EPA Region 5 Records Ctr.
203899

MICHIGAN

ADRIAN

★**Simplex Products Group**
Headquarters Location. See Executive Offices section for more details.

ALPENA

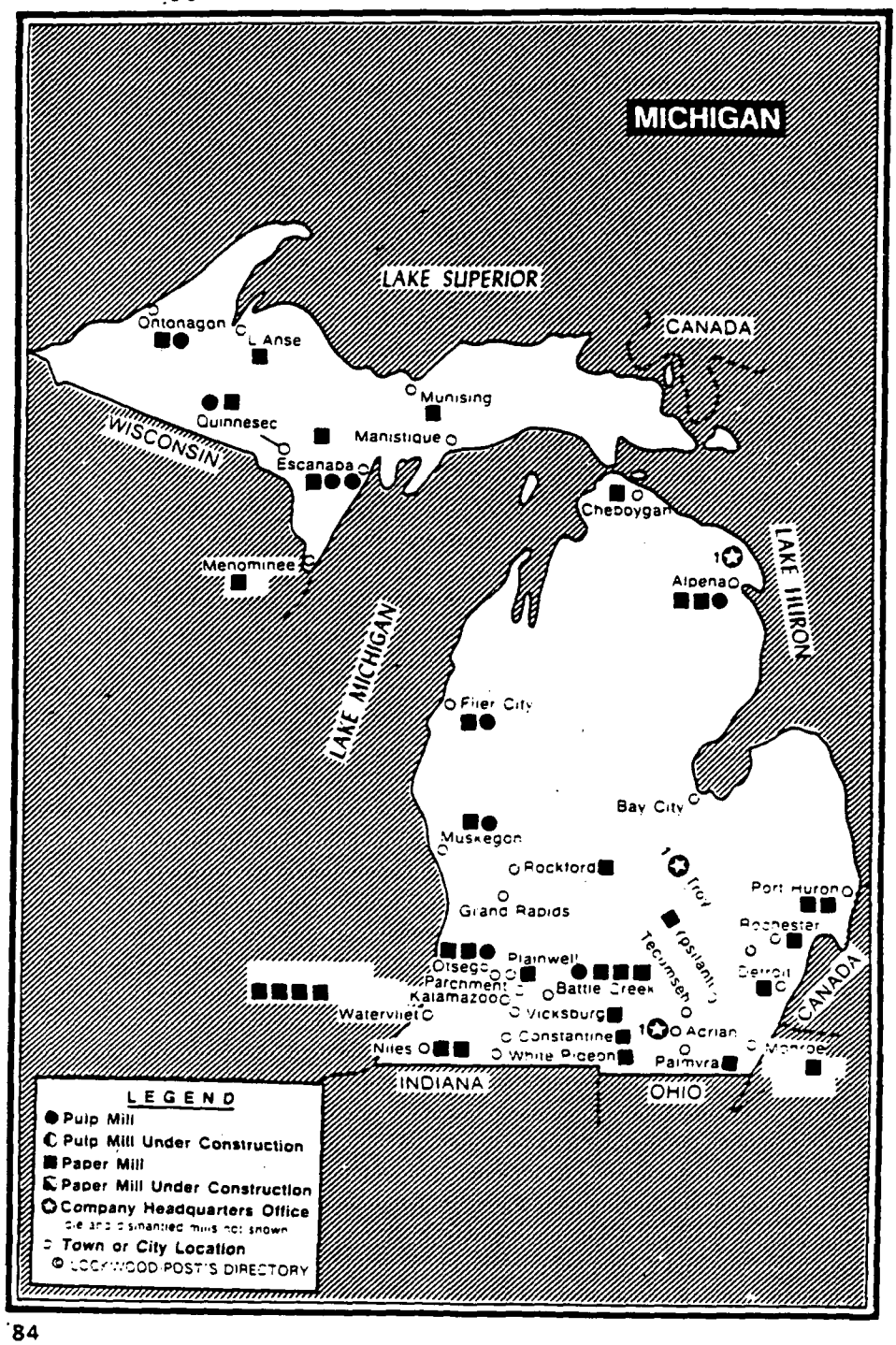
ABTco, Inc. (Subs. of ABT Building Products Corp.) 416 Ford Av. 49707
Tel: 517-354-2121 Fax: 517-356-2504
RR: Detroit & Mackinac Siding. Hwys: US Rte 23; State Rte 32.
K.C. Nielsen, Plant Mgr
T.E. Ludwig, Sr Maint Mgr
H.L. Scull, Plant Supt
L.M. Plowman, Mgr, Pdct & Process Devl
A.R. Dean, Mfg Supt
R.W. Murdock, Engrg Supt
A.J. Nadeau
L.E. Springe
W.K. Hunter, Plant Supt
M.J. Hanlon, Human Rsrcs Mgr

Woodhandling and Preparation Barkers: 2 26" mechanical. Chippers: 1-96" 12-knife. Avg. Daily Use of Peeled Pulpwood: 450 cds (rough basis).

Pulp Mill Defibrated Wood Pulp. Avg. Daily Prod.: 400 tons Batch Digesters: 4 Bauer Rapid-Cycle.
Pulp Processing: Stock Refiners: 9 Bauer disc.

Paper Mill Stock Preparation: Pulpers: 1 Jones repulper. Refiners: 3 Bauer, 2 Sprout-Waldron pump-thru.
Paper Machines. 1 Hardboard Fourdrinier 160" Width 156" Trim.
1 Hardboard Fourdrinier 50" Width 48" Trim.
Finishing Plant. Other Eqt.: 2 20-deck presses, 1 22-deck press.

Steam/Power. Power Boilers: 3. Fuel: Coal/Wood Waste. Steam, lbs hr.: 240,000. Press.: 900/300 psi.
Electricity: Purchased: 100,000 kwh/day. Generated: 200,000. Turbogenerators: 1 GE 7500 kva.



Water Treatment. Daily Usage. 1.500 million gpd. Source: River. Primary Treatment: Screening.

Effluent Treatment. Primary Treatment: Clarifier. Secondary Treatment: Aeration Lagoons. Tertiary Treatment: Sludge dewatering and drying.

Products. S1S and S2S hardboard. 360 MMsf annually (400 tons daily).

★**Fletcher Paper Co.** 318 W Fletcher St. 49707
Tel: 517-354-2131 Fax: 517-356-5288
Headquarters Location. See Executive Offices section for more details.
RR: D&M siding. Hwys: US Rte 23; State Rte 32.
James A Kelley, Opers Mgr
Richard Winter, Chief Engr
Bill England, Pur Agt
Tom Woods, Traffic Mgr
Frank Zicnelle, Mgr Ctd Pdcts
Joseph Bason, Mgr New Pdcts Div
Jim Matuzak, Maint Supv
George Snedden, Supt Pwr
James Nensewitz, Tech Asst, Qlty Cntrl
Michael Bushey, Sr Devl Chemist

Paper Mill Stock Preparation: Pulpers: 1 high consistency, 3 Hydrapulpers. Screens: 2 Selectifiers. Refiners: 5 Jones DD. Jordans: 3 Jones.
Paper Machines. 1 Fourdrinier 112" Width 100" Trim 1000 fpm.
1 Fourdrinier 112" Width 100" Trim 1150 fpm.
Dryers. Drums: 62. Size Presses: 2. Calenders: 2 stacks. Winders: 2.
Coaters. Off Machine. 1 60" Roll-Blade-Gravure, 10 tpd capacity.
Finishing Plant. Sheeters: 1-67" precision. Trimmers: 2, 65" 85".

Steam/Power. Power Boilers: 2. Fuel: Gas & Oil. Coal. Steam, lbs hr.: 140,000. Press.: 450 psi.
Electricity: Freq, phase: 60, 3. Generated: 72,000 kwh/day.

Water Treatment. Daily Usage. 1.1 million gpd. Source: Thunder Bay River. Primary Treatment: Yes.

Effluent Treatment. Primary Treatment: 1 Clarifier.

Products. Bible, offset, carbonizing, chart, coating base, label, manifold, flame retardant, mold inhibiting, pattern, map, onionskin, opaque bond, release, saturating, sensitizing, technical, wet strength and writing papers. 85 tons daily.

BATTLE CREEK

American Fibrit Inc. 76 Armstrong Rd. 49015-1079
Tel: 616-968-3000 Fax: 616-968-0198
RR: ConRail. Hwys: On State Rte 96; Near IS-94, 8 mi.
C-Roger Davisson, Pres
Daniel W Schoenbeck, Vice Pres, Opers
Gregory A Worsnop, Vice Pres, Fin

Pulp Mill Ground Wood, Refiner. Avg. Daily Prod.: Thermomechanical: 30 tons Refiners: 1 1250 hp L36 Defibrator primary, 1 200 hp ROP 20 secondary.

Paper Mill Stock Preparation: Pulpers: 1 Hydrapulper.
Paper Machines. 3 pulp molding machines of own design.

Products. Molded wood fiber products for automotive interior trim.

Michigan Paperboard Co. (Affil. of Field Container Co.) 79 E Fountain St. 49017-4198
Tel: 616-963-4004 Fax: 616-963-1306
RR: ConRail, GTW, siding. Hwys: Near IS-94, IS-69, 3 mi; Near State Rte 66, 37, 89, 3 mi.
John Goll, Pres
James M Lambert, Mfg Mgr
C Tobey, Mfg Supt
Gary McMillan, Plant Engr
Mike Scholly, Qlty Mgr
Dan Conway, Contr
James Minick, Ind Rels Mgr
Bill Bryant, Prchsg Mgr

Paper Mill Stock Preparation: Pulpers: 3 4000 lb Morden, 1 14', 1 20' Hydrapulper, 1 3000 lb Refiners: 1 disc. Jordans: 3. Screens: Centrisorter.
Paper Machines. 1 seven-unit Stevens Former 120" Trim 750 fpm.
1 six-unit Ultraformer 98" Width 96" Trim 450 fpm.
Dryers. Drums: 60".

Steam/Power. Power Boilers: 2. Fuel: Gas. Oil. Steam, lbs hr.: 80,000.

Products. Combination boxboard, 340 tons daily.

MHT-00313

Robert J. Smith & Associates, Inc.
Pulp & Paper Industry
Career Services
Bus. 616-668-3591 Fax 616-668-3851
32184 Fish Hatchery Rd. Kalamazoo, MI 49009

dorf Corp. 127 Angell St. 49015-1958
Tel 616-963-5511 Fax. 616-969-7166
RR ConRail. GTW siding. Hwys: IS-94, IS-69: State Rte 66, 37, 89
Tom Lawson, Vice Pres, Mill Opers
Nelson Gamache, Plant Engr
Paul Stofer, Tech Supt
Mike Minger, Qlty Mgr
Kimberly Cousineau, Prcrmnt Spclst
Chris Hansen, Contr
Dale Blanchard, Prod Supt
William Dever, Maint Supt
Jonathan Nelson, Mchne Supt

Paper Mill Stock Preparation: Pulpers: 1 3000 lb Morden Slushmaker; 1 14', 1 16', 1 20' Hydrapulpers. Screens: 8 Centrisorter. Refiners: 4 Sprout Waldron disc. Cleaners: 3 systems
Paper Machines. 1 five-unit Beloit Bel-Bond former 146" Width 130" Trim 1064 fpm.
Dryers Drums: 85 60". Calenders: 3 stacks. Hi-Velocity 8 gas infrared. Winders: 1 Beloit.
Coaters. On Machine. Kohler blade. Black Clawson air knife. 450 tpd capacity.
Finishing Plant. Sheeters: 1 Clark Aiken.

Steam/Power. Power Boilers: 2. Fuel: Oil/Gas. Steam, lbs hr.: 140,000.
Electricity Purchased: 212,500 kwh/day. Generated: 37,500 kwh/day. Turbogenerators: 1 Elliott, 2000 kw/kva

Water Treatment. Daily Usage, 750 M.g.p.d. Source: River

Effluent Treatment. Primary Treatment: 2 flotation clarifiers Effluent to joint industrial/municipal plant

Products. White clay coated, white lined chip borads, 375 tons daily

CHEBOYGAN

eat Lakes Tissue Co. 437 S Main St. 49721
Tel 616-627-0200 Fax 616-627-0242
Hwys: On US Rte 27
Clarence Roznowski, Pres
Keith Stronschein, Vice Pres, Fin
Dave Lahaie, Mfg Mgr
Al Cronan Opers Mgr
Keith Foster Pulp Mgr
Bud La Haie, Elec Engr
Elmer Kitchen, Mech Engr
Priscilla Hart, Logistics

Paper Mill Paper Machines 1 Yankee Fourdrinier 136" Width 130" Trim.
1 Yankee Fourdrinier 136" Width 130" Trim.

Products. All dry-crepe tissue grades (8.5 - 20 lb. basis weight range) Single and two ply sanitary commercial and industrial tissue, 100 tons daily

CONSTANTINE

Simplex Products Group Centreville Rd, E 3rd St. 49042
Tel 616-435-2425 Fax 616-435-7510
RR ConRail siding Hwys On US Rte 131
Ross Collins Mill Supt
Barry Lusk Maint Supv
Roy Farmer Shppg/Rcvng Supv
David Erickson Tech Mgr

Paper Mill Stock Preparation Pulpers. 2. Screens: 3. Refiners 4 1 deflaker Other Eqt 1 disc filter
Paper Machines 1 Eight-Cylinder 112" Width 100 Trim
Dryers Drums 4 sets hi-stack
Finishing Plant Other Eqt. Laminators: 2

Steam/Power. Power Boilers: 2. Fuel Gas/Oil Press 150 psi
Electricity Freq. phase 440 v, 60, 3 Purchased: 100%

Water Treatment. Daily Usage, 70,000 g.p.d. Source River

Effluent Treatment. Primary Treatment: None. Effluent to municipal plant

Products. Chipboard test liner, 150 tons daily

DETROIT

IPMC Inc. (IVEX Paper Mill Corp.) 9125 W Jefferson Av, 48209
Tel. 313-842-0042 Fax: 313-842-1055
RR: ConRail siding, Rouge Yard. Hwys: IS-75.
Jerry Buchheit, Res Mgr
Gasper Calandrino, Engrg Mgr
David Anganello, Prod Mgr
Louis J Sturm, ISO Mgr
Edward Kill, Tech Mgr
Cindy Cornish, Cust Srvc Mgr
Carol Klopfer, Human Rsrcs Mgr
Douglas A Murray, Contr
Jim Cunningham, Sales Mgr
Kris E Brady, Logstcs Mgr

Paper Mill Stock Preparation: Pulpers: 6. Refiners: 9 double disc.
Paper Machines. 1 Yankee Fourdrinier 133" Width 123" Trim 900 fpm.
1 Yankee Fourdrinier 135" Width 124" Trim 1500 fpm.
1 Yankee Fourdrinier 137" Width 126" Trim 1300 fpm.
1 Yankee Fourdrinier 144" Width 130" Trim 2200 fpm.
Dryers. Drums: 22 drums. Yankee: 4. Calenders: 4 stacks. Winders: 4.
Finishing Plant. Roll Wrapping Eqt.: automatic. Rewinders: 1

Steam/Power. Power Boilers: 3 Fuel: Gas/Oil. Electricity. Purchased: 35%. Generated: 65%.

Water Treatment. Daily Usage, 450 M.g.p.d. Source: River

Effluent Treatment. Primary Treatment: Effluent to municipal system.

Products. Lightweight MG papers (8.5-35 lb basis weights) for waxing, twisting, foil lamination, packaging, and specialties; recycled papers, bleached, natural and colored kraft converting specialties, creped specialty grades (16-50 lb basis weights), 175 tons daily.

ESCANABA

Mead Corp. Publishing Paper Div. (PO Box 757, Escanaba, MI, 49829-0757)
Tel 906-786-1660 Fax 906-789-3221, 789-3206
RR C&NW, WI Cntrl sidings. Hwys: US Rte 2, 41; State Rte 35
Gary L Butryn, Pres, Gen Mgr
Kirk D Bruno, Vice Pres, Admin
Michael T Mack, Vice Pres, Mktg
W H Goode, Vice Pres, Mfg Opers
G.W Brown, Vice Pres, Prod Tchnlgy
R.J Papaik, Vice Pres, Engrg & Project
Mike McDonald, Vice Pres, Human Rsrcs
James Okraszewski Vice Pres, Woodlands
L King, Gen Supt of Pulping
Robert Blake, Mgr, Qlty Assrnc
Dave Bonistall, Enviro Control Mgr
Mike Fornetti, Gen Supt, Pwr & Util
Mark H Miller, Mgr, Mktg Srvcs
Frank N Kissel, Contr
Joseph P Hodge, Mgr, Prchsg Srvcs
Eugene Malarsky, Natl Sls Mgr
Kel Smyth Public Rels & Cmmctns Mgr

Woodhandling and Preparation Chip Handling: Rader pneumatic system Barkers. 2 14 5'x80' drum Hogs 1 Gruendler bark, 1 Gauld shredder Chippers 2 116" B.C Chip Screens 1 screening and slicing system Kone de-icing conveyor

Pulp Mill Kraft. Avg. Daily Prod Bl Swd., 875 tons Bl Hwd., 1060 tons of which 80 tons is Market Pulp Batch Digesters 8 6,500 cu.ft
Ground Wood. Refiner Avg Daily Prod.: Bl. Hwd., 250 tons Refiners 4 primary, 2 secondary, 1 rejects. Bauer 48", 4500 hp
Chemical Recovery Plant. Evaporators 1 6-effect Swenson Recovery Boilers. 1 B&W, 2,800,000 lbs solids/day, 500,000 lbs steam/hr at 1475 psi, 950° Electrostatic Precipitators 1 Koppers on rcvry boiler 1 PCW on No 11 power boiler. Lime Kilns 1 Allis-Chalmers Gas Scrubbers. 1 Ducon on recovery boiler, 2 Chemco on No 9 boiler, 1 venturi on kiln. Lime Mud Washers 1 40'x55' Dorr-Oliver 9x9 mixer Recausticizing System Dorr-Oliver
Bleach Plant. Sequence Gwd P stage Kraft (D&C)-E/O-D-E-D Chlorine Dioxide System Albright & Wilson R8
Pulp Processing: Screens. RMP: 4 Model 100, 1 Model 400 Bird Centrisorter Cleaners five-stage Noss system. Washers. 1 13.5'x20' Dorr-Oliver drum filter Deckers. 1 12'x19' Dorr-Oliver disc Drainers: 1 Thune press. Stock Refiners. 2 34", 1 26" Sprout-Waldron Twin-Flo
Screens: Kraft: 2 primary, 2 secondary, 1 tertiary Bird Centrisorter. Washers 4 13.5'x24' Impco brown stock; 5 13.5 x24' Impco bldhd stock. Deckers: 1 13.5'x24' Impco.
Pulp Drying: Dryers: Former No 2 P&J paper machine modified for pulp drying 166" width, 155" trim, 1300 fpm, 300 tpd capacity. Cutter-Layboys: 1 Lamb-Grays Harbor.

Paper Mill Stock Preparation: Pulpers: 3 Hydrapulpers, 2 continuous Morden, 1 Beloit Jones, 2 Hydrapulper broke. Screens: 6 Centriscreen, 2 broke. Refiners. 13 Sprout-Waldron disc, 5 Deflakers (broke). Cleaners: 3 five-stage Bauer Centricleaner-Deculator systems.
Paper Machines. 1 Pusey & Jones Fourdrinier 166" Width 151" Trim 2300 fpm
1 Beloit Fourdrinier 300" Width 274" Trim 3300 fpm.
1 Valmet Fourdrinier 320" Width 304" Trim 3500 fpm.
Dryers. Winders: 3 Jagenberg single-drum, 1 Cameron MIR, 1 Wartsila two-drum, 1 Cameron two-drum.
Coaters. Off Machine. 1 286", 1 172", 1 302" trailing blade.
Finishing Plant. Supercalenders: 2 9-roll Bruderhaus, 2 12-roll Kleinewefers, 2 10-roll Appleton A-Frame. Roll Wrapping Eqt.: Lamb-Grays Harbor automatic with double crimp and header lines. Rewinders: 1 Lenox, 1 Cameron, 1 Jagenberg two-drum

Steam/Power. Power Boilers: 4 Fuel: oil, gas, bark, coal Steam, lbs hr: 1,600,000 Press.: 400/1500 psig.
Electricity: Freq, phase: 60, 3. Installed H P: 100,000 Hydroelectric. 3,000 kwh/day Turbogenerators. 70,000 kwh/day

Water Treatment. Daily Usage, 40.0 million g.p.d. Source: Lake Michigan Primary Treatment: Sand filters, Marley four-cell cooling tower

Effluent Treatment. Primary Treatment: Clarifier Secondary Treatment: Aeration lagoon and activated sludge, secondary clarifier, unaerated lagoon. Tertiary Treatment Clarifier 5 Winkle sludge presses

Products. Coated book and publication papers, 1550 tons daily Kraft hardwood market pulp, 80 tons daily

FILER CITY

Packaging Corp. of America Corrugated Products Div (PO Box 316, Manistee, MI, 49660)
Tel: 616-723-9951 Fax: 616-723-1395
RR: CSX Hwys: On US Rte 31
Robert V LaBruzzo, Vice Pres & Gen Mgr
John H Myers, Prod Mgr
Robert J Hybza, Tech & Engrg Mgr
William J Volkema, Paper Mill Supt
Lynn R Jones, Paper Mill Supt
Donald W Zwiefka, Maint Mgr
Gerald R Haw, Power/Util Supt
David L Bell, Fiber Prcrmt Mgr
Robert J DeSisto, Total Qlty Mgmt Mgr
Carl F Mills, Cust Srvc Mgr
Peter A Martens, Acctg & Contrl Mgr
U Paul Sitz, Prchsg Mgr

Woodhandling and Preparation Roundwood Storage Capacity 20,000 Cords Barkers. 1 12'x80' FMP drum Chippers: 1 112", 12-knife Chip Screens: 2 HiCap

Pulp Mill Semi-Chemical, Avg. Daily Prod soda carbonate 600 tons Continuous Digesters: 2 Pandia Chemical Recovery Plant. Evaporators. 2 multiple-effect. Recovery Boilers 1 fluidized bed unit.
Pulp Processing: Stock Refiners. 2 American Defibrator Washers: 6 screw press

Paper Mill Stock Preparation Waste Paper Processing: 325 ton daily Pulpers. 3. Screens. 3 Refiners 4 Jones, 5 Sprout Waldron, disc.
Paper Machines. 1 Fourdrinier 174" Width 158" Trim 1700 fpm
1 Fourdrinier 172" Width 157" Trim 1300 fpm
1 Fourdrinier 160" Width 148" Trim 850 fpm.
Dryers. Drums. 148-60" dia

MHI-00314

HOWARD ZUKER ASSOCIATES
919 N. MICHIGAN AVENUE • CHICAGO, ILLINOIS 60611 • PHONE 312-664-5700 • FAX 312-944-1471
THE PAPER TIGERS

Steam/Power. Power Boilers: 2. Fuel: Gas. Steam, lbs hr.: 600,000. Press.: 610 psi.
Electricity: Purchased: 305,000 kwh/day. Generated: 235,000 kwh/day. Turbogenerators: 3-21,875 kva total.

Water Treatment. Daily Usage, 20.0 million g.p.d. Source: River, Lake.

Effluent Treatment. Primary Treatment: 2 Clarifiers. Secondary Treatment: Aeration pond.

Products. Semichemical corrugating medium, 900 tons daily.

KALAMAZOO

Georgia-Pacific Corp. ⁴Communication Papers Div. 2425 King Hwy, 49001
Tel: 616-382-2890 Fax: 616-343-9428
RR: ConRail, GTW, siding. Hwys: IS-94; Near State Rte 96.
Thomas F Sullivan, Gen Mgr
C.R. Larrick, Prod Mgr
James C Ittner, Tech Dir
Rod Loucks, Mgr Qlty Cntrl

Pulp Mill Deinked Pulp: 2 lines of 10 primary and 2 secondary flotation cells Avg. Daily Prod.: 200 tons Bleach Plant. Sequence: 1 peroxide, 1 hydrosulphite stage. Towers: 1 downflow.

Paper Mill Stock Preparation: Pulpers: 6. Beaters: 4 1500 lb, 6 2500 lb, 2 3500 lb. Refiners: 5.
Paper Machines. 1 Fourdrinier 185" Width 163" Trim 2500 fpm.
1 Fourdrinier 170" Width 150" Trim 2000 fpm.
Dryers. Size Presses: 1.
Coaters. On Machine. 1 Billblade.

Steam/Power. Power Boilers: 1. Fuel: Coal, Gas. Steam, lbs hr.: 245,000. Press.: 875 psi.
Electricity: Freq. phase: 440v, 60, 3. Installed H.P.: 18,500 electric. Purchased: 4,000 kw. Generated: 12,000 kw. Turbogenerators: 4.

Water Treatment. Daily Usage, 4.0 million g.p.d. Source: River.

Effluent Treatment. Primary Treatment: Clarifiers, joint municipal system.

Products. Bond, offset, label, coated and recycled grades, 400 tons daily.

James River Corp. Paperboard Packaging Group 243 E Paterson St, 49007
Tel: 616-383-5000 Fax: 616-383-5454
RR: ConRail. Hwys: US Rte 12, 13, IS-94, State Rte 43.
Stephen Beach, Plant Mgr, Pprbd
Phil Farmer, Prod Mgr, K-1 Mchn
Fay Beebe, Supt, Plt 4, K-3
Jeff Lawler, Supt, Plt 14 (Cnvtg)
Richard Bennett, Tech Mgr
Parker Holden, Mgr Engrg, Util
Dean Goodwin, Contr
R Keith Lolley, Empl Rels Mgr
Timothy Ireland, Empl Rels Dir

Paper Mill Stock Preparation: Pulpers: 10 Hydrapulpers. 1 Morden Slushmaker. Beaters: 1 continuous broke.
Paper Machines. 1 seven-unit pressure former 132" Width 120" Trim.
1: K-1 triple-ply board machine, with 2 Ply-Former on-top fourdriniers. Tamformer S top dewatering unit on middle ply former, on Tampella base Fourdrinier 162" Width 146" Trim 1200 fpm, with Tam-Flo R rectifier roll headboxes, Tamsec press section, 75 72" dryers.
Coaters. On Machine. 2 Air Knife, 2 Bar.
Off Machine. 1 76" double-head Beloit PE coater.
Finishing Plant. Other Eqt.: 1 56" Inta-Roto laminator.

Steam/Power. Power Boilers: 3. Fuel: Gas/Oil. Steam, lbs hr.: 450,000.

Water Treatment. Daily Usage, 2.0 million g.p.d. Source: Deep well.

Effluent Treatment. Secondary Treatment: via municipal syst.

Products. Machine clay-coated folding boxboards, foil laminating, grease and moisture resistant laminated, polyethylene coated, 800 tons daily.

Nickal Paper Co. 2305 E King Hwy.
RR: ConRail siding. Hwys: On US Rte 12.

Paper Mill Stock Preparation: Pulpers: 2 Hydrapulper. Refiners: 3 Sprout Waldron.
Paper Machines. 1 Beloit Eight-Cylinder 108" Width 100" Trim 450 fpm.
Dryers. Drums: 110. Infrared: 30. Calenders: 1 stack.
Finishing Plant. Rewinders: 1.

Steam/Power. Power Boilers: 2. Fuel: Gas/Oil. Steam, lbs hr.: 70,000.
Electricity: Purchased: 48,000 kwh/day.

Water Treatment. Daily Usage, 580 M.g.p.d. Source: Wells, City.

Effluent Treatment. Primary Treatment: 1 Clarifier.

Products. Recycled 69 lb. linerboard, 160 tons daily. Paper Mill is idle.

Portage Paper Co. Inc. (Div. of The Fournier Group) 2030 Portage St, 49001 (PO Box 2048, Kalamazoo, MI, 49003)
Tel: 616-345-7131 Fax: 616-345-1609
RR: ConRail sidings. Hwys: IS 94; US Rte 131; State Rte 43, 96.
Fernand D Fournier, Pres
Brad Crawford, Gen Mgr
Mike Breen, Plant Mgr
Ed Atwill, Sales & Mktg Mgr
Jim Friel, Ppr Mach Supt
Robert Quackenbush, Tech Coord
Jim Waldron, Maint Supt
Marilyn Wren, Prchsg Coord

Paper Mill Paper Machines. 1 Fourdrinier 137" Width 124" Trim (idle).
1 Fourdrinier 139" Width 126" Trim.
1 Fourdrinier 141" Width 127" Trim.
1 Fourdrinier 154" Width 142" Trim.
1 Fourdrinier 164" Width 152" Trim.
Coaters. Off Machine. 5 C2S Fountain Blade, 126" trim.

Steam/Power. Power Boilers: Fuel: Oil/Gas.

Water Treatment. Source: River, Wells.

Effluent Treatment. Primary Treatment: 2 clarifiers.

Products. Recycled bond, offset, tablet, envelope, kraft bag, and specialty papers, 200 tons daily.

L'ANSE

The Celotex Corp. 200 Main St, 49946 (PO Box 188, L'Anse, MI, 49946)
Tel: 906-524-6101 Fax: 906-524-6613
RR: Soo Line. Hwys: On US Rte 41.
C.N. Abbott, Plant Mgr

Paper Mill Stock Preparation: Pulpers: 1 Hydrapulper.
Paper Machines. 1 Black Clawson Fourdrinier 172" Width 165" Trim 50 fpm with 450' eight-deck Coe dryer.
Coaters. Off Machine. 1 Acrylic coater.

Steam/Power. Power Boilers: Steam, lbs hr.: 93,000.
Electricity: Purchased: 100%.

Water Treatment. Daily Usage, 1.0 million g.p.d. Source: Bay.

Products. Mineral and light panel board products, perforated and unperforated tile, other interior finish products, 270 tons daily.

MANISTIQUE

Manistique Papers Inc. (Subs. of Kruger Inc.) 453 S Mackinac Av, 49854
Tel: 906-341-2175 Fax: 906-341-5635
RR: Wis. Cntrl, siding. Hwys: On US Rte 2.
Leif Christensen, Pres, Gen Mgr
Tony Martin, Paper Mchne Supt
Jon Johnson, Plant Engr
Earl Patterson, Mktg Mgr
Bruce Norman, Prchsg Mgr
E.A. Bourdo, Mgr, Rcyclg Opers
Larry Koski, Sales Mgr
Jason Panek, Tech Dir
Linda Benedetto, Contr

Pulp Mill Deinked Pulp: Avg. Daily Prod.: cap. 500 tons

Paper Mill Stock Preparation: Pulpers: 2 Jones, R
finers: 1 Claflin.
Paper Machines. Twin-Wire Formers: 1 165" Wi
154" Trim 4200 fpm.
Dryers. Drums: 48 60" dia. Calenders: 1. Reels
Winders: 1 Beloit.

Steam/Power. Power Boilers: Fuel: Coal. Steam,
hr.: 145,000. Press.: 350 psi.
Electricity: Purchased: 5000 kwh/day.

Water Treatment. Daily Usage, 2.5 million g.p.
Source: River. Primary Treatment: Yes.

Effluent Treatment. Primary Treatment: Clarif
Secondary Treatment: Activated sludge system.

Products. Recycled and colored newsprint, groun
wood printing and groundwood converting paper
300 tons daily.

MENOMINEE

Menominee Paper Co Inc. (Subs. of Bell Packagi
Corp.) 144 First St, 94858 (PO Box 310, Menom
nee, MI, 49858-0310)
Tel: 906-863-5595 Fax: 906-864-3284
RR: ELS. Hwys: US Rte 41; State Rte 173.
Marshall Schneider, Vice Pres, Gen Mgr
Roger Smith, Prod Mgr
Jules Nagy, Gen Mgr, Ppr Pdcts
Kathleen Schneider, Gen Mgr, Bd Sls, Mktg & Pr
Ginny Abel, Contr
Anita Doepke, Dir, Enviro Affrs
Deb Konyn, CPI Facilitator
Bill Doerr, Qlty Assrnce Mgr
Ed Bush, Maint Supt
Dave Nielsen, Mtrls Mgr
Craig Grajeda, Prchsg Mgr

Paper Mill Stock Preparation: Pulpers: 4 Hydrap
pers. Refiners: 2 Claflin, Jordans: 5.
Paper Machines. 1 Black Clawson Fourdrinier 16
Width 154" Trim with Extended Nip-C press.
1 Yankee Fourdrinier 136" Width 128" Trim.
Finishing Plant. Supercalenders: 2. Rewinders:
Slitter/Rewinders: 3. Other Eqt.: Waxers: 5.

Steam/Power. Power Boilers: Fuel: Coal. Steam,
hr.: 140,000.
Electricity: Purchased: 7,000 kwh/day. Generat
4,000 kwh/day. Turbogenerators: 2.

Water Treatment. Daily Usage, 5.0 million g.p.
Source: River.

Effluent Treatment. Primary Treatment: Yes. S
ondary Treatment: Yes.

Products. Linerboard, corrugating medium, tu
stock, bag stock, 450 tons daily. Baking cup stoc
waxing tissue, lightweight MG, 60 tons da
Waxed paper in rolls, sheets, and bags.

