certificates of analysis; a detailed interpretation of the surface water quality and leachate data including an analysis of spatial and temporal trends; the identification of any adverse impacts to surface water as a result of mill activities and associated recommendations, as applicable.
 - (iii) The Annual Report shall be prepared by or under the direction of a qualified professional licensed to practice in Nova Scotia by APGNS or APENS.

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13. Registered Public Drinking Water Supply

- a) The Approval Holder shall maintain registration as a Public Drinking Water Supply, in accordance with the Guidelines for Monitoring Public Drinking Water Supplies, as required.

14. Dangerous Goods

General

- a) In the event of a conflict between the terms and conditions of Condition 14 of this Approval and the Dangerous Goods Management Regulations, the Dangerous Goods Management Regulations will apply.
- b) This Approval allows the Facility to store and handle Dangerous Goods.
- c) The Approval Holder shall maintain a complete inventory of all Dangerous Goods handled and stored at the Facility. The list provided by Northern Pulp to NSE dated June 23, 2011 will be considered the list of authorized Dangerous Goods for the Facility under this Approval.
- d) The Approval Holder shall not accept or handle Dangerous Goods which are not authorized by this Approval. Should the Facility wish to store or handle any dangerous goods not listed on the inventory provided in Condition 14(c), the Approval Holder shall submit the Material Safety Data Sheets (MSDS) to the Department 10 business days in advance for review.
- e) The Approval Holder shall designate Dangerous Goods storage and receiving areas within the Facility and restrict the handling and storage of Dangerous Goods to designated areas.
- f) The Approval Holder shall not knowingly accept Waste Dangerous Goods at the Facility.

Storage / Process Tanks and Handling

- g) All loading and unloading of Dangerous Goods shall be completed within the receiving areas of the Facility.

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- h) All Dangerous Goods shall be handled in a manner which safely minimizes generation of vapour to the atmosphere at the Facility and at the Site.
- i) Incompatible Dangerous Goods shall not be loaded or unloaded in the receiving area at the same time.
- j) The Approval Holder shall submit the Chemical Unloading Area Upgrade Study, indicated in the January 21, 2013 correspondence from Northern Pulp regarding the Assessment of Dangerous Goods Handling and Storage, by no later than March 15, 2016.
- k) Individual Dangerous Goods or groups of compatible Dangerous Goods shall have secondary containment to meet the specifications of condition 14(p). Secondary containment shall be constructed such that potential spills of Dangerous Goods do not come in contact with or pass under incompatible materials. Should the Facility not meet this Condition, a plan, which meets the satisfaction of the Department, must be filed within 45 days of the issuance of this Approval for correction of the situation.
- l) A trained employee of the Facility shall be present during all Dangerous Goods handling operations.
- m) The Approval Holder shall submit a plan to eliminate all open floor drains in storage/ process tank areas and handling areas of the Facility which will allow release of Dangerous Goods to the environment or the effluent treatment facility. This plan shall be to the satisfaction of the Department and contain an implementation schedule. This plan shall be submitted no later than December 1, 2015.
- n) All storage racks, vehicles, railcars, ventilation ducts, containers and mix/storage tanks associated with flammable Dangerous Goods shall be electrically grounded to prevent build up of static electric charges.
- o) All Dangerous Goods that are accepted by the Facility shall be stored in drums, containers, totes, tanks or pails composed of materials which are compatible with the goods stored therein.
- p) The Approval Holder shall undertake a feasibility study, which meets the satisfaction of the Department, for the installation of secondary containment/ spill control for all Dangerous Goods Storage tanks or containers. The secondary containment shall be sized to contain 110% of the volume of the largest tank or container in the

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specifically contained area / being serviced by the spill control or 100% of the volume of the largest tank or container plus 10% of the aggregate capacity of all other containers or tanks in the contained/ catchment area, whichever is greater. This study shall include a plan for implementation based on a hierarchy of risk (ie the highest risk being implemented first). The risk matrix shall be included in the submission. This study shall be submitted to the Department no later than January 30, 2016.

