# WEYERHAEUSER FLINT RIVER OPERATIONS

## Project XL

## MACT Compliance Plan

May 2000

**WEYERHAEUSER FLINT RIVER OPERATIONS**

# Project XL
# MACT Compliance Plan

## I. INTRODUCTION

In January, 1997, the United States Environmental Protection Agency (hereafter EPA), the State of Georgia represented by the Georgia Department of Natural Resources, Environmental Protection Division (or EPD) and Pollution Prevention Assistance Division (or $P^2$AD), and Weyerhaeuser Company approved a Final Project Agreement (FPA) for Weyerhaeuser Flint River Operations Project XL.

The public notice of the availability on the proposed Project XL Final Project Agreement for Weyerhaeuser Flint River Operations was published in the Federal Register, October 11, 1996. (*See,* 61 Fed. Reg. 53373; attached as Appendix A.) Notice of the approval of the FPA was published in the Federal Register January 31, 1997. *See,* 62 Fed. Reg. 4760 (attached as Appendix B).

## II. PURPOSE OF THE FINAL PROJECT AGREEMENT

Weyerhaeuser, EPD, $P^2$AD, and EPA entered into the final project agreement to accomplish four principal purposes. They were, as stated in the FPA, as follows:

- To articulate, within the framework of this Agreement, that Weyerhaeuser intends to continue to attain environmental results that are measurably superior when compared to current and reasonably anticipated regulatory standards as contemplated by EPA's Project XL criteria.

- To document the Agencies' decision to accept Weyerhaeuser's Project XL proposal as that proposal is embodied in this FPA.

- To identify the means to provide, as set forth in this Agreement, for environmental regulatory flexibility as requested by Weyerhaeuser as an incentive for superior environmental results.

- To state that the Parties do not intend to create legal rights or obligations or to consider this FPA to be a contract or a regulatory action, like a rule or permit, although the Agencies intend to propose legally enforceable rules and permits to implement several provisions of this FPA.

## III. IMPLEMENTING PROJECT XL FOR FLINT RIVER OPERATIONS

In January, 1997, when the FPA was presented to the parties for final approval, EPA had not yet published in final form National Emission Standards for Hazardous Air Pollutants for the pulp and paper manufacturing industry, 40 CFR Part 63 Subpart S (commonly referred to as MACT). MACT standards were proposed for the industry in 1993.

In January 1997, the parties experienced uncertainty as to the nature and form of regulatory flexibility Weyerhaeuser would need to implement the FPA due to the absence of final, published, MACT standards. The parties responded to this uncertainty by agreeing on an approach to MACT implementation in the FPA. That approach is contained in the FPA Section IV.A.3. (pp. 14-15) and in Appendix Seven titled "MACT Implementation Including Principles for Accounting for HAP [Hazardous Air Pollutants] Emission Controls and Controls to Implement MACT".[1]

MACT standards for pulping and bleaching operations in the kraft pulp manufacturing category of the industry were promulgated with a Federal Register notice published April 15, 1998.[2] The MACT standards published April 15, 1998, apply to pulping and bleaching systems at Weyerhaeuser's Flint River Operations.

In summary, the FPA provided that Weyerhaeuser could request flexibility in implementing MACT through a series of steps. The steps are as follows:

**Table 1 - Steps in MACT Implementation in FPA**

| Step and Deliverable | Responsible Party | Status |
|---|---|---|
| Prepare Flint River MACT Applicability Assessment containing,<br>• HAP emission reductions required to be obtained<br>• Timeline | Weyerhaeuser | Done |
| Prepare MACT Compliance Plan containing,<br>• Emission units controlled by MACT standard<br>• Allowable HAP emission for each emissions unit<br>• HAP emission reductions accomplished through MIM IV that may be counted and<br>• Emission units that will be controlled, if necessary, to obtain additional HAP emissions. | Weyerhaeuser, EPA and Georgia EPD | Done |
| Promulgate site-specific MACT rule | EPA | Pending review |

[1] Appendix Seven to the FPA is attached for ease of reference.
[2] *See,* 63 *Fed. Reg*. 18503-18751.