MONROE

Jefferson Smurfit Corp. Industrial Packaging D
1151 W Elm Av, 48161-2885
Tel: 313-241-7776 Fax: 313-241-2189
RR: C&O siding. Hwys: US Rte 24, IS-75.
Douglas Banks, Reg Mgr
Steve Opheim, Chief Engr
Gary VanWormer, Fnshg Supt
Terry Lewis, Plant Contr
E Flotow, Reg Sales Mgr
J Zimmerman, Sales Rep

Paper Mill Stock Preparation: Pulpers: 2 Hydra
per. Refiners: 1 Sprout Waldron, 2 Emerson.
dans: 3 Shartle.
Paper Machines. 1 Seven-Cylinder 124" Wi
110" Trim 450 fpm.
Dryers. Drums: 104. Calenders: 2 stacks. Winde
1.
Finishing Plant. Rewinders: 2. Trimmers: 1.

Steam/Power. Power Boilers: Fuel: Gas, Oil. Ste
lbs hr.: 70,000.
Electricity: Purchased: 100%.

Water Treatment. Daily Usage, 750 M.g.p.d. Sou
River.

Effluent Treatment. Primary Treatment: J
municipal-industrial system.

Products. Plain chip, can and tube board, lightwe
chip, 130 tons daily.

Jefferson Smurfit Corp. Industrial Packaging Div. (
merly Monroe Paper Co.) 1220 East Elm Av.
RR: ConRail, Grand Trunk. Hwys: Near IS-75, 1
On State Rte 50.

Paper Mill Stock Preparation: Pulpers: 1 15' Ap
Pulper, 2 20' and 1 16' Hydrapulper. Screens:
Selectifier. Refiners: 2 34" Sprout-Waldron.

dans: 2 Emerson 2-OD. Cleaners: 8 10" Vortrap. Consistency Regulators: 4 Bird.
Paper Machines 1 Black Clawson Seven-Cylinder 120" Width 108" Trim 600 fpm.
1 Seven-Cylinder 120" Width 108" Trim 400 fpm. Dryers. Drums: 103, and 137-42" dia. Reels: 2 Auto Winders. 2 two-drum.
Steam/Power. Power Boilers 2. Fuel Gas, Oil. Steam, lbs hr.: 140,000 Press.: 600/175 psi. Electricity: Purchased: 100%.
Water Treatment. Daily Usage, 800 M.g.p.d Source: Lake Erie Primary Treatment: None
Effluent Treatment. Primary Treatment: 2 50' Clarifiers. Secondary Treatment: Municipal Syst.
Products. Tube and core board, linerboard, automotive, building, chip and WP chip filler, and partition boards, 200 tons daily.
Paper Mill is idle

MUNISING

Kimberly-Clark Corp. Munising Mill, Technical Paper Group 501 E Munising Av, 49862 (PO Box 10, Munising, MI, 49862-0010)
Tel: 906-387-2700 Fax: 906-387-2935
RR: Wis Central. Hwys: State Rte M28, M94.
Tom Shannon, Mill Mgr
Dan Macke, Admn Mgr
Mike Kerwin, Human Rsrcs Mgr
Ken Bolster, Ppr Mill Supt
Paper Mill Stock Preparation: Pulpers: 4. Screens: 2. Refiners: 3. Jordans: 2
Paper Machines. 2 Fourdrinier 136" Width 120" Trim.
Coaters, Off Machine. 4. Saturators: 5.
Finishing Plant. Supercalenders. 1 94", 1-68". Rewinders: 5. Sheeters: 3, cap. 60 tpd. Other Eqt.. 1 Embosser, 1 Laminator
Steam/Power. Power Boilers 2. Fuel: Coal/Wood Waste. Oil standby
Water Treatment. Daily Usage, 5.0 million g.p.d. Source: Lake Superior
Effluent Treatment. Primary Treatment: Yes.
Products. Writing, map, impregnating, coating base, saturating, coated and saturated specialties, Kimdura synthetic paper, 98 tons daily

MUSKEGON

S.D. Warren Co. (Subs of Sappi Ltd) 2400 Lakeshore Dr, 49443 (PO Box 119 Muskegon, MI, 49443-0119)
Tel: 616-755-3761 Fax: 616-759-5416
RR: C&O siding Hwys US Rte 31, IS-96
David M Crowe, Vice Pres, Gen Mgr
Donald E Booker, Pulp Mill & Util Mgr
Ken B Callow, #4 Ppr Mchne Prod Mgr
Donald U Peet, #5 Ppr Mchne Prod Mgr
John W.O Anderson, Engrg Mgr
Wayne R Thompson, Contr & Prcrmt Mgr
John E Holland, Cust Srvc Mgr
David L Tyler Tech, Qlty & Syst Mgr
Mike B Robbins, Maint Mgr
Jeffrey M Fern, Human Rsrc Mgr
Larry V Nash, Orgnztl Devl Mgr
George C Morstadt, Fnsng & Shpng Mgr
Woodhandling and Preparation Roundwood Storage Capacity 5,000 cds Chip Storage Capacity. 120,000 tons Mobile Equipment Hopto RR crane, Poclain crane Flume 1 Log Handling. Drag and belt conveyors Chip Handling Rader pneumatic system Sawdust Handling Rader pneumatic system Chip Unloaders Hydraulic truck dumper Barkers. 1 30 cds/hr Manitowoc drum Hogs. 1 Montgomery Chippers 1 15-knife Carthage Norman Chip Screens 3 Link Belt Avg. Daily Use of Peeled Pulpwood 300 cds swd, 200 cds hwd.
Pulp Mill Kraft Avg Daily Prod.. Bl. Swd.. 125 tons Bl. Hwd . 125 tons Continuous Digesters. 1 Kamyr Chemical Recovery Plant Evaporators. 1 six-effect Swenson Black Liquor Oxidation System Champion system Recovery Boilers: 1 C-E, 750,000 lbs solids/day Lime Kilns 1 Dorr Oliver Fluo-Solids, 70 tpd. Gas Scrubbers 1 Lime Mud Washers. 1 Dorr-Oliver Recausticizing System. Dorr-Oliver Bleach Plant Sequence C-E-H-D Towers 4 Mixers 4 Thick Stock Pumps 1. Chlorine Dioxide System Solvay process
Pulp Processing: Knotters 3 Impco Screens. 3 Cowan Cleaners 1 three-stage Bauer system Washers 3 9'x16 Impco vacuum Deckers 1 9x16', 1 8'x8 Impco Other Eqt. 6 pre-refiners (bleached stock)
Pulp Drying Wet Machines. 1-100 tpd Kamyr. Cutter-Layboys: Hamblet. Scales: 1
Paper Mill Stock Preparation: Pulpers: 6 Vokes rotor Hydrapulper. Screens. 2 Selectifiers. Refiners: 5 Claflin, 1 double disc. Jordans: 4 Shartle. Cleaners: 2 Centricleaner three-stage systems with vacuum rejects. Consistency Regulators: 14 DeZurik, 5 Foxboro. Size Cookers: 1 continuous. 3 batch
Paper Machines 1 Beloit Fourdrinier 163" Width 144" Trim 1100 fpm
1 Rice Barton Fourdrinier 222" Width 200" Trim 2000 fpm
Dryers. Drums 40 and 27 48", 55 and 69 60" dia. Hi-Velocity: 2. Size Presses: 2. Calenders: 4. Reels: 2 Pope. Winders: 2 two-drum.
Coaters, On Machine. 1 163" puddle, 1 222" Invertablade.
Finishing Plant. Supercalenders: 3-100", 1-87", 1-115", 1-80" Roll Wrapping Eqt.: D.J. Murray system. Rewinders: 3 Langston. Sheeters: 1 Lenox folio: 3, 100" to 112". Trimmers: 3-100". Ream Wrapping & Cartoning: Southworth system. Strapping Eqt.: Signode system.
Steam/Power. Power Boilers: 3 Fuel: Coal/Oil. Steam, lbs hr.: 500,000. Press.: 500 psi.
Electricity: Freq, phase: 60, 3. Purchased: 3,500 kwh/day Generated: 19,000 kwh/day. Turbogenerators. 3-25,500 kw.
Water Treatment. *Daily Usage. 20.0 million g.p.d.* Source: Lake. Primary Treatment: Eimco.
Effluent Treatment. Primary Treatment: County spray irrigation system.
Products. Machine coated book and cover papers, 675 tons daily

NILES

French Paper Co. 100 French St, 49120 (PO Box 398, Niles, MI, 49120)
Tel: 616-683-1100 Fax: 616-683-3025
RR: ConRail siding. Hwys. US Rte 31, 12: State Rte 60, 51
J.E. French, Chmn Bd
Jerry E French, Pres, Treas
David L Bruce Jr, Vice Pres, Supt
Jerry Koch, Vice Pres, Sec
Erich Schrof, Asst Supt
Rick Van Wynsbergne, Fnshg Frmn
Duane Bodfish, Chief Engr
Doyle Harpole, Maint Mgr
Tom Tokarz, Pur Agt
Tad Kline, Sales Srvc
Kathy Bush, Sales Srvc
Paper Mill Stock Preparation: Pulpers: 3 Dynapulper, 1 Slushmaker Refiners. 2 Claflin. Jordans: 4
Paper Machines. 1 Pusey & Jones Fourdrinier 118" Width 107" Trim
Dryers Winders. 2.
Finishing Plant Sheeters: 2 Trimmers: 2. Other Eqt. 2 Embossers
Steam/Power. Power Boilers: Fuel. Coal, Gas, Oil. Press.. 150 psi
Electricity Freq, phase: 440v, 60, 3. Installed H.P 1600 electric, 1600 water
Water Treatment. Daily Usage, 800 M.g.p.d. Source: Deep wells.
Effluent Treatment. Primary Treatment: Yes. Secondary Treatment: Yes
Products. White and colored offset, cover, embossing, greeting card, text and specialty papers, 55 tons daily

Simplicity Pattern Co., Inc. 901 Wayne St, 49121
Tel 616-683-4100 Fax. 616-687-1500 Telex. 258459
RR ConRail Hwys: US Rte 12, 31, State Rte 60, 40
Bill Rettke, Vice Pres Plt Dir
Paul Pomainville, Paper Mill Supt
Tom DeForest Mgr, Engrg & Ppr Making
R DeForest Plant Engr
T Smit Plant Contr
B Wilks, Distrib Mgr
B Lillie, Ind Rels Dir
V Hess, Traf Mgr
Paper Mill Stock Preparation: Pulpers. 3 Dynapulpers. Screens 1 Refiners: 4. Jordans. 1. Cleaners: 5 Consistency Regulators: 2. Other Eqt.. 2 savealls.
Paper Machines Stevens Formers. 1 162" Width 150" Trim 1000 fpm
Dryers. Drums: 8 and 12 - 48" dia. Calenders: 1 7-roll. 1-2 roll. Reels. 1 Winders. 2 Shear-Cut
Steam/Power. Power Boilers: 1 Fuel. Gas/Oil. *Steam lbs hr 35000 Press.. 100 psi*
Electricity Freq phase 60, 3 Installed H.P: 3,264 Purchased 32 000 kwh/day
Water Treatment. Daily Usage. 1.0 million g.p.d Source: Wells
Effluent Treatment. Primary Treatment: Yes
Products. Pattern tissue. 33 tons Interleaving papers, 40 tons daily

ONTONAGON

Stone Container Corp. Ctnrbd & Paper Div. One Superior Way, 49953
Tel: 906-884-2021
RR: Escanaba & Lake Superior Hwys. US Rte 45, State Rte 64
Ron Howard, Gen Mgr
Richard Jakob, Prod Mgr
J.R. Richardson, Tech/Enviro Mgr
Dave Schmidt, Paper Mill Supt
J.E. Asiala, Ppr Mach Supt
S.G. Dimitrovich, Ppr Mach Supt
Greg Anderson, Pulp Supt
Mark Szczepanik, Supt, Pwr & Util
Peter J Whiteneck, Empty Reels Mgr
James Walchuk, Mgr, Engrg & Maint
Robert Anttila, Maint Supt
Wayne Boucher, Supt, I & E
James P Ninefeldt, Contr
Robert Schon, Mtrls Mgr
Woodhandling and Preparation Chip Storage Capacity: 50,000 tons. Mobile Equipment: 1 Pettibone Cary-Lift, 2 D-7 dozers. Chip Handling: Rader pneumatic. Sawdust Handling: Rader drag chain. Chip Screens: three-stage Rader disc. Avg. Daily Use of Peeled Pulpwood: 1100 tons purchased hwd chips.
Pulp Mill Semi-Chemical, Avg. Daily Prod.: Sodium Carbonate, Unbl Hwd: 600 tons Continuous Digesters: 2 Pandia
Chemical Recovery Plant. Evaporators: 1 six-body, four-effect Goslin, Copeland fluidized bed reactor
Pulp Processing: Hot Stock Refiners. 2 Sunds. Washers 1 Eimco, 1 Swenson
Paper Mill Stock Preparation: Pulpers: 3. Refiners. 4 Bolton Emerson, 5 Sprout-Waldron. Screens: 1 Bird Centriscreen Cleaners: Bauer Centricleaners. Consistency Regulators. DeZurik
Paper Machines. 1 Pusey & Jones Fourdrinier 177" Width 160" Trim 1500 fpm
1 Black Clawson Fourdrinier 180" Width 162" Trim 2300 fpm.
Dryers. Drums. 120 Calenders. 2 Winders: 2.
Steam/Power. Power Boilers: 1, 3 package Fuel: Gas, Coal Oil, Bark Steam, lbs hr.: 350,000 Press. 1500/250/175/70 psi
Electricity Freq, phase: 60, 3 Installed H.P.. 13500 Purchased: 35% Generated: 65%. Turbogenerators. 1 GE, 15,000 kw.
Water Treatment. Daily Usage, 4 5 million g.p.d Source: Lake Superior. Primary Treatment: None.
Effluent Treatment. Primary Treatment: 1 Clarifier. Secondary Treatment clarifier, activated sludge, gravity thickener, belt filter press
Products. Semichemical corrugating medium, 730 tons daily

OTSEGO

Menasha Corp. Paperboard Div 320 N Farmer St, 49078 (PO Box 155 Otsego, MI, 49078-0155)
Tel: 616-692-6141 Fax 616-692-2060
RR ConRail siding Hwys US Rte 131, State Rte 89
John Bonham, Gen Mgr
Andre Fischbach, Prod Mgr
David Merkel, Tech Mgr
S J Rosenthal, Maint Mgr
Jim Szaroletta, Engrg Mgr
Al Coleman Pwr & Rcvry Mgr
Jeff Burleigh Prchsg Mgr
Cindy Bezaury Human Rsrcs Mgr
Tim Howard Contr
Woodhandling and Preparation 2 hydraulic truck dumpers chip thickness screening Avg Daily Use of Peeled Pulpwood 750 green tons purchased chips
Pulp Mill Semi-Chemical Avg Daily Prod . Unbl Hwd.. carbonate cook 320 tons Continuous Digesters. 1 vertical Asplund Defibrator
Chemical Recovery Plant Recovery Boilers: Dorr Oliver (SLI) fluid bed reactor
Pulp Processing Stock Refiners 3 Sprout-Waldron primary Washers: Black Clawson brown stock.
Paper Mill Stock Preparation Pulpers: Secondary fiber system 1 1 14' Hydrapulper. 5 HDC's. 1 fiberizer. 2 barrier screens. 1 deflaker, three-stage cleaning

MHI-00316

Pulpers: Secondary fiber system 2: 1 16' Hydrapulper, 3 HDC's, 2 LDC's, screening, multiple stage reverse cleaning. Total capacity of both systems, 700 tpd
Paper Machines. 1 Fourdrinier 176" Width 163" Trim 3000 fpm with 1 600 pli suction press, 1 8500 pli Extended Nip press, 54 dryers.
1 Fourdrinier 96" Width 85" Trim 1500 fpm with 2 blind drilled presses, 43 dryers.

Steam/Power. Power Boilers: Cogeneration Plant: 2 Solar Mars T-15,000 gas turbine generators, 10,000 kw cap. ea. Steam, lbs hr.: 360,000 cap. Press., 200 psi.
Power Boilers: 1 package. Fuel: gas, oil. Steam, lbs hr., 250,000
Electricity: Purchased: 5,000 kw.

Water Treatment. Daily Usage, 2.2 million g.p.d. Source: Wells.

Effluent Treatment. Secondary Treatment: Aeration pond.

Products. Semichemical corrugating medium, 830 tons daily

Rock-Tenn Co. Paperboard Products Div. 431 Helen Av, 49078
Tel: 616-692-6211 Fax: 616-692-6581
RR: ConRail siding. Hwys: Near US Rte 131, 2 mi; On State Rte 89.
Walter K Lancaster, Vice Pres, Gen Mgr
Guy Rensi, Ppr Mill Supt
Jack Harvey, Plant Engr
Dave Johnson, Prod Cnvtg Mgr
Ron Anglin, Cnvtg Mgr
Rhonda Slayton, Cust Srvc Mgr
Bill Lee, Wstrn Sales Mgr
Matt Zenal, Salesman
Dan Siller, Salesman

Paper Mill Stock Preparation: Pulpers: 1 3000 lb Morden Slushmaker, 3 Hydrapulpers. Screens: 8. Refiners: 2 34" Jones DD, 1 Bauer double disc. Jordans: 4. Cleaners: Black Clawson, Bird filler, 1 asphalt dispersion unit.
Paper Machines. 1 Eight-Cylinder 140" Width 126" Trim
Dryers. Drums: 163. Calenders: 2.
Coaters. Off Machine. 1 86" Egan PE extrusion coater

Steam/Power. Power Boilers: 3. Fuel: Coal/Gas/Oil. Steam, lbs hr., 134,000. Press., 875/300 psi.
Electricity Freq, phase: 60,3. Installed H.P.: 8000. Purchased. 41,000 kwh/day Generated: 64,000 kwh/day Hydroelectric: 4000 kw Westinghouse, 3000 kw Stal Laval.

Water Treatment. Daily Usage, 450 M.g.p.d. Source: 4 Wells Primary Treatment: Chlorination. Secondary Treatment, iron stabilization.

Effluent Treatment. Primary Treatment: 2 clarifiers. Secondary Treatment: 2 stabilization basins, 8 aerators.

Products. Plain and bending chip, filled and solid news, jute lined, woodgrain, laminated specialties, building, polyethylene coated boards, 250 tons daily

PALMYRA

Sorenson Paperboard Corp. 6240 E US Rte 223, 49268 (PO Box 135, Palmyra, MI, 49268)
Tel 517-263-5160 Fax 517-265-3604
Hwys: On US Rte 223, Near US Rte 23, IS-75
Merritt Sorenson Pres
Cathleen Sorenson-Goll, Vice Pres, Sec
Judith Sorenson Treas
Sue Willnow Sales Srvc, Office Mgr

Paper Mill Stock Preparation Pulpers, 1 10', 1 12', 1 16 Hydrapulpers. Screens 6 P-12 pressure. Refiners 2 Bauer disc. Jordans: 3 Other Eqt.: 1 1000 gpm and 1 1500 gpm Sveen Pedersen savealls
Paper Machines 1 Beloit Six-Cylinder 80" Width 78" Trim

Steam/Power. Power Boilers Fuel Gas. Press., 150 psi
Electricity Freq, phase 60, 3. Purchased: 100%.

Water Treatment. Daily Usage, 120 M.g.p.d. Source. River

Effluent Treatment. Primary Treatment: Yes.

Products. Chipboard kraft-lined, can, tube and drum stock pad stock 80 tons daily

PARCHMENT

Crown Vantage Inc. Packaging Papers Group 100 Island Av, 49004-1394
Tel: 616-383-5000 Fax: 616-384-6217
RR: ConRail, CK & S, siding Hwys: On US Rte 131; Off State Rte 43.
James Buroker, Opers Mgr
John J Drenth, Mgr, UM&E
Willy Beckman, Mgr Mfg Srvcs
Thomas P DeWolff, Total Qlty Mgr
Donald Lewis, Gen Supt
Phil Picard, Gen Supt
Denise Trainer, Tech Dir
Roy W Kemppainen, Mgr Pdct Devl
Carne Kovtan, Contr
Robert H Russel, Prchsg Mgr

Paper Mill Stock Preparation: Pulpers: 1 6000 lb, 1 2000 lb and 2 4000 lb Morden Slushmakers, 1 2500 lb Pulpmaster, 1 Barracuda, 2 6000 lb and 1 1000 lb Hydrapulpers. Beaters: 2 2500 lb. Vortex, 3 2500 lb. Horne, 2 2000 lb. Jones. Refiners: 5 34" disc (1 800 hp, 4 700 hp). Screens: Bird Centriscreen. Jordans: 8 Majestic, 17 Fibremaster.
Paper Machines. 1 Horne Harper Fourdrinier 117" Width 104" Trim 750 fpm
1 Pusey & Jones Fourdrinier 163" Width 148" Trim 1100 fpm.
1 Bagley & Sewell Fourdrinier 165" Width 148" Trim 1400 fpm.
1 Beloit Fourdrinier 167" Width 148" Trim 1800 fpm.
1 Yankee Fourdrinier 139" Width 126" Trim 1100 fpm.
1 Yankee Fourdrinier 139" Width 126" Trim 1350 fpm
Dryers. Calenders: 5. Size Presses: 5.
Coaters, Off Machine. Air Knife: 1. Blade: 3. Solvent: 1.
Finishing Plant. Supercalenders: 2. Rewinders: 2.

Steam/Power. Power Boilers: 3 Fuel: Gas/Oil. Steam, lbs hr.: 400,000.

Water Treatment. Daily Usage, 5.0 million g.p.d. Source: Well.

Effluent Treatment. Primary Treatment: Clarifier Secondary Treatment: Aeration lagoon.

Products. Parchment, bond, greeting card, coating base, MG and MF waxing, MG and MF foil backing, MG and MF bag, dry waxed, lightweight coated, coated bag, fluorochemical treated, lightweight publishing, NASTA spec book publishing, pressure-sensitive and hot-melt release parchment papers. Mill No 1: 100 tons daily. Mill No 2: 320 tons daily.

PLAINWELL

Simpson Plainwell Paper Co. 200 Allegan St, 49080
Tel: 616-685-5851 Fax: 616-685-2597
RR: ConRail siding Hwys US Rte 131; State Rte 89
Roger L Huckendubler, Mill Mgr
Robert Green, Prod Mgr
Dennis Kelly, Gen Supt, Ppr Mfg
Scott Sleeman, Mchn Supt No 18
Richard J Thomas, Mgr Fnshng & Matl Hndlg
Steve Button, Mchn Supt No 16 & No. 17
Gary N Longworth, Mgr Engrg & Maint
Bill Boyden, Dir, Tech & Mfg Srvcs
Alan K Bruner, Supt Distrbtn
Barbara J Bradley, Prchsg Agt
Robert Tardiff, Mgr Qlty Confrnce
Kay C Woodruff, Supv, Testers
Bruce Bracken, Mgr, Emply Rels
Terry Therkildsen, Tech Srvcs Supt
Henrietta Kaye, Compt

Paper Mill Stock Preparation Pulpers 1 10,000 lb, 1 6000 lb and 1 4000 lb Batch 1 9500 lb, 1 8000 lb, 1 6000 lb Refiners 11 double disc. Jordans, 1 Stock Mixers 3 blend chests
Paper Machines 1 Fourdrinier 112" Width 98" Trim 850 fpm
1 Fourdrinier 135" Width 118" Trim 900 fpm
1 Fourdrinier 135" Width 120" Trim 2000 fpm
Dryers Size Presses: 3
Coaters, On Machine 1 120" trailing blade-rod, 190 tons daily capacity.
Finishing Plant Supercalenders 1-126", 1-130". Roll Wrapping Eqt., 1 automated line Rewinders: 2 Sheeters, 3 Trimmers, 2 Other Eqt. 1-60" dual roll embosser

Steam/Power. Power Boilers 4 Fuel Coal, Gas/Oil Steam, lbs hr., 205,000 Press 265 psi.
Electricity Freq, phase 60, 3. Purchased: 160,000 3250,000

Water Treatment. Daily Usage 2.7 million g.p.d. Source wells

Effluent Treatment. Primary Treatment 1-Clarifier Secondary Treatment Attusholz activated sludge process.

Products. Coated and uncoated book and cover, release base, technical specialties, 260 tons daily.

PORT HURON

Crown Vantage Inc. Packaging Papers Group 21 Riverview St, 48060
Tel: 810-984-5523 Fax: 810-984-5830
RR: GTW siding Hwys: IS-94, IS-69
James R Scony, Res Mgr
Brent A Earnshaw, Opers Mgr
Gregory A Howe, Contr
Alan C Crawford, Mgr, Prchsg
Robert W Ferguson, Mgr, Indl Rels
Robert A Wright, Machine Supt
Ronald G Koglin, Mgr, Proc Engrg

Paper Mill Stock Preparation: Pulpers: 8. Refiners 14. Jordans: 2.
Paper Machines. 1 No. 1 Beloit Yankee Fourdrinier 137" Width 124" Trim 1500 fpm
1: No. 2 Beloit Yankee Fourdrinier 134" Width 121" Trim 1200 fpm.
1: No. 3 Allis Chalmers Yankee Fourdrinier 150 Width 134" Trim 2000 fpm.
1: No. 4 Yankee Fourdrinier 137" Width 124" Trim 1200 fpm.
Dryers. Yankee: 3 12', 1 18' dia. units. Size Presses: 4. Calenders: 4 variable crown. Winders: 4.
Coaters. On Machine. 4 two-stream, short-dwell blade.
Finishing Plant. Rewinders: 1.

Steam/Power. Power Boilers: 3 Fuel: Oil/Gas Steam, lbs hr. 76,000. Press.: 600/200 psi.
Electricity: Freq, phase 60 3. Generated: 3 gas fired turbines, rated at 5.8 Mw ISO each; 2 51,000 lbs/hr waste heat recovery boilers.

Products. Lightweight coated, release treated, for mounting, twisting, soft calendered, double side coated, MG bleached, jumbo rolls only, 170 tons daily.

E.B. Eddy Paper Inc. (Affl. of E.B. Eddy Forest Products Ltd.) 1700 Washington Av, (PO Box 5003, Port Huron, MI, 48061-5003)
Tel: 810-982-0191 Fax: 810-982-7124
RR: GTW siding Hwys: State Rte 21, 25; Near IS-69, IS-94, 1 mi, Near Prov Hwy 402, 2 mi.
A Richard Wagner Vice Pres, Res Mgr
Joseph C Fiedler, Mtrls Mgr
C Dale Hoy, Sec, Contr
Howard L Hunter, Tech Dir
Mark Bessette, Engrg Mgr
Randall L McNeely, Util Supt
Kenneth A Wood, Maint Mgr
Hal Henry, Ppr Mach Supt
Larry Thomas, Ppr Mach Supt
S.J. Bentley, Asst Ppr Mach Supt
Alan D Cutcher, Dir Human Rsrcs
Celeste Lewis-Bradley, Mgr Prod Cntrl
Robert L Andrews, Mgr Budget & Insrnc
Richard P Cole, Gen Sls Mgr
Leon E Rymers, Mgr, Pdct Devl

Paper Mill Stock Preparation: Pulpers: 5. Screens: Refiners: 15 Cleaners: 6.
Paper Machines 1 Yankee Fourdrinier 143" Width 127" Trim 1500 fpm
1 Fourdrinier 132" Width 116" Trim 1200 fpm
1 Fourdrinier 184" Width 156" Trim 1800 fpm
1 Yankee Fourdrinier 210" Width 186" Trim 2500 fpm
Dryers. Drums 79 Yankee: 2. Size Presses: 4. Calenders 4 stacks Winders 4
Finishing Plant Roll Wrapping Eqt.: automatic Rewinders 1

Steam/Power. Power Boilers. Steam, lbs hr.: Purchased
Electricity Purchased: 80%

Water Treatment. Daily Usage, 4.5 million g.p.d. Source St Clair River

Products. Carbonizing, coil winding, coating base, for mounting, interleaving, kraft specialties, laminating, offset, opaque, grease-resistant, pan liner, lightweight printing, book, wet strength, and specialties, 270 tons daily.

QUINNESEC

Champion International Corp. (PO Box 211, Norway, MI, 49870-0211)

MHI-00317

906-779-3200 Fax: 906-779-3307 Telex: 34273
CANW Hwys: On US Rte 2
Dettinger, Vice Pres, Opers Mgr
Kibbel, Opers Coord
List, Mgr, Enviro Affrs
Plemmons, Maint & Engrg Mgr
Stephenson, Process Control Mgr
F Pontti, Cmmnty Affrs Mgr
Peterson, Pulp Mill Mgr
Young, Wdyd Mgr
Curran, Matl Srvcs Mgr
Rubberd, Rcvry & Util Mgr
Leuthain, Plant Contr
Perry, Pdct Srvcs
Lorenz, Admn/Human Rsrcs
Handling and Preparation Roundwood Storage Capacity: 8,400 cds. Chip Storage Capacity: 1,000 cds;. Barkers. 2 Murco drum.. Chippers: 1 Murco. Chip Screens: 2 Rotex. 1 Rader chip thickness system.
Kraft. Avg. Daily Prod.: Bl Hwd., 1150 a.d. of which 875 tons is Market Pulp. Continuous Digesters: 1 Kamyr vapor phase, two-vessel.
Chemical Recovery Plant. Evaporators: 1 five-effect combined falling film. Recovery Boilers: 1 B&W, 0,000 lbs steam/hr. Electrostatic Precipitators: Research Cottrell,. Lime Kilns. 1 12' x 274' Allis-Chalmers. Recausticizing System: Dorr Oliver
Plant. Sequence: Sunds oxygen delignification Cd-E/O-D-D.
Processing: Washers: 3 Dorr-Oliver brown 1 Sunds brown stock. Screens. 3 primary, 1 secondary Bird. Cleaners: Bauer Centricleaner unbleached, four-stage Noss bichd. Deckers. 2 Dorr-Oliver unbl, 1 Rauma valveless.
Drying: Fourdriniers. 1 240" KMW. Dryers: 1 air-float. Cutter-Layboys: 1 224" Lamb.
Mill Paper Machines. 1 No. 41: Beloit Fourdrinier 280" Trim 3500 fpm.
Coaters. On Machine. 2.
Steam/Power. Power Boilers: 1 B&W, 1 C-E package. Steam, lbs hr.: 675,000
Electricity: Turbogenerators. 1 30 Mw Stal-Laval
Water Treatment. Daily Usage, 17 0 million g.p.d. Source: River.
Effluent Treatment. Primary Treatment: 2 150' Eimco clarifiers. Secondary Treatment. 2 aeration basins, 2 190' clarifiers, sludge dewatering
Products. Bleached hardwood kraft market pulp, 750 tons daily. Coated free sheet, 750 tons daily

ROCHESTER

Papers Group Inc. 340 Mill St, 48307
Tel: 810-651-8121 Fax. 810-651-2792
RR: GTW siding. Hwys: US Rte 10, State Rte 150
Stanley S Luczycki, Res Mgr
Richard Marciniak, Mgr Admin
Nick Lapanowski, Ppr Mchne Supt
Gregg Hunsager, Mgr, Pdctn & Schdlg
Steve Ziolkowski, Tech Dir
Wayne Broadhead, Plant Engr
Mike Quick, Cnvtg Supt
Mary Lou Deaton, Cust Srvc
Leah Shorter, Cust Srvc
Paper Mill Stock Preparation Pulpers. 1 Jones Hi-Lo
Beaters: 1 1000 lb. Screens 1 Parker Jordans 2 Noble & Wood, 1 Jones Fibremaster
Paper Machines 1 Fourdrinier 66" Width 62" Trim
Dryers. Size Presses 1 Calenders 1 stack
Coaters, On Machine 1-62" roll saturator, 20 tons daily cap.
Off Machine 1-62" roll laminator, 12 tons daily cap.
Finishing Plant Rewinders 1-72" Cameron Sheeters. 1-72" 1-84" Trimmers 1-50" 1-84" Other Eqt. Punch Presses 2 Die Cutters. 1-32x60 Sheridan. Sewing Machines 1
Steam/Power. Power Boilers Fuel Oil Press. 100 psi.
Electricity Freq. phase 60 3 Purchased 100%
Water Treatment. Daily Usage 150 M g.p d. Source Wells.
Effluent Treatment. Primary Treatment Yes Effluent to municipal plant
Products. Absorbent, blotting, cover, impregnating, regular and wet strength filter saturated filter; industrial filter, cartridge filter coffee and vacuum filter, impregnated specialty, flameproof; creped specialties; sewn specialties, glass fiber, synthetic fiber papers; non-wovens speaker cone, photo mount, matrix papers, 18 tons daily

ROCKFORD

Converters Paperboard Co. (Subs. of Chicago Freight Car Leasing) 7734 Childsdale Rd NE, 49341 (PO Box 560, Rockford, MI, 49341)
Tel: 616-866-3421 Fax: 616-866-1114
Hwys: Near US Rte 131, 3 mi.
Larry Harris, Pres
Ron Fox, Vice Pres, Gen Mgr
Marty Reschner, Prod Supt
Harold Krieger, Tech Dir
Mike Knapp, Maint Supt

Paper Mill Stock Preparation: Pulpers: 4 Hydrapulper. Screens: 8. Refiners: 3 Sprout-Waldron. Cleaners: Black Clawson low-intensity with X-clone on filler system Consistency Regulators: DeZunk. Other Eqt.. Allied clay mixing eqt.
Paper Machines. 1 Eight-Cylinder 76" Width 69" Trim 350 fpm.
Dryers. Drums: 115-42", 12-36" dia. Calenders: 3 stacks.
Coaters, On Machine. 2 Kohler rod.
Finishing Plant. Trimmers: 1.

