Periodic Review Report
Site No. 558041
Irving Tissue
1 Eddy Street
Fort Edward, NY
VERTEX Project No. 43004

Prepared By:

VERTEX Engineering, PC
45-18 Court Square, Suite 602
Long Island City, NY 11101

January 11, 2017

Prepared For:

Irving Tissue
1 Eddy Street
Fort Edward, NY
Attn: Mr. Tom Nash

Submitted To:

New York State Department of
Environmental Conservation
Office of Environmental Quality, Region 5
1115 Route 86, PO Box 296
Ray Brook, NY 12977
Attention: Mr. Michael McLean

VERTEX

Vertex Engineering, PC
45-18 Court Square, Suite 602
Long Island City, NY 11101
PHONE 646.553.3500 | FAX 646.553.3499

January 11, 2017

New York State Department of Environmental Conservation
Division of Environmental Remediation
1115 Route 86
Ray Brook, NY 12977

Attention: Mr. Michael McLean

RE: **Periodic Review Report**
Irving Tissue
1 Eddy Street
Fort Edward, NY
VERTEX Project No. 43004
Site No. 558041

Dear Mr. McLean:

On behalf of Irving Tissue, VERTEX Engineering, PC (VERTEX) is pleased to submit the Periodic Review Report for the Forebay Parcel located at the Irving Tissuefacility (Irving) at 1 Eddy Street in Fort Edward, New York State Department of Environmental Conservation (NYSDEC) Site No. 558041. This Periodic Review Report had been prepared in accordance with the requirements contained in Section D of the Order on Consent and Administrative Settlement (the "Consent order") Index No. A5-0638-06-10 dated August 4, 2010 and pursuant to the provisions contained in 6 NYRR Part 375 Section 1.6(c).

The Subject Site contains an industrial facility engaged in the manufacturing and packaging of paper products. On August 4, 2010 the NYSDEC entered into a Consent Order with Irving to facilitate regulatory response activities during construction of a new industrial building. The new industrial building is located at a portion of the Irving property known as the forebay area (the "Subject Site") that had been affected by contaminated sediments from the Hudson River and by Historic Fill material as defined in 6 NYCRR 375-1.2(x).

Response actions at the Subject Site were implemented in conjunction with the construction of a new industrial building within a portion of the Forebay Area. Response actions were performed at the Subject Site in accordance with a Site Management Plan (SMP) dated July 29, 2010 that was prepared by VERTEX and previously submitted to and approved by NYSDEC.

This Periodic Review Report summarizes the current status of the site and effectiveness of the remedial action. The remedial action remains intact and is effectively protecting human health and the environment.

Please do not hesitate to contact us should you have any questions or require additional information. Thank you.

Sincerely,

VERTEX Engineering, PC

Joseph J.C. Dultz
Vice President

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CERTIFICATION

I, Joseph J.C. Dultz, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Periodic Review Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

For each institutional control or engineering control identified for the site, I certify that all of the following statements are true:

(a) The institutional control and or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by DER;

(b) Nothing has occurred that would impair the ability of such control to protect public health and the environment;

(c) Nothing has occurred that would constitute a violation or failure to comply with any Site Management Plan for this control;

(d) Access to the site will continue to be provided to DER to evaluate the remedy, including access to evaluate the continued maintenance of this control.

_____ January 11, 2017

Signature Date

PERIODIC REVIEW REPORT

Irving Tissue
1 Eddy Street
Fort Edward, New York
VERTEX Project No: 43004
NYSDEC Site No. 558041

1.0 EXECUTIVE SUMMARY

1.1 Summary of the Site

The Subject Site is a portion of an existing paper manufacturing facility and is known as the forebay area. Historically, a dam diverted water from the Hudson River into the forebay for the purposes of hydroelectric power generation. Sediment from the Hudson River containing polychlorinated biphenyls (PCBs) from upstream industrial facilities was deposited onto the site. During the 1970s, hydropower generation ceased, the dam was demolished and the forebay area was backfilled to grade with common fill, debris from the demolished dam and other materials including wood and pulp and used as a parking area. Contamination consisting of polynuclear aromatic hydrocarbons (PAHs) and metals were also found in the historic fill at the site. PCBs are considered the major Contaminant of Concern (COC) at the site

An Order on Consent and Administrative Settlement (the "Consent Order") Index No. A5-0638-06-10 for site No. 558041 was established in August 2010. A Site Management Plan (SMP) was submitted for the site in July 2010 to facilitate the construction of a new building on the site. In 2010 and 2011, a new industrial building was constructed across a portion of the forebay area. The new industrial building was constructed without a basement and the finished floor slab elevation is approximately three (3) feet above the existing ground surface. The remainder of the forebay area not occupied by the footprint of the building consists of cement loading docks, cement pads, asphalt areas, and unpaved areas with clean fill topped with gravel.

Eight Progress Reports for the construction were submitted to the NYSDEC between September 2010 and August 2011. A Final Report was submitted in November 2011.

1.2 Effectiveness of the Remedial Program

The remedial objectives for the site were reached and reported in the Final Report in 2011. No additional remedial measures have taken place.

1.3 Compliance

An Engineering Control Inspection was performed on January 5, 2017. The engineering controls were observed to be in good condition and no subsurface alterations or improvements have taken place since the completion of the building construction. In addition, no subsurface alterations or improvements are planned in this area. There is no change in use planned for the site. No potable water wells are present and groundwater is not utilized for potable use.

1.4 Recommendations

At this time, VERTEX does not recommend any changes to the SMP or the frequency of PRR submittals.

2.0 SITE OVERVIEW

2.1 Site Location

The Subject Site is a portion of an industrial property located at 1 Eddy Street in Fort Edward, New York. Refer to **FIGURE 1** for the Subject Site locus. The industrial property is owned and operated by Irving Tissue ("Irving") and utilized for the final manufacturing and packaging of paper products. The industrial property is bordered to the south by the Hudson River, and the north, east and west by a predominantly residential area.

The Subject Site occupies an area of approximately 43,800 square-feet at the southwestern portion of the above referenced industrial property. The Subject Site is located within a former forebay created by a dam that was constructed during the early 1900s across the Hudson River. A building was constructed in 2010 and 2011 on the subject site. The subject site consists of the new building, asphalt paved areas, loading docks, and concrete pads. Ground surface across the Subject Site slopes gently towards the south. Refer to **FIGURE 2** for depiction of the Subject Site limits.