## `IV. MACT IMPLEMENTATION FOR FLINT RIVER OPERATIONS – MACT COMPLIANCE PLAN

### Overview.

Overall, kraft pulp mills will meet the MACT standard by reducing HAP emissions to the atmosphere from designated emission units or wastewater streams. In general, the required reductions involve controlling and destroying HAPs otherwise emitted in gaseous form (known as "vent collection" in the industry) and by controlling and treating and destroying HAPs present in wastewater streams at kraft mills (or "condensate collection/treatment"). Weyerhaeuser's MACT Compliance Plan affects the "vent collection" aspect of MACT implementation at Flint River operations.

With regard to vent collection requirements, Flint River Operations' approach to MACT compliance may be summarized as follows.

- Flint River has already reduced HAP emissions to a greater degree than required by EPA's MACT standard;
- Flint River now captures and destroys HAPs from emission units that other mills will not be required to control;
- Flint River has reduced HAP emissions while other mills will not be required to demonstrate reductions until April 2001; and
- Flint River will emit HAPs from emission units that other mills will control.

Other than with respect to vent collection requirements, which Weyerhaeuser anticipates will be covered in a site-specific MACT rule, Flint River will comply with all applicable MACT requirements.

### Elements of the MACT Compliance Plan.

The elements of the MACT Compliance Plan set out in Appendix Seven of the FPA (p. A7.4) are as follows:

1. The HAP emitting units at Flint River that will be controlled by the MACT Standard.
2. The amount of HAPs allowed to be emitted for each HAP emitting unit at the mill under the MACT Standard.
3. The HAP emitting units and the amount of HAP emission reductions eligible to be counted according to sections A. and B. [of Appendix Seven].
4. HAP emitting units that the facility plans to use to obtain additional HAP emission reductions, and units that present a potential to obtain HAP emission reductions, and the amount eligible to be counted against HAP emission reductions required by the MACT Standard.

Information required by Elements 1., 2., 3., and 4. of the MACT Compliance Plan is presented in Table 2 below. The following introduction describes how Table 2 addresses that information.

**Element 1. - HAP emission units controlled by the MACT Standard.**

The issue addressed by Element 1. is what emission units at Flint River Operations must control HAP emissions under the MACT standard.

Table 2, in the columns titled "Name of Equipment" and "Covered by MACT Rule?" provides responsive information as follows.[3]

- If "Yes" appears in Table 2 under "Covered by MACT Rule?" then HAP emissions from the named piece of equipment are required to be controlled to comply with the MACT standard.

**Element 2. - HAPs allowed to be emitted from the emission unit by the MACT standard.**

The issue addressed by Element 2. is what amount of HAPs is allowed to be emitted from an emission unit if the emission unit is covered by the MACT standard.

Table 2 provides information responsive to Element 2 is two ways.

- If "Yes" appears in Table 2 under "Covered by MACT Rule?" and "NA" appears under "Deficit Amount" then HAP emissions from the named piece of equipment must be controlled and are controlled at Flint River Operations.

- Conversely, if "Yes" appears in Table 2 under "Covered by MACT Rule?" and a number appears under "Deficit Amount" (e.g., 0.0017 for the Brownstock Diffusion Washer) then HAP emissions from the named piece of equipment are required to be controlled and are **not** controlled at Flint River Operations. The amount given under "Deficit Amount" is the amount of HAP emissions from the named piece of equipment that Flint River is required control.[4]

**Element 3. - HAP emission units and the amount of HAP emission reductions eligible to be counted.**

Element 3. goes to the heart of the MACT regulatory flexibility afforded to Weyerhaeuser under the FPA. The issue addressed by Element 3. is what "extra" reductions of HAP emissions are provided by Weyerhaeuser at Flint River operations.

Table 2 provides information responsive to Element 3 is two ways.

[3] The equipment listed in Table 2 is described in more detail in Appendix C.

[4] HAP emission data has been collected through five source tests conducted at Flint River Operations. The dates of the tests, report numbers and related information, are listed in Appendix E. All test reports listed in Appendix E are on file in EPA's Region 4 offices in Atlanta. The reports are open to pubic review under the federal Freedom of Information Act. For further information contact Mr. Lee Page at 404-562-9131.