Steam/Power. Power Boilers: 1. Fuel: gas. Steam, lbs hr.. 60,000 Press.. 150 psi.
Electricity: Freq, phase: 60, 3. Installed H.P.: 2100 electric. 300 water. Purchased: 1500 kva.

Water Treatment. Daily Usage. 20 M.g.p.d. Source: River.

Effluent Treatment. Primary Treatment: 1 Clarifier Effluent to county sewer line.

Products. Boxboard: clay-coated, chip, news, lined and solid kraft, food grade. 100 tons daily.

TROY

★**ABTco, Inc.** Abitibi Building Products
Headquarters Location See Executive Offices section for more details

VICKSBURG

Simpson Paper Co. 336 W Washington St, 49097 (PO Box 157, Vicksburg, MI, 49097)
Tel 616-649-9200 Fax: 616-649-9299
RR: ConRail siding Hwys: Near US Rte 131; IS-94, 6 mi
Donald K Ulsh, Mill Mgr
Gary Vandien, Prod Mgr
Jeff Honour, Ppr Mchns Supt
Dick Moyle, Cnvtg Supt
Jeff Cross, Tech Dir
Claus Globig, Mgr R&D
Bruce Block, Plant Engr
John Fields, Mgr Qlty Cntrl
Bruce Kroeze Plant Contr
Tim Moore, Pur Mgr
Ronald G Markan Pers Dir

Paper Mill Stock Preparation: Pulpers: 3 Jones Pulpmaster Beaters. 2 1500 lb, 2 1000 lb Bertrams Screens 5 Refiners 3 double disc Morden, Jordans 5 Jones Imperial
Paper Machines 1 Fourdrinier 121" Width 105" Trim 300 fpm
1 Fourdrinier 132" Width 112" Trim 500 fpm
1 Fourdrinier 134" Width 114" Trim 600 fpm
Dryers Drums 122 Size Presses: 4 Calenders 3 stacks Winders 3
Coaters, Off Machine 1 52" air knife, 20 tpd.
Finishing Plant, Supercalenders 2-56", 1-48" Rewinders 6 Sheeters 3-57", 61" 61" Trimmers 3-66", 75" 110"

Steam/Power. Power Boilers 2 Fuel Gas/Oil Steam lbs hr 80,000
Electricity Purchased 100%

Water Treatment. Daily Usage, 2.5 million g.p.d. Source River, Wells

Effluent Treatment. Primary Treatment Clarifier Secondary Treatment Aeration basin, spray irrigation

Products. Rag and sulphite bond, solid and pasted bristol, check, book (antique, eggshell, EF, MF, SC, coated, offset), cover, embossing, sulphite drawing, greeting card, ledger, text and cover, linen finish, safety, photographic base, reproduction, writing, and 100% recycled text papers, 125 tons daily

WATERVLIET

Fletcher Paper Co. Watervliet Paper Mill (formerly Silver Leaf Paper Co.) 711 N Main St, 49098
Tel: 616-463-3141 Fax: 616-463-2850
RR: siding Hwys IS-94, State Rte 140

Pulp Mill Deinking: Avg Daily Prod. 140 tons Pulp Mill is Idle

Paper Mill Stock Preparation: Pulpers 3. Refiners 2 Sprout Waldron, 4 Hydradisc. Jordans 1 Jones Other Eqt.. Disc Savealls 2
Paper Machines 1 Beloit Fourdrinier 124" Width 110" Trim 1000 fpm, 70 tpd, 43#-116# uncoated with Measurex 2001 control system
1 Beloit Fourdrinier 138" Width 122" Trim 1000 fpm, 70 tpd, 70# and higher coated C1S with Measurex 2001 control system
Dryers. Drums: 85. Size Presses: 2. Calenders. 2 Winders. 2
Coaters, Off Machine. 1 92", 1 88", 1 70", 1 66" air knife
On Machine. 1 128" Valmet TwoStream
Finishing Plant. Supercalenders. 5 119", 66", 80", 86", 96" Rewinders: 1 96" Beloit Bi-Winder; 1 120" Beloit S-15, 1 80" Cameron duplex. Sheeters 3 76" to 101" Trimmers: 2 85", 1 100" Other Eqt.. Laminators 1 62", 600 fpm Black Clawson with flying splice. Embossers. 1 62", 800 fpm Butterworth rotary.

Steam/Power. Power Boilers: 3. Fuel: Coal, Nat Gas available. Steam, lbs hr.: 90,000. Press.. 235 psi. Electricity: Installed H.P: 450 water Purchased. 100%.

Water Treatment. Daily Usage. 700 M.g.p.d. Source: wells.

Effluent Treatment. Primary Treatment: and.

Products. No. 1 & No. 2 offset enamel text and cover with 50% recycled fiber and 20% post-consumer waste, playing card stock, greaseproof, moldproof, wet strength C1S label, coated recycled papers for commercial printing and flexible packaging, 140 tons daily
Paper Mill is Idle

WHITE PIGEON

White Pigeon Paper Co. (PO Box 277, White Pigeon, MI, 49099)
Tel: 616-483-7601 Fax: 616-483-9989
RR. ConRail siding Hwys: On US Rte 12.
William Schmidt, Pres
Dick Bennett, Dir, Mfg
Len Eggleston, Gen Supt
Frank Black, Supt
Ronald Hamilton, Tech Dir
Kenneth A Shane, Plant Contr
Patsy Brown, Prchsg Mgr
David DiBiaggio, Sales Mgr
Carol Yoogr, Sales Srvc Mgr

Paper Mill Stock Preparation: Pulpers 4 Hydrapulper Screens 6 Refiners: 5.
Paper Machines 1 seven-unit Ultraformer 110" Trim
Dryers. Drums 41 Calenders. 2.
Coaters, On Machine 2 air knife, 2 rod
Finishing Plant. Rewinders 1 Trimmers 1-85"

Steam/Power. Power Boilers 2. Fuel Oil/Gas. Steam, lbs hr. 180,000 Press: 500 psi
Electricity: Purchased 100%

Water Treatment. Daily Usage, 250 M g.p.d. Source River

Effluent Treatment. Primary Treatment Clarifier Secondary Treatment 6 Settling Basins

Products. Clay-coated boxboard, 200 tons daily

YPSILANTI

Crown Vantage Inc. Curtis Fine Papers Group 1000 N Huron St 48197
Tel 313-482-2600 Fax 313-482-1288
RR ConRail siding Hwys On IS-94
Pat Kittle Res Mgr
Tim Ellsworth Mfg Mgr
Addison D Mooken Tech Dir
Gerald Linzmeyer, Enviro Mgr
Richard Franklin, Plant Engr
Steven D Schultz, Pdct Devl Mgr

Paper Mill Stock Preparation Pulpers 1 1000, 2 2000 lb Hydrapulper Refiners 2 Sprout Waldron Screens. 1 Bird pressure Cleaners Bauer Centricleaners Consistency Regulators DeZunk Stock Mixers Lightin agitators

MHI-00318

Paper Machines. 1 Manchester Fourdrinier 90" Width 80" Trim 500 fpm.
Dryers. Drums: 29-36". Size Presses: 1. Calenders: 1 stack. Winders: 1.
Finishing Plant. Roll Wrapping Eqt.: 1 line. Rewinders: 1-78" Langston. Sheeters: 1-85", 65" Hamblet. Trimmers: 1-110" Lawson, 1-85" Seybold. Other Eqt.: Embossers: 2. Printer-Embossers: 1. Pasters: 1 duplex.

Steam/Power. Power Boilers: 1. Fuel: Gas/Oil. Steam, lbs hr.: 40,000. Press.: 120 psi.
Electricity: Freq, phase: 60, 3. Installed H.P.: 1200. Purchased: 25000 kwh/day.

Water Treatment. Daily Usage, 500 M.g.p.d. Source: Wells, River. Primary Treatment: yes.

Effluent Treatment. Primary Treatment: City sewer system.

Products. Colored cover and text, colored envelope, colored and sulphite and bleached kraft specialties, 50 tons daily.

MINNESOTA

BEMIDJI

Georgia-Pacific Corp. Hardboard Plant 280 Nymore Rd NE, (PO Box 518, Bemidji, MN, 56601)
Tel: 218-751-5140 Fax: 218-751-5831
RR: BN siding. Hwys: US Rte 2, 71, 371.
Gary Wilson, Res Mgr
Paul Malterude, Mgr, Traf & Sls

Woodhandling and Preparation Barkers: 1 21" Manitowoc. Chippers: 1 12' Hansel. Avg. Daily Use of Peeled Pulpwood: 100 cds aspen.

Pulp Mill Defibrated Wood Pulp. Avg. Daily Prod.: Unbl. Hwd., 100 tons Continuous Digesters: 2 30' Grenco.

Paper Mill Paper Machines. 2 Hardboard dry formers with 49"x97.5" presses and drying systems.

Steam/Power. Power Boilers: 1. Fuel: Bark. Steam, lbs hr.: 14,000. Press., 200 psi.
Electricity: Freq, phase: 440v, 60, 3. Installed H.P.: 2350 electric. Purchased: 30,000 kwh/day.

Water Treatment. Source: City.

Products. Standard panel and tempered hardboard (⅛" to ⅜" thickness) and special types, S2S, 290 Msf daily cap. (100 tons daily).

BRAINERD

Potlatch Corp. Northwest Paper Div. 1801 Mill Av NE, 56401
Tel. 218-828-3200 Fax: 218-828-5118
RR: Burl Nthrn. Hwys: US Rte 210, 371.
Thomas G Palkie, Vice Pres, Mfg
Roderick W Petron, Mgr, Qlty Srvcs
Thomas J Westerback, Mgr, Ppr Mfg
Erwin D Kosloski, Mgr, Tech Srvc
Daryl L Hartman, Mgr, Mech Srvc
Robert A Krell, Mgr, Emply Rels
Elmer W Walls, Mgr, Fnshg & Shppg
Charles O Provost, Mgr, Ctg
David E Dinham, Prchsg Mgr
Al D Evans, Plt Contr

Paper Mill Stock Preparation: Pulpers: 3 Hydrapulpers Refiners 4 disc. Jordans: 1
Paper Machines. 1 Fourdrinier 128" Width 112" Trim 1500 fpm.
1 Fourdrinier 200" Width 180" Trim 2000 fpm.
Dryers Size Presses: 1 112" Calenders: 2.
Coaters. Off Machine 1 112" two-station blade.
On Machine. 1 180" Billblade
Finishing Plant Supercalenders. 2-134", 2-121" 1-80" Rewinders 7. Sheeters: 6, 4 precision. Trimmers 1

Steam/Power. Power Boilers: 4 Fuel: Gas/Coal. Steam, lbs hr. 260,000
Electricity Purchased 200,000 kwh/day Generated. 54,000 kwh/day

Water Treatment. Daily Usage. 3.0 million g.p.d. Source River Primary Treatment. Infilco accelerator

Effluent Treatment. Primary Treatment: 1-90' Beloit-Passavant clarifier Secondary Treatment: 9 12'x26' Bio-Surf units. 1-85' Eimco clarifier

Products. Coated offset text and cover (gloss, matte, dull), 395 tons daily

CLOQUET

★**Potlatch Corp.** Northwest Paper Div. 207 Av C, 55720 (PO Box 510, Cloquet, MN, 55720-0510)
Tel: 218-879-2300 Fax: 218-879-2349
Headquarters Location. See Executive Offices section for more details.
RR: Burl Nthrn, Duluth & Nrthestrn RR. Hwys: State Rte 33, 45.
Thomas A Biazzo, Vice Pres, Mfg, Cloquet Unit
Charles E Hartley, Prod Mgr, Pulp, Pwr & Rcvry
Glen H Lundin, Mgr, Paper Mfg
Richard L Morgan, Mgr, Pwr Rcvry & Chem Prep
David F Peterson, Mgr, Tech Srvc
Larry D Slater, Mgr, Pulp Mfg
Barbara A Reher, Prod Mgr, Ppr Cnvrsn
Robert R Becker, Prod Mgr, Info Sys
William H Erickson, Mgr Ctg
Joseph P Prevendar, Mgr, Engrg
Michael A Rossing, Mgr, Maint
Robert M Kainu, Mgr Wood Prprtn
John D Hanson, Mgr, Fnshg & Shppg
James E Buchner, Mgr Empl Rels
Jack E Munter, Pur Agt
Richard J Brenner, Div Contr

Woodhandling and Preparation Roundwood Storage Capacity: 30,000 cds. Barkers: 1 84' drum. Chippers: 1 120", 12 knife. Chip Screens: 2. Avg. Daily Use of Peeled Pulpwood: 190 cds swd, 700 cds hwd.

Pulp Mill Kraft. Avg. Daily Prod.: Bl. Swd., 100 tons Bl. Hwd., 440 tons Batch Digesters: 10.
Chemical Recovery Plant. Evaporators: 1 six-effect HPD with concentrators. Recovery Boilers: 1 B&W. Lime Kilns: 1 calciner. Recausticizing System: 1.
Bleach Plant. Sequence: Hwd: D-E-D-E-D; Swd: D-E-D-D.
Pulp Drying: Wet Machines: 1 Impco feltless.

Paper Mill Stock Preparation: Pulpers: 4 Hydrapulpers. Refiners: 9 disc. Jordans: 3.
Paper Machines. 1 Fourdrinier 216" Width 192" Trim 1500 fpm.
1 Fourdrinier 216" Width 196" Trim 2500 fpm.
Coaters. On Machine. 2 200" Billblade.
Off Machine. 1 200" trailing blade.
Finishing Plant. Supercalenders: 2 194". Rewinders: 3. Sheeters: 4 precision. Trimmers: 2.

Steam/Power. Power Boilers: 3. Fuel: Coal/Gas/Oil/Bark. Steam, lbs hr.: 550,000.
Electricity: Purchased: 300,000 kwh/day. Generated: 400,000 kwh/day.

Water Treatment. Daily Usage, 13.0 million g.p.d. Source: River, Lake Superior.

Effluent Treatment. Primary Treatment: discharge into P.O.T.W.

Products. Coated offset, text and cover, coated web papers, 540 tons daily.

USG Interiors Inc. 35 Arch St, 55720-1592
Tel: 218-879-2800 Fax: 218-879-3673
RR: Duluth & Nrthwstrn, BN, Milw, siding. Hwys: Near US Rte 61, IS-35, 3 mi; State Rte 33, 45.
Dom Dannessa, Plant Mgr
Ray Nyholm, Mfg Mgr, Board
Dan Schmidt, Mfg Mgr, Board
Bruce J Kahara, Mgr, Mfg Engrg
Frank McKean, Qlty Assrnce Mgr

Paper Mill Paper Machines 1 Board Fourdrinier 113" Width 107" Trim.
1 Board Fourdrinier 104" Width 101" Trim
1 Board Fourdrinier 169" Width 159" Trim
Coaters. On Machine. 3 roll

Steam/Power. Power Boilers: Fuel: Coal/Gas/Oil. Press., 275 psi
Electricity: Freq, phase 13,800v, 60, 3 Purchased: 100%.

Water Treatment. Source River

Effluent Treatment. Primary Treatment: Yes.

Products. Board mill: mineral ceiling panels and decorative tile

DULUTH

Georgia-Pacific Corp. Hardboard Plant 14th Av W and Waterfront St, 55802 (PO Box 16267, Duluth, MN, 55816-0267)
Tel 218-727-6891 Fax. 218-727-3935
RR: Burl Nthn, CNW, siding Hwys. US Rte 2, 53, 61. Near IS-35, 1 5 mi
D.E. Coons, Gen Mgr
Phil Sutula, Plant Mgr
Dick Chambers, Mfg Mgr
David Fredrickson, Engrg
Tom Lochner, Tech Dir
Mike Henderson, Mgr Fnshg
David Gellerstedt, Mgr Prchsg
Bruce Elletson, Traffic Mgr

Woodhandling and Preparation Chippers: 1 10 knife Chip Screens. 2. Avg. Daily Use of Peeled Pulpwood: 325 cds (rough basis)

Pulp Mill Defibrated Wood Pulp Avg. Daily Prod.: 350 tons Continuous Digesters 1 Asplund Defibrator and 3 42" 1CP Sprout Waldron refiners.
Pulp Processing. Stock Refiners: 6 36-2 Sprout Waldron.

Paper Mill Paper Machines 4 Hardboard Formers with 4'x8', 5'x9', 4'x16' and 5.5'x16' presses.

Steam/Power. Power Boilers: 5. Fuel: Gas, Oil, Wood waste. Steam, lbs hr.: 80,000. Press.: 200 psi.
Electricity: Freq, phase: 60, 3. Installed H.P.: 6200. Purchased: 100%.

Water Treatment. Daily Usage, 222 M.g.p.d. Source: Lake. Primary Treatment: Chlorination.

Effluent Treatment. Primary Treatment: Concentrated white water to molasses via evaporator, with distillate to joint industrial/municipal plant.

Products. Standard treated hardboard, S1S, 350 tons daily (835 Msf, 1/8" basis).

Lake Superior Paper Industries (Div. of Consolidated Papers Inc.) 100 N Central Av, 55807-2400
Tel: 218-628-5100 Fax: 218-628-5301
RR: BN. Hwys: IS 35; Hwy 2 in W Duluth.
David L Beal, Opers Mgr
Paul A Heller, Prod Mgr, Fiber Opers
Mark G Swenson, Prod Mgr, Paper Opers
Ken Snell, Pulp Mill Mgr
Rene Quirion, Paper Mill Mgr
Paul Thomsen, Prof Srvcs Mgr
Tom Brown, Maint Team Mgr
James P Olds, Mtrls Mgr
David A Evens, Engrg Mgr
Rick Agar, Site Logstcs, Fnshg Ldr
Brian Marmorine, Pulp Mill Tech Mgr
Kenneth Chartier, Paper Mill Tech Mgr
David Kask, Engrg Process Control Mgr
James Bittinger, Pulp Mill Maint Mgr
Debra McGovern, Enviro Mgr
Donavon E Hall, Wdyd Team Ldr
Carl Brown, Contr
Larry Teague, Human Rsrcs Mgr
Jack H LaVoy, Pub Affrs Mgr

Pulp Mill Ground Wood, Stone. Avg. Daily Prod.: 440 tons Grinders: 6 73 tpd Tampella pressurized.
Pulp Processing: Washers: 2 Rauma pressure.

Paper Mill Paper Machines. Twin-Wire Formers: 1 Voith 317" Width 295" Trim 4600 fpm.
Dryers. Winders. 2 Jagenberg Vari-top.
Finishing Plant. Supercalenders: 3 12-roll Wartsila Appleton Rewinders: 1 Jagenberg Vari-roll.

Steam/Power. Power Boilers: Press.: 800 psi. steam supplied from adjacent Minnesota Power Hibbard power plant.
Electricity: Turbogenerators: 1 9000 kw Turbodyne.

Products. Premium supercalendered (SCA) groundwood printing papers, 670 tons daily.

Superior Recycled Fiber Industries (Affl. of Lake Superior Paper Industries) 55807

Pulp Mill Deinking Avg Daily Prod.: 250 tons of which 250 tons is Market Pulp.

Products. Deinked market pulp from office wastepapers, 250 tons daily Mill adjacent to Lake Superior Paper mill

GRAND RAPIDS

Blandin Paper Co. (Subs of Fletcher Challenge Canada Ltd.) 115 First St SW, 55744-3699
Tel. 218-327-6200 Fax. 218-327-6212
RR Burl Nrthrn siding Hwys: US Rte 2, 169: State Rte 38
A.C. Wallace, Pres, CEO
Douglas A Johnston, Group Vice Pres, Mfg
Brian M Vergin, Sr Vice Pres, Mktg
A.E. Radecki, Sr Vice Pres, Fin & Admn
John D Ward, Sr Vice Pres, Tech Devl/Prchsg & Enviro
Ralph B O'Connor, Pres, Blandin Sls Corp (Chicago)
J.S Deindorfer, Vice Pres, Mktg (NY)
Edward M Zabinski, Vice Pres, Human Rsrcs
Tom Newman, Mgr, Elec & Instr Maint
Joseph Parkinen, Mgr, Engrg
Timothy A St. Cyr, Supt, Pwr
Walter J Rew, Tech Dir
Russ Davis, Supv, Qlty Cntrl
Steve Koski, No 3 PM Line Supt

MHI-00319

TRYG R ANGELL LTD
SEARCH PLACEMENT
TRYG R. ANGELL
4021 MAIN STREET • STRATFORD, CT 06479
Tel: 203-377-4541 Fax: 203-377-4545

Products. Bond writing, vellum bristols, wedding, typewriter text and cover art, drawing, papeteries, greeting card deckle-edge, embossed, plate-finish, watermarked, business and printing papers, duplex boards 122 tons daily, total of Woronoco, and Millers Falls mills

WORONOCO

Strathmore Papers Div of International Paper Co 34 Valley View Av 01097
Tel 413-562-3770 Fax 413-572-2226, 2226
RR B&M Hwys On US Rte 20
Norman Marsolan Plant Mgr
James A Stevens, Supt, Mill No 2
Carl Bednarsky Asst Supt
Brian Meade, Chem
Shen L Cruz, Chem
Paper Mill Paper Machines 1 Fourdrinier 66" Width 56' Trim
1 Fourdrinier 77" Width 68" Trim (idle)
1 Fourdrinier 110" Width 96" Trim
Products. Mill No 1 writing, text, cover, artist's, papeterie papers (idle) Mill No 2 Rag specialty, bond, writing, text and cover papers

MICHIGAN

ADRIAN

★**Simplex Products Group**
Headquarters Location See Executive Offices section for more details

ALPENA

ABTco. Inc. (Subs of ABT Building Products Corp) 416 Ford Av 49707
Tel 517 354-2121 Fax 517-356-2504
RR Detroit & Mackinac Siding Hwys US Rte 23 State Rte 32
K C Nielsen Plant Mgr
T E Ludwig Sr Maint Mgr
H L Scull Plant Supt
L M Plowman Mgr Pdct & Process Devl
A R Dean Mfg Supt
R W Murdock Engrg Mgr
A J Nadeau Power Plt & Enviro Supt
J E Falk Qlty Cntrl Supt
L E Springer Plt Contr
W K Hunter Prchsg Supv
M J Hanlon Human Rsrcs Mgr
D A Werblow Woods Mgr
Woodhandling and Preparation Barkers 2 26' mechanical Chippers 1-96 12-knife Avg Daily Use of Peeled Pulpwood 450 cds (rough basis)
Pulp Mill Defibrated Wood Pulp Avg Daily Prod 400 tons Batch Digesters 4 Bauer Rapid-Cycle
Pulp Processing Stock Refiners 9 Bauer disc
Paper Mill Stock Preparation Pulpers 1 Jones repulper Refiners 3 Bauer 2 Sprout-Waldron pump-thru
Paper Machines 1 Hardboard Fourdrinier 160" Width 156 Trim
1 Hardboard Fourdrinier 50 Width 48 Trim
Finishing Plant Other Eqt 2 20-deck presses 1 22-deck press
Steam/Power Power Boilers 3 Fuel Coal/Wood Waste Steam lbs hr 240 000 Press 900/300 psi
Electricity Purchased 100 000 kwh/day Generated 200 000 Turbogenerators 1 GE 7500 kva
Water Treatment Daily Usage 1 500 million gpd Source River Primary Treatment Screening
Effluent Treatment. Primary Treatment Clarifier Secondary Treatment Aeration Lagoons Tertiary Treatment Sludge dewatering and drying
Products S1S and S2S hardboard 360 MMsf annually (400 tons daily)

★**Fletcher Paper Co** (Subs of Fletcher Corp) 318 W Fletcher St 49707
Tel 517 354 2131 Fax 517 356 5288
Headquarters Location See Executive Offices section for more details
RR D&M siding Hwys US Rte 23, State Rte 32
James A Kelley Vice Pres, Opers
Bill England Pur Agt
Tom A Woods, Traffic Mgr
Jeff Armstrong, Mgr Ctd Pdcts
Jim Matuzak, Maint Supv
George Snedden, Supt Pwr
James Nensewitz, Tech Asst, Qlty Cntrl
Michael Bushey, Sr Devl Chemist
Paper Mill Stock Preparation Pulpers 1 high-consistency, 3 Hydrapulpers Screens 2 Selectifier Refiners 5 Jones DD Jordans 3 Jones
Paper Machines 1 Fourdrinier 112" Width 100" Trim 1000 fpm
1 Fourdrinier 112" Width 100" Trim 1150 fpm
Dryers Drums 62 Size Presses 2 Calenders 2 stacks Winders 2
Coaters Off Machine 1 60" Roll-Blade-Gravure, 10 tpd capacity
Finishing Plant Sheeters 1-67" precision Trimmers 2, 65" 85'
Steam/Power. Power Boilers 2 Fuel Gas & Oil, Coal Steam, lbs hr 140,000 Press 450 psi
Electricity Freq, phase 60, 3 Generated 72,000 kwh/day
Water Treatment. Daily Usage 1 1 million g p.d Source Thunder Bay River Primary Treatment Yes
Effluent Treatment. Primary Treatment 1 Clarifier
Products. Bible offset, carbonizing, chart coating base label manifold flame retardant, mold inhibiting, pattern, map onionskin opaque bond release, saturating, sensitizing, technical wet strength and writing papers 85 tons daily

BATTLE CREEK

American Fibrit Inc. (Subs of Becker Group Inc) 76 Armstrong Rd 49015-1079
Tel 616-968-3000 Fax 616-968-0198
RR ConRail Hwys On State Rte 96 Near IS-94 8 mi
Daniel W Schoenbeck Plant Mgr
Pulp Mill Ground Wood Refiner Avg Daily Prod TMP 30 tons Refiners 1 1250 hp L36 Defibrator primary 1 200 hp ROP 20 secondary
Paper Mill Stock Preparation Pulpers 1 Hydrapulper
Paper Machines 3 pulp molding machines of own design
Products. Molded wood fiber products for automotive interior trim

Michigan Paperboard Co. (Affil of Field Container Co L P) 79 E Fountain St 49017-4198
Tel 616-963-4004 Fax 616-963-1306
RR ConRail GTW siding Hwys Near IS-94 IS-69 3 mi Near State Rte 66 37 89 3 mi
John Goll Pres
Ron Fox Mfg Mgr
C Tobey Mfg Supt
Gary McMillan Plant Engr
Mike Scholly Qlty Mgr
Dan Conway Contr
James Minick Indl Rels Mgr
John Pasquill Prchsg Mgr
Paper Mill Stock Preparation Pulpers 3 4000 lb Morden 1 14 1 20 Hydrapulper 1 3000 lb Refiners 1 disc Jordans 3 Screens Centrisorter
Paper Machines 1 seven unit Stevens Former 120 Trim 750 fpm
1 six unit Ultraformer 98 Width 96 Trim 450 fpm
Dryers Drums 60
Steam/Power Power Boilers 2 Fuel Gas Oil Steam lbs hr 80 000
Products. Combination boxboard 340 tons daily

Waldorf Corp. 177 Angell St 49015-1958
Tel 616 963 5511 Fax 616 969-7166
RR ConRail GTW siding Hwys IS-94 IS-69 State Rte 66 37 89
Tom Lawson Vice Pres Mill Opers
John Davis Mill Supt
Kevin Sutton Prod & Mach Supt
Gary Drouin Plant Engrg & Maint Supt
Beth A Appelt Tech Supt Qlty Mgr
Kimberly Cousineau Prcrmnt Spclst
Chris Hansen Contr
Paper Mill Stock Preparation Pulpers 1 300
Morden Slushmaker 1 14 1 16 1 20 Hydra
pers Screens 8 Centrisorter Refiners 4 Sp
Waldron disc Cleaners 3 systems
Paper Machines 1 five-unit Beloit Bel-Bond for
146" Width 130" Trim 1064 fpm
Dryers Drums 85 60" Calenders 3 stacks
Velocity 8 gas infrared Winders 1 Beloit
Coaters On Machine Kohler blade, Black Cla
air knife 450 tpd capacity
Finishing Plant Sheeters 1 Clark Aiken
Steam/Power Power Boilers 2 Fuel Oil/G
Steam lbs hr 140,000
Electricity Purchased 212,500 kwh/day Ge
ated 37 500 kwh/day Turbogenerators 1 El
2000 kw/kva
Water Treatment. Daily Usage, 750 M.g.p.d Sou
River
Effluent Treatment. Primary Treatment 2 flota
clarifiers Effluent to joint industrial/muni
plant
Products. White clay coated, white lined chip bo
375 tons daily

CHEBOYGAN

Great Lakes Tissue Co. 437 S Main St, 49721
Tel 616-627-0200 Fax 616-627-0242
Hwys On US Rte 27
Clarence Roznowski Pres
F Raymond Stoveken, Vice Pres, Gen Mgr
Dave Lahaie Mfg Mgr
Al Cronan Ppr Making Mgr
Keith Foster Pulp Mgr
Bud La Haie Elec Engr
Elmer Kitchen Mech Engr
Regina Couture, Logistics
Michael Werden Acctg Mgr
Paper Mill Paper Machines 1 Yankee Fourdrin
128' Width 126' Trim single-felted
1 Yankee Fourdrinier 128' Width 126" Trim
Products. All dry-crepe tissue grades (9 2 - 20 lb
sis weight range/stretch 6% to 65% range) Sin
and two ply sanitary tissue 100 tons daily

CONSTANTINE

Simplex Products Group Centreville Rd, E 3rd S
49042 (PO Box 187 Constantine, MI, 49042)
Tel 616-435-2425 Fax 616-435-7510
RR ConRail siding Hwys On US Rte 131
David Erickson Tech Mgr
Barry Lusk Maint Supv
Roy Farmer Shpng/Rcvng Supv
Vicky Dodson Office Mgr
Paper Mill Stock Preparation Pulpers 2 Screens
Refiners 4 1 deflaker Other Eqt 1 disc filter
Paper Machines 1 Eight-Cylinder 112" Wid
100" Trim
Dryers Drums 4 sets hi-stack
Finishing Plant Other Eqt Laminators 2
Steam/Power Power Boilers 2 Fuel Gas/O
Press 150 psi
Electricity Freq phase 440 v 60 3 Purchase
100%
Water Treatment. Daily Usage 70 000 g.p.
Source River
Effluent Treatment. Primary Treatment None Effu
ent to municipal plant
Products Chipboard test liner 150 tons daily

DETROIT

IPMC Inc. (IVEX Paper Mill Corp) (Div of IVEX Pack
aging Corp) 9125 W Jefferson Av 48209
Tel 313-842-0042 Fax 313-842 1055
RR ConRail siding Rouge Yard Hwys IS-75
Jerry Buchheit Res Mgr
Gasper Calandrino Engrg Mgr
Paul Zajas Prod Mgr
David Ariganello Prod Mgr
Louis J Sturm ISO Mgr
Edward Kill Tech Mgr
Kris E Brady Prchsg Mgr
Cindy Kszysiak Cust Srvc Mgr
Carol Zajas Human Rsrcs Mgr
Douglas A Murray Contr

MHI-00320

Jim Cunningham, Sales Mgr

Paper Mill Stock Preparation: Pulpers: 6. Refiners: 9 double disc.
Paper Machines. 1 Yankee Fourdrinier 133" Width 123" Trim 900 fpm.
1 Yankee Fourdrinier 135" Width 124" Trim 1500 fpm.
1 Yankee Fourdrinier 137" Width 126" Trim 1300 fpm.
1 Yankee Fourdrinier 144" Width 130" Trim 2200 fpm.
Dryers. Drums: 22 drums. Yankee: 4. Calenders: 4 stacks. Winders: 4.
Finishing Plant. Roll Wrapping Eqt.: automatic. Rewinders: 1.

Steam/Power. Power Boilers: 3. Fuel: Gas/Oil. Electricity: Purchased: 35%. Generated: 65%.

Water Treatment. Daily Usage. 450 M.g.p.d. Source: River.

Effluent Treatment. Primary Treatment: Effluent to municipal system.

Products. Lightweight MG papers (8.5-35 lb basis weights) for waxing, twisting, foil lamination, packaging, and specialties; recycled papers, bleached, natural and colored kraft converting specialties, creped specialty grades (16-50 lb basis weights), 175 tons daily.