- q) The Approval Holder shall submit a report on the evaluation of surface grades as indicated in the January 21, 2013 correspondence from Northern Pulp regarding the Assessment of Dangerous Goods Handling and Storage.
- r) All containers shall be stored upright and kept off the floor. All products and Dangerous Goods shall be stored in accordance with manufacturer's specifications.
- s) The Approval Holder shall not transfer or repackage flammable liquids inside any building at the Facility without receiving prior approval of the Department.
- t) Door openings shall be provided with sills or ramps of a minimum 3" inches to contain spillage of Dangerous Goods inside the Dangerous Goods storage buildings.
- u) The Dangerous Goods storage building shall be constructed of impervious or liquid tight materials where the outside walls meet the floor.
- v) Sufficient aisle space shall be provided between containers/drums to allow the unobstructed movement of persons, transfer equipment, fire protection equipment, spill control equipment, and decontamination equipment to any part of the Dangerous Goods Storage facility.
- w) The Approval Holder shall ensure that all storage areas, containers, tanks, totes, drums and pails, including railcars and trucks containing products and Dangerous Goods are labelled to clearly identify their contents.
- x) All bulk tank storage vessels shall operate with visual and audible high level alarms. The Approval Holder shall submit confirmation within 30 days of the issuance of this Approval that audible alarms have been installed on these tanks. Should this Condition not be met within 30 days of issuance of this Approval, the Approval Holder shall file notification of which tanks do not comply and a plan, which meets the satisfaction of the Department, indicating how this Condition will be achieved.

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Notification shall be submitted within 30 days of the issuance of the Approval. The plan shall be submitted within 60 days of the issuance of the Approval.

- y) All transfers of bulk Dangerous Goods shall be conducted using containment pads or drip pans to capture spills or drips during transfer operations to/from railcars and other approved containers.
- z) The bulk storage tanks shall be equipped with emergency shut-off valves or emergency shut-off on transfer pumps to permit the immediate shutdown of transfer operations in the event of an uncontrolled release.
- aa) All bulk underground storage tanks at the Dangerous Goods storage facility shall have cathodic protection or sacrificial anode protection systems.
- ab) The Approval Holder shall ensure that all sludges and solid wastes associated with the Facility, including tank bottoms, shall be handled and disposed in a manner authorized by the Department. Discharge or disposal of sludges or solid wastes to the Effluent Treatment Facility is strictly prohibited.
- ac) The Approval Holder shall not transfer Dangerous Goods to/from more than one railcar or tanker truck at a time.
- ad) The Approval Holder shall not store Dangerous Goods in railcar tankers or tanker trucks for a period which exceeds 21 days from arriving on the Site. The Approval Holder shall document exact times of arrival and departure of bulk shipments and make those available to the Department upon request.
- ae) The Approval Holder shall maintain written acceptable standard operating procedures for the handling of Dangerous Goods, including valving and venting procedures. Such procedures shall be readily available to all employees.

Waste Dangerous Goods

- af) The disposal of Waste Dangerous Goods, including radioactive sources, shall be at a facility licensed or approved for the disposal of such Waste Dangerous Goods by the applicable regulatory agency having jurisdiction.

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Dangerous Goods / Process Bulk Storage Tank Maintenance

- ag) The Approval Holder shall develop an inspection/ repair plan for the following tanks identified in the Tank Assessment Study, submitted November 2012, as requiring further investigation and or repair: 11% Caustic Tank, CLO₂ Storage Tank #2, Chemical Feed Tank, Green Liquor Dump Tank, Liquid Alum Storage Tank, Clarified White Tank,. This plan shall include, but not be limited to, a schedule for any repairs identified and shall be submitted by no later than June 1, 2016.
- ah) The Approval Holder shall implement the approved plan, required under Condition 14 (ag) in accordance with the approved schedule.
- ai) The Approval Holder shall submit the details of the assessment and repair of the White Liquor Tank, as indicated in the January 21, 2013 correspondence from Northern Pulp regarding the Assessment of Dangerous Goods Handling and Storage, and the work completed on the Caustic Storage Tank (cleaning required for further inspection) as indicated in the Tank Assessment Study, submitted November 2012. This information shall be submitted to the Department no later than April 15, 2015.
- aj) Subsequently by June 30th on a five (5) year cycle the Dangerous Goods Storage/ Process tank(s) shall be assessed against a Standard(s) acceptable to the Department. The Approval Holder shall submit the proposed Standard(s) to the Department for approval 60 days in advance of the inspection.
 - ak) If results of the tests required in Condition 14 (ah) indicate that the Dangerous Goods Bulk Storage/ Process Tanks require maintenance, replacement or upgrades, then the Approval Holder will:
 - (i) Submit to the Department a copy of the report as well as a plan for maintenance, replacement or upgrades within 30 days of the testing event to address any outstanding issues identified;
 - (ii) Undertake the necessary maintenance or upgrades within one (1) year of being identified. If these deficiencies cannot be corrected within one (1) year of being identified, then the reasons shall be submitted in writing 60 days prior to the deadline with a proposal for a revised schedule, and a request for an extension;

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- (iii) Following completion of the maintenance or upgrades, the tank(s) shall be retested in accordance with Condition 14(ah) to ensure the maintenance or upgrades were effective.