- First, paragraph A in Appendix Seven to the FPA permits Weyerhaeuser to count "extra" reductions in HAP emissions that occurred after January 1, 1996. Table 2., with respect the Cylinder Mould Decker and the Cylinder Mould Filtrate Tank, identifies reductions in HAP emissions that occurred after January 1, 1996. The numbers that appear in Table 2 under "Credit Amount" for the Cylinder Mould Decker and the Cylinder Mould Filtrate Tank represent HAP emission reductions accomplished by Weyerhaeuser on a voluntary basis. These emission reductions were measured by "before" and "after" emission testing of the equipment involved.[5]

- Second, other pieces of equipment at Flint River were individually listed in Paragraph B. in Appendix Seven to the FPA. Table 2 provides under "Credit Amount" the amount of extra reductions in HAP emissions accomplished for the listed equipment (e.g., 0.0017 for the Weak Liquor Storage Tank). HAP emissions from those listed pieces of equipment may go to atmosphere under the HAP standard.

**Element 4. - Additional HAP emission units to be controlled and the amount of additional HAP emission reductions.**

- Other than the units listed as controlled in Table 2, Flint River Operations will not control emission units to meet the vent collection requirements of the MACT standard.

- Table 2 provides responsive information to this element in the calculation of the HAP emission Credit(Deficit) Balance. The Credit(Deficit) Balance is summarized below.

| **HAP Emission/Reduction Calculation** | |
|---|---|
| **Parameter** | **Credit(Deficit) Balance** (amounts in Pound Methanol/ADMT) |
| Total Credits:<br><br>• Total Credits is the amount of HAP reductions accomplished at Flint River Operations for emission units that are not required to be controlled under the MACT Standard. | 0.14057 |
| (Total Deficits):<br><br>• (Total Deficits) is the amount of HAP reductions that would be required at Flint River Operations for emission units that are not controlled but are covered by the MACT Standard. | (0.0215) |

[5] For additional information concerning the HAP emission tests referenced *see*, footnote 4 and Appendix E.

| | |
|---|---|
| Credit(Deficit) Balance:<br><br>• Flint River Operations has a Credit Balance. That means the mill captures and destroys more HAPs than otherwise required under the MACT Standard.<br>• The amount of additional MACT control at Flint River is 0.11907 Pounds Methanol/ADMT. The mill produces approximately 320,000 tons/year. That means Flint River emits approximately 31,000 fewer pounds of HAPs annually, compared to similar mills in the industry. | 0.11907 |

# TABLE 2 - MACT COMPLIANCE PLAN

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| **DIGESTER SYSTEM** | | | | | | |
| Chip Bin | P301 | Yes | Controlled - HVLC | NA | NA | |
| Steaming Vessel | | Yes | Controlled - LVHC | NA | NA | |
| Impregnation Vessel | | Yes | Controlled – LVHC | NA | NA | |
| Continuous Digester | P300 | Yes | Controlled – LVHC | NA | NA | |
| Digester No 1A Flash Tank | P310 | Yes | Controlled – LVHC | NA | NA | |
| Digester No 1B Flash Tank | P311 | Yes | Controlled – LVHC | NA | NA | |
| Digester No 2 Flash Tank | P315 | Yes | Controlled - LVHC | NA | NA | |
| **PULP WASHING SYSTEM** | | | | | | |
| Pressure Diffusion (PD) Washer | | Yes | Controlled - HVLC | NA | NA | |
| PD Washer Filtrate Tank | | Yes | Controlled – HVLC | NA | NA | |
| No 1 Digester Surge Tank | P302 | Yes | Controlled – HVLC | NA | NA | |
| No 2 Digester Surge Tank | P304 | Yes | Controlled – HVLC | NA | NA | |
| Brownstock Diffusion Washer | | Yes | Atmosphere | NA | 0.0017 | |
| 1 Stage BSW Filtrate Tank | | Yes | Atmosphere | NA | 0.0048 | |
| 2 Stage BSW Filtrate Tank | P421 | Yes | Controlled – HVLC | NA | NA | |
| **KNOTTER AND SCREEN SYSTEMS** | | | | | | |