ESCANABA

Mead Corp. Publishing Paper Div. 7100 County Rd 426, 49829 (PO Box 757, Escanaba, MI, 49829-0757)
Tel: 906-786-1660 Fax: 906-789-3221, 789-3206
RR: C&NW, WI Cntrl sidings. Hwys: On County rd 426; Near US Rte 2, 41; State Rte 35.
Gary L Butryn, Pres, Gen Mgr
Kirk D Bruno, Vice Pres, Admin
Steven E Rosenberg, Vice Pres, Sls & Mktg
W.H. Goode, Vice Pres, Mfg Opers
G.W. Brown, Vice Pres, Prod Tchnlgy
R.J. Papaik, Vice Pres, Engrg & Project
Mike McDonald, Vice Pres, Human Rsrcs
James Okraszewski, Vice Pres, Woodlands
L King, Gen Supt of Pulping
Robert Blake, Mgr, Qlty Assrnce
Dave Bonistall, Enviro Control Mgr
Mike Fornetti, Gen Supt, Pwr & Util
Mark H Miller, Mgr, Mktg Srvcs
Frank N Kissel, Contr
Joseph P Hodge, Mgr, Prchsg Srvcs
Eugene Malarsky, Natl Sls Mgr
Kel Smyth, Public Rels & Cmmctns Mgr

Woodhandling and Preparation Chip Handling: Rader pneumatic system. Barkers: 2 14.5'x80' drum. Hogs: 1 Gruendler bark, 1 Gauld shredder. Chippers: 2 116" B.C. Chip Screens: 1 screening and slicing system. Kone de-icing conveyor.

Pulp Mill Kraft. Avg. Daily Prod.: Bl. Swd., 875 tons Bl. Hwd., 1060 tons of which 80 tons is Market Pulp. Batch Digesters: 8 6,500 cu.ft.
Ground Wood. Refiner. Avg. Daily Prod.: Bl. Hwd., RMP: 250 tons Refiners: 4 primary, 2 secondary, 1 rejects, Bauer 48", 4500 hp.
Chemical Recovery Plant. Evaporators: 1 6-effect Swenson. Recovery Boilers: 1 B&W, 2,800,000 lbs solids/day, 500,000 lbs steam/hr at 1475 psi, 950°. Electrostatic Precipitators: 1 Koppers on rcvry boiler. 1 PCW on No. 11 power boiler. Lime Kilns: 1 Allis-Chalmers. Gas Scrubbers: 1 Ducon on recovery boiler. 2 Chemco on No. 9 boiler. 1 venturi on kiln. Lime Mud Washers: 1 40'x55' Dorr-Oliver, 9x9 mixer. Recausticizing System: Dorr-Oliver.
Bleach Plant. Sequence: Gwd: P stage. Kraft: (D&C)-E/O-D-E-D. Chlorine Dioxide System: Albright & Wilson R8.
Pulp Processing: RMP:. Screens: 4 Model 100, 1 Model 400 Bird Centrisorter. Cleaners: five-stage Noss system. Washers: 1 13.5'x20' Dorr-Oliver drum filter. Deckers: 1 12'x19' Dorr-Oliver disc. Drainers: 1 Thune press. Stock Refiners: 2 34", 1 26" Sprout-Waldron Twin-Flo.
Kraft:. Screens: 2 primary, 2 secondary, 1 tertiary Bird Centrisorter. Washers: 4 13.5'x24' Impco brown stock; 5 13.5'x24' Impco blend stock. Deckers: 1 13.5'x24' Impco.
Pulp Drying: Dryers: Former No. 2 P&J paper machine modified for pulp drying: 166" width, 155" trim, 1300 fpm, 300 tpd capacity. Cutter-Layboys: 1 Lamb-Grays Harbor.

Paper Mill Stock Preparation: Pulpers: 3 Hydrapulpers, 2 continuous Morden, 1 Beloit Jones, 2 Hydrapulper broke. Screens: 6 Centriscreen, 2 broke. Refiners: 13 Sprout-Waldron disc, 5 Deflakers (broke). Cleaners: 3 five-stage Bauer Centricleaner-Deculator systems.
Paper Machines. 1 Pusey & Jones Fourdrinier 166" Width 151" Trim 2300 fpm.
1 Beloit Fourdrinier 300" Width 274" Trim 3300 fpm.
1 Valmet Fourdrinier 320" Width 304" Trim 3500 fpm.
Dryers, Winders: 3 Jagenberg single-drum. 1 Cameron MIR. 1 Wartsila two-drum. 1 Cameron two-drum.
Coaters. Off Machine. 1 286", 1 172", 1 302" trailing blade.
Finishing Plant. Supercalenders: 2 9-roll Bruderhaus, 2 12-roll Kleinewefers, 2 10-roll Appleton A-Frame. Roll Wrapping Eqt.: Lamb-Grays Harbor automatic with double crimp and header lines. Rewinders: 1 Lenox, 1 Cameron, 1 Jagenberg two-drum.

Steam/Power. Power Boilers: 4. Fuel: oil, gas, bark, coal. Steam, lbs hr.: 1,600,000. Press.: 400/1500 psig.
Electricity: Freq. phase: 60, 3. Installed H.P.: 100,000. Hydroelectric: 3,000 kwh/day. Turbogenerators: 70,000 kwh/day.

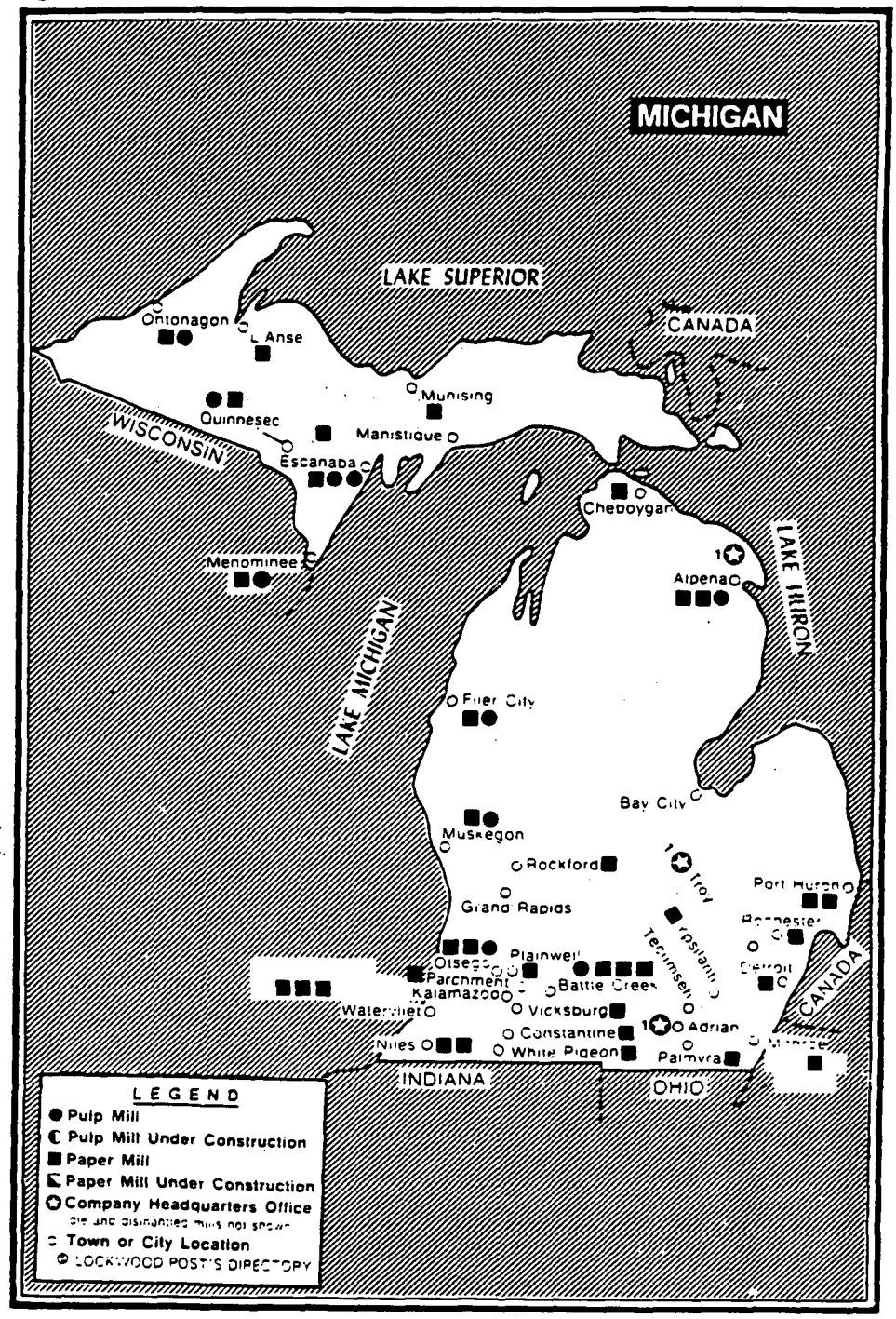
Water Treatment. Daily Usage. 40.0 million g.p.d. Source: Lake Michigan. Primary Treatment:. Sand filters. Marley four-cell cooling tower.

Effluent Treatment. Primary Treatment: Clarifier. Secondary Treatment: Aeration lagoon and activated sludge, secondary clarifier, unaerated lagoon. Tertiary Treatment: Clarifier. 5 Winkle sludge presses.

Products. Coated book and publication papers. 1550 tons daily. Kraft hardwood market pulp. 80 tons daily.

FILER CITY

Tenneco Packaging Containerboard Products Div. 2246 Udell St. 49634 (PO Box 316, Manistee, MI, 49660)
Tel: 616-723-9951 Fax: 616-723-1395
RR: CSX. Hwys: On US Rte 31.
Robert V LaBruzzo, Vice Pres & Gen Mgr
Robert J Hybza, Tech & Engrg Mgr
William J Volkema, Paper Mill Supt



MHI-00321

HOWARD ZUKER ASSOCIATES
919 N MICHIGAN AVENUE • CHICAGO, ILLINOIS 60611 • PHONE 312-664-5700 • FAX 312-944-1471
THE PAPER TIGERS

Lynn R Jones, Paper Mill Supt
John H Myers, Maint Mgr
Gerald R Haw, Power/Util Supt
David L Bell, Fiber Prcrmt Mgr
Robert J DeSisto, Total Qlty Mgmt Mgr
Carl F Mills, Cust Srvc Mgr
Peter A Martens, Acctg & Contrl Mgr
U Paul Sitz, Prchsg Mgr

Woodhandling and Preparation Roundwood Storage Capacity: 20,000 Cords. Barkers: 1 12'x80' FMP drum. Chippers: 1 112", 12-knife. Chip Screens. 2 HiCap.

Pulp Mill Semi-Chemical. Avg. Daily Prod.: soda carbonate. 600 tons Continuous Digesters: 2 Pandia. Chemical Recovery Plant. Evaporators: 2 multiple-effect. Recovery Boilers: 1 fluidized bed unit.
Pulp Processing: Stock Refiners: 2 American Defibrator Washers: 6 screw press.

Paper Mill Stock Preparation: Waste Paper Processing: 325 ton daily. Pulpers: 3. Screens: 3. Refiners: 4 Jones, 5 Sprout Waldron, disc.
Paper Machines. 1 Fourdrinier 174" Width 158" Trim 1700 fpm.
1 Fourdrinier 172" Width 157" Trim 1300 fpm.
1 Fourdrinier 160" Width 148" Trim 850 fpm.
Dryers. Drums: 148-60" dia.

Steam/Power. Power Boilers: 2. Fuel: Gas. Steam, lbs hr.: 600,000 Press.: 610 psi
Electricity: Purchased: 305,000 kwh/day. Generated: 235,000 kwh/day. Turbogenerators: 3-21,875 kva total.

Water Treatment. Daily Usage, 20.0 million g.p.d. Source: River, Lake.

Effluent Treatment. Primary Treatment: 2 Clarifiers. Secondary Treatment: Aeration pond

Products. Semichemical corrugating medium, 900 tons daily.

KALAMAZOO

Georgia-Pacific Corp. Kalamazoo Business Unit, Communication Papers Div 2425 King Hwy, 49001
Tel: 616-382-2890 Fax: 616-343-9428
RR ConRail, GTW, siding Hwys: IS-94; Near State Rte 96
C Richard Larrick, Gen Mgr
Mark W Sullivan, Sales Mgr
L Allan Campbell, Engrg & Maint Mgr
Kristopher J Blake, Tech Srvcs Mgr
Ronald L Hanson, Mtrls Mgr
Roland H Taylor, Contr
Diane L Kievit, Human Rsrcs Mgr

Pulp Mill Deinking: 6 primary and 2 secondary flotation cells. Avg. Daily Prod.: Blchd: 200 tons
Bleach Plant. Sequence 1 peroxide, 1 hydrosulphite stage Towers 1 downflow

Paper Mill Stock Preparation: Pulpers: 4 Refiners: 7 Paper Machines 1 Fourdrinier 185" Width 163" Trim 2500 fpm
1 Fourdrinier 170" Width 150" Trim 2000 fpm.
Dryers Size Presses 1
Coaters On Machine 1 Billblade

Steam/Power. Power Boilers. 1. Fuel Coal. Gas Steam lbs hr 245,000 Press 875 psi
Electricity Freq. phase: 440v, 60, 3 Installed H P 24 000 Purchased 9,000 kw Generated: 6,000 kw Turbogenerators: 1

Water Treatment. Daily Usage, 5 0 million g.p.d Source River

Effluent Treatment. Primary Treatment: Clarifier, belt filter press Secondary Treatment: Municipal primary with advanced secondary

Products. Bond coated and uncoated book, coated and uncoated groundwood, offset, envelope, carbonless copy and base, place mat, register bond, tablet coated and recycled grades, 400 tons daily

James River Corp. Paperboard Div 243 E Paterson St, 49007
Tel 616-383-5000 Fax 616-383-5135
RR ConRail Hwys US Rte 12, 13 IS-94, State Rte 43
David Briere, Plant Mgr, Pprbd
Pam Hovine Prod Mgr, K-1 Mchn
Andy Black, Supt Plt 4 K-3
Jeff Lawler Supt Plt 14 (Cnvtg)
Mark Keed Tech Mgr
Frank Brode, Mgr Engrg, Util
Dean Goodwin, Contr
Bill Wienrga, Human Rsrcs Mgr
Kevin Fitzpatrick, Reg Dir, Human Rsrcs

Paper Mill Stock Preparation: Pulpers: 10 Hydrapulpers, 1 Morden Slushmaker. Beaters: 1 continuous broke.
Paper Machines. 1 seven-unit pressure former 132" Width 120" Trim.
K-1 triple-ply board machine, with 2 Ply-Former on-top fourdriniers, Tamformer S top dewatering unit middle ply former, on Tampella basq Fourdrinier 162" Width 146" Trim 1200 fpm, with Tam-Flo R rectifier roll headboxes, Tamsec press section, 75 72" dryers.
Coaters, On Machine, 2 Air Knife, 2 Bar.
Off Machine, 1 76" double-head Beloit PE coater.
Finishing Plant. Other Eqt.: 1 56" Inta-Roto laminator.

Steam/Power. Power Boilers: 3. Fuel: Gas/Oil. Steam, lbs hr.: 450,000.

Water Treatment. Daily Usage, 2.0 million g.p.d. Source: Deep well.

Effluent Treatment. Secondary Treatment: via municipal syst.

Products. Machine clay-coated folding boxboards, foil laminating, grease and moisture resistant laminated, polyethylene coated, 800 tons daily.

Nickal Paper Co. 2305 E King Hwy,
RR: ConRail siding. Hwys: On US Rte 12.

Paper Mill Stock Preparation: Pulpers: 2 Hydrapulper. Refiners: 3 Sprout Waldron.
Paper Machines. 1 Beloit Eight-Cylinder 108" Width 100" Trim 450 fpm.
Dryers. Drums: 110. Infrared: 30. Calenders: 1 stack.
Finishing Plant. Rewinders: 1.

Steam/Power. Power Boilers: 2. Fuel: Gas/Oil. Steam, lbs hr., 70,000.
Electricity: Purchased: 48,000 kwh/day.

Water Treatment. Daily Usage, 580 M.g.p.d. Source: Wells, City

Effluent Treatment. Primary Treatment. 1 Clarifier

Products. Recycled 69 lb. linerboard. 160 tons daily. Paper Mill is idle.

Portage Paper Co. Inc. (Div. of The Fournier Group) 401 E Alcott, 49001 (PO Box 2048, Kalamazoo, MI, 49003)
Tel: 616-345-7131 Fax: 616-345-1609
RR. ConRail sidings. Hwys: IS 94; US Rte 131; State Rte 43, 96
Fernand D Fournier, Pres
Yves Lofontaine, Vice Pres, Opers
Mike Breen, Plant Mgr
Ed Atwill, Sales & Mktg Mgr
Marilyn Wren, Prchsg Coord

Paper Mill Paper Machines. 1 Fourdrinier 137" Width 124" Trim (idle)
1 Fourdrinier 139" Width 126" Trim
1 Fourdrinier 141" Width 127" Trim
1 Fourdrinier 154" Width 142" Trim
1 Fourdrinier 164" Width 152" Trim
Coaters, Off Machine 5 C2S Fountain Blade, 126" trim

Steam/Power. Power Boilers: Fuel: Oil/Gas

Water Treatment. Source River, Wells

Effluent Treatment. Primary Treatment: 2 clarifiers

Products. Recycled bond, offset, tablet, envelope, kraft bag, and specialty papers. 200 tons daily

L'ANSE

The Celotex Corp. 200 Main St, 49946
Tel 906-524-6101 Fax 906-524-6613
RR Soo Line Hwys On US Rte 41
C N Abbott, Plant Mgr

Paper Mill Stock Preparation Pulpers 1 Hydrapulper
Paper Machines. 1 Black Clawson Fourdrinier 172" Width 165" Trim 50 fpm with 450' eight-deck Coe dryer
Coaters, Off Machine 1 Acrylic coater

Steam/Power Power Boilers Steam lbs 93,000
Electricity: Purchased 100%

Water Treatment. Daily Usage, 1.0 million g.
Source: Bay

Products. Mineral and light panel board produ perforated and unperforated tile, other interior ish products, 270 tons daily

MANISTIQUE

Manistique Papers Inc. (Subs. of Kruger Inc.) 45 Mackinac Av, 49854
Tel: 906-341-2175 Fax: 906-341-5635
RR: Wis Cntrl, siding. Hwys: On US Rte 2.
Leif Christensen, Pres, Gen Mgr
Donald J Cayouette, Vice Pres, Mfg
Tony Martin, Paper Mchne Supt
Jon Johnson, Plant Engr
Earl Patterson, Mktg Mgr
Bruce Norman, Prchsg Mgr
E.A. Bourdo, Mgr, Rcyclg Opers
Larry Koski, Sales Mgr
Jason Panek, Tech Dir
Linda Benedetto, Contr

Pulp Mill Deinked Pulp: Avg. Daily Prod.: cap. 5 tons

Paper Mill Stock Preparation: Pulpers: 2 Jones.
Paper Machines. Twin-Wire Formers: 1 165" Wi 154" Trim 4200 fpm.
Dryers. Drums: 48 60" dia. Calenders: 1. Reels Winders: 1 Beloit.

Steam/Power. Power Boilers: Fuel: Coal. Steam, hr., 145,000. Press.: 350 psi
Electricity: Purchased: 5000 kwh/day.

Water Treatment. Daily Usage, 2.5 million g.p Source: River Primary Treatment: Yes.

Effluent Treatment. Primary Treatment: Clarif Secondary Treatment: Activated sludge system.

Products. Recycled and colored newsprint, groun wood printing and groundwood converting pape 320 tons daily

MENOMINEE

Bell Packaging Corp. Menominee Paper Div. 144 Fi St, 94858 (PO Box 310, Menominee, 49858-0310)
Tel. 906-863-5595 Fax: 906-864-3284
RR: ELS. Hwys: US Rte 41; State Rte 173.
W Roger Smith, Gen Mgr
Scott Spurgeon, Vice Pres, Sls
Kevin French, Prod Mgr
Jules Nagy, Gen Mgr, Ppr Pdcts
Kathleen Schneider, Gen Mgr, Bd Sls, Mktg & Pr
Dan Auden, Contr
Anita Doepke, Dir, Enviro Affrs
Deb Konyn, CPI Facilitator
John Keeler, Qlty Assrnce Mgr
Tony Cicero, Engrg & Maint Mgr
Craig Grajeda, Mtrls Mgr
Bill Doerr, Tech Support Mgr
John Mentch, Prod Devl Mgr

Paper Mill Stock Preparation. Pulpers: 4 Hydrapulpers Refiners 2 Claflin, Jordans: 5.
Paper Machines. 1 Black Clawson Fourdrinier 164 Width 154" Trim with Extended Nip-C press.
1 Yankee Fourdrinier 136" Width 128" Trim.
Finishing Plant. Supercalenders. 2. Rewinders: Slitter/Rewinders. 3. Other Eqt.. Waxers: 5.

Steam/Power. Power Boilers: Fuel: Coal. Steam, hr 140,000
Electricity Purchased: 7,000 kwh/day Generated 4,000 kwh/day Turbogenerators. 2

Water Treatment. Daily Usage, 5.0 million g.p. Source: River

Effluent Treatment. Primary Treatment: Yes. Secondary Treatment Yes

Products. Linerboard, corrugating medium, tub stock, bag stock 450 tons daily Baking cup stock waxing tissue lightweight MG, 60 tons daily Waxed paper in rolls, sheets, and bags.

Great Lakes Pulp & Fibre Inc. 701 Fourth Av, (PO Box 277 Menominee, MI 49858-0277)
Tel 906-863-8137 Fax 906-863-7488
Tom Kuber Chf Exec Ofcr
Lars Dannberg, Pres
Terry Nelson Sr Vice Pres
Ronald A Beyer Vice Pres, Opers & Busn Devl
Donald G Estebo Cnsltnt
Steve Courtney, Mill Mgr

MHI-00322

• CENTRAL NATIONAL-GOTTESMAN INC. •
Three Manhattanville Road. Purchase, NY 10577-2110 Tel: 914-696-9000 Fax: 914-696-1066
ALL GRADES OF PULP FROM U.S. & WORLDWIDE SOURCES BLEACHED HARDWOOD KRAFT PULP

Pulp Mill Two-stage Flotation Deinking: Avg. Daily Prod.: Blchd. 520 tons of which 520 tons is Market Pulp
Bleach Plant. Sequence: P-(inter-stage deinking)-Hydrosulfite (or, R (formamidine sulfinic acid)). Towers: 1 Sunds pressurized peroxide, 1 Sunds reductive
Pulp Processing: Waste Paper Deinking Plant: 745 tons daily. Pulpers: 2 Fiberprep batch. Detrashers: 1 Fiberprep. Cleaners: Fiberprep high-density. Screens: Fiberprep coarse and fine. Deckers: 1 Kvaerner Hymac twin-wire. Kneaders: 1 Shinhama. Screens: Fiberprep fine-slotted. Fiberprep first-stage flotation deinking cells. Cleaners: one-stage Gyrocleaner reverse and two-stage Fibreprep forward. Washers: 1 Kvaerner Hymac. Dispersers: 1 Krima system preceding first-stage bleaching. Second stage (inter-bleach) Verticell flotation deinking cells. Deckers: 1 Kvaerner Hymac disc preceding second-stage bleaching. Clarifiers: 2 dissolved air flotation.
Pulp Drying: Dryers: 1 Kvaerner Hymac sheet former, dewatering press. ABB Flakt air-borne dryer. Cutter-Layboys: Lamb-Grays Harbor bale finishing and wrapping line.
Effluent Treatment. Primary Treatment: Trickling filter system, activated sludge system.
Products. Bleached deinked market pulp from mixed office waste. 520 tons daily.

MONROE

Jefferson Smurfit Corp. Industrial Packaging Div. 1151 W Elm Av. 48162-2801
Tel: 313-241-7776 Fax: 313-241-2189
RR: C&O siding. Hwys: US Rte 24, IS-75.
Richard Jett, Mfg Mgr
James Sisung, Chief Engr
Gary VanWormer, Fnshg Supt
Terry Lewis, Plant Contr
E Flotow, Reg Sales Mgr
J Zimmerman, Sales Rep
Paper Mill Stock Preparation: Pulpers: 2 Hydrapulper Refiners: 1 Sprout Waldron, 2 Emerson. Jordans. 3 Shartle
Paper Machines 1 Seven-Cylinder 124" Width 110" Trim 450 fpm
Dryers. Drums. 104 Calenders. 2 stacks. Winders: 1.
Finishing Plant. Rewinders: 2 Trimmers: 1.
Steam/Power. Power Boilers: Fuel: Gas. Oil. Steam, lbs hr., 70,000
Electricity: Purchased: 100%.
Water Treatment. Daily Usage. 750 M.g.p.d. Source: River
Effluent Treatment. Primary Treatment: Joint municipal-industrial system
Products. Plain chip, can and tube board. lightweight chip. 130 tons daily

Jefferson Smurfit Corp. Industrial Packaging Div. (formerly Monroe Paper Co.) 1220 East Elm Av.
RR. ConRail. Grand Trunk. Hwys: Near IS-75, 1 mi; On State Rte 50
Paper Mill Stock Preparation: Pulpers: 1 15' Apmew Pulper 2 20' and 1 16' Hydrapulper Screens: 14 Selectifier Refiners 2 34" Sprout-Waldron Jordans 2 Emerson 2-OD. Cleaners: 8 10" Vortrap. Consistency Regulators: 4 Bird.
Paper Machines 1 Black Clawson Seven-Cylinder 120" Width 108" Trim 600 fpm.
1 Seven-Cylinder 120" Width 108" Trim 400 fpm. Dryers Drums 103, and 137-42" dia. Reels. 2 Autoflyte Winders 2 two-drum
Steam/Power. Power Boilers: 2. Fuel: Gas. Oil. Steam. lbs hr 140,000 Press.: 600/175 psi.
Electricity Purchased 100%.
Water Treatment. Daily Usage. 800 M.g.p.d. Source: Lake Erie Primary Treatment: None.
Effluent Treatment. Primary Treatment: 2 50' Clarifiers. Secondary Treatment: Municipal Syst.
Products. Tube and core board, linerboard, automotive building, chip and WP chip filler, and partition boards. 200 tons daily
Paper Mill is Idle

MUNISING

Kimberly-Clark Corp. Munising Mill, Technical Paper Group 501 E Munising Av, 49862-1490 (PO Box 10, Munising, MI, 49862-0010)
Tel: 906-387-2700 Fax: 906-387-2935
RR: Wis Central. Hwys: State Rte M28, M94.
Tom Shannon, Mill Mgr
Dick Marklein, Opers Mgr
Dan Macke, Admn Mgr
Mike Kerwin, Human Rsrcs Mgr
Paper Mill Stock Preparation: Pulpers: 4. Screens: 2. Refiners: 3. Jordans: 2.
Paper Machines. 2 Fourdrinier 136" Width 120" Trim
Coaters, Off Machine. 4. Saturators: 5.
Finishing Plant. Supercalenders: 1 94", 1-68". Rewinders: 5. Sheeters: 2, cap: 60 tpd. Other Eqt.: 1 Embosser, 1 Laminator.
Steam/Power. Power Boilers: 2. Fuel: Coal/Wood Waste. Oil standby.
Water Treatment. Daily Usage. 5.0 million g.p.d. Source: Lake Superior.
Effluent Treatment. Primary Treatment: Yes.
Products. Writing, map, impregnating, coating base, saturating, coated and saturated specialties, Kimdura synthetic paper. 98 tons daily

MUSKEGON

S.D. Warren Co. (A Sappi Group Co.) 2400 Lakeshore Dr, 49443 (PO Box 119, Muskegon, MI, 49443-0119)
Tel: 616-755-3761 Fax: 616-759-5416
RR: C&O siding. Hwys: US Rte 31; IS-96.
David M Crowe, Vice Pres, Gen Mgr
Donald E Booker, Pulp Mill & Util Mgr
Ken B Callow, #4 Ppr Mchne Prod Mgr
Donald U Peet, #5 Ppr Mchne Prod Mgr
John W.O. Anderson, Engrg Mgr
Wayne R Thompson, Contr & Prcrmt Mgr
John E Holland, Cust Srvc Mgr
David L Tyler, Tech, Qlty & Syst Mgr
Mike B Robbins, Maint Mgr
Jeffrey M Fern, Human Rsrc Mgr
Larry V Nash, Orgnztl Devl Mgr
George C Morstadt, Fnshg & Shppg Mgr
Woodhandling and Preparation Roundwood Storage Capacity 5,000 cds. Chip Storage Capacity: 120,000 tons. Mobile Equipment: Hopto RR crane, Poclain crane Flume: 1 Log Handling Drag and belt conveyors. Chip Handling Rader pneumatic system. Sawdust Handling: Rader pneumatic system Chip Unloaders: Hydraulic truck dumper Barkers 1 30 cds/hr Manitowoc drum Hogs: 1 Montgomery Chippers: 1 15-knife Carthage.Norman. Chip Screens: 3 Link Belt. Avg. Daily Use of Peeled Pulpwood 300 cds swd, 200 cds hwd.
Pulp Mill Kraft. Avg. Daily Prod. Bl Swd., 125 tons Bl Hwd., 125 tons Continuous Digesters. 1 Kamyr. Chemical Recovery Plant. Evaporators. 1 six-effect Swenson. Black Liquor Oxidation System Champion system. Recovery Boilers 1 C-E, 750,000 lbs solids/day. Lime Kilns: 1 Dorr Oliver Fluo-Solids. 70 tpd. Gas Scrubbers: 1. Lime Mud Washers 1 Dorr-Oliver Recausticizing System Dorr-Oliver
Bleach Plant. Sequence C-E-H-D. Towers 4 Mixers 4 Thick Stock Pumps. 1. Chlorine Dioxide System: Solvay process.
Pulp Processing: Knotters: 3 Impco. Screens. 3 Cowan Cleaners 1 three-stage Bauer system. Washers. 3 9'x16' Impco vacuum Deckers. 1 9'x16', 1 8'x8' Impco Other Eqt.: 6 pre-refiners (bleached stock)
Pulp Drying: Wet Machines: 1-100 tpd Kamyr. Cutter-Layboys: Hamblet. Scales: 1.
Paper Mill Stock Preparation Pulpers: 6 Vokes rotor Hydrapulper Screens. 2 Selectifiers. Refiners: 5 Claflin, 1 double disc. Jordans 4 Shartle Cleaners 2 Centricleaner three-stage systems with vacuum rejects. Consistency Regulators: 14 DeZurik, 5 Foxboro. Size Cookers: 1 continuous, 3 batch
Paper Machines 1 Beloit Fourdrinier 163" Width 144" Trim 1100 fpm
1 Rice Barton Fourdrinier 222" Width 200" Trim 2000 fpm
Dryers. Drums 40 and 27 48", 55 and 69 60' dia Hi-Velocity: 2 Size Presses. 2. Calenders 4 Reels 2 Pope. Winders. 2 two-drum
Coaters. On Machine 1 163" puddle, 1 222" Invertablade.
Finishing Plant Supercalenders. 3-100", 1-87" 1-115", 1-80". Roll Wrapping Eqt. D.J Murray system Rewinders: 3 Langston. Sheeters 1 Lenox folio. 3, 100" to 112" Trimmers: 3-100" Ream Wrapping & Cartoning: Southworth system. Strapping Eqt. Signode system.
Steam/Power. Power Boilers. 3 Fuel. Coal/Oil Steam. lbs hr. 500,000 Press.. 500 psi.
Electricity: Freq, phase: 60, 3. Purchased. 3,500 kwh/day Generated: 19,000 kwh/day. Turbogenerators. 3-25,500 kw
Water Treatment. Daily Usage. 20.0 million g.p.d. Source: Lake Primary Treatment: Eimco.
Effluent Treatment. Primary Treatment: County spray irrigation system.
Products. Machine coated book and cover papers. 700 tons daily.