The site is affected by contaminated sediments from the Hudson River and by historic fill material. Historically, a dam was utilized to divert water from the Hudson River through a forebay on the site into a turbine house for hydroelectric power generation. The use of the turbines ceased in 1973, after which the dam was demolished and the Hudson River reverted to its natural channel. During the years of operation, sediments from the Hudson River were deposited across the forebay area and at the foot of the turbine house. The sediment in the forebay area has been found to contain PCBs; it should be noted that the industrial activities at the Site did not involve the presence or usage of PCBs or PCB-containing materials. The source of the PCBs at the site was identified as likely associated with historic industrial activities at locations along the Hudson River upstream from the Subject Site, deposited with the sediment across the forebay area. The area of the forebay was subsequently filled to grade and used as a parking area. The fill that was utilized to raise the grade

of the former forebay area was found to contain rubble generated during the demolition of the former dam as well as pulp and wood from past utilization of the Site for the manufacturing of paper products. Contaminants at the site include PCBs, PAHs and metals. PCBs are considered the major COC at the site, and are not found within the shallowest portion of fill material.

2.2 Remedial Program

The Consent Order for the site, Index No. A5-0638-06-10, was established in August 2010. A SMP was submitted for the site in July 2010. The SMP facilitated the on-site management and off-site disposal of soil and groundwater generated during the construction of a new industrial building at the forebay area, as well as future protective and monitoring measures for the site.

The new industrial building was constructed in 2010 and 2011, and was constructed without a basement, the foundation of the building consists of a concrete slab supported by drilled-in piles. The entire Site area is either covered by the footprint of the industrial building, concrete loading docks, cement pads, and asphalt-paved surfaces. Unpaved areas consist of 12-inches of compacted clean fill. Eight Progress Reports for the construction were submitted to the NYSDEC between September 2010 and August 2011. A Final Report was submitted in November 2011.

A Declaration of Covenants and Use Restriction ("Deed Restriction") had been recorded on November 14, 2011 at the Washington County Registry of Deeds for the Subject Site. The Deed Restriction prohibits the use of the site for anything other than industrial uses, use of the site groundwater, and any use of the site that results in unacceptable human exposure to contaminated soil.

3.0 EVALUATION OF REMEDY PERFORMANCE

3.1 Evaluation of Remedy Performance

The remedy at the site consists of capping; the entire site area is either covered by the footprint of the industrial building, concrete loading docks, cement pads, and asphalt pavement. Unpaved areas include 12-inches of compacted clean fill overlain by gravel for erosion control. The industrial building does not have a basement and that the finished floor slab is situated approximately three (3) feet above the ground surface.

An Engineering Control Inspection was performed on January 5, 2017. The engineering controls were observed to be in good condition and no subsurface alterations, improvements, or disturbances have taken place since the completion of the building construction. Irving Tissue has notified facility employees that development, excavation, or any ground intrusive work is restricted in the forebay area and engineering controls. Any emergency repairs requiring disturbance of the engineering controls will be performed in accordance with the SMP and documented in the subsequent PRR.

Based upon the Engineering Control Inspection completed on January 5, 2017, the remedy is operating as designed and is protective of human health and the environment. Photographs of the forebay area taken during the Engineering Control Inspection are included in **APPENDIX A.**

4.0 OVERALL PRR CONCLUSIONS AND RECOMMENDATIONS

4.1 Compliance with the SMP

The engineering controls at the site consists of soil caps that include the footprint of the industrial building, concrete loading docks, cement pads, asphalt pavement, and unpaved areas capped with 12-inches of clean fill and gravel. All of these site features were observed to be in place and in satisfactory condition during the Engineering Control Inspection.

The Institutional Control for the site includes a Deed Notice that has been recorded with Washington County Registry of Deeds that prohibits the use of the site for anything other than industrial uses, use of the site groundwater, and any use of the site that results in unacceptable human exposure to contaminated soil. A copy of the Deed Notice is provided as **APPENDIX B.** Based upon the Engineering Control Inspection completed on January 5, 2017, the requirements of the Deed Notice are being met.

4.2 Performance and Effectiveness of the Remedy

Based upon the Engineering Control Inspection conducted on January 5, 2017, the engineering controls and institutional controls implemented under the SMP remain protective of public health and the environment. No changes to the SMP, engineering controls, or institutional control are recommended at this time. The NYSDEC Institutional and Engineering Controls Certification Form is provided as **APPENDIX C**.

4.3 Future PRR Submittals

At this time, no changes to the frequency of PRR submittals are proposed. The next PRR will be submitted to NYSDEC in January 2022.