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| Primary Knotters | | Yes | Not vented | NA | NA | |
| Secondary Knotter | | Yes | Not vented | NA | NA | |
| Knotters Accept Tank | | Yes | Atmosphere | NA | NA – See comment | Knotter and screen systems HAP emissions are less than 0.03 pounds/ODT |
| Primary Screen Standpipe | | Yes | Atmosphere | NA | NA – See comment | |
| Secondary Screen Standpipe | | Yes | Atmosphere | NA | NA – See comment | |
| Tertiary Screen Standpipe | | Yes | Atmosphere | NA | NA – See comment | |
| Refined Rejects Tank | P405 | Yes | Atmosphere | NA | NA – See comment | |
| Radi Trim Standpipe | | Yes | Atmosphere | NA | NA – See comment | |
| Knots Conveyor Belt | | Yes | Controlled – HVLC | NA | NA – See comment | Vented through Chip Bin |

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| **DECKER SYSTEM** | | | | | | |
| Cylinder Mould Decker | P400 | No | Atmosphere | 0.0465 | NA | A credit is available because MIM Phase IV – Isothermal cooking – reduced HAP emissions. Isothermal cooking is described in Appendix D. -The reductions occurred after January 1, 1996, and are allowed under the Final Project Agreement (*see*, p. A7.3). The credit amount is the reduction in emissions, comparing emissions before and after MIM IV was completed. "Before" conditions were measured in a December 1993 source test and "after" conditions were measured in an October 1998 source test. Information concerning the source tests is provided at Appendix E. All test reports listed in Appendix E are on file in EPA's Region 4 offices in Atlanta. |
| Cylinder Mould Vacuum Pump | P409 | No | Atmosphere | NA | NA | |

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| Cylinder Mould Filtrate Tank | P408 | No | Atmosphere | 0.0732 | NA | A credit is available because MIM Phase IV – Isothermal cooking – reduced HAP emissions. Isothermal cooking is described in Appendix D. The reductions occurred after January 1, 1996, and are allowed under the Final Project Agreement (*see*, p. A7.3). The credit amount is the reduction in emissions, comparing emissions before and after MIM IV was completed. "Before" conditions were measured in a December 1993 source test and "after" conditions were measured in an October 1998 source test. Information concerning the source tests is provided at Appendix E. All test reports listed in Appendix E are on file in EPA's Region 4 offices in Atlanta. |
| **OXYGEN DELIGNIFICATION SYSTEM** | | | | | | |

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| Oxygen Blow Tank | P001 | Yes | Atmosphere | NA | 0.0012 | HAP emission amounts based on ~~10/98~~ October 1998 source test. Information concerning the source tests is provided at Appendix E. All test reports listed in Appendix E are on file in EPA's Region 4 offices in Atlanta. |
| Post Oxygen Washer (POW) | P010 | Yes | Atmosphere | NA | 0.0071 | |
| POW Filtrate Tank | P004 | Yes | Atmosphere | NA | 0.0064 | |
| **BLEACHING SYSTEM** | | | | | | |
| D1 MC Mixer | | Yes | Not vented | NA | NA | |
| D1 Tower/Washer | P501 | Yes | Controlled – Bleach plant scrubber | NA | NA | |
| D1 Filtrate Tank | | Yes | Atmosphere | NA | NA – See comment | Chlorinated HAP emissions less than 10 ppm by volume. |
| D2 MC Mixer | | Yes | Not vented | NA | NA | |
| D2 Tower/Washer | P503 | Yes | Controlled – Bleach plant scrubber | NA | NA | |
| D2 Filtrate Tank | P506 | Yes | Controlled – Bleach plant scrubber | NA | NA | |
| **EVAPORATOR SYSTEM** | U600 | | | | | |
| 5th Effect | | Yes | Not vented | NA | NA | |
| 4th Effect | | Yes | Not vented | NA | NA | |
| 3d Effect | | Yes | Not vented | NA | NA | |
| 6th Effect | | Yes | Not vented | NA | NA | |
| 2nd Effect | | Yes | Not vented | NA | NA | |