NILES

French Paper Co. 100 French St. 49120 (PO Box 398, Niles, MI, 49120)
Tel: 616-683-1100 Fax: 616-683-3025
Hwys: US Rte 31, 12; State Rte 60, 51.
J.E. French, Chmn Bd
Jerry E French, Pres, Treas
David L Bruce Jr, Vice Pres, Supt
Jerry Koch, Vice Pres, Sec
Rick Van Wynsberghe, Fnshg Frmn
Duane Bodfish, Chief Engr
Doyle Harpole, Maint Mgr
Tom Tokarz, Pur Agt
Tad Kline, Sales Srvc
Kathy Bush, Sales Srvc
Paper Mill Stock Preparation: Pulpers: 3 Dynapulper, 1 Slushmaker Refiners: 2 Claflin, Jordans: 4
Paper Machines. 1 Pusey & Jones Fourdrinier 118" Width 107" Trim
Dryers. Winders: 2
Finishing Plant Sheeters: 2 Trimmers: 2. Other Eqt.. 2 Embossers.
Steam/Power. Power Boilers: Fuel: Coal, Gas, Oil. Press.. 150 psi
Electricity. Freq, phase: 440v, 60, 3. Installed H.P.: 1600 electric, 1600 water.
Water Treatment. Daily Usage. 800 M.g.p.d. Source: Deep wells.
Effluent Treatment. Primary Treatment: Yes. Secondary Treatment: Yes.
Products. White and colored offset, cover, embossing, greeting card, text and specialty papers. 55 tons daily

Simplicity Pattern Co., Inc. 901 Wayne St. 49121
Tel: 616-683-4100 Fax: 616-687-1500 258459
RR. ConRail. Hwys. US Rte 12, 31; State Rte 60, 51.
Eric Booker, Vice Pres, Plt Dir
StevePaul Bartocci, Paper Mill Supt
Tom DeForest, Mgr, Engrg & Ppr Making
R DeForest, Plant Engr
T Smit, Plant Contr
B Wilks, Distrib Mgr
B Lillie, Indl Rels Dir
V Hess, Traf Mgr
Paper Mill Stock Preparation: Pulpers: 3 Dynapulpers Screens 1 Refiners. 4. Jordans: 1. Cleaners. 5 Consistency Regulators. 2. Other Eqt.: 2 savealls.
Paper Machines Stevens Formers: 1 162" Width 150" Trim 1000 fpm
Dryers Drums: 8 and 12 - 48" dia. Calenders: 1 7-roll, 1-2 roll Reels 1 Winders 2 Shear-Cut.
Steam/Power. Power Boilers: 1 Fuel Gas/Oil Steam lbs hr 35000 Press. 100 psi.
Electricity Freq. phase: 60, 3 Installed H.P: 3,264 Purchased 32,000 kwh/day
Water Treatment. Daily Usage. 1.0 million g.p.d. Source Wells
Effluent Treatment. Primary Treatment: Yes
Products. Pattern tissue, 33 tons. Interleaving papers. 40 tons daily

ONTONAGON

Stone Container Corp. Containerboard & Paper Div. One Superior Way, 49953
Tel 906-884-2021
RR Escanaba & Lake Superior Hwys US Rte 45, State Rte 64

MHI-00323

TRYG R. ANGELL LTD

SEARCH PLACEMENT

TRYG R. ANGELL

4021 MAIN STREET • STRATFORD, CT 06479

Tel: 203-377-4541 Fax: 203-377-4545

Ron Howard, Gen Mgr
Richard Jakob, Prod Mgr
J.R. Richardson, Tech/Enviro Mgr
Dave Schmidt, Paper Mill Supt
J.E. Asiala, Ppr Mach Supt
Eugene Lewis, Ppr Mach Supt
Greg Anderson, Pulp Supt
Mark Szczepanik, Supt, Pwr & Util
Peter J Whiteneck, Emply Rels Mgr
James Walchuk, Mgr, Engrg & Maint
Robert Anttila, Maint Supt
Wayne Boucher, Supt, I & E
James P Ninefeldt, Contr
Dan Farley, Mtrls Mgr

Woodhandling and Preparation Chip Storage Capacity: 50,000 tons. Mobile Equipment: 1 Pettibone Cary-Lift, 2 D-7 dozers. Chip Handling: Rader pneumatic. Sawdust Handling: Rader drag chain. Chip Screens: three-stage Rader disc. Avg. Daily Use of Peeled Pulpwood: 1100 tons purchased hwd chips.

Pulp Mill Semi-Chemical. Avg. Daily Prod.: Sodium Carbonate, Unbl Hwd: 600 tons Continuous Digesters: 2 Pandia.
Chemical Recovery Plant. Evaporators: 1 six-body, four-effect Goslin, Copeland fluidized bed reactor. Pulp Processing: Hot Stock Refiners: 2 Sunds. Washers: 1 Eimco, 1 Swenson.

Paper Mill Stock Preparation: Pulpers: 3. Refiners: 4 Bolton Emerson, 5 Sprout-Waldron. Screens: 1 Bird Centriscreen. Cleaners: Bauer Centricleaners. Consistency Regulators: DeZurik.
Paper Machines. 1 Pusey & Jones Fourdrinier 177" Width 160" Trim 1500 fpm.
1 Black Clawson Fourdrinier 180" Width 162" Trim 2300 fpm.
Dryers. Drums: 120. Calenders: 2. Winders: 2.

Steam/Power. Power Boilers: 1, 3 package. Fuel: Gas, Coal Oil, Bark. Steam, lbs hr.: 350,000. Press.: 1500/250/175/70 psi.
Electricity: Freq, phase: 60, 3. Installed H.P.: 13500. Purchased: 35%. Generated: 65%. Turbogenerators: 1 GE, 15,000 kw.

Water Treatment. Daily Usage, 4.5 million g.p.d. Source: Lake Superior. Primary Treatment: None.

Effluent Treatment. Primary Treatment: 1 Clarifier. Secondary Treatment: clarifier, activated sludge, gravity thickener, belt filter press.

Products. Semichemical corrugating medium, 815 tons daily.

OTSEGO

Menasha Corp. Paperboard Div. 320 N Farmer St, 49078 (PO Box 155, Otsego, MI, 49078-0155)
Tel: 616-692-6141 Fax: 616-692-2060
RR: ConRail siding. Hwys: US Rte 131; State Rte 89.
Jeff Volker, Gen Mgr
Andre Fischbach, Prod Mgr
David Merkel, Tech Mgr
J Alan Coleman, Maint & Pwr Rcvry Mgr
Jim Szaroletta, Engrg Mgr
Jeff Burleigh, Prchsg Mgr
Katharine Lett, Human Rsrcs Mgr
Tim Howard, Contr

Woodhandling and Preparation 2 hydraulic truck dumpers, chip thickness screening. Avg. Daily Use of Peeled Pulpwood: 750 green tons purchased chips.

Pulp Mill Semi-Chemical. Avg. Daily Prod.: Unbl. Hwd., carbonate cook: 320 tons Continuous Digesters: 1 vertical Asplund Defibrator.
Chemical Recovery Plant. Recovery Boilers: Dorr Oliver (SLI) fluid bed reactor.
Pulp Processing: Stock Refiners: 3 Sprout-Waldron primary. Washers: Black Clawson brown stock.

Paper Mill Stock Preparation: Pulpers: Secondary fiber system 1: 1 14' Hydrapulper, 5 HDC's, 1 fiberizer, 2 barrier screens, 1 deflaker, three-stage cleaning.
Pulpers: Secondary fiber system 2: 1 16' Hydrapulper, 3 HDC's, 2 LDC's, screening, multiple stage reverse cleaning. Total capacity of both systems, 700 tpd.
Paper Machines. 1 Fourdrinier 176" Width 163" Trim 3000 fpm with 1 600 pli suction press, 1 8500 pli Extended Nip press, 54 dryers.
1 Fourdrinier 96" Width 85" Trim 1500 fpm with 2 blind drilled presses, 43 dryers.

Steam/Power. Power Boilers: Cogeneration Plant: 2 Solar Mars T-15,000 gas turbine generators, 10,000 kw cap. ea. Steam, lbs hr.: 360,000 cap. Press.: 200 psi.
Power Boilers: 1 package. Fuel: gas, oil. Steam, lbs hr.: 250,000.
Electricity: Purchased: 5,000 kw.

Water Treatment. Daily Usage, 2.2 million g.p.d. Source: Wells.

Effluent Treatment. Secondary Treatment: Aeration pond.

Products. Semichemical corrugating medium, 830 tons daily.

Rock-Tenn Co. Paperboard Products Div. 431 Helen Av, 49078
Tel: 616-692-6211 Fax: 616-692-6581
RR: ConRail siding. Hwys: Near US Rte 131, 2 mi; On State Rte 89.
Walter K Lancaster, Vice Pres, Gen Mgr
Tom Doss, Ppr Mill Supt
Jack Harvey, Plant Engr
Douglas Boomer, Prod Cnvtg Mgr
Scott Earhart, Cnvtg Mgr
Rhonda Slayton, Cust Srvc Mgr
Bill Lee, Wstrn Sales Mgr
Matt Zerial, Salesman
Dan Siller, Salesman

Paper Mill Stock Preparation: Pulpers: 1 3000 lb Morden Slushmaker, 3 Hydrapulpers. Screens: 8. Refiners: 2 34" Jones DD, 1 Bauer double disc. Jordans: 4. Cleaners: Black Clawson, Bird filler, 1 asphalt dispersion unit.
Paper Machines. 1 Eight-Cylinder 140" Width 126" Trim.
Dryers. Drums: 163. Calenders: 2.
Coaters, Off Machine. 1 86" Egan PE extrusion coater.

Steam/Power. Power Boilers: 3. Fuel: Coal/Gas/Oil. Steam, lbs hr.: 134,000. Press.: 875/300 psi.
Electricity: Freq, phase: 60,3. Installed H.P.: 8000. Purchased: 41,000 kwh/day. Generated: 64,000 kwh/day. Hydroelectric: 4000 kw Westinghouse, 3000 kw Stal Laval.

Water Treatment. Daily Usage, 450 M.g.p.d. Source: 4 Wells. Primary Treatment: Chlorination. Secondary Treatment: Iron stabilization.

Effluent Treatment. Primary Treatment: 2 clarifiers. Secondary Treatment: 2 stabilization basins, 8 aerators.

Products. Plain and bending chip, filled and solid news, jute lined, woodgrain, laminated specialties, building, polyethylene coated boards, 250 tons daily.

PALMYRA

Sorenson Paperboard Corp. 6240 E US Rte 223, 49268 (PO Box 135, Palmyra, MI, 49268)
Tel: 517-263-5160 Fax: 517-265-3604
Hwys: On US Rte 223, Near US Rte 23, IS-75.
Merritt Sorenson, Pres
Cathleen Sorenson-Goll, Vice Pres, Sec
Judith Sorenson, Treas
Sue Willnow, Sales Srvc, Office Mgr

Paper Mill Stock Preparation: Pulpers: 1 10', 1 12', 1 16' Hydrapulpers. Screens: 6 P-12 pressure. Refiners: 2 Bauer disc. Jordans: 3. Other Eqt.: 1 1000 gpm and 1 1500 gpm Sveen Pedersen savealls.
Paper Machines. 1 Beloit Six-Cylinder 80" Width 78" Trim.

Steam/Power. Power Boilers: Fuel: Gas. Press.: 150 psi.
Electricity: Freq, phase: 60, 3. Purchased: 100%.

Water Treatment. Daily Usage, 120 M.g.p.d. Source: River.

Effluent Treatment. Primary Treatment: Yes.

Products. Chipboard, kraft-lined, can, tube and drum stock, pad stock, 80 tons daily.

PARCHMENT

Crown Vantage Inc. Packaging Papers Group land Av, 49004-1394
Tel: 616-384-6262 Fax: 616-384-6217
RR: ConRail, CK & S, siding. Hwys: On US Rte Off State Rte 43.
James Buroker, Opers Mgr
Willy Beckman, Mgr Mfg Srvcs
Phil Berry, Mgr, UM&E
Thomas P DeWolff, Total Qlty Mgr
Donald Lewis, Gen Supt
Denise Trainer, Tech Dir
Roy W Kemppainen, Mgr Pdct Devl
Carrie Kovtan, Contr
Robert H Russel, Prchsg Mgr

Paper Mill Stock Preparation: Pulpers: 1 6000 2000 lb and 2 4000 lb Morden Slushmake 2500 lb Pulpmaster, 1 Barracuda, 2 6000 lb 1 1000 lb Hydrapulpers. Beaters: 2 2500 lb. tex, 3 2500 lb. Horne, 2 2000 lb. Jones. Refi 5 34" disc (1 800 hp, 4 700 hp). Screens: Centriscreen. Jordans: 8 Majestic, 17 Fibrema
Paper Machines. 1 Horne Harper Fourdrinier 1 Width 104" Trim 750 fpm.
1 Pusey & Jones Fourdrinier 163" Width 1 Trim 1100 fpm.
1 Bagley & Sewell Fourdrinier 165" Width 1 Trim 1400 fpm.
1 Beloit Fourdrinier 167" Width 148" Trim 1 fpm.
1 Yankee Fourdrinier 139" Width 126" Trim 1 fpm.
1 Yankee Fourdrinier 139" Width 126" Trim 1 fpm.
Dryers. Calenders: 5. Size Presses: 5.
Coaters, Off Machine. Air Knife: 1. Blade: 3. Sow 1.
Finishing Plant. Supercalenders: 2. Rewinders:

Steam/Power. Power Boilers: 3. Fuel: Gas/ Steam, lbs hr.: 400,000.

Water Treatment. Daily Usage, 5.0 million g.p Source: Well.

Effluent Treatment. Primary Treatment: Clari Secondary Treatment: Aeration lagoon.

Products. Bond, greeting card, coating base, MG MF waxing, MG and MF foil backing, MG and bag, dry waxed, lightweight coated, coated fluorochemical treated, lightweight publish NASTA spec book publishing, pressure-sens and hot-melt release papers. Mill No 1: 100 t daily. Mill No 2: 320 tons daily.

PLAINWELL

Simpson Plainwell Paper Co. 200 Allegan St, 490
Tel: 616-685-5851 Fax: 616-685-2597
RR: ConRail siding. Hwys: US Rte 131; State Rte
Bill Boyden, Mill Mgr
Robert Green, Prod Mgr
Dennis Kelly, Gen Supt, Ppr Mfg
Scott Sleeman, Mchn Supt No. 18
Richard J Thomas, Mgr Fnshng & Matl Hndlg
Steve Button, Mchn Supt No. 16 & No. 17
Gary N Longworth, Mgr Engrg & Maint
George Brown, Supt Distrbtn
Barbara J Bradley, Prchsg Agt
Robert Tardiff, Mgr, Qlty Confrnce
Kay C Woodruff, Supv, Testers
Bruce Bracken, Mgr, Emply Rels
Terry Therkildsen, Tech Srvcs Supt
Dave Wiser, Compt

Paper Mill Stock Preparation: Pulpers: 1 10,000 1 6000 lb and 1 4000 lb. Batch: 1 9500 lb. 8000 lb, 1 6000 lb. Refiners: 11 double disc. Jordans: 1. Stock Mixers: 3 blend chests.
Paper Machines. 1 Fourdrinier 112" Width 9 Trim 850 fpm.
1 Fourdrinier 135" Width 118" Trim 900 fpm.
1 Fourdrinier 135" Width 120" Trim 2000 fpm
Dryers. Size Presses: 3.
Coaters, On Machine. 1 120" trailing blade-r 190 tons daily capacity.
Finishing Plant. Supercalenders: 1-126", 1-130 Roll Wrapping Eqt.: 1 automated line. Rewinders: Sheeters: 3. Trimmers: 2. Other Eqt.: 1-60" d roll embosser.

Steam/Power. Power Boilers: 4. Fuel: Coal, Gas/ Steam, lbs hr.: 205,000. Press.: 265 psi.
Electricity: Freq, phase: 60, 3. Purchased 160,000 3250,000.

Water Treatment. Daily Usage, 2.7 million g.p.d Source: wells.

HOWARD ZUKER ASSOCIATES
919 N. MICHIGAN AVENUE • CHICAGO, ILLINOIS 60611 • PHONE 312-664-5700 • FAX 312-944-1471
THE PAPER TIGERS

Effluent Treatment. Primary Treatment: 1-Clarifier. Secondary Treatment: Attisholz activated sludge process.

Products. Coated and uncoated book and cover, release base, technical specialties. 260 tons daily.

PORT HURON

Blue Water Fibre L.P. (PO Box 611367, Port Huron, MI, 48061-1367)

Tel: 810-984-3531 Fax: 810-984-2332
Douglas A Hall, Mill Mgr

Pulp Mill Deinking: Avg. Daily Prod.: 200 tons of which 200 tons is Market Pulp.

Products. Deinked market pulp. 200 tons daily.

Crown Vantage Inc. Port Huron Mill 218 Riverview St. 48060

Tel: 810-984-5523 Fax: 810-984-5830
RR: GTW siding. Hwys: IS-94, IS-69.
James R Scohy, Res Mgr
Brent A Earnshaw, Opers Mgr
Gregory A Howe, Contr
Alan C Crawford, Mgr, Prchsg
Robert W Ferguson, Mgr, Indl Rels
Dennis W Klinkman, Machine Supt
Ronald G Koglin, Mgr, Proc Engrg

Paper Mill Stock Preparation: Pulpers: 8. Refiners: 14. Jordans: 2.
Paper Machines. No. 1: Beloit Yankee Fourdrinier 137" Width 125" Trim 1500 fpm.
No. 2: Beloit Yankee Fourdrinier 134" Width 121" Trim 1200 fpm.
No. 3: Allis Chalmers Yankee Fourdrinier 150" Width 134" Trim 2000 fpm.
No. 4: Yankee Fourdrinier 137" Width 124" Trim 1200 fpm.
Dryers. Yankee: 3 12', 1 18' dia. units. Size Presses: 3. Calenders: 4 variable crown. Winders: 4.
Coaters, On Machine. 4 two-stream, short-dwell blade.
Finishing Plant. Rewinders: 1.

Steam/Power. Power Boilers: 2. Fuel: Oil/Gas. Steam, lbs hr.: 70,000. Press.: 600/200 psi.
Electricity: Freq, phase: 60, 3.

Products. Lightweight coated, release treated, foil mounting, twisting, soft calendered, double side coated, MG bleached, jumbo rolls only. 170 tons daily.

E.B. Eddy Paper Inc. (Affl. of E.B. Eddy Forest Products Ltd.) 1700 Washington Av. (PO Box 5003, Port Huron, MI, 48061-5003)

Tel: 810-982-0191 Fax: 810-982-7124
RR: GTW siding. Hwys: State Rte 21, 25; Near IS-69, IS-94, 1 mi; Near Prov Hwy 402, 2 mi.
A Richard Wagner, Vice Pres, Res Mgr
Joseph C Fiedler, Mtrls Mgr
C Dale Hoy, Sec, Contr
Steven J Bentley, Tech Dir
Mark Bessette, Engrg Mgr
Randall L McNeely, Util Supt
Kenneth A Wood, Maint Mgr
Larry Thomas, Ppr Mach Supt, #5 & #6
Hal Henry, Ppr Mach Supt, #7 & #8
Rod Tibboles, Asst Ppr Mach Supt
Tim Wight, Asst Ppr Mach Supt
Alan D Cutcher, Dir Human Rsrcs
Celeste Lewis-Bradley, Mgr Prod Cntrl
Ron Leger, Mgr Budget & Insrnc
Richard P Cole, Gen Sls Mgr
David Rushton, Mgr, Pdct Devl

Paper Mill Stock Preparation: Pulpers: 5. Screens: 4. Refiners: 15. Cleaners: 6.
Paper Machines. 1 Yankee Fourdrinier 143" Width 127" Trim 1500 fpm.
1 Fourdrinier 132" Width 116" Trim 1200 fpm.
1 Fourdrinier 184" Width 156" Trim 1800 fpm.
1 Yankee Fourdrinier 210" Width 186" Trim 2500 fpm.
Dryers. Drums: 79. Yankee: 2. Size Presses: 4. Calenders: 4 stacks. Winders: 4.
Finishing Plant. Roll Wrapping Eqt.: automatic. Rewinders: 1.

Steam/Power. Power Boilers: Steam, lbs hr.: purchased.
Electricity: Purchased: 80%.

Water Treatment. Daily Usage. 4.5 million g.p.d. Source: St. Clair River.

Products. Carbonizing, coil winding, coating base, foil mounting, interleaving, kraft specialties, laminating, offset, opaque, grease-resistant, pan liners, lightweight printing, book, wet strength, and specialties. 270 tons daily.

QUINNESEC

Champion International Corp. (PO Box 211, Norway, MI, 49870-0211)

Tel: 906-779-3200 Fax: 906-779-3307 234273
RR: C&NW. Hwys: On US Rte 2.
Fred Oettinger, Vice Pres, Opers Mgr
Leroy Kibbel, Opers Coord
Steve List, Mgr, Enviro Affrs
Steve Bergfeld, Maint & Engrg Mgr
Bill Stephenson, Process Control Mgr
Mark F Pontti, Cmmnty Affrs Mgr
Gene Peterson, Pulp Mill Mgr
Arden Olson, Wdyd Mgr
George Curran, Matl Srvcs Mgr
Don Hubbard, Rcvry & Util Mgr
Robert E Mates, Plant Contr
Steve Perry, Pdct Srvcs
Randal Lorenz, Admn/Human Rsrcs

Woodhandling and Preparation Roundwood Storage Capacity: 8,400 cds. Chip Storage Capacity: 30,000 cds;. Barkers: 2 Murco drum;. Chippers: 1 Murco;. Chip Screens: 2 Rotex. 1 Rader chip thickness system.

Pulp Mill Kraft. Avg. Daily Prod.: Bl. Hwd., 1150 a.d. tons of which 800 tons is Market Pulp. Continuous Digesters: 1 Kamyr vapor phase, two-vessel.
Chemical Recovery Plant. Evaporators: 1 five-effect Rosenblad falling film. Recovery Boilers: 1 B&W, 540,000 lbs steam/hr. Electrostatic Precipitators: 1 Research Cottrell;. Lime Kilns: 1 12' x 274' Allis-Chalmers. Recausticizing System: Dorr Oliver.
Bleach Plant. Sequence: Sunds oxygen delignification: Cd-E/O-D-D.
Pulp Processing: Washers: 3 Dorr-Oliver brown stock, 1 Sunds brown stock. Screens: 3 primary, 1 secondary Bird. Cleaners: Bauer Centricleaner unbleached, four-stage Noss blchd. Deckers: 2 Dorr-Oliver unbl, 1 Rauma valveless.
Pulp Drying: Fourdriniers: 1 240" KMW. Dryers: 1 Flakt air-float. Cutter-Layboys: 1 224" Lamb.

Paper Mill Paper Machines. No. 41: Beloit Fourdrinier 282" Trim 3600 fpm.
Coaters, On Machine. 2.

Steam/Power. Power Boilers: 1 B&W, 1 C-E package. Steam, lbs hr.: 675,000.
Electricity: Turbogenerators: 1 30 Mw Stal-Laval.

Water Treatment. Daily Usage. 17.0 million g.p.d. Source: River.

Effluent Treatment. Primary Treatment: 2 150' Elmco clarifiers. Secondary Treatment: 2 aeration basins, 2 190' clarifiers, sludge dewatering.

Products. Bleached hardwood kraft market pulp. 800 tons daily. Coated free sheet. 800 tons daily.

ROCHESTER

Custom Papers Group Inc. 340 Mill St. 48307

Tel: 810-651-8121 Fax: 810-651-2792
RR: GTW siding. Hwys: US Rte 10; State Rte 150.
Stanley S Luczycki, Res Mgr
Richard Marciniak, Mgr Admin
Rick Lapanowski, Ppr Mchne Supt
Gregg Hunsager, Mgr, Pdctn & Schdlg
Steve Ziolkowski, Tech Dir
Wayne Broadhead, Plant Engr
Mike Quick, Cnvtg Supt
Mary Lou Deaton, Cust Srvc
Ruth Shorter, Cust Srvc

Paper Mill Stock Preparation: Pulpers: 1 Jones Hi-Lo. Beaters: 1 1000 lb. Screens: 1 Parker. Jordans: 2 Noble & Wood, 1 Jones Fibremaster.
Paper Machines. 1 Fourdrinier 66" Width 62" Trim.
Dryers. Size Presses: 1. Calenders: 1 stack.
Coaters, On Machine. 1-62" roll saturator. 20 tons daily cap.
Off Machine. 1-62" roll laminator. 12 tons daily cap.
Finishing Plant. Rewinders: 1-72" Cameron. Sheeters: 1-72", 1-84". Trimmers: 1-50", 1-84". Other Eqt.: Punch Presses: 2. Die Cutters: 1-32x60 Sheridan. Sewing Machines: 1.

Steam/Power. Power Boilers: Fuel: Oil. Press.: 100 psi.
Electricity: Freq, phase: 60, 3. Purchased: 100%.

Water Treatment. Daily Usage. 150 M.g.p.d. Source: Wells.

Effluent Treatment. Primary Treatment: Yes. Effluent to municipal plant.

Products. Absorbent, blotting, cover, impregnating, regular and wet strength filter, saturated filter, industrial filter, cartridge filter, coffee and vacuum filter, impregnated specialty, flameproof; creped specialties; sewn specialties; glass fiber, synthetic fiber papers; non-wovens; speaker cone, photo mount, matrix papers. 18 tons daily.

ROCKFORD

Converters Paperboard Co. (Subs. of Chicago Freight Car Leasing) 7734 Childsdale Rd NE, 49341 (PO Box 560, Rockford, MI, 49341)

Tel: 616-866-3421 Fax: 616-866-1114
Hwys: Near US Rte 131, 3 mi.
Larry Harris, Pres
Marty Reschner, Plant Mgr
Nelson Gamache, Prod Supt/Plant Engr
Harold Kneger, Tech Dir

Paper Mill Stock Preparation: Pulpers: 4 Hydrapulper. Screens: 8. Refiners: 3 Sprout-Waldron. Cleaners: Black Clawson low-intensity with X-clone on filler system. Consistency Regulators: DeZunk. Other Eqt.: Allied clay mixing eqt.
Paper Machines. 1 Eight-Cylinder 76" Width 69" Trim 350 fpm.
Dryers. Drums: 115-42", 12-36" dia. Calenders: 3 stacks.
Coaters, On Machine. 2 Kohler rod.
Finishing Plant. Trimmers: 1.

Steam/Power. Power Boilers: 1. Fuel: gas. Steam, lbs hr.: 60,000. Press.: 150 psi.
Electricity: Freq, phase: 60, 3. Installed H.P.: 2100 electric, 300 water. Purchased: 1500 kva.

Water Treatment. Daily Usage. 20 M.g.p.d. Source: River.

Effluent Treatment. Primary Treatment: 1 Clarifier Effluent to county sewer line.

Products. Boxboard: clay-coated, chip, news, lined and solid kraft, food grade. 100 tons daily.

TROY

★**ABTco. Inc.** Abitibi Building Products

Headquarters Location. See Executive Offices section for more details.

VICKSBURG

Fox River Paper Co. (formerly Simpson Paper Co.) 300 W Hwy St, 49097 (PO Box 157, Vicksburg, MI, 49097)

Tel: 616-649-9200 Fax: 616-649-9299
RR: ConRail siding. Hwys: Near US Rte 131; IS-94, 6 mi.
Roger Huckendubler, Mill Mgr
Gary Vandlen, Prod Mgr
Jeff Honour, Ppr Mchns Supt
Dick Moyle, Cnvtg Supt
Jeff Cross, Tech Dir
Bruce Block, Plant Engr
John Fields, Mgr Qlty Cntrl
Ronald G Markan, Pers Dir

Paper Mill Stock Preparation: Pulpers: 3 Jones Pulpmaster. Beaters: 2 1500 lb, 2 1000 lb. Bertrams. Screens: 5. Refiners: 3 double disc Morden. Jordans: 5 Jones Imperial.
Paper Machines. 1 Fourdrinier 121" Width 105" Trim 300 fpm.
1 Fourdrinier 132" Width 112" Trim 500 fpm.
1 Fourdrinier 134" Width 114" Trim 600 fpm.
Dryers. Drums: 122. Size Presses: 4. Calenders: 3 stacks. Winders: 3.
Coaters, Off Machine. 1 52" air knife. 20 tpd.
Finishing Plant. Supercalenders: 2-56", 1-48". Rewinders: 6. Sheeters: 3-57", 61", 61". Trimmers: 3-66", 75", 110".

MHI-00325

• CENTRAL NATIONAL-GOTTESMAN INC. •
Three Manhattanville Road, Purchase, NY 10577-2110 Tel: 914-696-9000 Fax: 914-696-1066
ALL GRADES OF PULP FROM
U.S. & WORLDWIDE SOURCES
EXPORT WOODPULP

Steam/Power. Power Boilers: 2. Fuel: Gas/Oil. Steam, lbs hr.: 80,000
Electricity: Purchased: 100%.

Water Treatment. Daily Usage, 2.5 million g.p.d. Source: River, Wells.

Effluent Treatment. Primary Treatment: Clarifier. Secondary Treatment: Aeration basin, spray irrigation.

Products. Rag and sulphite bond, solid and pasted bristol, check, book (antique, eggshell, EF, MF, SC, coated, offset), cover, embossing, sulphite drawing, greeting card, ledger, text and cover, linen finish, safety, photographic base, reproduction, writing, and 100% recycled text papers, 125 tons daily.

WATERVLIET

Fletcher Paper Co. Watervliet Paper Mill (formerly Silver Leaf Paper Co.) 711 N Main St.

RR: siding. Hwys: IS-94; State Rte 140.

Pulp Mill Deinking: Avg. Daily Prod.: 140 tons
Pulp Mill is idle.

Paper Mill Stock Preparation: Pulpers: 3. Refiners: 2 Sprout Waldron, 4 Hydradisc. Jordans: 1 Jones. Other Eqt.: Disc Savealls: 2.
Paper Machines. 1 Beloit Fourdrinier 124" Width 110" Trim 1000 fpm, 70 tpd, 43#-116# uncoated with Measurex 2001 control system.
1 Beloit Fourdrinier 138" Width 122" Trim 1000 fpm, 70 tpd, 70# and higher coated C1S with Measurex 2001 control system.
Dryers. Drums: 85. Size Presses: 2. Calenders: 2. Winders: 2
Coaters. Off Machine. 1 92", 1 88", 1 70", 1 66" air knife.
On Machine. 1 128" Valmet TwoStream.
Finishing Plant. Supercalenders: 5: 119", 66", 80", 86", 96". Rewinders: 1 96" Beloit Bi-Winder; 1 120" Beloit S-15, 1 80" Cameron duplex. Sheeters: 3 76" to 101". Trimmers: 2 85", 1 100" Other Eqt Laminators: 1 62", 600 fpm Black Clawson with flying splice. Embossers: 1 62", 800 fpm Butterworth rotary

Steam/Power. Power Boilers: 3 Fuel: Coal, Nat Gas available. Steam, lbs hr: 90,000 Press. 235 psi. Electricity Installed H P. 450 water Purchased: 100%

Water Treatment. Daily Usage, 700 M.g.p.d. Source. wells

Effluent Treatment. Primary Treatment: and.

Products. No 1 & No 2 offset enamel text and cover with 50% recycled fiber and 20% post-consumer waste, playing card stock, greaseproof, moldproof, wet strength C1S label, coated recycled papers for commercial printing and flexible packaging, 140 tons daily
Paper Mill is idle

WHITE PIGEON

White Pigeon Paper Co. 15781 River St, 49099 (PO Box 277, White Pigeon, MI, 49099)
Tel: 616-483-7601 Fax: 616-483-9989
RR ConRail siding Hwys: On US Rte 12.
William Schmidt, Pres
Dick Bennett, Dir Mfg
Len Eggleston Gen Supt
Frank Black Supt
Paul Stouter Tech Dir
Kenneth A Shane, Plant Contr
Patsy Brown Prchsg Mgr
David DiBiaggio, Sales Mgr
Rose Hiner Sales Srvc Mgr

Paper Mill Stock Preparation Pulpers. 4 Hydrapulper Screens 6 Refiners 5
Paper Machines 1 seven-unit Ultraformer 110" Trim
Dryers. Drums 41 Calenders 2
Coaters On Machine 2 air knife, 2 rod
Finishing Plant Rewinders 1 Trimmers 1-85"

Steam/Power. Power Boilers 2 Fuel Oil/Gas. Steam, lbs hr 180,000 Press. 500 psi
Electricity Purchased. 100%

Water Treatment. Daily Usage, 250 M.g.p.d. Source River

Effluent Treatment. Primary Treatment: Clarifier. Secondary Treatment: 6 Settling Basins.

Products. Clay-coated boxboard, 200 tons daily.

YPSILANTI

Crown Vantage Inc. Ypsilanti Mill 1000 N Huron St, 48197
Tel: 313-482-2600 Fax: 313-482-1288
RR: ConRail siding. Hwys: On IS-94.
Patrick Kittle, Res Mgr
Kathie Cropsey, Tech Dir
Gerald Linzmeyer, Enviro Mgr
Tom Thomas, Plant Engr
Bryan Davis, Fnshg Supt
Robert Neesam, Contr

Paper Mill Stock Preparation: Pulpers: 1 1000, 2 2000 lb Hydrapulper. Refiners: 2 Sprout Waldron. Screens: 1 Bird pressure. Cleaners: Bauer Centricleaners. Consistency Regulators: DeZurik. Stock Mixers: Lightin' agitators.
Paper Machines. 1 Manchester Fourdrinier 90" Width 80" Trim 500 fpm.
Dryers. Drums: 29-36". Size Presses: 1. Calenders: 1 stack. Winders: 1.
Finishing Plant. Roll Wrapping Eqt.: 1 line. Rewinders. 1-78" Langston. Sheeters: 1-85", 65" Hamblet. Trimmers: 1-110" Lawson, 1-56" SHM. Other Eqt.: Embossers: 2. Printer-Embossers: 1. Pasters: 1 duplex.

Steam/Power. Power Boilers: 1. Fuel: Gas/Oil. Steam, lbs hr., 40,000. Press.: 120 psi.
Electricity Freq, phase: 60, 3. Installed H.P.: 1200. Purchased: 25000 kwh/day.

Water Treatment. Daily Usage, 500 M.g.p.d. Source: Wells, River. Primary Treatment: yes.

Effluent Treatment. Primary Treatment: City sewer system.