FIGURES

USGS Topographic Map, 1966
Ft. Edward, NY Quadrangle

SITE LOCUS MAP

Irving Tissue
1 Eddy Street
Ft. Edward, NY

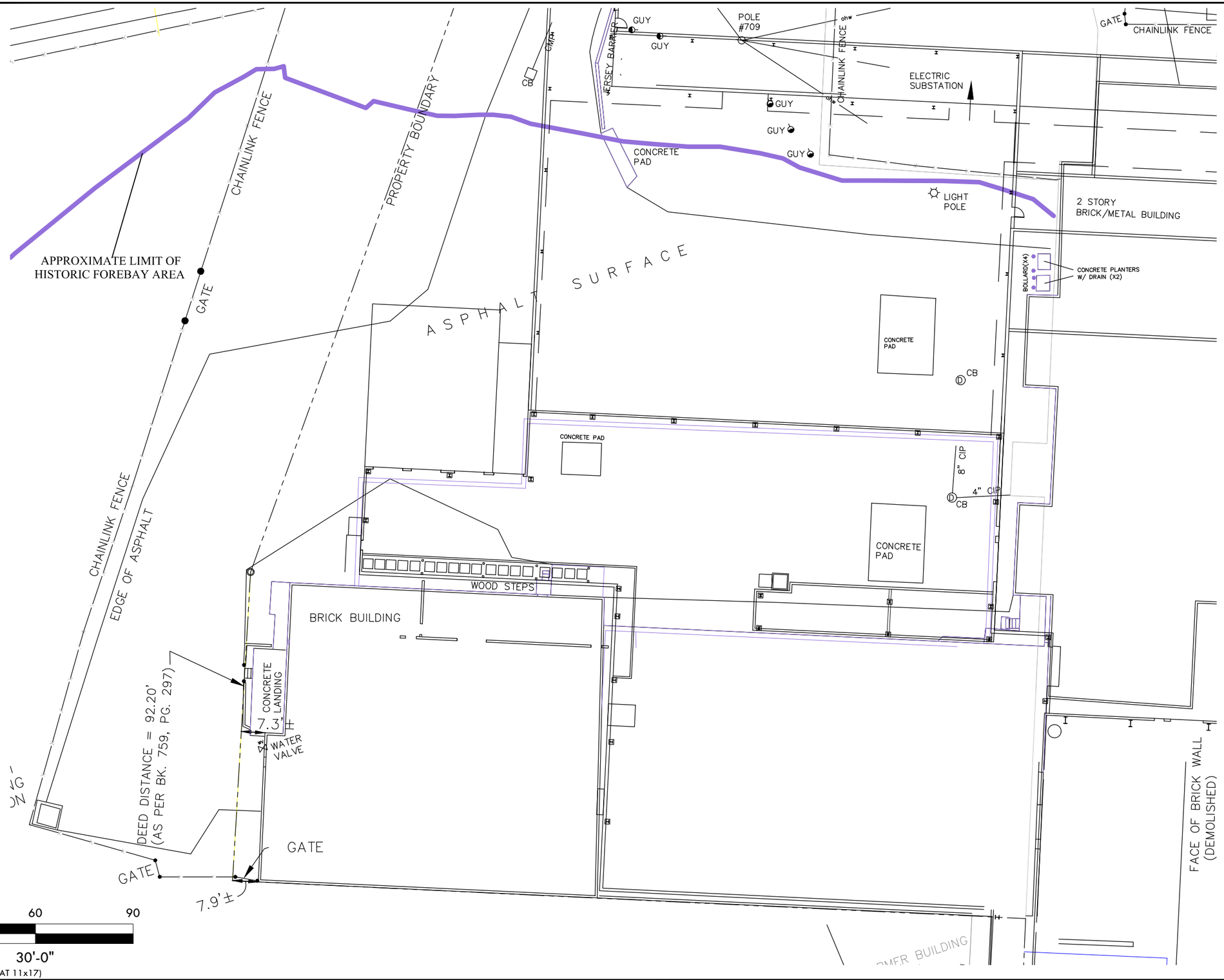
Scale: As Shown

January 2017

Project No. 43004

VERTEX

Environmental Services, Inc.
FIGURE NO. 1



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Wednesday, January 11, 2017 1:41:38 PM

VERTEX

REVISIONS

SITE SCHEMATIC

IRVING TISSUE
EDDY STREET
FORT EDWARD, NY

File No.:	43004
Date:	JAN. 2017
Drawn:	AS
Checked:	LPV
Job No.:	43004

FIGURE 2

APPENDIX A:
PHOTOGRAPH LOG

Photographic Documentation
Engineering Control Inspection – January 5, 2017
Forebay Area
Irving Tissue
1 Eddy Street
Fort Edward, Washington County, New York
Project No. 43004

Photograph: 1 **Description:** Concrete floor of portion of building located in the forebay area. The building floor is one of the engineering controls in the forebay area.	
Photograph: 2 **Description:** Concrete floor of portion of building located in the forebay area. The building floor is one of the engineering controls in the forebay area.	

Photographs taken by Daniel Gardner on 01/05/2017

Photographic Documentation
Engineering Control Inspection – January 5, 2017
Forebay Area
Irving Tissue
1 Eddy Street
Fort Edward, Washington County, New York
Project No. 43004

Photograph: 3 **Description:** Asphalt paved area in the southwest portion of the forebay area.	

Photograph: 4 **Description:** Asphalt paved area and exterior stairs in the southwest portion of the forebay area.	

Photographs taken by Daniel Gardner on 01/05/2017

Photographic Documentation
Engineering Control Inspection – January 5, 2017
Forebay Area
Irving Tissue
1 Eddy Street
Fort Edward, Washington County, New York
Project No. 43004

Photograph: 5 **Description:** Asphalt pavement in the forebay area. The pavement acts as a soil cap in the forebay area.	
Photograph: 6 **Description:** Asphalt pavement and concrete ramp in the forebay area.	

Photographs taken by Daniel Gardner on 01/05/2017

Photographic Documentation
Engineering Control Inspection – January 5, 2017
Forebay Area
Irving Tissue
1 Eddy Street
Fort Edward, Washington County, New York
Project No. 43004

Photograph: 7 **Description:** Asphalt pavement and concrete ramp in the forebay area.	
Photograph: 8 **Description:** Photo depicts an unpaved area with clean fill topped with gravel for erosion control. This area is located along the northern portion of the forebay area.	

Photographs taken by Daniel Gardner on 01/05/2017

APPENDIX B:
COPY OF DEED NOTICE

60 2011 00073071

Washington County
Dona J. Crandall County Clerk
383 Broadway Building A
Fort Edward, New York 12828

Doc#: 00073071
Bk: 3038 Pg: 55

Volm-3038 Pg-55

Instrument Number: 2011- 00073071

As

Deed Agreement

Recorded On: November 14, 2011

Parties: IRVING TISSUE

To

Billable Pages: 7

Recorded By: WHITEMAN OSTERMAN AND HANNA

Num Of Pages: 8

Comment:

**** Examined and Charged as Follows: ****

Deed Agreement	75 00	Cover Page	5 00
Recording Charge:	**80.00**		

Received
County Clerks Office
Nov 14,2011 12:47P
Washington County
Dona J. Crandall

**** THIS PAGE IS PART OF THE INSTRUMENT ****

I hereby certify that the within and foregoing was recorded in the Clerk's Office For: Washington County, NY

File Information:

Document Number: 2011- 00073071
Receipt Number: 247552
Recorded Date/Time: November 14, 2011 12:47:40P
Book-Vol/Pg: Bk-R Vl-3038 Pg-55
Cashier / Station: V Willey / Cashier Station 3

Record and Return To:

WHITEMAN OSTERMAN AND HANNA
ONE COMMERCE PLAZA
ALBANY NY 12260

WASHINGTON COUNTY

Dona J. Crandall
Washington County Clerk

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT is made the 9th day of November, 2011, by Irving Tissue, Inc., a corporation organized and existing under the laws of the State of Delaware and having an office for the transaction of business at 1 Eddy Street, Fort Edward, New York 12828

WHEREAS, Irving Tissue, Inc. is the subject of an Order on Consent executed by Irving Tissue, Inc. as part of the New York State Department of Environmental Conservation's (the "Department's) State Superfund Program, namely a portion of that parcel of real property located on 1 Eddy Street, in the Village of Fort Edward, County of Washington, State of New York, which is part of lands conveyed by Kimberly Clark Tissue Company (formerly known as Scott Paper Company) to Irving Tissue, Inc. by deed dated July 26, 1996 and recorded in the Washington County Clerk's Office on August 1, 1996, in Book 759 of Deeds at page 297, and being more particularly described in Appendix "A," attached to this declaration and made a part hereof, and hereinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants

NOW, THEREFORE, Irving Tissue, Inc., for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this declaration as Appendix "B" and made a part hereof

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no use or occupancy of the Property that results in unacceptable human exposure to contaminated soils

Third, the owner of the Property shall prohibit the Property from ever being used for purposes other than for its current use as industrial property without the express written waiver of such prohibition by the Department or Relevant Agency.