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| 1A Concentrator | | Yes | Not vented | NA | NA | |
| 1B Concentrator | | Yes | Not vented | NA | NA | |
| 1C Concentrator | | Yes | Not vented | NA | NA | |
| #1 Surface Condenser | U612 | Yes | LVHC | NA | NA | |
| #2 Surface Condenser | U615 | Yes | LVHC | NA | NA | |
| Hotwell | U601 | Yes | LVHC | NA | NA | |
| | | | | | | |
| Weak Liquor Storage Tank | U610 | No | HVLC | 0.0003 | NA | The credit amount is based on a 10/98 source test. Information concerning the source tests is provided at Appendix E. All test reports listed in Appendix E are on file in EPA's Region 4 offices in Atlanta. |
| Soap Skim Tank | U602 | No | HVLC | No data | NA | |
| Soap Separation Tank | U603 | No | HVLC | No data | NA | |
| Boilout Tank | U606 | No | HVLC | 0.00067 | NA | The credit amounts are based on a 10/98 source test. Information concerning the source tests is provided at Appendix E. All test reports listed in Appendix E are on file in EPA's Region 4 offices in Atlanta. |
| Utility Tank | U611 | No | HVLC | 0.0002 | NA | |
| 50% Black Liquor Tank | U605 | No | HVLC | 0.0021 | NA | |
| South 67% Tank | U502 | No | HVLC | 0.0034 | NA | |

| Table 2 – MACT COMPLIANCE PLAN EQUIPMENT LIST AND HAP CALCULATATION | | | | | | |
|---|---|---|---|---|---|---|
| **Name of Equipment** | **Title V Source Code** | **Covered by MACT I Rule?** | **Current Status of Emissions** | **Credit Amount (Pound Methanol/ADMT)** | **Deficit Amount (Pound Methanol/ADMT)** | **Comment** |
| North 67% Tank | U501 | No | HVLC | 0.0106 | NA | |
| #1 ESP Make Down Tank | U504 | No | HVLC | 0.0019 | NA | |
| #2 ESP Make Down Tank | U506 | No | HVLC | 0.0004 | NA | |
| #3 ESP Make Down Tank | U507 | No | HVLC | 0.0012 | NA | |
| Salt Cake Mix Tank | U503 | No | HVLC | 0.0001 | NA | |
| NaSH Storage Tank | | No | HVLC | 0.0000 | NA | |
| **STEAM STRIPPER SYSTEM** | | | | | | |
| Stripper Feed Tank | U617 | Yes | LVHC | NA | NA | |
| Spiral Heat Exchanger | | Yes | Not vented | NA | NA | |
| Stripper Column | | Yes | LVHC | NA | NA | |
| Stripper Overhead Condenser | U613 | Yes | LVHC | NA | NA | |
| Decanter | U614 | Yes | LVHC | NA | NA | |
| Foul Oil Storage Tank | U608 | Yes | LVHC | NA | NA | |
| Process Condensate Tank | U609 | Yes | HVLC | NA | NA | |
| VOC Tank | U616 | Yes | HVLC | NA | NA | |
| **TURPENTINE RECOVERY SYSTEM** | | | | | | |
| No 1 Condenser | | Yes | Not vented | NA | NA | |
| No 2 Condenser | P321 | Yes | LVHC | NA | NA | |
| Turpentine Decanter | P312 | Yes | LVHC | NA | NA | |
| | | | | | | |
| | | | | | | |
| **Total Credits** | | | | 0.14057 | | |
| **(Total Deficits)** | | | | | (0.0215) | |
| **Credit (Deficit) Balance** | | | | 0.11907 Pound Methanol/ADMT | | |

## V. MACT IMPLEMENTATION FOR FLINT RIVER OPERATIONS – CONCLUSION

In conclusion, this MACT Compliance Plan conforms to the Final Project Agreement between the parties and serves as a significant part of the basis for EPA to propose the site-specific MACT rule for Flint River Operations.

The MACT Compliance Plan demonstrates that Weyerhaeuser's Flint River Operations reduced HAP emissions beyond the level comparable mills will be required to achieve and accomplished reductions in HAP emissions long before comparable mills are required to provide reductions. Weyerhaeuser's additional HAP controls, and the FPA between the parties, provides a sound foundation for the regulatory flexibility Weyerhaeuser requests in the draft site-specific rule.