Products. Colored cover and text, colored envelope, colored and sulphite and bleached kraft specialties. 50 tons daily.

MINNESOTA

BECKER

Liberty Paper Inc. 13500 Liberty Ln, 55308 (PO Box 429, Becker, MN, 55308)
Tel: 612-261-6100 Fax: 612-261-5311
Larry M Newell, Plant Mgr

Paper Mill Stock Preparation: Black Clawson OCC Recycling System: 300 tpd.
Paper Machines. 1 Valmet Fourdrinier

Products. Recycled linerboard, 250 tons daily.

BEMIDJI

Georgia-Pacific Corp. Hardboard Plant 280 Nymore Rd NE, 56601 (PO Box 518, Bemidji, MN 56601)
Tel 218-751-5140 Fax: 218-751-5831
RR. BN siding Hwys: US Rte 2, 71 371
Gary Wilson, Res Mgr
Paul Malterude, Mgr, Traf & Sls

Woodhandling and Preparation Barkers. 1 21" Manitowoc Chippers. 1 12' Hansel Avg. Daily Use of Peeled Pulpwood 100 cds aspen

Pulp Mill Defibrated Wood Pulp Avg Daily Prod. Unbl Hwd., 100 tons Continuous Digesters 2 30' Grenco

Paper Mill Paper Machines 2 Hardboard dry formers with 49"x97.5" presses and drying systems

Steam/Power. Power Boilers. 1. Fuel. Bark. Steam, lbs hr 14,000 Press 200 psi
Electricity Freq, phase 440v, 60, 3 Installed H.P 2350 electric Purchased 30,000 kwh/day.

Water Treatment. Source. City

Products. Standard panel and tempered hardboard (⅛" to ⅜" thickness) and special types. S2S. 290 Msf daily capacity (⅛" basis)

BRAINERD

Potlatch Corp. Northwest Paper Div. 1801 Mill Av NE, 56401
Tel. 218-828-3200 Fax. 218-828-5118
RR: Burl Nthrn. Hwys: US Rte 210, 371
Thomas G Palkie, Vice Pres, Mfg
Roderick W Petron, Mgr, Qlty Srvcs
Thomas J Westerback, Mgr, Ppr Mfg
Erwin D Kosloski, Mgr, Tech Srvc
Daryl L Hartman, Mgr, Mech Srvc
Robert A Krell, Mgr, Emply Rels
Elmer W Walls, Mgr, Fnshg & Shppg
Charles O Provost, Mgr, Ctg
Al D Evans, Plt Contr

Paper Mill Stock Preparation: Pulpers: 3 Hydrapulpers. Refiners: 4 disc. Jordans. 1.
Paper Machines. 1 Fourdrinier 128" Width 112" Trim 1500 fpm
1 Fourdrinier 200" Width 180" Trim 2000 fpm
Dryers. Size Presses: 1 112". Calenders: 2.
Coaters. Off Machine 1 112" two-station blade.
On Machine. 1 180" Billblade.
Finishing Plant. Supercalenders: 2-134", 2-121", 1-80". Rewinders. 7. Sheeters: 6, 4 precision. Trimmers: 1.

Steam/Power. Power Boilers: 4. Fuel. Gas/Coal. Steam, lbs hr.: 260,000
Electricity Purchased: 200,000 kwh/day Generated: 54,000 kwh/day.

Water Treatment. Daily Usage, 3.0 million g.p.d. Source: River Primary Treatment: Infilco accelerator.

Effluent Treatment. Primary Treatment: 1-90' Beloit-Passavant clarifier. Secondary Treatment: 9 12'x26' Bio-Surf units, 1-85' Eimco clarifier.

Products. Coated offset text and cover (gloss, matte, dull), 395 tons daily.

CLOQUET

★**Potlatch Corp.** Northwest Paper Div 207 Av C, 55720 (PO Box 510, Cloquet, MN, 55720-0510)
Tel: 218-879-2300 Fax 218-879-2349
Headquarters Location. See Executive Offices section for more details
RR: Burl Nthrn, Duluth & Nrthestrn RR. Hwys: State Rte 33, 45
Thomas A Biazzo Vice Pres, Mfg, Cloquet Unit
Charles E Hartley Prod Mgr, Pulp, Pwr & Rcvry
Glen H Lundin, Mgr, Paper Mfg
Richard L Morgan, Mgr, Pwr Rcvry & Chem Prep
David F Peterson, Mgr, Tech Srvc
Larry D Slater, Mgr, Pulp Mfg
Robert R Becker, Prod Mgr, Info Sys
William H Erickson, Mgr Ctg
Joseph P Prevendar, Mgr, Engrg
Michael A Rossing, Mgr, Maint
Robert M Kainu, Mgr Wood Prprtn
John D Hanson, Mgr Fnshg & Shppg
James E Buchner, Mgr Empl Rels
Jack E Munter, Pur Agt
Richard J Brenner, Div Contr

Woodhandling and Preparation Roundwood Storage Capacity 30,000 cds. Barkers: 1 84' drum. Chippers. 1 120", 12 knife. Chip Screens: 2. Avg. Daily Use of Peeled Pulpwood. 190 cds swd, 700 cds hwd

Pulp Mill Kraft Avg Daily Prod., Bl. Swd., 100 tons Bl Hwd 440 tons Batch Digesters. 10
Chemical Recovery Plant. Evaporators: 1 six-effect HPD with concentrators Recovery Boilers. 1 B&W Lime Kilns 1 calciner Recausticizing System: 1.
Bleach Plant. Sequence. Hwd: D-E-D-E-D; Swd: D-E-D-D
Pulp Drying Wet Machines 1 Impco feltless

Paper Mill Stock Preparation Pulpers: 4 Hydrapulpers Refiners 9 disc
Paper Machines 1 Fourdrinier 216" Width 192" Trim 1500 fpm
1 Fourdrinier 216" Width 196" Trim 2500 fpm
Coaters On Machine 2 200" Billblade
Off Machine. 1 200" trailing blade
Finishing Plant Supercalenders: 2 194" Rewinders 3. Sheeters 4 precision Trimmers 2.

Steam/Power. Power Boilers: 3 Fuel: Coal/Gas/Oil/Bark Steam, lbs hr. 550,000
Electricity Purchased 300,000 kwh/day Generated. 400 000 kwh/day

Water Treatment. Daily Usage. 13.0 million g.p.d. Source River, Lake Superior

Effluent Treatment. Primary Treatment discharge into P O T W

Products. Coated offset, text and cover, coated wet papers 540 tons daily

93-1597

BRYAN

[illegible] PAPER COMPANY
[illegible] MICHIGAN

[illegible]	[illegible]	July 25, 1950
[illegible]	[illegible]	July 20, 1950
[illegible]	[illegible]	July 20, 1950

Type: [illegible]

Mill Water Supply

Fresh water intake is in Portage Creek above the waste outlet of the Allied Paper [illegible]

Waste Sources (Sewers numbered from upstream to downstream)

Sewer No. 1 carries all waste from Mill "A," the de-ink mill.

Sewer No. 2 carries all excess waste from Mill "C." One paper machine is located in this building. Under normal operation all white water from the paper machine is discharged to a settling basin. Most of the overflow from the basin is pumped to a storage compartment for eventual use in the de-ink mill. Excess over that pumped to the de-ink mill is wasted to the sewer. When the machine is on a color run none of the overflow liquor from the settling basin is used in the de-ink mill. Colored paper is a very small percentage of the total paper production.

Sewer No. 3 carries miscellaneous waste waters from the basement of the machine room of Mill "D." Three paper machines are operated in this Mill. A great portion of the flow in this sewer is from bearing cooling water, but some press water is also discharged to this sewer.

Sewers No. 4 and 5 are inter-connected and carry excess white water waste from Mill "D." Under normal operation white water from the three paper machines is discharged to a white water tank in the beater room basement and is re-used for

STORAGE

2067-B-7.3/014

[illegible] the de-ink mill.

[illegible] water from any machine on a [illegible] Colored paper is a very [illegible]

[illegible] discharges to the west bank of [illegible] Spain Street bridge. For the pur- [illegible] built. The No. 1 weir was [illegible] basement of the de-ink mill. [illegible] edged weir. The No. 2 weir was built in [illegible] de-ink mill and east of a paper [illegible] was a 1.5 foot rectangular metal [illegible]

[illegible] discharges to the east bank of Portage Creek midway between [illegible] the waste from Mill "C." A 2.0 [illegible] weir (Weir No. 3) was constructed in a weir box [illegible] to measure the flow.

[illegible] discharges to the east bank of Portage Creek from the basement [illegible] walkway to the old power plant on the [illegible] Portage Creek. Two 1.0 foot rectangular metal edged weirs (Weirs [illegible] constructed in the open 20 inch concrete channels leading to [illegible]

[illegible] open concrete channel south of the beater room line- [illegible] 1.0 foot rectangular metal edged weir (Weir No. [illegible] was constructed in this channel.

[illegible]

[illegible] feet north of Sewer No. 4. [illegible] Weir No. [illegible] was constructed in this [illegible].

[illegible]

[illegible] weirs to obtain a continuous [illegible]. Samples were taken at half hour [illegible] at Weirs No. [illegible] 2, 4, 5, 6 and 7. Samples [illegible] and 2, and jointly at Weirs No. 4 [illegible] survey period. At Weir No. 3 samples [illegible] composited by the automatic sampler [illegible].

SURVEY NO. 1
[illegible] 25, 1960 - 1st Shift

[illegible]	[illegible]	
[illegible]	0.4082	mg. No. 1 Weir
	0.5471	mg. No. 2 Weir
	0.2285	mg. No. 3 Weir
	0.3615	mg. No. 4 and 5 Weirs
	0.1163	mg. No. 6 and 7 Weirs
	1.7613	mg. Total

St. Regis Paper Company
Kalamazoo, Michigan

SAMPLE ANALYSIS

	Waste No. 1 Weir	Settled Waste	% Red.	Waste No. 2 Weir	Settled Waste	% Red.	Waste No. 3 Weir	Settled Waste	% Red.	Waste No. 4&5 Weirs	Waste No. 6&7 Weirs	Raw Water
5 Day B.O.D.	495	370	[illegible]	370	286	22.[illegible]	[illegible]	18	71.3	[illegible]	260	[illegible]
Total Solids	5,864	[illegible]		3,860	2,818		[illegible]	468		[illegible]	[illegible]	[illegible]
Total Volt. Solids	2,[illegible]	[illegible]		1,[illegible]	948		[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
Suspended Solids	4,220	[illegible]	[illegible]	[illegible]	672	70.0	[illegible]	86	[illegible]	242	[illegible]	
Suspended Volt. Solids	[illegible]	[illegible]	[illegible]	[illegible]	140	[illegible]	[illegible]	[illegible]	66.2	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]					[illegible]			7.[illegible]	[illegible]	
[illegible] Solids	[illegible]			[illegible]			[illegible]					

[illegible] except pH

NCASI 000550

[illegible]	[illegible] x 8.34 x [illegible] =	2,095 lbs.	
No. [illegible]	[illegible] x 8.34 x [illegible] =	1,690 lbs.	
No. [illegible] Weir	([illegible] x 8.34 x [illegible]) =	251 lbs.	
No. [illegible] & [illegible] Weirs	([illegible] x 8.34 x [illegible]) =	235 lbs.	
No. [illegible] & [illegible] Weirs	([illegible] x 8.34 x 200) =	252 lbs.	
Ex. Water	([illegible] x 8.34 x 1.8) =		27 lbs.
Net Total to River		4,496 lbs.	

Pounds of B.O.D. Per Ton Product

(4,496 ÷ 99,670) x 2,000 = 90.2 lbs.

Suspended Solids

No. 1 Weir	(0.5080 x 8.34 x 4,220)	17,880 lbs.	
No. 2 Weir	(0.5470 x 8.34 x 2,300)	10,500 lbs.	
No. 3 Weir	(0.2285 x 8.34 x 596)	1,135 lbs.	
No. 4 & 5 Weirs	(0.3615 x 8.34 x 242)	730 lbs.	
No. 6 & 7 Weirs	(0.2163 x 8.34 x 804)	780 lbs.	
Ex. Water	(0.7613 x 8.34 x 3)		74 lbs.
Net Total to River		30,951 lbs.	

Pounds of Suspended Solids Per Ton Product

(30,951 ÷ 99,670) x 2,000 = 622.0 lbs.

[illegible]

[illegible]

[illegible]

[illegible] Weir ([illegible] x 8.34 x [illegible]) = [illegible].260 lbs.

[illegible] ([illegible] x 8.34 x [illegible]) = 3,320 lbs.

[illegible] ([illegible].2265 x 8.34 x 362) = 690 lbs.

No. [illegible] & [illegible] Weirs ([illegible] x 8.34 x [illegible]) = 307 lbs.

No. [illegible] & [illegible] Weirs ([illegible] x 8.34 x 650) = 630 lbs.

Raw Water ([illegible] x 8.34 x 0) = _____ 0 lbs.

Not Total to River 11,207 lbs.

Pounds of Suspended Volatile Solids Per Ton Product

(11,207 ÷ 99.670) x 2,000 = 225.0 lbs.

Fibre Loss

[225.0 ÷ (2,000 x 0.95)] x 100 = 11.85%

Population Equivalent

(4.496 ÷ 0.167) = 26,900 people per 8 hours

Gallons Waste Per Ton Product

([illegible],300 ÷ 99.670) x 2,000 = 35,300 gallons

SURVEY NO. 2

July 20, 1950 - 2nd Shift

Production: 96,445 lbs.

Flow:

1.5630	mg. No. 1 Weir
[illegible]	mg. No. 2 Weir
0.1985	mg. No. 3 Weir
0.3445	mg. No. 4 & 5 Weirs
0.0584	mg. No. 6 & 7 Weirs
1.6734	mg. Total

St. Regis Paper Company
Kalamazoo, Michigan

Samp

SAMPLE ANALYSIS

	Waste No. 1 Weir	Settled Waste	% Red.	Waste No. 2 Weir	Settled Waste	% Red.	Waste No. 3 Weir	Settled Waste	% Red.
[illegible]-Day B.O.D.	278	127	54.3	510	234	54.1	88	16	81.8
Total Solids	3,300	2,140		4,508	2,380		1,090	[illegible]	
Total Volatile Solids	1,124	656		1,876	766		410	[illegible]	
Suspended Solids	2,060	1,006	51.2	3,264	972	70.2	716	[illegible]	90.0
Suspended Volatile Solids	708	2[illegible]6	66.7	1,352	234	82.6	[illegible]	24	[illegible]
pH	8.4			8.95			7.95		
Settleable Solids	1,00[illegible]			2,210			66		

	Waste No. [illegible] Weir	Settled Waste	% Red.	Waste No. 6 & [illegible] Weir	Settled Waste	% Red.	Raw Water
[illegible] Day B.O.D.	[illegible]0	[illegible]2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Solids	[illegible]	[illegible]		1,102	[illegible]98		[illegible]
Total Volatile Solids	[illegible]	18[illegible]		664	[illegible]		[illegible]
Suspended Solids	[illegible]	[illegible]	[illegible]	68		[illegible]	[illegible]
Suspended Volatile Solids		[illegible]6	8[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pH	[illegible]			[illegible]			
Settleable Solids	148			[illegible]			

[illegible] pH

NCASI 000553

[illegible]

[illegible]

[illegible]

[illegible] 305 lbs.

[illegible] 2,165 lbs.

[illegible] 146 lbs.

[illegible] 115 lbs.

[illegible] 75 lbs.

[illegible] 98 lbs.

[illegible] 3,708 lbs.

[illegible] Per Ton Product

[illegible] 2,000 = 76.7 lbs.

[illegible]

[illegible] (0.5[illegible] x 8.34 x 2,060) = 9,690 lbs.

[illegible] (0.5[illegible] x 8.34 x 3,264) = 13,850 lbs.

[illegible] Weir (0.[illegible] x 8.34 x 716) = 1,185 lbs.

[illegible] & [illegible] Weirs (0.[illegible] x 8.34 x 210) = 603 lbs.

[illegible] & [illegible] Weirs (0.[illegible]584 x 8.34 x 680) = 331 lbs.

[illegible] Water (0.[illegible]734 x 8.34 x 70) = 975 lbs.

Net Total to River 24,684 lbs.

Pounds of Suspended Solids Per Ton Product

(24,684 ÷ 96,445) x 2,000 = 512.0 lbs.

[illegible]

[illegible]

[illegible] W [illegible] x [illegible] x [illegible] = [illegible] lbs.

[illegible] W [illegible] x 8.34 x [illegible] = [illegible] lbs.

[illegible] W [illegible] x [illegible] x 272 = 450 lbs.

[illegible] W [illegible] 8.34 x 80 = 230 lbs.

[illegible] x [illegible] x 540 = 203 lbs.

[illegible] x [illegible] x 23 = _____ 348 lbs.

[illegible] 9,655 lbs.

P[illegible] S[illegible] V[illegible] Solids Per Ton Product

[illegible] = 200.5 lbs.

[illegible]

[illegible] x 100 = 10.55%

[illegible]

[illegible] 22 200 people per 8 hours

[illegible] Per Ton Product

([illegible] - 96.445) x 2.000 = 34,700 gallons

SURVEY NO. 3

July 20, 1950 - 3rd Shift

Production: 102,600 lbs.

Flows:

0.454	mg.	No. 1 Weir
0.[illegible]6	mg.	No. 2 Weir
0.190	mg.	No. 3 Weir
0.33[illegible]	mg.	No. 4 & 5 Weirs
0.109	mg.	No. 6 & 7 Weirs
1.[illegible]08	mg.	Total

St. Regis Paper Company
Kalamazoo, Michigan

SAMPLE ANALYSIS

	Waste No. 1 Weir	Settled Waste	% Red.	Waste No. 2 Weir	Settled Waste	% Red.	Waste No. 3 Weir	Settled Waste	% Red.
5-Day B.O.D.	430	150	65.1	240	114	52.5	75	48	36.0
Total Solids	4,324	2,090		2,850	1,846		738	500	
Total Volatile Solids	1,852	644		1,020	520		328	300	
Suspended Solids	3,328	758	77.2	1,752	802	54.2	364	[illegible]	52.2
Suspended Volatile Solids	1,412	172	87.8	640	188	70.6	228	[illegible]	95.7
pH	8.7			8.4			7.8		
Settleable Solids	2,[illegible]2			977			22[illegible]		

	Waste No. 4&5 Weir	Settled Waste	% Red.	Waste No. 6&7 Weir	Settled Waste	% Red.	Raw Water
5-Day B.O.D.	[illegible]	[illegible]	31.2	1[illegible]	20	86.7	7.0
Total Solids	[illegible]	[illegible]		1,[illegible]	1[illegible]		27[illegible]
Total Volatile Solids	2[illegible]	[illegible]6		66[illegible]	1[illegible]4		8[illegible]
Suspended Solids	[illegible]	[illegible]	[illegible]	[illegible]	48	9[illegible].4	[illegible]
Suspended Volatile Solids	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible].4	[illegible]
pH	[illegible]			[illegible]			
Settleable Solids	10[illegible]			[illegible]			

All values are p.p.m. except pH

NCRSI 000556

[illegible] = 1,628 lbs.

[illegible] x [illegible] = [illegible] lbs.

[illegible] x 75) = 119 lbs.

[illegible] x 32) = 91 lbs.

[illegible] x [illegible] = 136 lbs.

[illegible] = _____ 94 lbs.

[illegible] 2,912 lbs.

[illegible]

([illegible]) x [illegible] = 56.8 lbs.

Suspended Solids

No. 1 Weir (0.454 x 8.34 x 3,328) = 12,600 lbs.

No. 2 Weir ([illegible] x 8.34 x 1,752) = 7,540 lbs.

No. 3 Weir ([illegible] x 8.34 x 364) = 576 lbs.

No. 4 & 5 Weirs ([illegible]339 x 8.34 x 166) = 468 lbs.

No. 6 & 7 Weirs ([illegible] x 8.34 x 732) = 664 lbs.

Raw Water (1.608 x 8.34 x 70) = _____ 939 lbs.

Net Total to River 20,909 lbs.

Pounds of Suspended Solids Per Ton Product

([illegible],909 + 102,600) x 2,[illegible] = 407 lbs.

Suspended Volatile Solids

No. 1 Weir (0.454 x 8.34 x 1,412) = 5,340 lbs.

No. 2 Weir (0.516 x 8.34 x 640) = 2,750 lbs.

No. 3 Weir ([illegible] x 8.34 x 228) = 361 lbs.

No. 4 & 5 Weirs ([illegible]39 x 8.34 x 64) = 181 lbs.

No. 6 & 7 Weirs ([illegible] x 8.34 x 502) = 456 lbs.

Raw Water (1.608 x 8.34 x 25) = 335 lbs.

Net Total to River 8,753 lbs.

[illegible] Solids Per Ton of Product

[illegible] x 2,000 = 170.7 lbs.

Fibre Loss

[illegible] x 100 = 8.97%

[illegible]

[illegible] people per 8 hours

[illegible]

[illegible] x 2,000 = 31,300 gallons

[illegible]

	Survey No.1	Survey No.2	Survey No.3	Total
[illegible]	49.84	48.22	51.3	149.36
[illegible]-Million Gallons	1.761	1.673	1.608	5.042
Pounds of B.O.D. (Net)	4,496	3,708	2,912	11,116
Pounds of B.O.D. Per Ton Product	90.2	76.7	56.8	74.6 *
Pounds of Dry Solids (Net)	30,951	24,684	20,909	76,544
Lbs. of Dry Solids Per Ton Prod.	622	512	407	514 *
Lbs. of Volatile Solids (Net)	11,207	9,655	8,753	29,615
Lbs. of Vol. Solids Per Ton Prod.	225.0	200.5	170.7	198.7 *
Gallons Waste Per Ton Prod.	35,300	34,700	31,300	33,767 *
Fibre Loss-Per Cent	11.85	10.55	8.97	10.46 *
Population Equivalent	26,900	22,200	17,430	66,530

1.68 *

* Average of three surveys

Remarks

All chemical analyses were made in the Water Resources Laboratory at the Health Department in Lansing. Samples were immediately transported to this laboratory and were iced during transit. The dilution water used to determine the biochemical oxygen demand of the waste waters was Lea-Nichols water and one per cent Plainwell settled sewage was used for seeding each dilution. All other analyses were made according to the Ninth Edition of "Standard Methods for the Examination of Water and Sewage."

When figuring per cent fibre loss the pounds of mill production is converted to a dry basis. For uniformity a product with five per cent moisture is assumed for all of the mills.

R. W. Purdy
W. S. Springer
W. H. Abbott
J. R. Couchois

ALLIED PAPER COMPANY
MONARCH DIVISION
KALAMAZOO, MICHIGAN

Survey No. 1	1st Shift	April 27, 1950
Survey No. 2	2nd Shift	May 18, 1950
Survey No. 3	3rd Shift	April 27, 1950

Type: Book Conversion Mill

Mill Water Supply

Portage Creek.

Waste Sources

There are three sources of waste in the mill, two paper machines and a de-ink mill. Both paper machines are save-alled. One machine with a Bird type save all and the other with an Oliver vacuum filter. White water from the paper machines is used in the de-ink mill pulp washer except when a machine is running colored stock. All waste from the de-ink washer passes through an Oliver vacuum filter before discharge to the sewer.

Waste Measurement

All waste from this mill is discharged to a channel leading from the north side of the mill to Portage Creek. A previously constructed 6.0 foot rectangular metal edged weir in the west side of the twin box culvert under Cork Street was used to measure waste flow. The flow to the opposite half of the culvert was blocked off with sand bags to divert all waste through the weir.

Survey Procedure

A recording head meter was installed to obtain a continuous record of the flow during the three surveys. Composite samples during each survey were taken

STORAGE
NCASI 000508

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction	Raw Water
5-Day B.O.D.	156	111	28.9	2.5
Total Solids	1,094	858		255
Total Volatile Solids	494	334		98
Suspended Solids	424	174	58.9	7
Suspended Volatile Solids	214	60	72	2
pH	8.00			8.0
Settleable Solids	243			

All values in p.p.m. except pH

B.O.D.

Mill Waste (3.315 x 8.34 x 156) = 4,310 lbs.

Raw Water (3.315 x 8.34 x 2.5) = 69 lbs.

Net Total to River 4,241 lbs.

Pounds of B.O.D. per Ton Product

(4,241 ÷ 54,350) x 2,000 = 156 lbs.

Suspended Solids

Mill Waste (3.315 x 8.34 x 424) = 11,720 lbs.

Raw Water (3.315 x 8.34 x 7) = 193 lbs.

Net Total to River 11,527 lbs.

Pounds of Suspended Solids per Ton Product

(11,527 ÷ 54,350) x 2,000 = 424 lbs.

Suspended Volatile Solids

Mill Waste (3.315 x 8.34 x 214) = 5,910 lbs.

Raw Water (3.315 x 8.34 x 2) = 55 lbs.

Net Total to River 5,855 lbs.

Pounds of Suspended Volatile Solids per Ton Product

(5,855 ÷ 54,350) x 2,000 = 215 lbs.

Percent Fibre Loss

[215 ÷ (2,000 x 0.95)] x 100 = 11.33%

Population Equivalent

(4,241 ÷ 0.167) = 25,400 people per 8 hours

Gallons Waste Per Ton Product

(2,355,000 ÷ 54,350) x 2,000 = 86,600 gallons

SURVEY NO. 3

April 27, 1950 - 3rd Shift

Production: 62,750 lbs.

Flow: 2.80 mg. Total Mill Waste
0.96 mg. Condenser Water
1.84

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction	Raw Water
5-Day B.O.D.	150	128	14.7	2.9
Total Solids	1,244	966		224
Total Volatile Solids	524	446		99
Suspended Solids	504	304	39.7	10
Suspended Volatile Solids	184	92	50	0
pH	9.55			
Settleable Solids	224			

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.80 x 8.34 x 150) = 3,500 lbs.

Raw Water (2.80 x 8.34 x 2.9) = 68 lbs.

Net Total to River 3,432 lbs.

Pounds of B.O.D. per Ton Product

(3,432 ÷ 62,750) x 2,000 = 109.2 lbs.

Suspended Solids

Mill Waste (2.80 x 8.34 x 504) = 11,780 lbs.

Raw Water (2.80 x 8.34 x 10) = 234 lbs.

Net Total to River 11,546 lbs.

Pounds of Suspended Solids per Ton Product

(11,546 ÷ 62,750) x 2,000 = 369 lbs.

Suspended Volatile Solids

Mill Waste (2.80 x 8.34 x 184) = 4,300 lbs.

Raw Water (2.80 x 8.34 x 0) = 0 lbs.

Net Total to River 4,300 lbs.

Pounds of Suspended Volatile Solids per Ton Product

(4,300 ÷ 62,750) x 2,000 = 137 lbs.

Percent Fibre Loss

[137 ÷ (2,000 x 0.95)] x 100 = 7.21%

Population Equivalent

(3,432 ÷ 0.167) = 20,500 people per 8 hours

Gallons Waste Per Ton Product

(1,840,000 ÷ 62,750) x 2,000 = 58,700 gallons

Summary

	Survey No.1	Survey No.2	Survey No.3	Total
Production-Tons	32.46	27.18	31.38	91.02
Flow-Million Gallons	1.86	2.355	1.84	6.055
Pounds of B.O.D. (Net)	2,447	4,241	3,432	10,120
Pounds of B.O.D. Per Ton Product	75.5	156	109.2	113.6 *
Pounds of Dry Solids (Net)	8,795	11,527	11,546	31,868
Lbs. of Dry Solids Per Ton Prod.	271	424	369	354.7 *
Lbs. of Vol. Solids (Net)	3,290	5,855	4,300	13,445
Lbs. of Vol. Solids Per Ton Prod.	101.4	215	137	151.1 *
Gallons Waste Per Ton Product	57,300	86,600	58,700	67,533 *
Fibre Loss - Percent	5.33	11.33	7.21	7.96 *
Population Equivalent	14,680	25,400	20,500	60,580

* Average of three surveys.

Remarks

All chemical analyses were made in the Water Resources Laboratory at the Health Department in Lansing. Samples were immediately transported to this laboratory and were iced during transit. The dilution water used to determine the biochemical oxygen demand of the waste waters was Lea-Nichols water and one per cent Plainwell settled sewage was used for seeding each dilution. All other analyses were made according to the Ninth Edition of "Standard Methods for the Examination of Water and Sewage."

When figuring per cent fibre loss the pounds of mill production is converted to a dry basis. For uniformity a product with five per cent moisture is assumed for all of the mills.

R. W. Purdy
W. S. Springer
W. H. Abbott
J. R. Couchois

NCASI 000513

ALLIED PAPER COMPANY
MONARCH DIVISION
KALAMAZOO, MICHIGAN

Survey No. 1	1st Shift	April 27, 1950
Survey No. 2	2nd Shift	May 18, 1950
Survey No. 3	3rd Shift	April 27, 1950

Type: Book Conversion Mill

Mill Water Supply

Portage Creek.

Waste Sources

There are three sources of waste in the mill, two paper machines and a de-ink mill. Both paper machines are save-alled. One machine with a Bird type save-all and the other with an Oliver vacuum filter. White water from the paper machines is used in the de-ink mill pulp washer except when a machine is running colored stock. All waste from the de-ink washer passes through an Oliver vacuum filter before discharge to the sewer.

Waste Measurement

All waste from this mill is discharged to a channel leading from the north side of the mill to Portage Creek. A previously constructed 6.0 foot rectangular metal edged weir in the west side of the twin box culvert under Cork Street was used to measure waste flow. The flow to the opposite half of the culvert was blocked off with sand bags to divert all waste through the weir.

Survey Procedure

A recording head meter was installed to obtain a continuous record of the flow during the three surveys. Composite samples during each survey were taken

proportional to the flow with the automatic sampler.

SURVEY NO. 1

April 27, 1950 - 1st Shift

Production: 64,920 lbs.

Flow Data: 2.82 mg. Total Mill Waste
.96 mg. Condenser Water
1.86

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction	Raw Water
5-Day B.O.D.	107	92	14.0	2.9
Total Solids	982	780		224
Total Volatile Solids	458	304		99
Suspended Solids	384	220	42.7	10
Suspended Volatile Solids	140	72	48.5	0
pH	8.7			
Settleable Solids	183			

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.82 x 8.34 x 107) = 2,515 lbs.

Raw Water (2.82 x 8.34 x 2.9) = 68 lbs.

Net Total to River 2,447 lbs.

Pounds of B.O.D. Per Ton Product

(2,447 ÷ 64,920) x 2,000 = 75.5 lbs.

Suspended Solids

Mill Waste (2.82 x 8.34 x 384) = 9,030 lbs.

Raw Water (2.82 x 8.34 x 10) = 235 lbs.

Net Total to River 8,795 lbs.

Pounds of Suspended Solids per Ton Product

(8,795 ÷ 64,920) x 2,000 = 271 lbs.

Suspended Volatile Solids

Mill Waste (2.82 x 8.34 x 140) = 3,290 lbs.

Raw Water (2.82 x 8.34 x 0) = 0 lbs.

Net Total to River 3,290 lbs.

Pounds of Suspended Volatile Solids per Ton Product

(3,290 ÷ 64,920) x 2,000 = 101.4 lbs.

Percent Fibre Loss

[101.4 ÷ (2,000 x 0.95)] x 100 = 5.33%

Population Equivalent

(2,447 ÷ 0.167) = 14,680 people per 8 hours

Gallons Waste Per Ton Product

(1,860,000 ÷ 64,920) x 2,000 = 57,300 gallons

SURVEY NO. 2

May 18, 1950 - 2nd Shift

Production: 54,350 lbs. Colored Paper

Flow Data: 3.315 mg. Total Mill Waste
0.96 mg. Condenser Water
2.355 .

063831

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction	Raw Water
5-Day B.O.D.	156	111	28.9	2.5
Total Solids	1,094	858		255
Total Volatile Solids	494	334		98
Suspended Solids	424	174	58.9	7
Suspended Volatile Solids	214	60	72	2
pH	8.00			8.0
Settleable Solids	243			

All values in p.p.m. except pH

B.O.D.

Mill Waste (3.315 x 8.34 x 156) = 4,310 lbs.

Raw Water (3.315 x 8.34 x 2.5) = 69 lbs.

Net Total to River 4,241 lbs.

Pounds of B.O.D. per Ton Product

(4,241 ÷ 54,350) x 2,000 = 156 lbs.

Suspended Solids

Mill Waste (3.315 x 8.34 x 424) = 11,720 lbs.

Raw Water (3.315 x 8.34 x 7) = 193 lbs.

Net Total to River 11,527 lbs.

Pounds of Suspended Solids per Ton Product

(11,527 ÷ 54,350) x 2,000 = 424 lbs.

Suspended Volatile Solids

Mill Waste (3.315 x 8.34 x 214) = 5,910 lbs.

Raw Water (3.315 x 8.34 x 2) = 55 lbs.

Net Total to River 5,855 lbs.

Pounds of Suspended Volatile Solids per Ton Product

(5,855 ÷ 54,350) x 2,000 = 215 lbs.