Inventory Control

- a) The Approval Holder shall maintain an up-to-date inventory of Dangerous Goods which are stored at the Facility. The inventory shall consist of informational requirements of Section 12 (2) of the *Dangerous Goods Management Regulations*.
- am) The inventory shall be made available to the Department for inspection upon request.

15. Petroleum Management

- a) The Approval Holder shall reassess the petroleum storage tanks at the Facility, on a five (5) year cycle for each tank, against the “Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank Systems” (Standard), current edition and the Nova Scotia *Petroleum Management Regulations*, (the Regulations). The assessment shall be submitted within 90 days immediately following the testing.
- b) If results of the assessment required in Condition 15(a) indicate that the Petroleum Storage Tank (s) require maintenance, replacement or upgrades, then the Approval Holder will:
 - i) Submit to the Department a copy of the report as well as the planned maintenance, replacement or upgrades within 30 days of the testing event if maintenance or upgrades are required;
 - ii) Undertake the necessary maintenance, replacement or upgrades within one (1) year of being identified. If these deficiencies can not be corrected within one (1) year of being identified, then the reasons shall be submitted in writing 60 days prior to the deadline with a proposal for a revised schedule, and a request for an extension;
 - iii) Ensure secondary containment is installed / upgraded to meet the requirements for 110% of the capacity of the tank(s); and
 - iii) Following completion of the maintenance or upgrades, the tank(s) shall be retested to ensure the maintenance or upgrades were effective.
- c) The Approval Holder shall operate and maintain the petroleum storage tanks in accordance with the *Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank Systems*, dated June 5, 1997, as amended from time to time.

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- d) Testing and monitoring of the petroleum storage tanks shall be conducted in accordance with the *Nova Scotia Standards for Construction and Installation for Petroleum Storage Tank Systems*, dated June 5, 1997, as amended from time to time.

16. Industrial Landfill

- a) The disposal of domestic solid waste shall be conducted at a facility licensed or approved for the recycling, composting or disposal of such solid waste. The Approval Holder shall not dispose of domestic solid waste at the industrial landfill.
- b) The Approval Holder shall dispose of all Effluent Treatment System sludges at the industrial landfill, unless authorization has been obtained from the Department for alternative disposal.
- c) The Approval Holder shall dispose of all combustion residues and solid waste originating from pollution control equipment such as, electrostatic precipitators, scrubbers and demisters at the industrial landfill, unless authorization has been obtained from the Department for alternative disposal. Unless otherwise approved, solid waste from the multiclone must be disposed at the industrial landfill.
- d) The Approval Holder shall dispose of petroleum impacted soil at a facility licensed or approved for the treatment or disposal for such waste. Disposal of petroleum impacted soils at the Facility's industrial landfill is strictly prohibited.
- e) Only industrial waste types for which the industrial landfill was designed and as identified in the Landfill Operations Manual, dated December, 1989 and Solid Waste Management Strategy Background Report, dated November 1989, shall be disposed at the industrial landfill.
- f) The Approval Holder shall maintain and update the Abercrombie Point Landfill No. 3 Operations and Maintenance Manual at a minimum, on an annual basis or more frequently if necessary. A copy of the updated Manual shall be provided to the Department within 30 days of the update.
- g) The Approval Holder shall submit a time schedule for implementation of the recommendations outlined in the February 21, 2012 memo from Dillon Consulting to Northern Pulp regarding Assessment of Landfill 1 and 2, Abercrombie Point, by no later than April 15, 2015.

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- h) The Approval Holder shall submit closure plans for all disposal sites at the facility a minimum of 90 days in advance of the proposed closure. An amendment to this Approval may be required.
- i) Any proposed change or modification to the size, design, construction, disposal practices of any landfill, the Approval shall require an amendment to this Approval prior to implementation of that change or modification.

Ash Pond Management

- i) The Approval Holder shall maintain and update the Ash Pond Operations and Maintenance Manual, dated June 13, 2011 on an annual basis. Any changes or modifications to the Manual shall be submitted to the Department.
- j) The Approval Holder shall submit an accurate depth survey of the ash pond by no later than November 30, 2015.
- k) The Approval Holder shall submit calculations to support the use of the oil tank farm dyke as the 'fail safe' overflow for the ash pond. This information shall be submitted by no later than June 15, 2015.
- l) The Approval Holder shall implement the approved plan in accordance with the accepted implementation schedule.