Fourth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Department or Relevant Agency.

Fifth, the owner of the Property shall provide a periodic certification, prepared and submitted by a qualified environmental professional acceptable to the Department or Relevant Agency, which will certify that the institutional controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.

Sixth, the owner of the Property shall continue in full force and effect any institutional controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto, subject to modifications as approved by the Department or Relevant Agency.

Seventh, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department or Relevant Agency of the prohibitions and restrictions that the Order on Consent requires to be recorded, and hereby covenant not to contest the authority of the Department or Relevant Agency to seek enforcement.

Eighth, any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below

By: _____

Print Name: Robert K. Irving

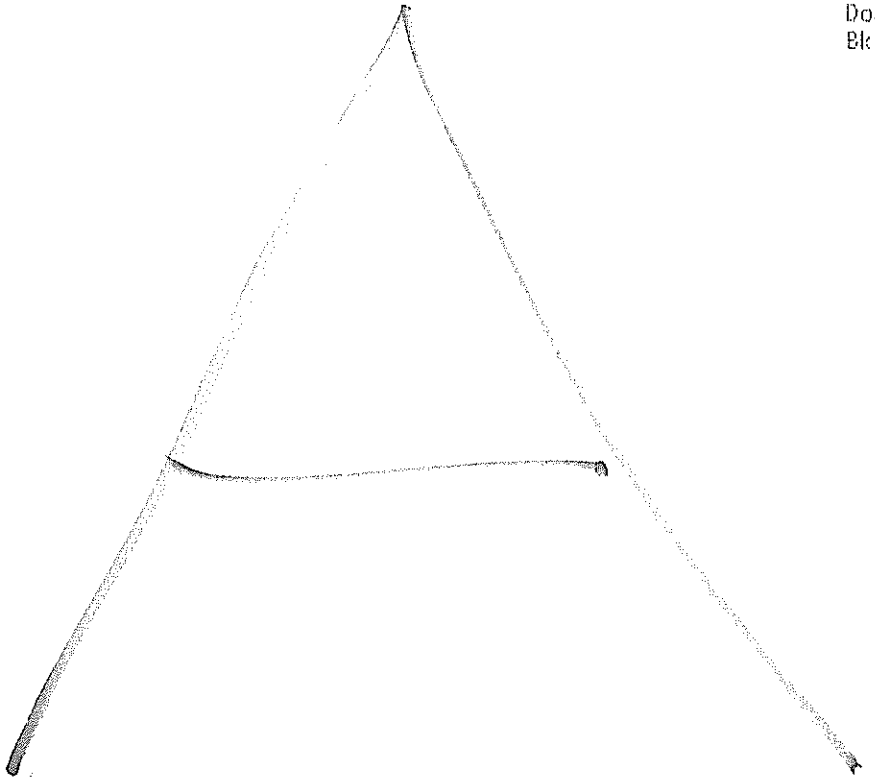
Title: President Date: November 9, 2011

PROVINCE OF NEW BRUNSWICK)
) ss.:
COUNTY OF WESTMORLAND)

On the 9th day of November, 2011, before me, the undersigned, personally appeared Robert K. Irving, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

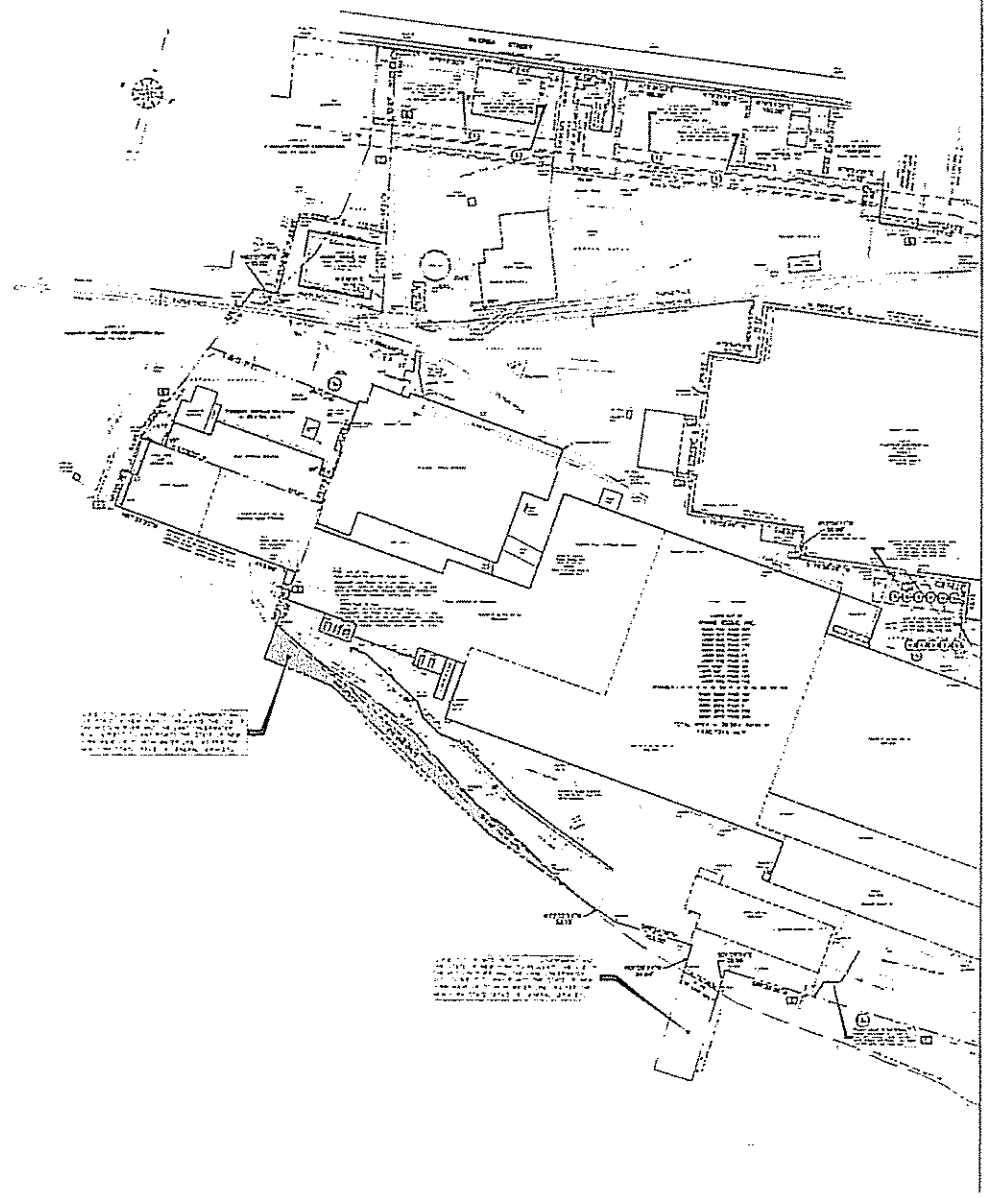
w:\15700\15748\dor\declaration of covenants and restrictions doc