Technical questions concerning equipment and emissions at Flint River Operations should be directed to Gary Strandburg, Flint River Plant Risk Manager, at 912-472-5227. Questions about the FPA or the site-specific rule should be directed to Charlie Douthwaite, Weyerhaeuser Senior Legal Counsel, at 253-924-2803.

Respectfully submitted,

**WEYERHAEUSER COMPANY**

By: _____

May 2000

# WEYERHAEUSER FLINT RIVER OPERATIONS

# Project XL

# MACT Compliance Plan

# Final Project Agreement

# Appendix Seven

# MACT Implementation Including Principles for Accounting for HAP Emission Controls and Controls to Implement MACT

# WEYERHAEUSER FLINT RIVER OPERATIONS

# Project XL

# MACT Compliance Plan

## APPENDIX A

## Federal Register Notice

## 61 *Fed. Reg*. 53373 (October 11, 1996)

# WEYERHAEUSER FLINT RIVER OPERATIONS

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**APPENDIX B**

**Federal Register Notice**

**62 *Fed. Reg*. 4760 (January 31, 199)**

WEYERHAEUSER FLINT RIVER OPERATIONS

Project XL

MACT Compliance Plan

**APPENDIX C**

# List and Description of Equipment

# Appendix C. List and Description of Equipment

| Name of Equipment | **Title V Source Code** | **Equipment Description** |
|---|---|---|
| **DIGESTER SYSTEM** | | |
| Chip Bin | P301 | Pre-steam wood chips to soften and remove retained air and provide uninterrupted chip flow to Digesting |
| Steaming Vessel | | Complete softening of chips to allow complete impregnation of the chips with cooking liquor |
| Impregnation Vessel | | Provide residence time to allow the wood chips to become saturated with the cooking liquor |
| Continuous Digester | P300 | Chemically and thermally remove the lignin binding the wood chips to produce individual pulp fibers |
| Digester No 1A Flash Tank | P310 | Accepts weak black liquor extracted from the cook and wash zones of the Digester and recovery of flash steam |
| Digester No 1B Flash Tank | P311 | Accepts weak black liquor extracted from the cook and wash zones of the Digester and recovery of flash steam |
| Digester No 2 Flash Tank | P315 | Accepts weak black liquor from the 1A & 1B Flash Tanks and allows release of turpentine vapors for recovery |
| **PULP WASHING SYSTEM** | | |
| Pressure Diffusion (PD) Washer | | Wash pulp from the Digester to remove lignin being carried over in the pulp |
| PD Washer Filtrate Tank | | Receives and stores filtrate from washer prior to sending to Digester wash zone |
| No 1 Digester Surge Tank | P302 | Reduce pulp to atmospheric pressure and provide pulp storage between Digesting and Brownstock washing |
| No 2 Digester Surge Tank | P304 | Reduce pulp to atmospheric pressure and provide pulp storage between Digesting and Brownstock washing |

| Name of Equipment | **Title V Source Code** | **Equipment Description** |
|---|---|---|
| Brownstock Diffusion Washer | | Wash the pulp from the surge chests to further reduce lignin carryover in the pulp |
| 1st Stage BSW Filtrate Tank | | Receives and stores filtrate from 1st stage of washer for return to Pressure Diffusion Washer |
| 2nd Stage BSW Filtrate Tank | | Receives and stores filtrate from 2nd stage of washer for return to 1st stage wash |
| **KNOTTER AND SCREEN SYSTEMS** | | |
| Primary Knotter | | Removes large uncooked chips and knots from brownstock pulp for transfer to Secondary Knotter |
| Secondary Knotter | | Washes fiber from uncooked chips and knots from Primary Knotters prior to return to Digesting Chip Bin |
| Knotters Accept Tank | | Receives brownstock pulp from Primary Knotters for pumping to Primary Screens |
| Primary Screen Standpipe | | Receives fiber recovered from Secondary Knotter and Secondary Screens for feed to Primary Screens |
| Secondary Screen Standpipe | | Receives fiber recovered from Tertiary Screen and rejects from Primary Screens for feed to Secondary Screens |
| Tertiary Screen Standpipe | | Receives refined rejects from Refined Rejects Tank for return to Tertiary Screen |
| Refined Rejects Tank | P405 | Receives and stores refined rejects from Rejects Refiner prior to return to the Tertiary Screen standpipe |
| Radi Trim Standpipe | | Receives rejects from Primary Knotters for feed to Secondary Knotter |
| Knots Conveyor Belt | | Transfers uncooked wood chips from Secondary Knotter back to the Digester Chip Bin |
| **DECKER SYSTEM** | | |