Percent Fibre Loss

[215 ÷ (2,000 x 0.95)] x 100 = 11.33%

Population Equivalent

(4,241 ÷ 0.167) = 25,400 people per 8 hours

Gallons Waste Per Ton Product

(2,355,000 ÷ 54,350) x 2,000 = 86,600 gallons

SURVEY NO. 3

April 27, 1950 - 3rd Shift

Production: 62,750 lbs.

Flow: 2.80 mg. Total Mill Waste
0.96 mg. Condenser Water
1.84

063833

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction	Raw Water
5-Day B.O.D.	150	128	14.7	2.9
Total Solids	1,244	966		224
Total Volatile Solids	524	446		99
Suspended Solids	504	304	39.7	10
Suspended Volatile Solids	184	92	50	0
pH	9.55			
Settleable Solids	224			

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.80 x 8.34 x 150) = 3,500 lbs.

Raw Water (2.80 x 8.34 x 2.9) = 68 lbs.

Net Total to River 3,432 lbs.

Pounds of B.O.D. per Ton Product

(3,432 ÷ 62,750) x 2,000 = 109.2 lbs.

Suspended Solids

Mill Waste (2.80 x 8.34 x 504) = 11,780 lbs.

Raw Water (2.80 x 8.34 x 10) = 234 lbs.

Net Total to River 11,546 lbs.

Pounds of Suspended Solids per Ton Product

(11,546 ÷ 62,750) x 2,000 = 369 lbs.

Suspended Volatile Solids

Mill Waste (2.80 x 8.34 x 184) = 4,300 lbs.

Raw Water (2.80 x 8.34 x 0) = 0 lbs.

Net Total to River 4,300 lbs.

Pounds of Suspended Volatile Solids per Ton Product

(4,300 ÷ 62,750) x 2,000 = 137 lbs.

Percent Fibre Loss

[137 ÷ (2,000 x 0.95)] x 100 = 7.21%

Population Equivalent

(3,432 ÷ 0.167) = 20,500 people per 8 hours

Gallons Waste Per Ton Product

(1,840,000 ÷ 62,750) x 2,000 = 58,700 gallons

Summary

	Survey No.1	Survey No.2	Survey No.3	Total
Production-Tons	32.46	27.18	31.38	91.02
Flow-Million Gallons	1.86	2.355	1.84	6.055
Pounds of B.O.D. (Net)	2,447	4,241	3,432	10,120
Pounds of B.O.D. Per Ton Product	75.5	156	109.2	113.6 *
Pounds of Dry Solids (Net)	8,795	11,527	11,546	31,868
Lbs. of Dry Solids Per Ton Prod.	271	424	369	354.7 *
Lbs. of Vol. Solids (Net)	3,290	5,855	4,300	13,445
Lbs. of Vol. Solids Per Ton Prod.	101.4	215	137	151.1 *
Gallons Waste Per Ton Product	57,300	86,600	58,700	67,533 *
Fibre Loss - Percent	5.33	11.33	7.21	7.96 *
Population Equivalent	14,680	25,400	20,500	60,580

* Average of three surveys.

Remarks

All chemical analyses were made in the Water Resources Laboratory at the Health Department in Lansing. Samples were immediately transported to this laboratory and were iced during transit. The dilution water used to determine the biochemical oxygen demand of the waste waters was Lea-Nichols water and one per cent Plainwell settled sewage was used for seeding each dilution. All other analyses were made according to the Ninth Edition of "Standard Methods for the Examination of Water and Sewage."

When figuring per cent fibre loss the pounds of mill production is converted to a dry basis. For uniformity a product with five per cent moisture is assumed for all of the mills.

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W. S. Springer
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J. R. Couchois

063836

ALLIED PAPER COMPANY
KING DIVISION
KALAMAZOO, MICHIGAN

Survey No. 1	1st Shift	June 22, 1950
Survey No. 2	2nd Shift	June 13, 1950
Survey No. 3	3rd Shift	June 15, 1950

Type: Book Conversion Mill

Mill Water Supply

Well water.

Waste Sources

Normal mill production consists of the operation of four paper machines and a de-ink mill. White water from the paper machines is used as fresh water in the de-ink washers. Three of the paper machines and the de-ink washer are save-alled with Oliver vacuum filters. The fourth paper machine has a Bird type save-all.

Waste Measurement

Waste from this mill is normally discharged to an earth channel north of the mill and also to a city sewer on Lake Street. The flow to the city sewer was diverted to the earth channel so that all waste could be measured at this point. A 5.0 foot rectangular metal edged weir was constructed in the earth channel north of the mill at the east end of Vine Street.

Survey Procedure

A recording head meter was installed to obtain a continuous record of the flow during the three surveys. Composite samples during each survey were taken with the automatic sampler.

STORAGE
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NCASI 000514
TMUR II

SURVEY NO. 1

June 22 1950 - 1st Shift

Production: 112,325 lbs.

Flow Data: 2.39 mg.

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction
5-Day B.O.D.	246	160	34.9
Total Solids	2,043	1,340	
Total Volatile Solids	806	436	
Suspended Solids	1,038	398	61.7
Suspended Volatile Solids	448	120	73.2
pH	7.1		
Settleable Solids	673		

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.39 x 8.34 x 246) = 4,900 lbs. Net to River

Pounds of B.O.D. Per Ton Product

(4,900 ÷ 112,325) x 2,000 = 87.2 lbs.

Suspended Solids

Mill Waste (2.39 x 8.34 x 1,038) = 20,700 lbs. Net to River

Pounds of Suspended Solids per Ton Product

(20,700 ÷ 112,325) x 2,000 = 368 lbs.

Suspended Volatile Solids

Mill Waste (2.39 x 8.34 x 448) = 8,930 lbs. Net to River

Pounds of Suspended Volatile Solids per Ton Product

(8,930 ÷ 112,325) x 2,000 = 158.9 lbs.

Percent Fibre Loss

[158.9 ÷ (2.000 x 0.95)] x 100 = 8.35%

Population Equivalent

(4.900 ÷ 0.167) 29,350 people per 8 hours

Gallons of Waste Per Ton of Product

(2,390,000 ÷ 112,325) x 2,000 = 42,500 gallons

SURVEY NO. 2

June 13, 1950 - 2nd Shift

Production: 121,430 lbs.

Flow Data: 2.38 mg.

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction
5-Day B.O.D.	270	220	18.5
Total Solids	1,952	1,690	
Total Volatile Solids	726	710	
Suspended Solids	686	251	63.4
Suspended Volatile Solids	260	74	71.5
pH	7.3		
Settleable Solids	398		

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.38 x 8.34 x 270) = 5,360 lbs. Net to River

Pounds of B.O.D. per Ton Product

(5,360 ÷ 121,430) x 2,000 = 88.2 lbs.

Suspended Solids

Mill Waste (2.38 x 8.34 x 686) = 13,620 lbs. Net to River

Pounds of Suspended Solids per Ton Product

(13,620 ÷ 121,430) x 2,000 = 224.5 lbs.

Suspended Volatile Solids

Mill Waste (2.38 x 8.34 x 260) = 5,160 lbs. Net to River

Pounds of Suspended Volatile Solids per Ton Product

(5,160 ÷ 121,430) x 2,000 = 85 lbs.

Percent Fibre Loss

[85 ÷ (2,000 x 0.95)] x 100 = 4.47%

Population Equivalent

(5,360 ÷ 0.167) = 32,100 people per 8 hours

Gallons of Waste Per Ton of Product

(2,380,000 ÷ 121,430) x 2,000 = 39,200 gallons

SURVEY NO. 3

June 15, 1950 - 3rd Shift

Production: 124,865 lbs.

Flow Data: 2.705 mg.

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction
5-Day B.O.D.	270	230	14.8
Total Solids	2,066	1,656	
Total Volatile Solids	816	664	
Suspended Solids	860	394	54.2
Suspended Volatile Solids	350	114	67.4
pH	7.7		
Settleable Solids	438		

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.705 x 8.34 x 270) = 6,080 lbs. Net to River

Pounds of B.O.D. per Ton Product

(6,080 ÷ 124,865) x 2,000 = 97.4 lbs.

Suspended Solids

Mill Waste (2.705 x 8.34 x 860) = 19,400 lbs. Net to River

Pounds of Suspended Solids per Ton Product

(19,400 ÷ 124,865) x 2,000 = 311 lbs.

Suspended Volatile Solids

Mill Waste (2.705 x 8.34 x 350) = 7,890 lbs. Net to River

Pounds of Suspended Volatile Solids per Ton Product

(7,890 ÷ 124,865) x 2,000 = 126.4 lbs.

Percent Fibre Loss

[126.4 ÷ (2 000 x 0.95)] = 6.65%

Population Equivalent

(6,080 ÷ 0.167) = 36.450 people per 8 hours

Gallons of Waste Per Ton Product

(2.705.000 ÷ 124.865) x 2,000 = 43,300 gallons.

Summary

	Survey No.1	Survey No.2	Survey No.3	Total
Production-Tons	56.16	60.72	62.43	179.31
Flow-Million Gallons	2.39	2.38	2.705	7.475 2.49*
Pounds of B.O.D. (Net)	4,900	5,360	6,080	16,340
Pounds of B.O.D. Per Ton Product	87.2	88.2	97.4	90.9 *
Pounds of Dry Solids (Net)	20,700	13,620	19,400	53,720
Lbs. of Dry Solids Per Ton Prod.	368	224.5	311	301.2 *
Lbs. of Vol. Solids (Net)	8,930	5,160	7,890	21,980
Lbs. of Vol. Solids Per Ton Prod.	158.9	85	126.4	123.4 *
Gallons Waste Per Ton Product	42,500	39,200	36,450	39,383 *
Fibre Loss - Percent	8.35	4.47	6.65	6.49 *
Population Equivalent	29,350	32,100	36,450	97,900

* Average of three surveys

Remarks

All chemical analyses were made in the Water Resources Laboratory at the Health Department in Lansing. Samples were immediately transported to this laboratory and were iced during transit. The dilution water used to determine the biochemical oxygen demand of the waste waters was Lea-Nichols water and one per cent Plainwell settled sewage was used for seeding each dilution. All other analyses were made according to the Ninth Edition of "Standard Methods for the Examination of Water and Sewage."

When figuring per cent fibre loss the pounds of mill production is converted to a dry basis. For uniformity a product with five per cent moisture is assumed for all of the mills.

R. W. Purdy
W. S. Springer
W. H. Abbott
J. R. Couchois

NCASI 000520

ALLIED PAPER COMPANY
KING DIVISION
KALAMAZOO, MICHIGAN

Survey No. 1	1st Shift	June 22, 1950
Survey No. 2	2nd Shift	June 13, 1950
Survey No. 3	3rd Shift	June 15, 1950

Type: Book Conversion Mill

Mill Water Supply

Well water.

Waste Sources

Normal mill production consists of the operation of four paper machines and a de-ink mill. White water from the paper machines is used as fresh water in the de-ink washers. Three of the paper machines and the de-ink washers are save-alled with Oliver vacuum filters. The fourth paper machine has a Bird type save-all.

Waste Measurement

Waste from this mill is normally discharged to an earth channel north of the mill and also to a city sewer on Lake Street. The flow to the city sewer was diverted to the earth channel so that all waste could be measured at this point. A 5.0 foot rectangular metal edged weir was constructed in the earth channel north of the mill at the east end of Vine Street.

Survey Procedure

A recording head meter was installed to obtain a continuous record of the flow during the three surveys. Composite samples during each survey were taken with the automatic sampler.

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SURVEY NO. 1

June 22 1950 - 1st Shift

Production: 112,325 lbs.

Flow Data: 2.39 mg.

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction
5-Day B.O.D.	246	160	34.9
Total Solids	2,043	1,340	
Total Volatile Solids	806	436	
Suspended Solids	1,038	398	61.7
Suspended Volatile Solids	448	120	73.2
pH	7.1		
Settleable Solids	673		

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.39 x 8.34 x 246) = 4,900 lbs. Net to River

Pounds of B.O.D. Per Ton Product

(4,900 ÷ 112,325) x 2,000 = 87.2 lbs.

Suspended Solids

Mill Waste (2.39 x 8.34 x 1,038) = 20,700 lbs. Net to River

Pounds of Suspended Solids per Ton Product

(20,700 ÷ 112,325) x 2,000 = 368 lbs.

Suspended Volatile Solids

Mill Waste (2.39 x 8.34 x 448) = 8,930 lbs. Net to River

Pounds of Suspended Volatile Solids per Ton Product

(8,930 ÷ 112,325) x 2,000 = 158.9 lbs.

Percent Fibre Loss

[158.9 ÷ (2,000 x 0.95)] x 100 = 8.35%

Population Equivalent

(4,900 ÷ 0.167) 29,350 people per 8 hours

Gallons of Waste Per Ton of Product

(2,390,000 ÷ 112,325) x 2,000 = 42,500 gallons

SURVEY NO. 2

June 13, 1950 - 2nd Shift

Production: 121,430 lbs.

Flow Data: 2.38 mg.

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction
5-Day B.O.D.	270	220	18.5
Total Solids	1,952	1,690	
Total Volatile Solids	726	710	
Suspended Solids	686	251	63.4
Suspended Volatile Solids	260	74	71.5
pH	7.3		
Settleable Solids	398		

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.38 x 8.34 x 270) = 5,360 lbs. Net to River

Pounds of B.O.D. per Ton Product

(5,360 ÷ 121,430) x 2,000 = 88.2 lbs.

Suspended Solids

Mill Waste (2.38 x 8.34 x 686) = 13,620 lbs. Net to River

Pounds of Suspended Solids per Ton Product

(13,620 ÷ 121,430) x 2,000 = 224.5 lbs.

Suspended Volatile Solids

Mill Waste (2.38 x 8.34 x 260) = 5,160 lbs. Net to River

Pounds of Suspended Volatile Solids per Ton Product

(5,160 ÷ 121,430) x 2,000 = 85 lbs.

Percent Fibre Loss

[85 ÷ (2,000 x 0.95)] x 100 = 4.47%

Population Equivalent

(5,360 ÷ 0.167) = 32,100 people per 8 hours

Gallons of Waste Per Ton of Product

(2,380,000 ÷ 121,430) x 2,000 = 39,200 gallons

SURVEY NO. 3

June 15, 1950 - 3rd Shift

Production: 124,865 lbs.

Flow Data: 2.705 mg.

063840

Sample Analysis

	Mill Waste	Settled Mill Waste	Percent Reduction
5-Day B.O.D.	270	230	14.8
Total Solids	2,066	1,656	
Total Volatile Solids	816	664	
Suspended Solids	860	394	54.2
Suspended Volatile Solids	350	114	67.4
pH	7.7		
Settleable Solids	438		

All values in p.p.m. except pH

B.O.D.

Mill Waste (2.705 x 8.34 x 270) = 6,080 lbs. Net to River

Pounds of B.O.D. per Ton Product

(6,080 ÷ 124,865) x 2,000 = 97.4 lbs.

Suspended Solids

Mill Waste (2.705 x 8.34 x 860) = 19,400 lbs. Net to River

Pounds of Suspended Solids per Ton Product

(19,400 ÷ 124,865) x 2,000 = 311 lbs.

Suspended Volatile Solids

Mill Waste (2.705 x 8.34 x 350) = 7,890 lbs. Net to River

Pounds of Suspended Volatile Solids per Ton Product

(7,890 ÷ 124,865) x 2,000 = 126.4 lbs.

Percent Fibre Loss

[126.4 ÷ (2,000 x 0.95)] = 6.65%

Population Equivalent

(6,080 ÷ 0.167) = 36,450 people per 8 hours

Gallons of Waste Per Ton Product

(2,705,000 ÷ 124,865) x 2,000 = 43,300 gallons.

Summary

	Survey No.1	Survey No.2	Survey No.3	Total
Production-Tons	56.16	60.72	62.43	179.31
Flow-Million Gallons	2.39	2.38	2.705	7.475
Pounds of B.O.D. (Net)	4,900	5,360	6,080	16,340
Pounds of B.O.D. Per Ton Product	87.2	88.2	97.4	90.9 *
Pounds of Dry Solids (Net)	20,700	13,620	19,400	53,720
Lbs. of Dry Solids Per Ton Prod.	368	224.5	311	301.2 *
Lbs. of Vol. Solids (Net)	8,930	5,160	7,890	21,980
Lbs. of Vol. Solids Per Ton Prod.	158.9	85	126.4	123.4 *
Gallons Waste Per Ton Product	42,500	39,200	36,450	39,383 *
Fibre Loss - Percent	8.35	4.47	6.65	6.49 *
Population Equivalent	29,350	32,100	36,450	97,900

* Average of three surveys

063842

Remarks

All chemical analyses were made in the Water Resources Laboratory at the Health Department in Lansing. Samples were immediately transported to this laboratory and were iced during transit. The dilution water used to determine the biochemical oxygen demand of the waste waters was Lea-Nichols water and one per cent Plainwell settled sewage was used for seeding each dilution. All other analyses were made according to the Ninth Edition of "Standard Methods for the Examination of Water and Sewage."

When figuring per cent fibre loss the pounds of mill production is converted to a dry basis. For uniformity a product with five per cent moisture is assumed for all of the mills.

R. W. Purdy
W. S. Springer
W. H. Abbott
J. R. Couchois

063843

NCASI 1950-56 93-1585

REX PAPER COMPANY
KALAMAZOO, MICHIGAN

Survey No. 1	1st Shift	April 25, 1950
Survey No. 2	2nd Shift	May 9, 1950
Survey No. 3	3rd Shift	May 3, 1950

Type: Book Conversion Mill

Mill Water Supply

Well water is used as process water.

Waste Sources

All waste from the de-ink mill and also the waste water from the one paper machine is discharged through the one sewer. White water from the paper machine is used as make-up water in the de-ink washers before it is discharged.

Waste Measurement

Sewer No. 1 is an open earth channel directly south of the west end of the main mill building. A previously constructed weir box was reconditioned and a 2.0 foot rectangular metal edged weir (Weir No. 1) used to measure the flow.

Survey Procedure

A recording head meter was installed at the weir to obtain a continuous record of the flow during the three surveys. Samples were taken at half-hour intervals proportional to the flow at the weir and composited during each survey.

SURVEY NO. 1

April 25, 1950 - 1st Shift

Production: 21,160 lbs. (Average daily production)

Flow: 0.509 mg. Weir No. 1 (Total flow)

(Box # GRID 1) STORING

9206 B-7.3/002

Sample Analysis

	Total Waste	Settled Waste	Per Cent Reduction
5-Day B.O.D.	314	162	48.4
Total Solids	1,868	1,166	
Total Volatile Solids	802	460	
Suspended Solids	1,040	314	69.8
Suspended Volatile Solids	520	156	70.0
pH	8.50		
Settleable Solids	714		

All values in p.p.m. except pH

B.O.D.

Total Waste (0.509 x 8.34 x 314) = 1,332 lbs. Net to River

Pounds of B.O.D. Per Ton of Product

(1,332 ÷ 21,160) x 2,000 = 126.0 lbs.

Suspended Solids

Total Waste (0.509 x 8.34 x 1,040) = 4,410 lbs. Net to River

Pounds of Suspended Solids Per Ton of Product

(4,410 ÷ 21,160) x 2,000 = 417.0 lbs.

Suspended Volatile Solids

Total Waste (0.509 x 8.34 x 520) = 2,210 lbs. Net to River

Pounds of Suspended Volatile Solids Per Ton of Product

(2,210 ÷ 21,160) x 2,000 = 209.0 lbs.

Per Cent Fibre Loss

[209.0 + (2.000 x 0.95)] x 100 = 11.00%

Population Equivalent

(1,332 + 0.167) = 7,980 people per 8 hours

Gallons Waste Per Ton Product

(509,000 + 21,160) x 2,000 = 48,200 gallons

SURVEY NO. 2

May 9, 1950 - 2nd Shift

Production: 21,160 lbs. (Average daily production)

Flow: 0.472 mg. Weir No. 1 (Total flow)

Sample Analysis

	Total Waste	Settled Waste	Per Cent Reduction
5-Day B.O.D.	145	130	10.4
Total Solids	1,502	980	
Total Volatile Solids	700	362	
Suspended Solids	676	141	79.1
Suspended Volatile Solids	388	49	87.4
pH	8.60		
Settleable Solids	528		

All values in p.p.m. except pH

B.O.D.

Total Waste (0.472 x 8.34 x 145) = 571 lbs. Net Total to River

Pounds of B.O.D. Per Ton of Product

(571 + 21,160) x 2,000 = 54.0 lbs.

Suspended Solids

Total Waste (0.472 x 8.34 x 676) = 2,665 lbs. Net Total to River

Pounds of Suspended Solids Per Ton of Product

(2,665 ÷ 21,160) x 2,000 = 252.0 lbs.

Suspended Volatile Solids

Total Waste (0.472 x 8.34 x 388) = 1,529 lbs. Net Total to River

Pounds of Suspended Volatile Solids Per Ton of Product

(1,529 ÷ 21,160) x 2,000 = 144.5 lbs.

Per Cent Fibre Loss

[144.5 ÷ (2,000 x 0.95)] x 100 = 7.61%

Population Equivalent

(571 ÷ 0.167) = 3,420 people per 8 hours

Gallons Waste Per Ton Product

(472,000 ÷ 21,160) x 2,000 = 44,600 gallons

SURVEY NO. 3

May 3, 1950 - 3rd Shift

Production: 21,160 lbs. (Average daily production)

Flow: 0.494 mg. Weir No. 1 (Total flow)

Sample Analysis

	Total Waste	Settled Waste	Percent Reduction
5-Day B.O.D.	200	175	12.5
Total Solids	1,650	1,408	
Total Volatile Solids	772	676	
Suspended Solids	792	528	33.3
Suspended Volatile Solids	422	313	25.8
pH	8.05		
Settleable Solids	253		

All values in p.p.m. except pH

B.O.D.

Total Waste (0.494 x 8.34 x 200) = 824 lbs. Net Total to River

Pounds of B.O.D. Per Ton of Product

(824 ÷ 21,160) x 2,000 = 77.9 lbs.

Suspended Solids

Total Waste (0.494 x 8.34 x 792) = 3,265 lbs. Net Total to River

Pounds of Suspended Solids Per Ton of Product

(3,265 ÷ 21,160) x 2,000 = 308.5 lbs.

Suspended Volatile Solids

Total Waste (0.494 x 8.34 x 422) = 1,740 lbs. Net Total to River

Pounds of Suspended Volatile Solids Per Ton of Product

(1,740 ÷ 21,160) x 2,000 = 164.5 lbs.

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Fibre Loss

$$[164.5 \div (2.000 \times 0.95)] \times 100 = 8.65\%$$

Population Equivalent

(824 ÷ 0.167) = 4,930 people per 8 hours

Gallons Waste Per Ton of Product

(494,000 ÷ 21,160) x 2.000 = 46,700 gallons

Summary

	Survey No.1	Survey No.2	Survey No.3	Total
Production-Tons	10.58	10.58	10.58	31.74
Flow-Million Gallons	0.509	0.472	0.494	1.475
Pounds of B.O.D. (Net)	1,332	571	824	2,727
Pounds of B.O.D. Per Ton Product	126.0	54.0	77.9	86.0 *
Pounds of Dry Solids (Net)	4,410	2,665	3,265	10,340
Lbs. of Dry Solids Per Ton Prod.	417.0	252.0	308.5	325.8 *
Lbs. of Vol. Solids (Net)	2,210	1,529	1,740	5,479
Lbs. of Vol. Solids Per Ton Prod.	209.0	144.5	164.5	172.7 *
Gallons Waste Per Ton Product	48,200	44,600	46,700	46,500 *
Fibre Loss-Percent	11.00	7.61	8.65	9.09 *
Population Equivalent	7,980	3,420	4,930	16,330

* Average of three surveys.

Remarks

All chemical analyses were made in the Water Resources Laboratory at the Health Department in Lansing. Samples were immediately transported to this laboratory and were iced during transit. The dilution water used to determine the biochemical oxygen demand of the waste waters was Lea-Nichols water and one per cent Plainwell settled sewage was used for seeding each dilution. All other analyses were made according to the Ninth Edition of "Standard Methods for the Examination of Water and Sewage."

When figuring per cent fibre loss the pounds of mill production is converted to a dry basis. For uniformity a product with five per cent moisture is assumed for all of the mills.

R. W. Purdy
W. S. Springer
W. H. Abbott
J. R. Couchois

NCASI 000546

Report of Survey

Allied Paper Company
Monarch Division
Kalamazoo, Michigan

Survey Periods:

November 3rd, 7:00 a.m. to November 4th, 7:00 a.m., 1953
November 4th, 7:00 a.m. to November 5th, 7:00 a.m., 1953

Type:

Book conversion mill

Mill Water Supply:

Portage Creek and well water

Production:

November 3rd	186,335 lbs.	93.17T
November 4th	239,290 lbs.	119.65T

Survey Procedure:

Effluent from the de-ink waste treatment plant is discharged through a four foot full channel weir. A record of the head over this weir was obtained by a continuous water level recorder. Influent and effluent twenty-four hour composite samples were obtained through the use of company installed equipment.

A portion of the bleach water was discharged directly to Portage Creek without treatment. This was discharged through a three foot full channel weir. A record of the head over this weir was obtained by a continuous water level recorder. A twenty-four hour composite sample of this waste was obtained through the use of a W.R.C. automatic sampler.

SA 039024

Miscellaneous sewers that discharged directly to Portage Creek were spot sampled and flow estimates were made.

Survey Data:

	Flow m.g.d.	5-Day B.O.D. p.p.m.	Susp. Solids p.p.m.	Susp. Vol. Solids p.p.m.	pH
November 3, 1953					
Waste Treatment Plant					
Influent		330	1528	628	7.9
Effluent	3.71	290	660	128	7.7
Condenser Water Sewer	1.5	17	226	61	7.6
November 4, 1953					
Waste Treatment Plant					
Effluent	4.01	410	850	200	8.9
Influent		495	1810	720	9.3
Bleach Water Sewer	0.60	99	210	120	2.5
Condenser Water Sewer	1.5	2.0	22	22	7.7

Calculations:

B.O.D. Data: (Pounds to River)

Waste Treatment Plant
November 3rd — 3.71 x 8.34 x 290 = 8,960
November 4th — 4.01 x 8.34 x 410 = 13,700

Bleach Water Sewer
November 3rd — Use same quantity as November 4th
November 4th — 0.60 x 8.34 x 99 = 495

Condenser Water Sewer
November 3rd — 1.5 x 8.34 x 17 = 213
November 4th — 1.5 x 8.34 x 2 = 25

B.O.D. Data: (Pounds per Ton of Production)

November 3rd	9,668/ 93.17 = 103.8
November 4th	14,220/119.65 = 118.9

B.O.D. Data: (% Reduction Through Waste Treatment Plant.)

November 3rd	(330-290)x100/330 = 12.1%
November 4th	(495-410)x100/495 = 17.2%

B.O.D. Data: (Population Equivalent)

November 3rd	9,668/0.167 = 57,900
November 4th	14,220/0.167 = 85,300

Suspended Solids Data: (Pounds to River)

Waste Treatment Plant	
November 3rd	3.71 x 8.34 x 660 = 20,400
November 4th	4.01 x 8.34 x 850 = 28,400
Bleach Water Sewer	
November 3rd	Use same quantity as Nov. 4
November 4th	0.60 x 8.34 x 210 = 1,050
Condenser Water Sewer	
November 3rd	1.5 x 8.34 x 226 = 2,830
November 4th	1.5 x 8.34 x 22 = 275

Suspended Solids Data: (Total Pounds per Ton of Production)

November 3rd	24,280/ 93.17 = 261
November 4th	29,725/119.65 = 249

Suspended Solids Data: (Pounds per ton of Production from sources other than waste treatment plant.)

November 3rd	3,880/ 93.17 = 41.7
November 4th	1,325/119.65 = 11.1

Suspended Solids Data: (% Reduction through Waste Treatment Plant)

November 3rd	(1528-660)x100/1528 = 56.8%
November 4th	(1810-850)x100/1810 = 53.0%

Suspended Volatile Solids Data: (Pounds to River)

Waste Treatment Plant

November 3rd	3.71 x 8.34 x 128 = 3950
November 4th	4.01 x 8.34 x 200 = 6680

Bleach Water Sewer

November 3rd	Use same quantity as Nov. 4th.
November 4th	0.60 x 8.34 x 120 = 600

Condenser Water Sewer

November 3rd	1.5 x 8.34 x 61 = 763
November 4th	1.5 x 8.34 x 22 = 275

Suspended Volatile Solids Data: (Total Pounds Per Ton of Production)

November 3rd	5313/ 93.17 = 57.0
November 4th	7555/119.65 = 63.1

Suspended Volatile Solids Data: (% Reduction through Waste Treatment Plant)

November 3rd	(628-128)x100/628 = 79.6%
November 4th	(720-200)x100/720 = 72.2%

Flow Data: (Gallons of Waste per ton of Production)

November 3rd	4,310,000/ 93.17 = 46,200
November 4th	4,610,000/119.65 = 38,600

Summary and Comparison of Results:

	Sept. 1953	1950
Production, tons	106.41	91.02
Flow, million gallons	4.46	6.05
B.O.D., total pounds	11,944	10,120
B.O.D., total pounds per ton	111.3	113.6
Suspended Solids, total pounds	27,000	31,868
Suspended Solids, total pounds per ton	255	354.7
Suspendded Solids, lbs. per ton from machines	26.4	
Suspended Vol. Solids, total pounds	6,434	29,214
Susp. Vol. Solids, total pounds per ton	60.0	151.1
Gallons of waste per ton	42,400	67,533
Population equivalent	71,600	60,580

Remarks:

The September 1953 results reported in the summary are the average of two consecutive twenty-four hour surveys. Between the first and second survey a change was made that eliminated a solids loss from 41.7 to 11.1 pounds. Also, it was only due to an error made in making some mill changes over the preceding week end that the portion of the bleach water was discharged direct to Portage Creek. It has been and it was stated that it was the intent in the future to treat all of this waste in the waste treatment plant.

Survey made by:
Ralph W. Purdy
Chester Harvey

Chemical Analyses by:
Russell Krueger

WATER RESOURCES
COMMISSION

Report of Waste Surveys

at

St. Regis Paper Company
Kalamazoo, Michigan

Survey Periods: (24 hours for each)

July 20, 1955
July 21, 1955
July 22, 1955
July 23, 1955
July 24, 1955
July 25, 1955
July 26, 1955

Summary of Results

te	7-20	7-21	7-22	7-23	7-24	7-25	7-26
ow, million gallons per day	6.908	6.741	6.883	6.676	3.099	7.044	6.375
oduction, tons	196.21	174.53	171.35	173.32		189.66	183.00
Day B.O.D., pounds	18,897	17,709	18,771	18,373	4,730	12,337	14,940
Day B.O.D., pounds per ton paper	96.31	101.46	109.54	106.00		65.04	81.63
tal Suspended Solids, pounds	61,414	41,602	66,589	68,371	5,272	45,234	37,642
tal Suspended Solids, pounds per ton paper	313.00	238.36	388.61	394.47		238.50	205.69
tal Suspended Vol. Solids, pounds	20,740	12,818	22,502	23,384	1,396	9,047	7,443
tal Suspended Vol. Solids, pounds per ton paper	105.70	73.44	131.32	134.92		47.70	40.67
llons Waste per ton paper	35,207	38,624	40,169	38,518		37,140	34,836
opulation Equivalent	11[illegible]5	106,041	112,401	110,017	28,323	73,874	89,461
ettleable Solids Removal, per cent	[illegible].50	73.77	60.86	[illegible].23	113.74	71.42	86.38
hite Water Susp. Solids, pounds	0.0	0.0	0.0	[illegible]	0.0	0.0	0.0
hite Water Susp. Solids, pounds per ton paper.	0.0	0.0	0.0	0.0		0.0	0.0

Type of Mill Production

De-ink Mill

Mill Water Supply

Portage Creek above Allied Monarch Division augmented with city water. Creek water is filtered before it is used.

Waste Control

De-ink waste flows by gravity to the main pump house. White water is pumped from various collection points to the main pump house and then both de-ink waste

and white water are pumped to a 100 foot diameter sedimentation basin with a 12 foot sidewater depth. Effluent is discharged to Portage Creek. Sludge is discharged to a large lagoon.

Survey Procedure

Effluent from the sedimentation basin is discharged through a weir box. A recording head meter was installed at the weir to obtain a continuous daily record of the flow. Samples were taken of the flow at fifteen minute intervals by an automatic sampler and composited for each survey period.

An influent sample was obtained by continuously bleeding a small portion of the influent flow from the pump house discharge line through a small box equipped with an automatic sampler.