APPENDIX A

NOTES CORRESPONDING TO SCHEDULE B

NOTES CORRESPONDING TO SCHEDULE B



MATCHLINE

Zoning Data

Village of Fort Edward Zoning Map

R2 - Residential
C1 - Commercial
I - Industrial

Statement of Encroachments

ALTA/ACSM Land Title Survey Certification

IRVING TISSUE Inc.

Stantec

ALTA/ACSM LAND TITLE SURVEY

IRVING TISSUE, INC.

Doc#: 00073071
Bk: 3038 Pg: 59

NOTES CORRESPONDING TO SCHEDULE B

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Village of Fort Edward Zoning Map

R2 - Residential
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ALTA/ACSM Land Title Survey Certification

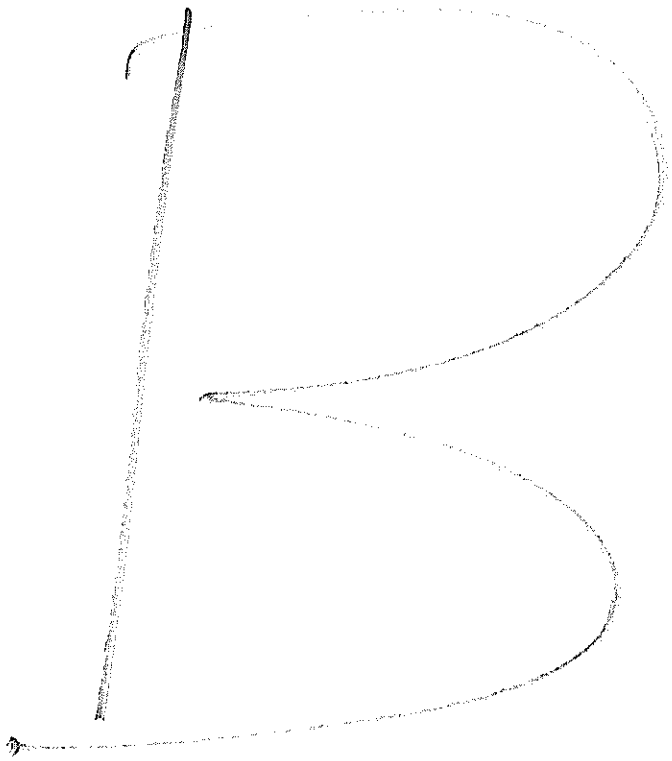
IRVING TISSUE, INC.

Startec

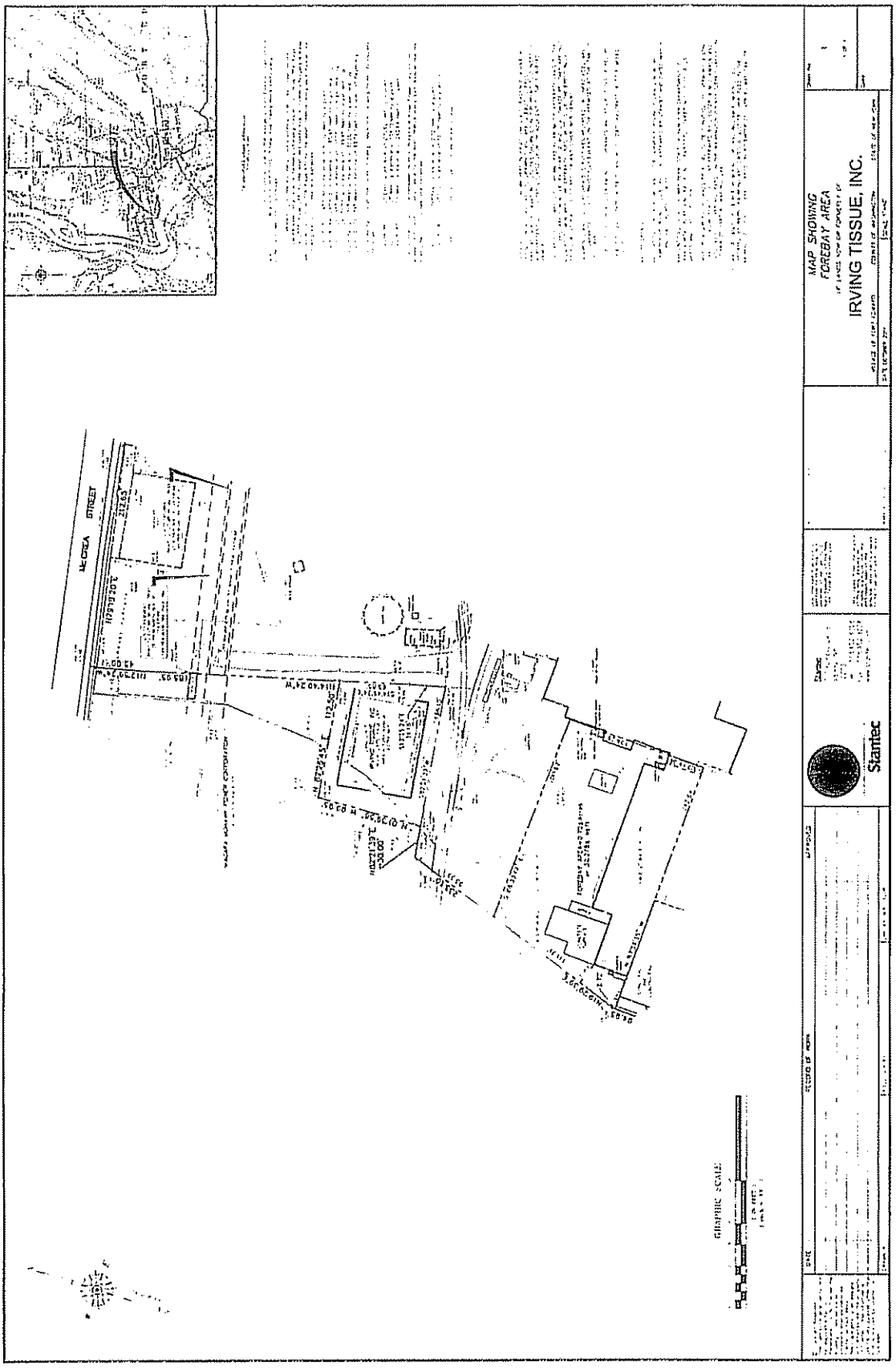
ALTA/ACSM LAND TITLE SURVEY

IRVING TISSUE, INC.

