

Guidance for ASB Operation During Extended Mill Process Outages

West Coast Regional Meeting

**Workshop: Contemporary Operational Issues at Wastewater
Treatment Systems**

September 26, 2016

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Presentation Coverage

- Background
- NCASI technical support
- Guidance document development
- Guidance document coverage
- Questions addressed and recommendations

Background

- International Paper (IP) contacted NCASI in October 2015 regarding:
 - Riegelwood, NC mill planned extended outage/slowdown for partial conversion to fluff pulp production (Jan – April 2016)
- IP required planning associated with aerated lagoon (ASB) performance that accounted for following factors:
 - Cold weather, decreased wastewater temperature
 - Bacteria die off from lack of food
 - Reduced treatment upon mill startup
 - Optimal system management (i.e. aeration, recirculation, etc.)
 - Cost/benefit of external technologies under consideration

NCASI Technical Support

- Mill provided expected conditions – influent temperature, flow, and organic loading for various levels of mill operation during the extended process outage
- NCASI applied the Wastewater Treatment System Heat Balance model to estimate ASB wastewater temperatures
 - With different levels of aeration
 - With and without effluent recirculation
- Applied NCASI ASB Model to estimate performance
 - At outage wastewater temperatures, flows, and organic loading
 - For certain ASB operating alternatives – recirculation, supplemental bacteria

NCASI Technical Support (contd.)

- NCASI provided wastewater engineering guidance based on
 - Model results and previous experience with ASB operation during extended mill process outages and winter operation – two scenarios
 - Mill outage conditions as expected
 - Unexpected conditions during mill outage
- Mill outage experience presented at NCASI Southern Regional meeting in June 2016

Fail, K. and Palumbo, J., “Planning and Implementing an ASB Management Plan for a Mill Outage,” NCASI Southern Regional meeting, June 2016

<http://www.ncasi.org/Downloads/Download.ashx?id=10720>

Guidance Document Development

- Based on ASB model results and experience with previous process outages at other mills
 - Guidance developed to address each of the mill's questions about ASB operation
- Guidance later generalized for application to all mills with ASB wastewater treatment

“Guidance for Aerated Stabilization Basin (ASB) Operation During and Following Extended Mill Process Outages”

Document on the NCASI members only website at:

Programs/Water Quality and Aquatic Biology/ASB info Resources @
<http://www.ncasi.org/Programs/Water-Quality-and-Aquatic-Biology/Resources/ASB-Info-Resources/Index.aspx>

Guidance Document Outline

- General recommendations
 - Develop an ASB operating plan
 - Monitor performance before, during, and after the outage
 - Consider ASB modeling resources to evaluate options
- Specific questions from and recommendations to IP-Riegelwood that may be applicable to all mills with ASBs
 1. Should supplemental bacteria be added to the ASB?
 2. Should supplemental organic loaded by added?
 3. Should supplemental nitrogen and phosphorus be added?
 4. Should aeration intensity be reduced?
 5. Should effluent recirculation be used (if available)?

Specific Recommendations (contd.)

6. What measures are available to increase hydraulic retention time?
 7. How can heat be added to the ASB?
 8. How should the ASB be monitored during the outage?
 9. How can final effluent ammonia be controlled?
- Two tables list operating practice questions, recommendations, and supporting model estimates for two scenarios
 - Mill outage conditions as expected
 - Unexpected conditions during mill outage



NATIONAL COUNCIL FOR AIR AND STREAM IMPROVEMENT

**GUIDANCE FOR AERATED STABILIZATION
BASIN (ASB) OPERATION DURING AND
FOLLOWING EXTENDED MILL PROCESS
OUTAGES**

MAY 2016

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Develop an ASB Operating Plan

Monitor ASB Performance Before, During, and After the Outage

Consider ASB Modeling Resources to Predict Performance

MILL-SPECIFIC RECOMMENDATIONS

Recommendations to Mill A

Should supplemental bacteria be added to the ASB?

Should supplemental organic loading be added to the ASB?

Should supplemental nitrogen and phosphorus be added to the ASB?

Should aeration intensity be reduced?

Should effluent recirculation be used?

What measures are available to increase wastewater hydraulic retention time?

How can heat be added to the ASB?

How should the ASB be monitored during an outage?

How can final effluent ammonia be controlled?

Mill A Specific Assumptions

ASSUMPTIONS COMMON TO ALL MILLS

Comments and Questions

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