17. Asbestos

Designated Asbestos Disposal Area

- a) Asbestos waste generated from the Facility shall be disposed of in the area designated for asbestos disposal on Engineering Plan entitled *Industrial Solid Waste Landfill Engineering Drawing Rev. 1 dated August 1990, Sheet 5 and Sheet 6*, prepared by Porter Dillon Consulting Ltd.
- b) A copy of the site plan indicating the location of the asbestos waste disposal area shall be maintained by the Approval Holder in the Registry of Deeds.
- c) Any modification or change to the area outlined in Condition 17(a) will require an amendment to this Approval.
- d) The designated asbestos disposal area shall be clearly marked by signage.
- e) The area designated for asbestos waste disposal must be secured from unauthorized access.

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- f) The Facility shall not accept asbestos waste from third party generators of the waste.

Designated Area Cover Limits

- g) Upon abandonment or discontinuance of use of the designated asbestos waste disposal area, the Approval Holder shall apply a final capping material having a depth of not less than one hundred twenty five (125) centimetres with a permeability of not greater than 10^{-6} .

Facility Inspection

- h) Upon abandonment or discontinuance of use of the designated asbestos waste disposal area, the Approval Holder shall inspect the area on a monthly basis to ensure that the final capping is intact.
- i) The Approval Holder shall undertake any repairs that may be required to maintain the cover limits specified in this Approval.

18. Spills or Releases

- a) All spills or releases shall be reported in accordance with the *Act (Part IV)* and the *Emergency Spill Regulations*.
- b) Spills or releases shall be cleaned up in accordance with the *Act, Policies, Standards and/or Procedures*, as directed by the Minister.

19. Records Maintenance

- a) The Approval Holder shall keep all chemical and physical analyses reports for 10 years.
- b) The Approval Holder shall keep all calibration and maintenance records for three years.
- c) The Approval Holder shall maintain all other data not mentioned in Conditions 19(a) or 19(b) for a minimum of two (2) years.

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20. Reporting

- a) All reporting requirements required by this Approval shall be submitted in writing and/or electronically, in a format acceptable to the Administrator.
- b) The Approval Holder shall submit required annual reports within ninety (90) days of the end of the applicable calendar year.

21. Community Liaison Committee

- a) The Approval Holder shall establish a Community Liaison Committee in accordance with the Department's Guide for the Formation and Operation of a Community Liaison Committees. The membership of said committee shall consist of at least two representatives of the Pictou Landing First Nation Community, one representative of the Pictou Landing Community, one representative of the Moodie Cove Community (permanent resident), one representative of the Town of Pictou Community and one representative of the Abercrombie Community, one representative of the Green Hill area along with participation of one employee of Northern Pulp Nova Scotia Limited.
- b) The Approval Holder shall submit the list of proposed Community Liaison Committee members as well as the terms of reference of the Committee to the Department by April 30th, 2015. This list shall be updated and submitted on an annual basis in the Annual Report for the Facility.

22. Communication Plan

- a) The Approval Holder shall develop, in consultation with the Pictou Landing First Nation, a Mi'kmaq Communication Plan for the purposes of sharing information between the Approval Holder and the Pictou Landing First Nation on environmental issues. This plan shall be submitted for approval to the Department by no later than March 30, 2015 and shall include but not be limited to the following information:
 - (i) an agreed upon mechanism for sharing of any information respecting environmental testing and reporting;
 - (ii) an agreed upon mechanism for PLFN to identify any questions or concerns they may have about the information supplied to them;
 - (iii) an agreed upon methodology for tracking the information exchange (i.e. courier delivery receipts); and
 - (iv) confirmation, in writing, from the PLFN, that they have agreed to the plan as submitted

Please note, email communication, on its own, will not be accepted.

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- b) The Approval Holder shall to the Department, provide proof of delivery to the PLFN, within 15 days following the date the report / monitoring is required to be submitted to NSE.
- c) The Approval Holder shall provide a list of documents shared, and records of communication with the Pictou Landing First Nation to the Department on or before July 1st (for the period January 1 to June 1) and January 30th (for the period June 2 to December 31 of the previous calendar year) of each year.