Doc#: 00073071
Bk: 3038 Pg: 60



APPENDIX B


MAP SHOWING
FOREBAY AREA
IRVING TISSUE, INC.
Stantec

Construction Worker - Soil: Table CW-1
Exposure Point Concentration (EPC) and Risk
Based on Adult Construction Workers

Irving Tissue, Fort Edward, NY

NYSDEC Site No. 558041

ELCR (all chemicals) = 3E-07
HI (all chemicals) = 5E-01

Oil or Hazardous Material (OHM)	EPC (mg/kg)	ELCR ingestion	ELCR dermal	ELCR inhalation GI	ELCR inhalation pulmonary	$ELCR_{total}$	Subchronic HQ_{ing}	Subchronic HQ_{derm}	Subchronic HQ_{inh-GI}	Subchronic HQ_{inh}	HQ_{total}
Polychlorinated biphenyls (PCBs)	7.7E+00	1.1E-07	2.2E-07	3.0E-09	2.0E-10	3.4E-07	1.6E-01	3.1E-01	4.2E-03	1.4E-02	4.9E-01
Lead	4.8E+01						3.9E-02	4.7E-03	1.0E-03	1.8E-03	4.7E-02

Construction Worker - Soil: Table CW-2
Equations For Adult Construction Workers Cancer Risk

Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing} * CSF_{oral}$$

$$LADD_{ing} = \frac{EPC * IR * RAF_{c\text{-}ing} * EF * ED_{ing} * EP * C1}{BW * AP_{lifetime}}$$

Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF_{oral}$$

$$LADD_{derm} = \frac{EPC * SA * AF * RAF_{c\text{-}derm} * EF * ED_{derm} * EP * C1}{BW * AP_{lifetime}}$$

Cancer Risk from Particulate Inhalation - Gastrointestinal Absorption

$$ELCR_{inh\text{-}GI} = LADD_{inh\text{-}GI} * CSF_{oral}$$

$$LADD_{inh\text{-}GI} = \frac{EPC * RCAF_{inh\text{-}gi} * PM_{10} * VR_{work} * RAF_{c\text{-}ing} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{lifetime}}$$

Cancer Risk from Particulate Inhalation - Pulmonary Absorption

$$ELCR_{inh} = LADD_{inh} * CSF_{inhalation}$$

$$LADD = \frac{EPC * RCAF_{inh} * PM_{10} * VR_{work} * RAF_{c\text{-}inh} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{lifetime}}$$

Parameter	Value	Units
CSF	OHM-specific	$(mg/kg\text{-}day)^{-1}$
LADD	age/OHM-specific	mg/kg-day
EPC	OHM-specific	mg/kg
IR	100	mg/day
$RAF_{c\text{-}ing}$	OHM-specific	dimensionless
$RAF_{c\text{-}derm}$	OHM-specific	dimensionless
$RAF_{c\text{-}inh}$	OHM-specific	dimensionless
EF	0.714	event/day
$ED_{ing\ \&\ derm}$	1	day/event
ED_{inh}	0.333	day/event
EP	182	days
C1	1.0E-06	kg/mg
C2	1.0E-09	kg/µg
C3	1440	min/days
C4	1.0E-03	m^3/L
BW	58.0	kg
$AP_{(lifetime)}$	25,550	days
VR_{work}	60	L/min
AF	0.29	mg/cm^2
SA	3473	cm^2/day
$RCAF_{inh\text{-}gi}$	1.5	dimensionless
$RCAF_{inh}$	0.5	dimensionless
PM_{10}	60	$µg/m^3$

Construction Worker - Soil: Table CW-3
Equations For Adult Construction Workers Noncancer Risk

Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{oral\text{-}subchronic}}$$

$$ADD_{ing} = \frac{EPC * IR * RAF_{nc\text{-}ing} * EF * ED_{ing} * EP * C1}{BW * AP_{noncancer}}$$

Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{oral\text{-}subchronic}}$$

$$ADD_{dermal} = \frac{EPC * SA * AF * RAF_{nc\text{-}derm} * EF * ED_{dermal} * EP * C1}{BW * AP_{noncancer}}$$

Noncancer Risk from Particulate Inhalation - Gastrointestinal Absorption

$$HQ_{inh\text{-}GI} = \frac{ADD_{inh\text{-}GI}}{RfD_{oral\text{-}subchronic}}$$

$$ADD_{inh\text{-}GI} = \frac{EPC * RCAF_{inh\text{-}gi} * PM_{10} * VR_{work} * RAF_{nc\text{-}ing} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{noncancer}}$$

Noncancer Risk from Particulate Inhalation - Pulmonary Absorption

$$HQ_{inh} = \frac{ADD}{RfD_{inhalation\text{-}subchronic}}$$

$$ADD_{inh} = \frac{EPC_{soil} * RCAF_{inh} * PM_{10} * VR_{work} * RAF_{nc\text{-}inh} * EF * ED_{inh} * EP * C2 * C3 * C4}{BW * AP_{noncancer}}$$

Parameter	Value	Units
RfD	OHM-specific	mg/kg-day
ADD	OHM-specific	mg/kg-day
EPC	OHM-specific	mg/kg
IR	100	mg/day
$RAF_{nc\text{-}ing}$	OHM-specific	dimensionless
$RAF_{nc\text{-}derm}$	OHM-specific	dimensionless
$RAF_{nc\text{-}inh}$	OHM-specific	dimensionless
EF	0.714	event/day
$EF_{cyanide}$	0	event/day
$ED_{ing\ \&\ derm}$	1	day/event
ED_{inh}	0.333	day/event
EP	182	days
$EP_{cyanide}$	1.00	day
C1	1.0E-06	kg/mg
C2	1.0E-09	kg/µg
C3	1440	min/days
C4	1.0E-03	m^3/L
BW	58.0	kg
$AP_{noncancer}$	182	days
$AP_{cyanide}$	1	day
VR_{work}	60	L/min
AF	0.29	mg/cm^2
SA	3473	cm^2/day
$RCAF_{inh\text{-}gi}$	1.5	dimensionless
$RCAF_{inh}$	0.5	dimensionless
PM10	60	$\mu g/m^3$