| Name of Equipment | **Title V Source Code** | **Equipment Description** |
|---|---|---|
| Cylinder Mould Decker | P400 | Thickens refined brownstock pulp from the screens from 4% to 25% for feed to the Oxygen Reactor |
| Cylinder Mould Vacuum Pump | P409 | Creates negative pressure in the Cylinder Mould drum to enhance separation of filtrate from pulp |
| Cylinder Mould Filtrate Tank | P408 | Receives and stores filtrate from Cylinder Mould Decker and POW Filtrate Tank for re-circulation to other areas |
| **OXYGEN DELIGNIFICATION SYSTEM** | | |
| Oxygen Blow Tank | P010 | Receives and stores diluted, delignified pulp from the Oxygen Reactor for pumping to the Post Oxygen Washer |
| Post Oxygen Washer (POW) | P004 | Washes the pulp from the Oxygen Reactor with evaporator clean condensate prior to bleaching |
| POW Filtrate Tank | | Receives and stores extraction from the Post Oxygen Washer prior to re-circulation to other process areas |
| **BLEACHING SYSTEM** | | |
| D1 MC Mixer | | Provide intimate contact of chlorine dioxide solution with pulp from the Pre-Bleach Surge Chests |
| D1 Tower/Washer | P501 | Provide retention time for chlorine dioxide solution to react with pulp; provide washing of lignin from pulp |
| D1 Filtrate Tank | | Receive and store D1 Tower extraction prior to discharge to the acid sewer |
| D2 MC Mixer | P503 | Provide intimate contact of chlorine dioxide solution with pulp from the Eo Tower |
| D2 Tower/Washer | P506 | Provide retention time for chlorine dioxide solution to react with pulp; provide washing of lignin from pulp |
| D2 Filtrate Tank | | Receive and store D2 Tower extraction prior to use as E0 Tower wash |
| **EVAPORATOR SYSTEM** | U600 | |
| 5th Effect | | Heat up and start concentrating weak black liquor at 16-18% solids |
| 4th Effect | | Concentration of weak black liquor to 21-22% solids content |

| Name of Equipment | **Title V Source Code** | **Equipment Description** |
|---|---|---|
| 3d Effect | | Concentrate black liquor to 26% solids for removal of tall oil soap |
| 6th Effect | | Concentrate black liquor from 26% solids to intermediate ( 50%) black liquor solids |
| 2nd Effect | | Concentrate black liquor from 26% solids to intermediate ( 50%) black liquor solids |
| 1A Concentrator | | Concentrate intermediate (50%) black liquor to strong (67%) black liquor for chemical recovery |
| 1B Concentrator | | Concentrate intermediate (50%) black liquor to strong (67%) black liquor for chemical recovery |
| 1C Concentrator | | Concentrate intermediate (50%) black liquor to strong (67%) black liquor for chemical recovery |
| #1 Surface Condenser | U612 | Condense water vapor from the multiple effect evaporators bodies |
| #2 Surface Condenser | U615 | Condense water vapor from the multiple effect evaporators bodies |
| Hotwell | U601 | Accepts condensates from the #1 & #2 Evaporator Surface Condensers |
| | | |
| Weak Liquor Storage Tank | U610 | Provide surge for weak black liquor from Digesting prior to feed to multiple effect evaporators |
| Soap Skim Tank | U602 | Skim crude tall oil soap from black liquor from the 3rd Effect |
| Soap Separation Tank | U603 | Allow tall oil soap and black liquor from Soap Skim Tank to further separate prior to pumping to soap storage |
| Boilout Tank | U606 | Recovery of black liquor spills and evaporator water washes for return to the evaporators |
| Utility Tank | U611 | Normally stores 50% liquor; also serves as a “swing” tank for other black liquor tank inspections and repairs |
| 50% Black Liquor Tank | U605 | Stores intermediate black liquor prior to final evaporation in the 1A, 1B, & 1C Concentrators |
| South 67% Tank | U502 | Storage of black liquor prior to burning in the Recovery Boiler for chemical recovery |
| North 67% Tank | U501 | Storage of black liquor prior to burning in the Recovery Boiler for chemical recovery |