23. Contingency Plans/Operation and Maintenance Manuals

Contingency Planning

- a) The Approval Holder shall submit to the Department a contingency plan to address any potential emergency situation at the Facility. The contingency plan shall be developed and routinely updated in accordance with the Department's *Contingency Planning Guidelines* dated September 29, 2004, as amended from time to time, and made available to the Department upon request.
- b) The Approval Holder shall ensure that all personnel are trained to address environmental emergencies in a manner consistent with the Facility's approved contingency plan and that the necessary materials and equipment are available at all times for such purpose.
- c) A copy of the contingency plan is to be maintained on site at all times.
- d) A copy of the contingency plan is to be sent to the local fire department.

24. Rehabilitation Plans

- a) One (1) year prior to decommissioning/closure of the Facility, or any part thereof, the Approval Holder shall submit a detailed closure plan to the Department for review and approval. The plan shall include but not be limited to, the estimated total cost for labour, equipment, supplies and services of a 3rd party contractor to undertake all the work necessary to decommission the Facility, or any part thereof, as well as a plan for dealing with all of the wastes and residual materials / contamination in accordance with the *Act*, the Regulations, Policies, Procedures and Guidelines prescribed or adopted by the Department, as well as a long term monitoring plan for the site.

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- b) The closure plan shall include the method and practices for the handling and disposal of all products and waste materials on Site.
- c) The closure plan shall be implemented in accordance with the approved plan.

25. Insurance

- a) The Approval Holder shall obtain environmental impairment liability insurance in the amount of \$5,000,000. Insurance shall indicate Nova Scotia Environment as insured. Proof of coverage shall be provided to the Department within sixty (60) days of issuance of the Approval.

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APPENDIX A
TABLES

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Table 1: Stack Emission Limits

| POINT SOURCE | AIR CONTAMINANT | |
|----------------------------------|----------------------------------|--|
| | PARTICULATE | TOTAL REDUCED SULPHUR (TRS) |
| Recovery Boiler | 77 mg/Rm ³ * | 15 ppm dv*** (any 4 hour rolling average) |
| Lime Kiln | 0.50 kg/adubmt | 20 ppm dv (any 4 hour rolling average)** |
| Smelt Dissolving Tank | 0.50 kg/adubmt | |
| Power Boiler | 150 mg/Rm ³ | |
| REFERENCE SAMPLING METHOD | Environment Canada EPS 1/RM/8 | US EPA Method 16/16A/16B |

mg - milligrams

Rm³ - reference cubic meter (ie. The volume of gas at 25 degrees celsius (°C) and 101.3 kilopascals (kpa) corrected to 11% Oxygen)

ppm dv - parts per million dry volume

kg - kilograms

adubmt – reference production rate in air dried unbleached metric tonnes

*Emission limit to be achieved upon completion of commissioning of the recovery boiler precipitator system.

** Prior to installation of the continuous emission monitor, the TRS limit is to be confirmed through source testing, conducted twice per annum, on a continuous basis over a 24-hour period on a day acceptable to the Department. Testing shall be done during normal lime kiln operation and data confirming this shall be submitted along with the TRS test results. Upon installation of the continuous emission monitor, measurement readings from the continuous emission monitor shall be used for compliance purposes.

***To allow for startup and shutdown conditions, the Approval Holder may exceed this limit upto 1 % of the time, with no 4 hour rolling average exceeding 30 ppm dv.

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TABLE 2: Effluent Monitoring Parameters and Discharge Limits

| Parameter | Sample Type | Monitoring Frequency | Location | Discharge Limit |
|---|--------------------------|--|---|--|
| Biochemical Oxygen Demand (BOD ₅) | Continuous | 3 days per week | Effluent Monitoring Station Point C | PPER |
| Suspended Solids | Continuous | Daily | Effluent Monitoring Station Point C | PPER |
| pH | Continuous | Daily | Point B and Effluent Monitoring Station Point C | 6-9 |
| Flow rate | Continuous | Daily (averaged annually based on 355 days of operation) | Effluent Monitoring Station Point C | 90000 cubic meters |
| Acute Toxicity-rainbow trout | Grab | once per month*, as per PPER | Effluent Monitoring Station Point C | Pass LC50, as per the PPER |
| Acute Toxicity-Daphnia magna | Grab | once per week**, as per PPER | Effluent Monitoring Station Point C | Pass LC50, as per the PPER |
| Dioxins and Furans | 24 hour composite sample | Annually, 350 days between samples | Effluent Monitoring Station Point C | as required by the Pulp and Paper Effluent Chlorinated Dioxins and Furans Regulations*** |
| Total Reduced Sulphur (TRS) | Grab | Weekly | Point A | NCASI**** Method RSC-02.02 Limit TBD |

PPER – Federal Pulp and Paper Effluent Regulations

* if LC50 test fails, testing will be increased to weekly until a minimum of three (3) consecutive tests are passed.