Construction Worker - Soil: Table CW-4
Definitions and Exposure Factors

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
HI - Hazard Index	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	$(mg/kg\text{-}day)^{-1}$	see Table CW-5. EPA IRIS 2004
RfD - Reference Dose	chemical specific	mg/kg-day	see Table CW-5. EPA IRIS 2004
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CW-2.
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific. See Table CW-3.
EPC - Exposure Point Concentration	chemical specific	µg/L	see Table CW-1.
IR - Soil Ingestion Rate	100	mg/day	US EPA Risk for Superfund (2001)
RAF_c - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	Pathway specific - see Table CW-5.
RAF_{nc} - Relative Absorption Factor for Noncancer Effects	chemical specific	dimensionless	Pathway specific - see Table CW-5.
EF - Exposure Frequency	0.714	event/day	US EPA Risk for Superfund (2001)
$ED_{ing,derm}$ - Exposure Duration for ingestion or dermal exposure	1	day/event	
ED_{inh} - Exposure Duration for inhalation exposure	0.333	day/event	Represents 8 hours / event.
EP - Exposure Period	182	days	US EPA Risk for Superfund (2001)
$EP_{cyanide}$ - Exposure period for cyanide exposure	1	day	US EPA Risk for Superfund (2001)
BW - Body Weight	58.0	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7, Females, ages 18 - 25.
$AP_{(lifetime)}$ - Averaging Period for lifetime	25,550	days	Represents 70 years
$AP_{(noncancer)}$ - Averaging Period for noncancer	182	days	US EPA Risk for Superfund (2001)
$AP_{cyanide}$ - Averaging period for assessing cyanide exposure	1	day	US EPA Risk for Superfund (2001)
AF - Adherence Factor	0.29	mg/cm^2	US EPA Risk for Superfund (2001)
VR_{work} - Ventilation Rate during work (heavy exertion)	60	L/min	US EPA Risk for Superfund (2001)
SA - Surface Area	3473	cm^2/day	US EPA Risk for Superfund (2001)
$RCAF_{inh\text{-}gi}$ - Relative Concentration Adjustment Factor, gastrointestinal	1.5	dimensionless	
$RCAF_{inh}$ - Relative Concentration Adjustment Factor, inhalation	0.5	dimensionless	EPA Supplemental Guidance 2001
PM10 - Concentration of PM_{10}	60	$\mu g/m^3$	EPA Supplemental Guidance 2001

Construction Worker - Soil: Table CW-5
Chemical-Specific Data

Oil or Hazardous Material	Oral CSF $(mg/kg\text{-}day)^{-1}$	$RAF_{c\text{-}ing}$	$RAF_{c\text{-}derm}$	$RAF_{c\text{-}inh}$	Inhalation CSF $(mg/kg\text{-}day)^{-1}$	Subchronic Oral RfD mg/kg-day	Subchronic $RAF_{nc\text{-}ing}$	Subchronic $RAF_{nc\text{-}derm}$	Subchronic $RAF_{nc\text{-}inh}$	Subchronic Inhalation RfD
Polychlorinated biphenyls (PCBs)	2.0E+00	0.85	0.16	1	3.5E-01	5.0E-05	0.85	0.16	1	5.7E-06
Lead						7.5E-04	0.5	0.006	1	2.9E-04

Trespasser - Soil: Table TS-1
Exposure Point Concentration (EPC)
Adults and Children Trespassers/Visitors (Cancer and Non-Cancer)

Irving Tissue, Fort Edward, NY

NYSDEC Site No. 558041

ELCR (all chemicals) = 5E-07
Chronic HI (all chemicals) = 1E-01
Subchronic HI (all chemicals) = 1E-01

Oil or Hazardous Material	EPC (mg/kg)	$ELCR_{ingestion}$	$ELCR_{dermal}$	$ELCR_{total}$	Chronic HQ_{ing}	Chronic HQ_{derm}	Chronic HQ_{total}	Subchronic HQ_{ing}	Subchronic HQ_{derm}	Subchronic HQ_{total}
Polychlorinated biphenyls (PCBs)	7.7E+00	2.1E-07	3.3E-07	5.4E-07	5.3E-02	8.2E-02	1.4E-01	4.6E-02	6.1E-02	1.1E-01
Lead	4.8E+01				5.1E-03	5.1E-04	5.6E-03	1.1E-02	9.4E-04	1.2E-02

Trespasser - Soil: Table TS-2

Equations for Adults and Children Trespassers/Visitors (Cancer)

Cancer Risk from Ingestion

$$ELCR_{ing} = LADD_{ing} * CSF$$

$$LADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{c\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP_{lifetime}}$$

Cancer Risk from Dermal Absorption

$$ELCR_{derm} = LADD_{derm} * CSF$$

$$LADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{c\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP_{lifetime}}$$

Parameter	Value	Units
CSF	OHM specific	$(mg/kg\text{-}day)^{-1}$
LADD	age/OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
IR	50	mg/day
$RAF_{c\text{-}ing}$	OHM specific	dimensionless
$RAF_{c\text{-}derm}$	OHM specific	dimensionless
$EF_{ing,derm}$	0.164	event/day
ED	1	day/event
EP	7	years
C	0.000001	kg/mg
BW	50.7	kg
$AP_{(lifetime)}$	70	years
SA	2940	cm^2 / day
SAF	0.14	mg/cm^2

Trespasser - Soil: Table TS-3

Equations for Adults and Children Trespassers/Visitors (Non-Cancer)

0

Chronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

Chronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{ing,derm}}{RfD}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
IR	50	mg/day
$RAF_{nc\text{-}ing}$	OHM specific	dimensionless
$RAF_{nc\text{-}derm}$	OHM specific	dimensionless
$EF_{ing,derm}$	0.164	event/day
$EF_{cyanide}$	1.00	event/day
ED	1	day/event
EP	7	years
$EP_{cyanide}$	1	day
C	0.000001	kg/mg
BW	50.7	kg
AP	7	year
$AP_{cyanide}$	1	day
SA	2940	cm^2 / day
SAF	0.14	mg/cm^2

Trespasser - Soil: Table TS-4
Equations For Subchronic Non-Cancer Risk for a Trespassers/Visitors