| Name of Equipment | **Title V Source Code** | **Equipment Description** |
|---|---|---|
| #1 ESP Make Down Tank | U504 | Mix collected particulate from electrostatic precipitator chamber #1 with 67% black liquor for recycle to chemical recovery in the Recovery Boiler |
| #2 ESP Make Down Tank | U506 | Mix collected particulate from electrostatic precipitator chamber #2 with 67% black liquor for recycle to chemical recovery in the Recovery Boiler |
| #3 ESP Make Down Tank | U507 | Mix collected particulate from electrostatic precipitator chamber #3 with 67% black liquor for recycle to chemical recovery in the Recovery Boiler |
| Salt Cake Mix Tank | U503 | Mix collected particulate from economizer hoppers with black liquor for recycle to chemical recovery in the Recovery Boiler |
| NaSH Storage Tank | | Store sodium hydrosulfite solution prior to use as make-up to the liquor system |
| **STEAM STRIPPER SYSTEM** | | |
| Stripper Feed Tank | U617 | Collects and stores condensates from the Turpentine Decanter and NCG systems for feed to the Stripper Column |
| Spiral Heat Exchanger | | Transfers heat from Stripper Column stripped condensate to Stripper Column fed from Stripper Feed Tank |
| Stripper Column | | Uses 50lb steam to remove TRS compounds and some HAP's from collected condensates |
| Stripper Overhead Condenser | U613 | Condenses vapors from the Stripper Column |
| Decanter | U614 | Decants foul oil from condensate condensed by the Stripper Overhead Condenser |
| Foul Oil Storage Tank | U608 | Stores foul oil from the Decanter prior to burning in the Calciner |
| Process Condensate Tank | U609 | Provides surge for condensates condensed on the "clean side" of the Evaporator Surface Condensers prior to use as wash medium for the Post Oxygen Washer |
| VOC Tank | U616 | Receive and store condensates for pumping to the aerated wastewater treatment system |
| **TURPENTINE RECOVERY SYSTEM** | | |

| Name of Equipment | **Title V Source Code** | **Equipment Description** |
|---|---|---|
| No 1 Condenser | | Condense flash tanks relief steam while allowing turpentine vapors to carry over to #2 Turpentine Condenser. |
| No 2 Condenser | P321 | Condense mixture of turpentine and water vapors from the #1 Turpentine Condenser |
| Turpentine Decanter | P312 | Retention time to separate turpentine from the water and turpentine mixture from the #2 Turpentine Condenser |
| **PROCESS GAS COLLECTION SYSTEMS** | | |
| HVLC (for High Volume, Low Concentration) | | A collection and treatment system for gases emitted from process sources. HVLC systems include vents from pulp washing systems, knotter and screening systems, decker systems, oxygen delignification systems, and weak liquor tanks. Collected vent gases must be burned in a boiler, lime kiln, recovery furnace, or dedicated thermal oxidizer. |
| LVHC (for Low Volume, High Concentration) | | A collection and treatment system for gases emitted from process sources. LVHC systems include vents from digesters, evaporator systems, turpentine recovery systems, and steam strippers. |

# WEYERHAEUSER FLINT RIVER OPERATIONS

## Project XL

## MACT Compliance Plan

## APPENDIX D

## Description of Isothermal Cooking

# WEYERHAEUSER FLINT RIVER OPERATIONS

## Project XL

## MACT Compliance Plan

## APPENDIX E

## List of Source Tests and Methods