** if LC50 test fails, acute toxicity on rainbow trout shall be conducted immediately, testing on Daphnia magna shall be increased to three (3) times per week until a minimum of three (3) consecutive tests are passed.

*** if measurable quantities of 2,3,7,8 TCDD (15 ppq) or 2,3,7,8 TCDF (50 ppq) are detected, testing shall be increased to monthly until three (3) consecutive non-detect quarters are achieved.

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**** National Council for Air and Stream Improvement
TBD- To be determined based on baseline measurements

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TABLE 2A: Effluent Parameters and Discharge Limits

| PARAMETER | COMPLIANCE | | MONITORING LOCATION | LIMIT |
|---|-----------------|-----------------|---------------------|--|
| Adsorbable organic halides (AOX) | 1 Day Maximum | | TBD** | 0.9 kg/adubmt |
| | Monthly Average | | | 0.55 kg/adubmt |
| Nitrate-Nitrogen | Daily | | TBD** | As determined by a receiving water study* |
| Total Phosphorous | Daily | | TBD** | As determined by a receiving water study* |
| Colour | Daily | | TBD** | As determined by a receiving water study* |
| COD | Daily | | TBD** | As determined by a receiving water study* |
| Biochemical Oxygen Demand (BOD ₅) | Continuous | 3 days per week | TBD** | As determined by a receiving water study* or 4.8 kg/ADt maximum monthly average, whichever is less |
| Suspended Solids | Continuous | Daily | TBD** | As determined by a receiving water study* or 7.3 kg/ADt maximum per monthly average, whichever is less |
| Dissolved Oxygen | Field (grab) | 5 days per week | TBD** | |
| pH | Continuous | Daily | TBD** | 6-9 |
| Flow rate | Continuous | Daily | TBD** | To be determined based on water use and wastewater flow reductions |

*A receiving water study, which meets the satisfaction of the Department, conducted by a qualified individual, based on the proposed location of discharge

**To be determined based on proposed location of treatment facility.

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TABLE 3: Surface Water Discharge Limits

| PARAMETER | DISCHARGE LIMIT |
|------------------------------|--|
| pH | 6.5 - 9.0 |
| Total Petroleum Hydrocarbons | 3.5 milligrams per litre or Atlantic RBCA* |
| Chromium (trivalent) | 8.9 micrograms per litre |
| Chromium (Hexavalent) | 1.0 micrograms per litre |
| Copper | 2-4 micrograms per litre |
| Iron | 300 micrograms per litre |
| Nickel | 25-150 micrograms per litre |
| Vanadium | 2 milligrams per litre |
| Zinc | 30 micrograms per litre |

* lowest value after finalization of Atlantic RBCA standard for surface water

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TABLE 4: General Inorganic Chemistry and Metals Parameters

| | | | |
|-------------------------------------|-----------------------|------------------------|------------------------------------|
| Sodium (Na) | Nitrate + Nitrite (N) | Conductivity | Antimony (Sb) |
| Potassium (K) | Nitrite (N) | pH | Selenium (Se) |
| Calcium (Ca) | Nitrate (N) | Total Organic Carbon | Tin (Sn) |
| Magnesium (Mg) | Phosphorus | Total Dissolved Solids | Silver (Ag) |
| Hardness (CaCO ₃) | Ammonia (N) | Aluminum (Al) | Strontium (Sr) |
| Alkalinity (CaCO ₃) | Arsenic (As) | Boron (B) | Thallium (Tl) |
| Carbonate (as CaCO ₃) | Iron (Fe) | Bismuth (Bi) | Titanium (Ti) |
| Bicarbonate (as CaCO ₃) | Manganese (Mn) | Barium (Ba) | Uranium (U) |
| Sulfate (SO ₄) | Lead (Pb) | Beryllium (Be) | Vanadium (V) |
| BTEX | Copper (Cu) | Chromium (Cr) | Cadmium (Cd) |
| Fluoride (F) | Zinc (Zn) | Cobalt (Co) | Total petroleum Hydrocarbons (TPH) |
| Silica (SiO ₂) | Colour | Molybdenum (Mo) | |
| Ortho-Phosphorus (P) | Turbidity | Nickel (Ni) | |

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APPENDIX B
REFERENCE DOCUMENTS

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APPENDIX C
EFFLUENT TREATMENT CENTRE MAP

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