0

Subchronic Noncancer Risk from Ingestion

$$HQ_{ing} = \frac{ADD_{ing}}{RfD_{subchronic}}$$

$$ADD_{ing} = \frac{[OHM]_{soil} * IR * RAF_{nc\text{-}ing} * EF_{ing} * ED * EP * C}{BW * AP}$$

Subchronic Noncancer Risk from Dermal Absorption

$$HQ_{derm} = \frac{ADD_{derm}}{RfD_{subchronic}}$$

$$ADD_{derm} = \frac{[OHM]_{soil} * SA * RAF_{nc\text{-}derm} * SAF * EF_{derm} * ED * EP * C}{BW * AP}$$

Parameter	Value	Units
RfD	OHM specific	mg/kg-day
ADD	OHM specific	mg/kg-day
$[OHM]_{soil}$	OHM specific	mg/kg
IR	50	mg/day
$RAF_{nc\text{-}ing}$	OHM specific	dimensionless
$RAF_{nc\text{-}derm}$	OHM specific	dimensionless
$EF_{ing,derm}$	0.286	event/day
$EF_{cyanide}$	1.00	event/day
ED	1	day/event
$EP_{cyanide}$	1	day
EP	0.577	years
C	0.000001	kg/mg
BW	40.3	kg
AP	0.577	year
$AP_{cyanide}$	1	day
SA	2477	cm^2 / day
SAF	0.14	mg/cm^2

Trespasser - Soil: Table TS-5
Definitions and Exposure Factors

Parameter	Value	Units	Notes
ELCR - Excess Lifetime Cancer Risk	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
CSF - Cancer Slope Factor	chemical specific	$(mg/kg\text{-}day)^{-1}$	see Table RS-7, EPA IRIS, 2004
LADD - Lifetime Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
HQ - Hazard Quotient	chemical specific	dimensionless	Pathway specific (ing =ingestion, derm=dermal, inh=inhalation)
RfD - Reference Dose	chemical specific	mg/kg-day	see Table RS-7, EPA IRIS, 2004
ADD - Average Daily Dose	chemical specific	mg/kg-day	Pathway specific
EPC - Exposure Point Concentration	chemical specific	mg/kg	
IR - Soil Ingestion Rate	50	mg/day	US EPA Risk for Superfund, 2001 (http://www.mass.gov/dep/ors/orspubs.htm)
RAF_c - Relative Absorption Factor for Cancer Effects	chemical specific	dimensionless	
$EF_{subchronic}$ - Exposure Frequency for subchronic ingestion or dermal exposure	0.286	event/day	2 days/week
$EF_{chronic}$ - Exposure Frequency for chronic ingestion or dermal exposure	0.164	event/day	2 days/week, 30 weeks/year
EF_{cancer} - Exposure Frequency for cancer, ingestion or dermal exposure	0.164	event/day	2 days/week, 30 weeks/year
$EF_{cyanide}$ - Exposure Frequency for cyanide exposure	1.00	event/day	
ED - Exposure Duration	1	day/event	
$EP_{(11-12)}$ - Exposure Period for age group 11-12	0.577	years	30 weeks
$EP_{(11-18)}$ - Exposure Period for age group 11-18	7	years	
$EP_{cyanide}$ - Exposure period for cyanide exposure	1	day	US EPA Risk for Superfund, 2001
$BW_{(11-12)}$ - Body Weight for age group 11-12	40.3	kg	U.S. EPA. 1997. Exposure Factors Handbook. Table 7-7
$BW_{(11-18)}$ - Body Weight for age group 11-18	50.7	kg	Ibid
$AP_{subchronic}$ - Averaging Period for subchronic noncancer	0.577	years	30 weeks
$AP_{chronic}$ - Averaging Period for chronic noncancer	7	years	
AP_{cancer} - Averaging Period for lifetime	70	years	
$AP_{cyanide}$ - Averaging period for assessing cyanide exposure	1	day	US EPA Risk for Superfund, 2001
$SA_{(11-12)}$ - Surface Area for age group 11-12	2477	cm^2 / day	50th percentile of forearms, hands, and feet for females. US EPA Risk for Superfund, 2001
$SA_{(11-18)}$ - Surface Area for age group 11-18	2940	cm^2 / day	Ibid
SAF - Surface Adherence Factor, Trespasser	0.14	mg/cm^2	Weighted Skin-Soil Adherence Factors, April 2002.

Trespasser - Soil: Table TS-6
Chemical-Specific Data

Oil or Hazardous Material	CSF $(mg/kg\text{-}day)^{-1}$	$RAF_{c\text{-}ing}$	$RAF_{c\text{-}derm}$	Chronic RfD mg/kg-day	Subchronic RfD mg/kg-day	Chronic $RAF_{nc\text{-}ing}$	Chronic $RAF_{nc\text{-}derm}$	Subchronic $RAF_{nc\text{-}ing}$	Subchronic $RAF_{nc\text{-}derm}$
Polychlorinated biphenyls (I	2.0E+00	0.85	0.16	2.0E-05	5.0E-05	0.85	0.16	0.85	0.16
Lead				7.5E-04	7.5E-04	0.5	0.006	0.5	0.006

APPENDIX C:
INSTITUTIONAL AND ENGINEERING CONTROLS CERTIFICATION FORM

Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 558041

Site Name ~~Irving Tissue, Inc.~~ Irving Tissue (company name change)

Site Address: 1 Eddy Street Zip Code: 12828
City/Town: Fort Edward
County: Washington
Site Acreage: 1.010

Reporting Period: Nov 21, 2011 to Nov 21, 2016

	YES	NO
1. Is the information above correct?	G	(G)
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	G	(G)
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	G	(G)
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	G	(G)
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	G	(G)

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? -industrial	(G)	G
7. Are all ICs/ECs in place and functioning as designed?	(G)	G

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative _____ Date

SITE NO. 558041

Box 3

Description of Institutional Controls:

-groundwater use restriction
-landuse restriction
-site management plan

Description of Engineering Controls:

Box 4

-cover system

Periodic Review Report (PRR) Certification Statements **Box 5**

1. I certify by checking "YES" below that:

(a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
(G)	G

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or Box 4, I certify by checking "YES" below that all of the following statements are true:

(a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

(d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
(G)	G

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 558041

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I THOMAS NASH (print name) at ONE EDDY ST. FORT EDWARD, NY 12828 (print business address)

am certifying as OWNER (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Thomas Nash
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

1/12/17
Date

IC/EC CERTIFICATIONS

Box 7

Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I THOMAS NASH (print name) at ONE EDDY STREET FORT EDWARD, NY 12828 (print business address)

am certifying as a for the OWNER (Owner or Remedial Party)

Thomas Nash
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

Stamp (Required for PE)

1/12/17
Date