Survey Data:

Influent

Date	7-20	7-21	7-22	7-23	7-24	7-25	7-26
5-Day B.O.D., p.p.m.	420	590	495	455	205	390	525
Suspended Solids, p.p.m.	1,888	1,944	2,124	2,040	1,048	1,880	2,104
Suspended Vol. Solids, p.p.m.	760	824	780	812	456	772	840
2-hour Settleable Solids, p.p.m.	1,236	1,632	1,584	1,444	742	1,554	1,616
pH	7.2		6.9	7.6	7.8		7.0

Effluent

5-Day B.O.D., p.p.m.	328	315	327	330	183	210	281
Suspended Solids, p.p.m.	1066	740	1160	1228	204	770	708
Suspended Vol. Solids, p.p.m.	360	228	392	420	54	154	140
pH		7.2	7.2	7.3	7.5	7.3	7.2
Production, Tons	196.21	174.53	171.35	173.32		189.66	183.00
Flow, million gallons per day	6.908	6.741	6.883	6.676	3.099	7.044	6.375

Survey Calculations

Pounds of 5-Day B.O.D. to River

												INFLUENT (Raw)
7-20	6.908	x	8.34	x	328	=	18,897					24,200 lbs./day
7-21	6.741	x	8.34	x	315	=	17,709					33,160
7-22	6.883	x	8.34	x	327	=	18,771					28,400
7-23	6.676	x	8.34	x	330	=	18,373					25,310
7-24	3.099	x	8.34	x	183	=	4,730					—
7-25	7.044	x	8.34	x	210	=	12,337					22,800
7-26	6.375	x	8.34	x	281	=	14,940					27,900

Pounds of 5-Day B.O.D. per ton of paper

7-20	18,897	/	196.21	= 96.31
7-21	17,709	/	174.53	= 101.46

7-22	18,771 / 171.35 =	109.54
7-23	18,373 / 173.32 =	106.00
7-25	12,337 / 189.66 =	65.04
7-26	14,940 / 183.00 =	81.63

Population Equivalent

7-20	18,897 / 0.167 =	113,155
7-21	17,709 / 0.167 =	106,041
7-22	18,771 / 0.167 =	112,401
7-23	18,373 / 0.167 =	110,017
7-24	4,730 / 0.167 =	28,323
7-25	12,337 / 0.167 =	73,874
7-26	14,940 / 0.167 =	89,461

Total Pounds of Suspended Solids to River

7-20	6.908	x	8.34	x	1066	=	61,414
7-21	6.741	x	8.34	x	740	=	41,602
7-22	6.883	x	8.34	x	1160	=	66,589
7-23	6.676	x	8.34	x	1228	=	68,371
7-24	3.099	x	8.34	x	204	=	5,272
7-25	7.044	x	8.34	x	770	=	45,234
7-26	6.375	x	8.34	x	708	=	37,642

Total Pounds of Suspended Solids per ton paper

7-20	61,414 / 196.21 =	313.00
7-21	41,602 / 174.53 =	238.36
7-22	66,589 / 171.35 =	388.61
7-23	68,371 / 173.32 =	394.47
7-25	45,234 / 189.66 =	238.50
7-26	37,642 / 183.00 =	205.69

Total Pounds of Suspended Volatile Solids to River

7-20	6.908	x	8.34	x	360	=	20,740
7-21	6.741	x	8.34	x	228	=	12,818
7-22	6.883	x	8.34	x	392	=	22,502
7-23	6.676	x	8.34	x	420	=	23,384
7-24	3.099	x	8.34	x	54	=	1,396
7-25	7.044	x	8.34	x	154	=	9,047
7-26	6.375	x	8.34	x	140	=	7,443

Total Pounds of Suspended Volatile Solids per ton of paper

7-20	20,740 / 196.21 =	105.70
7-21	12,818 / 174.53 =	73.44
7-22	22,502 / 171.35 =	131.32
7-23	23,384 / 173.32 =	134.92
7-25	9,047 / 189.66 =	47.70
7-26	7,443 / 183.00 =	40.67

Gallons of Waste per ton of paper

7-20	6,908,000 / 196.21 =	35,207
7-21	6,741,000 / 174.53 =	38,624
7-22	6,883,000 / 171.35 =	40,169

7-23	6,676,000 / 173.32 =	38,518
7-25	7,044,000 / 189.66 =	37,140
7-26	6,375,000 / 183.00 =	34,836

Treatment Plant Efficiency

B.O.D. Removal

7-20	(420 - 328) x 100 / 420 =	21.90%
7-21	(590 - 315) x 100 / 590 =	46.61%
7-22	(495 - 327) x 100 / 495 =	33.93%
7-23	(455 - 330) x 100 / 455 =	27.47%
7-24	(205 - 183) x 100 / 205 =	10.73%
7-25	(390 - 210) x 100 / 390 =	46.15%
7-26	(525 - 281) x 100 / 525 =	46.47%

Suspended Solids Removal

7-20	(1888 - 1066) x 100 / 1888 =	43.54%
7-21	(1944 - 740) x 100 / 1944 =	61.93%
7-22	(2124 - 1160) x 100 / 2124 =	45.39%
7-23	(2040 - 1228) x 100 / 2040 =	39.80%
7-24	(1048 - 204) x 100 / 1048 =	80.53%
7-25	(1880 - 770) x 100 / 1880 =	59.04%
7-26	(2104 - 708) x 100 / 2104 =	66.35%

Suspended Volatile Solids Removal

7-20	(760 - 360) x 100 / 760 =	52.63%
7-21	(824 - 228) x 100 / 824 =	72.33%
7-22	(780 - 392) x 100 / 780 =	49.74%
7-23	(812 - 420) x 100 / 812 =	48.27%
7-24	(456 - 54) x 100 / 456 =	88.15%
7-25	(772 - 154) x 100 / 772 =	80.05%
7-26	(840 - 140) x 100 / 840 =	83.33%

Settleable Solids Removal

7-20	(1888 - 1066) x 100 / 1236 =	66.50%
7-21	(1944 - 740) x 100 / 1632 =	73.77%
7-22	(2124 - 1160) x 100 / 1584 =	60.86%
7-23	(2040 - 1228) x 100 / 1444 =	56.23%
7-24	(1048 - 204) x 100 / 742 =	113.74%
7-25	(1880 - 770) x 100 / 1554 =	71.42%
7-26	(2104 - 708) x 100 / 1616 =	86.38%

<u>Remarks</u>

On the 7-20 survey and again during the 7-25 survey the by-pass sewer from the pump house was discharging untreated waste to Portage Creek even though all three pumps were in operation. This condition was again observed on August 24. From the flow charts obtained at the effluent weir it is possible to pick off the flows with one, two, and three pumps in operation. The discharge over the weir with one pump in operation is approximately 2,900 gallons per minute, with two

pumps 4,250 gallons per minute and with three pumps 5,000 gallons per minute.

According to a letter of October 19, 1953, the clarifier is 100 feet in diameter and has a sidewater depth of 12 feet. The three pumps in the main pump house are each of 3,000 gallons per minute capacity.

The following is the theoretical detention time in the clarifier for the average daily flow on each of the survey dates:

7-20	2.44 hours
7-21	2.51 hours
7-22	2.45 hours
7-23	2.53 hours
7-24	5.45 hours
7-25	2.40 hours
7-26	2.65 hours

Survey written and supervised by
Ralph W. Purdy

Field Work by
H. Liechti

Chemical Analyses by
R. Krueger

Report of Waste Surveys
at
Allied Paper Company
(Monarch Division)
Kalamazoo, Michigan

Survey Periods (24-hours for each)

July 28, 1955
July 29, 1955
July 30, 1955
July 31, 1955
August 1, 1955
August 2, 1955
August 3, 1955

Summary of Results

Date	7-28	7-29	7-30	7-31	8-1	8-2	8-3
Flow, million gallons per day	5.797	5.578	5.864	4.749	5.530	5.750	5.277
Production, tons	100.39	100.17	107.73		107.03	118.37	86.10
5-Day B.O.D., pounds	14,759	13,779	16,504	1,819	13,784	15,039	8,158
5-Day B.O.D., pounds per ton paper	147.02	137.55	153.19		128.78	127.05	94.75
Total suspended solids, pounds	20,745	28,402	27,969	5,163	28,735	26,387	17,826
Total susp. solids, lbs. per ton paper	206.64	283.53	259.62		268.47	222.91	207.03
Total susp. vol. solids, lbs.	8,723	9,600	9,545	3,192	10,632	7,859	7,708
Total susp. vol. solids, lbs. per ton paper	86.89	95.84	88.60		99.33	66.39	89.52
Gallons Waste per ton paper	57,745	55,685	54,432		51,668	48,576	61,289
Population equivalent	88,377	82,508	98,826	10,892	82,538	90,053	48,850
Settleable Solids Removal, per cent	101.25	82.80	81.59	-62.90	94.36	98.17	114.49
Other Paper Processing suspended solids, lbs.	5,305	5,504	6,960	3,234	11,431	7,754	4,845
Other Paper Processing suspended solids, lbs./ton paper	52.84	54.95	64.61		106.80	65.51	56.27

Type of Mill Production

De-ink Mill

Mill Water Supply

Well water and Portage Creek

Waste Control

De-ink waste flows by gravity to the main pump house. White water is pumped to the gravity line. De-ink waste and white water are pumped to a 90 foot diameter clarifier with a 12 foot side water depth. Effluent is discharged to Portage Creek. Sludge is discharged to a large lagoon. Waste waters from the bleach plant are discharged direct to Portage Creek.

Survey Procedure

063803

Effluent from the clarifier is discharged through a weir box. A company

installed recording head meter was used to obtain a continuous record of the flow. A composite sample of the effluent was obtained from the companies sampling device (water wheel type of sampler).

An influent sample was obtained from the discharge line from the pump house. A constant size sample is taken at set time intervals by a timing device and valve arrangement.

Bleach waste, white water overflows and other miscellaneous wastes plus uncontaminated waters were measured by building a weir in the culvert underneath Cork Street. A recording head meter was installed at the weir to obtain a continuous daily record of the flow. Samples were taken of the flow at fifteen minute intervals by an automatic sampler and composited for each survey period. A record of this flow was obtained during the mill shutdown period so that the difference in flow should represent the contaminated waste.

Survey Data

Influent							
Date	7-28	7-29	7-30	7-31	8-1	8-2	8-3
5-Day B.O.D., p.p.m.	690	705	610	70	440	440	240
Suspended Solids, p.p.m.	1,420	1,632	1,438	134	1,390	1,650	1,170
Suspended Vol. Solids, p.p.m.	800	708	686	74	700	650	660
2-hr. Settleable Solids, p.p.m.	956	1,116	978	124	905	1,090	690
pH	9.3	7.6	7.2	6.7	7.5	7.6	7.5
Effluent							
5-Day B.O.D., p.p.m.	350	375	430	96	350	370	200
Suspended Solids, p.p.m.	452	708	640	212	536	580	380
Suspended Vol. Solids, p.p.m.	144	204	180	96	160	132	140
pH	7.6	7.3	7.2	6.7	7.6	7.5	7.5
Flow, million gals. per day	4.096	3.878	3.936	1.091	3.871	3.852	4.096
Other Paper Processing Waste							
5-Day B.O.D., p.p.m.	58	35	48	33	52	63	31
Suspended Solids, p.p.m.	116	120	144	116	240	160	116
Suspended Vol. Solids, p.p.m.	76	60	70	76	110	70	64
2-hr. Settleable Solids p.p.m.		50	130		204	116	76
pH	6.4		6.1	8.0	6.0	4.5	6.6
Flow, million gals. per day	6.001	6.000	6.228	3.658	5.959	6.198	5.481
Production, tons	100.39	100.17	107.73		107.03	118.37	86.10

Flow during shutdown period - 4.3 million gallons per day.

Typical analyses of Portage Creek Water

B.O.D.	2	p.p.m.
Suspended Solids	10	p.p.m.
Suspended Vol. Solids	0	

Survey Calculations

Pounds of 5-Day B.O.D. to River

7-28	4.096 x 8.34 x 350 =	11,956	
	6.001 x 8.34 x (58-2) =	2,803	
			14,759
7-29	3.878 x 8.34 x 375 =	12,128	
	6.000 x 8.34 x (35-2) =	1,651	
			13,779

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7-30	3.936	x	8.34	x	430 =	14,115		
	6.228	x	8.34	x	(48-2) =	2,389		
								16,504
7-31	1.091	x	8.34	x	96 =	873		
	3.658	x	8.34	x	(33-2) =	946		
								1,819
8-1	3.871	x	8.34	x	350 =	11,299		
	5.959	x	8.34	x	(52-2) =	2,485		
								13,784
8-2	3.852	x	8.34	x	370 =	11,886		
	6.198	x	8.34	x	(63-2) =	3,153		
								15,039
8-3	4.096	x	8.34	x	200 =	6,832		
	5.481	x	8.34	x	(31-2) =	1,326		
								8,158

Pounds of 5-Day B.O.D. per ton of paper

7-28	14,759	/	100.39	=	147.02
7-29	13,779	/	100.17	=	137.55
7-30	16,504	/	107.73	=	153.19
8-1	13,784	/	107.03	=	128.78
8-2	15,039	/	118.37	=	127.05
8-3	8,158	/	86.10	=	94.75

Population Equivalent

7-28	14,759	/	0.167	=	88,377
7-29	13,779	/	0.167	=	82,508
7-30	16,504	/	0.167	=	98,826
7-31	1,819	/	0.167	=	10,892
8-1	13,784	/	0.167	=	82,538
8-2	15,039	/	0.167	=	90,053
8-3	8,158	/	0.167	=	48,850

Total Pounds of Suspended Solids to River

7-28	4.096	x	8.34	x	452 =	15,440		
	6.001	x	8.34	x	(116-10) =	5,305		
								20,745
7-29	3.878	x	8.34	x	708 =	22,898		
	6.000	x	8.34	x	(120-10) =	5,504		
								28,402
7-30	3.936	x	8.34	x	640 =	21,009		
	6.228	x	8.34	x	(144-10) =	6,960		
								27,969
7-31	1.091	x	8.34	x	212 =	1,929		
	3.658	x	8.34	x	(116-10) =	3,234		
								5,163
8-1	3.871	x	8.34	x	536 =	17,304		
	5.959	x	8.34	x	(240-10) =	11,431		
								28,735

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8-2	3.852	x	8.34	x	580	=	18,633		
	6.198	x	8.34	x	(160-10)	=	7,754		
									26,387
8-3	4.096	x	8.34	x	380	=	12,981		
	5.481	x	8.34	x	(116-10)	=	4,845		
									17,826

Total Pounds of Suspended Solids per Ton of Paper

7-28	20,745	/	100.39	=	206.64
7-29	28,402	/	100.17	=	283.53
7-30	27,969	/	107.73	=	259.62
8-1	28,735	/	107.03	=	268.47
8-2	26,387	/	118.37	=	222.91
8-3	17,826	/	86.10	=	207.03

Other Paper Processing Suspended Solids, pounds per Ton Paper

7-28	5,305	/	100.39	=	52.84
7-29	5,504	/	100.17	=	54.95
7-30	6,960	/	107.73	=	64.61
8-1	11,431	/	107.03	=	106.80
8-2	7,754	/	118.37	=	65.51
8-3	4,845	/	86.10	=	56.27

Total Pounds of Suspended Volatile Solids to River

7-28	4.096	x	8.34	x	144	=	4,919		
	6.001	x	8.34	x	76	=	3,804		
									8,723
7-29	3.878	x	8.34	x	204	=	6,598		
	6.000	x	8.34	x	60	=	3,002		
									9,600
7-30	3.936	x	8.34	x	180	=	5,909		
	6.228	x	8.34	x	70	=	3,636		
									9,545
7-31	1.091	x	8.34	x	96	=	873		
	3.658	x	8.34	x	76	=	2,319		
									3,192
8-1	3.871	x	8.34	x	160	=	5,165		
	5.959	x	8.34	x	110	=	5,467		
									10,632
8-2	3.852	x	8.34	x	132	=	4,241		
	6.198	x	8.34	x	70	=	3,618		
									7,859
8-3	4.096	x	8.34	x	140	=	4,782		
	5.481	x	8.34	x	64	=	2,926		
									7,708

Total Pounds of Suspended Volatile Solids per Ton of Paper

7-28	8,723	/	100.39	=	86.89
7-29	9,600	/	100.17	=	95.84
7-30	9,545	/	107.73	=	88.60
8-1	10,632	/	107.03	=	99.33
8-2	7,859	/	118.37	=	66.39
8-3	7,708	/	86.10	=	89.52

Gallons Waste per Ton of Paper

7-28	(4,096,000 + 6,001,000 - 4,300,000)	/	100.39	=	57,745
7-29	(3,878,000 + 6,000,000 - 4,300,000)	/	100.17	=	55,685
7-30	(3,936,000 + 6,228,000 - 4,300,000)	/	107.73	=	54,432
8-1	(3,871,000 + 5,959,000 - 4,300,000)	/	107.03	=	51,668
8-2	(3,852,000 + 6,198,000 - 4,300,000)	/	118.37	=	48,576
8-3	(4,096,000 + 5,481,000 -- 4,300,000)	/	86.10	=	61,289

Treatment Plant Efficiency
B.O.D. Removal

7-28	(690 - 350)	x	100	/	690	=	49.27%
7-29	(705 - 375)	x	100	/	705	=	46.80%
7-30	(610 - 430)	x	100	/	610	=	29.50%
7-31	(70 - 96)	x	100	/	70	=	37.14%
8-1	(440 - 350)	x	100	/	440	=	20.45%
8-2	(440 - 370)	x	100	/	440	=	15.90%
8-3	(240 - 200)	x	100	/	240	=	16.66%

Suspended Solids Removal

7-28	(1,420 - 452)	x	100	/	1,420	=	68.16%
7-29	(1,632 - 708)	x	100	/	1,632	=	56.61%
7-30	(1,438 - 640)	x	100	/	1,438	=	55.49%
7-31	(134 - 212)	x	100	/	134	=	58.20%
8-1	(1,390 - 536)	x	100	/	1,390	=	61.43%
8-2	(1,650 - 580)	x	100	/	1,650	=	64.84%
8-3	(1,170 - 380)	x	100	/	1,170	=	67.52%

Suspended Volatile Solids Removal

7-28	(800 - 144)	x	100	/	800	=	82.00%
7-29	(708 - 204)	x	100	/	708	=	71.18%
7-30	(686 - 180)	x	100	/	686	=	73.76%
7-31	(74 - 96)	x	100	/	74	=	29.72%
8-1	(700 - 160)	x	100	/	700	=	77.14%
8-2	(650 - 132)	x	100	/	650	=	79.69%
8-3	(660 - 140)	x	100	/	660	=	78.78%

Settleable Solids Removal

7-28	(1,420 - 452)	x	100	/	956	=	101.25%
7-29	(1,632 - 708)	x	100	/	1,116	=	82.80%
7-30	(1,438 - 640)	x	100	/	978	=	81.59%
7-31	(134 - 212)	x	100	/	124	=	62.90%
8-1	(1,390 - 536)	x	100	/	905	=	94.36%
8-2	(1,650 - 580)	x	100	/	1,090	=	98.17%
8-3	(1,170 - 380)	x	100	/	690	=	114.49%

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Remarks

During the construction of the weir and also during the survey periods, suspended solids were observed that no doubt originated from white water overflows. These solids along with those from the bleach washers are included as those from other paper processing waste.

The following is the theoretical detention time in the clarifier for the average daily flow on each of the survey dates:

7-28	3.36 hours
7-29	3.54 hours
7-30	3.49 hours
7-31	12.60 hours
8-1	3.55 hours
8-2	3.57 hours
8-3	3.36 hours

Survey written by
Ralph W. Purdy
Supervised by
Gerald Calhoun
Field work by
Howard Liechti
Chemical Analyses by
R. Krueger

Mill	Suspended Solids, lbs. Raw Load 1951	Raw Load 1955	1955 Treatment applied to 51 Raw Load	1955 treatment	B.O.D., lbs. Raw Load 1951	Raw Load 1955	1955 Treatment applied to 51 Raw Load	1955 treatme
Ring	53,720	120,907	15,535	34,970	16,340	21,433	11,817	15,501
Monarch	31,868	44,064	12,696	17,558	10,120	11,840	7,813	9,140
C.P.C.	78,313	122,934	21,184	33,258	13,612	34,853	6,413	16,422
Mich. P.C.	34,300	34,948	14,372	14,645	4,200	5,695	2,745	3,722
Rex	10,340	19,477	3,691	6,953	2,727	5,261	1,109	2,140
St. Regis	76,544	112,647	36,335	53,475	11,116	26,989	6,934	16,837
Mac Sim.	15,697			2,801	5,420			4,770
National Gyp.	3,877			1,052	3,051			2,408
Suth. 1	1,942			879	972			633
uth 4 & 7	25,919	28,484	4,707	5,174	4,289	11,768	2,368	6,498
awthorne	6,879			413	1,889			982
tsego	5,193			751	19,124			7,571
V.	4,812			624	624			979
VP 2	16,946			1,446	3,831			1,479

Allied Paper Company

063828

Report of Waste Surveys
at
Rex Paper Company
Kalamazoo, Michigan

Survey Periods:

September 6 & 7, 1955	6:00 PM - 6:00 AM
September 7, 1955	6:00 AM - 6:00 PM
September 7 & 8, 1955	6:00 PM - 6:00 AM
September 8, 1955	6:00 AM - 6:00 PM

Survey Purpose:

To check results of previous survey in July, 1955, particularly to determine whether or not the influent sample obtained by the automatic sampler was truly representative of the flow.

Summary of Results

Date	9/6 & 7, '55	9/7 & 8, '55
Flow, million gallons per day	1,110	1,143
Production, Tons	21.25	21.25
5-Day B.O.D., lbs.	2,036	1,953
5-Day B.O.D., lbs. per ton Paper	95.81	91.90
Total Susp. Solids, lbs.	6,082	5,085
Total Susp. Solids, lbs/ton Paper	286.21	239.29
Total Susp. Vol. Solids, lbs.	1,636	1,313
Total Susp. Vol. Solids, lbs/ton Paper	76.98	61.78
Gallons Waste per Ton of Paper	52,235	53,788
Population Equivalent	12,191	11,694
Settleable Solids Removal, per cent	80.62	77.43
Other Paper Processing Susp. Sols., lbs.	0.0	0.0
Other Paper Processing Susp. Sols., lbs/ton of Paper	0.0	0.0

Type of Mill Production

De-ink

Mill Water Supply

Well Water

Survey Procedure

Effluent from the clarifier is discharged through a weir box. A recording head meter was installed at the weir to obtain a continuous daily record of the flow. Samples were taken of the flow at fifteen minute intervals by an automatic sampler and composited for each survey period.

064080

An influent sample was obtained by installing an automatic sampler in the gravity sewer line to the clarifier and also by hand sampling at thirty minute intervals. A

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weighted sampling brecket was used so the sample obtained was taken in the lower cross section of the sewer.

Survey Data:

Date	9-6&7	9-7		9-7&8	9-8	
	Auto.	Auto.	Hand	Auto.	Auto.	Hand
Influent						
5-Day B.O.D., p.p.m.	760	460	410	330	440	420
Susp. Sol., p.p.m.	2350	1940	1690	1580	1900	1510
Susp. Vol. Sol., p.p.m.	1120	820	700	650	750	630
2-hr. Settleable Sols., p.p.m.	2030	1656	1394	1420	1680	1222
pH	7.4	7.4	7.4	7.2	6.8	6.9
Effluent						
5-Day B.O.D., p.p.m.	220	220		205	205	
Susp. Sol., p.p.m.	680	632		544	524	
Susp. Vol. Sol., p.p.m.	192	160		144	132	
pH	7.0	6.8		7.1	6.7	
Flow, million gallons	0.580	0.530		0.549	0.594	

Production, Tons (Avg. for each 24-hour period) 21.25

Survey Calculations (Using analytical results from samples obtained by the automatic sampler)

Pounds of 5-Day B.O.D. to River

9 - 6 & 7	0.580	x	8.34	x	220	=	1,064	
9 - 7	0.530	x	8.34	x	220	=	972	
								2,036
9 - 7& 8	0.549	x	8.34	x	205	=	938	
9 - 8	0.594	x	8.34	x	205	=	1,015	
								1,953

Pounds of 5-Day B.O.D. per ton of Paper

9 - 6 & 7	2,036	/	21.25	=	95.81
9 - 7 & 8	1,953	/	21.25	=	91.90

Population Equivalent

9 - 6 & 7	2,036	/	0.167	=	12,191
9 - 7 & 8	1,953	/	0.167	=	11,694

Total Pounds of Suspended Solids to River

9 - 6 & 7	0.580	x	8.34	x	680	=	3,289	
9 - 7	0.530	x	8.34	x	632	=	2793	
								6,802
9 - 7 & 8	0.549	x	8.34	x	544	=	2,490	
9 - 8	0.594	x	8.34	x	524	=	2,595	
								5,085

Rex Paper Company - 3

Total Pounds of Suspended Solids per Ton of Paper

9 - 6 & 7	6,082	/	21.25	=	286.21
9 - 7 & 8	5,085	/	21.25	=	239.29

Total Pounds of Suspended Volatile Solids to River

9 - 6 & 7	0.580	x	8.34	x	192	=	929	
9 - 7	0.530	x	8.34	x	160	=	707	
								1,636
9 - 7 & 8	0.549	x	8.34	x	144	=	659	
9 -8	0.594	x	8.34	x	132	=	654	
								1,313

Total Pounds of Suspended Volatile Solids per Ton of Paper

9 - 6 & 7	1,636	/	21.25	=	76.98
9 - 7 & 8	1,313	/	21.25	=	61.78

Gallons Waste per Ton of Paper

9 - 6 & 7	1,110,000	/	21.25	=	52,235
9 - 7 & 8	1,143,000	/	21.25	=	53,788

Treatment Plant Efficiency
B.O.D. Removal

9 - 6 & 7	(760 - 220)	x	100/760	=	71.05%
9 - 7	(460 - 220)	x	100/460	=	52.17%
9 - 7 & 8	(330 - 205)	x	100/330	=	37.87%
9 - 8	(440 - 205)	x	100/440	=	53.40%

Suspended Solids Removal

9 - 6 & 7	(2350 - 680)	x	100/2350	=	71.06%
9 - 7	(1940 - 632)	x	100/1940	=	67.42%
9 - 7 & 8	(1580 - 544)	x	100/1580	=	65.56%
9 - 8	(1900 - 524)	x	100/1900	=	72.42%

Suspended Volatile Solids Removal

9 - 6 & 7	(1120 - 192)	x	100/1120	=	82.85%
9 - 7	(820 - 160)	x	100/820	=	80.48%
9 - 7 & 8	(650 - 144)	x	100/650	=	77.84%
9 - 8	(750 - 132)	x	100/750	=	82.40%

Settleable Solids Removal

9 - 6 & 7	(2350 - 680)	x	100/2030	=	82.26%
9 - 7	(1940 - 632)	x	100/1656	=	78.98%
9 - 7 & 8	(1580 - 544)	x	100/1420	=	72.95%
9 - 8	(1900 - 524)	x	100/1680	=	81.90%

Remarks:

The following is the theoretical detention time in the settling tank for the average daily flow on each of the survey dates:

9 - 6 & 7	3.18 hours
9 - 7 & 8	3.09 hours

The comparison of the chemical analyses of the samples obtained by the hand sampling method and the automatic sampler indicate that the location of the automatic sampler was such that the heavier solids were collected in the sample. Therefore, the results obtained in the July surveys should represent the conditions at that time.

Although the waste flows were not materially different, the results of this later survey show a somewhat greater removal of settleable solids over that found in July.

Survey written and supervised by
Ralph W. Purdy

Field work by
Howard Liechti &
George Loucks

Chemical analyses by
Russell Krueger

Rex Paper Company

1950 Results

31.74 ton of production
1.475 million gallons of waste per day
2,700 pounds of B.O.D. — 86.0 lbs/ton
10,300 pounds of total susp. solids — 325.8 lbs/ton

1955 Results

B.O.D.

	Untreated lbs.	lbs/ton	Effluent to River lbs.	lbs./ton
7-20	7,706	594.59	2,037	157.17
7-21	4,776	169.66	2,232	79.28
7-22	5,256	238.36	2,426	110.02
7-23	No data		2,256	116.22
7-24	3,601		631	
7-25	5,224	263.04	2,122	106.84
7-26	4,465	203.69	2,057	93.84
9-6	5,709	268.65	2,036	95.81
9-7	3,691	173.69	1,953	91.90

Total Suspended Solids

	Untreated lbs.	lbs/ton	Effluent to River lbs.	lbs./ton
7-20	40,256	3106.1	7,295	562.89
7-21	13,706	486.8	7,185	255.24
7-22	12,938	586.7	6,813	308.98
7-23	No data		7,488	385.78
7-24	9,700		1,133	
7-25	16,804	846.1	8,053	405.49
7-26	16,053	732.3	7,625	347.85
9-6	19,942	938.4	6,082	286.21
9-7	16,646	783.3	5,085	239.29

Settleable Solids

	W.T.P. Inf.	W.T.P. Eff.	% Removal
7-20	36,164	3,139	91.32
7-21	9,906	3,385	65.83
7-22	9,603	3,477	63.79
7-23	No data	No data	
7-24	8,447	0.0	101.41
7-25	14,628	4,848	59.82
7-26	13,685	5,258	61.58
9-6	17,139	3,322	80.62
9-7	14,825	3,346	77.43

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	Total Mill Production tons	TOtal Mill Flow million gallons
7-20	12.96	1.110
7-21	28.15	1.245
7-22	22.05	1.212
7-23	19.41	1.095
7-24		0.511
7-25	19.86	1.305
7-26	21.92	1.203
9-6	21.25	1.110
9-7	21.25	1.143

Ralph W. Purdy

			Allied Paper Co. King	Allied Paper Co. Monarch	Kalamazoo Paper Co.	Michigan Paper Co.	Rex Paper Company	St. Regis	Mac Sir Bar
Production, tons	1950	Avg.	179.31	91.02	214.16	73.86	31.74	149.36	261.0
		Max.	207.78	113.28	259	101.62	28.15	196.21	287.5
	1955	Min.	156.66	83.02	210	83.38	12.96	171.35	211.0
		Avg.	192.32	100.21	237.25	93.51	20.86	181.33	268.0
Waste Flow, Million gallons per day	1950	Avg.	7.475	6.055	9.544	3.591	1.475	5.042	4.840
		Max.	7.6780	4.047	8.543	1.4105	1.305	7.044	3.017
	1955	Min.	5.5127	3.4319	7.549	1.3215	1.095	6.375	2.009
		Avg.	6.5381	3.660	8.087	1.3737	1.178	6.771	2.378
5-Day B.O.D., pounds per day	1950	Avg.	16,340	10,120	13,612	3,294	2,727	11,116	5,420
		Max.	19,210	12,106	18,789	4,409	2,426	18,897	6,254
	1955	Min.	9,474	6,476	14,083	2,870	1,953	12,337	3,229
		Avg.	15,501	9,140	16,422	3,722	2,140	16,837	4,770
Total Suspended Solids, pounds per day	1950	Avg.	53,720	31,868	78,313	22,098	10,340	76,544	15,69
		Max.	44,136	21,256	57,888	19,287	8,053	68,371	6,301
	1955	Min.	28,965	14,936	13,016	11,892	5,085	37,642	1,040
		Avg.	34,970	17,558	33,258	14,645	6,953	53,475	2,801
Population Equivalents	1950	Avg.	97,900	60,580	81,500	19,720	16,330	66,530	32,47
		Max.	115,029	72,491	112,508	26,401	14,527	113,155	37,44
	1955	Min.	56,731	38,778	84,329	17,185	11,694	73,874	19,33
		Avg.	92,820	54,731	98,335	22,287	12,814	100,820	28,56

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			National Gypsum	Sutherland Div. 1	Sutherland Div. 4&7	Hawthorne	Otsego Falls Paper Mills	K. V. P. Mill 1	K. V. P. Mill 2	Totals
Production, tons	1950	Avg.	129.59	95.52	444.93	34.70	77.06	70.18	219.15	2,071.58
		Max.	155.0	123.4	485.62	43.69	89.86	88.0	229.4	2,408.51
	1955	Min.	145.0	99.4	314.08	39.71	74.83	61.71	180.1	1,843.19
		Avg.	150.10	112.73	437.47	41.90	83.04	75.07	205.78	2,199.57
Waste Flow, Million gallons per day	1950	Avg.	1.651	2.284	9.163	1.697	1.097	3.070	5.232	62.216
		Max.	1.163	0.870	10.041	0.894	0.376	1.949	4.695	53.0282
	1955	Min.	0.538	0.835	9.499	0.797	0.301	1.765	4.260	45.2891
		Avg.	0.815	0.858	9.768	0.845	0.327	1.872	4.449	48.9198
5-Day B.O.D., pounds per day	1950	Avg.	3,051	972	4,289	1,889	19,124	624	3,831	96,409
		Max.	3,573	762	9,264	1,176	8,966	2,093	2,037	109,962
	1955	Min.	2,205	515	3,167	821	5,027	594	1,191	63,942
		Avg.	2,408	633	6,498	982	7,571	979	1,479	89,082
Total Suspended Solids, pounds per day	1950	Avg.	3,877	1,942	25,919	6,879	5,193	4,812	16,946	354,148
		Max.	3,317	1,320	15,836	500	1,130	721	1,800	249,916
	1955	Min.	351	265	1,424	339	475	412	1,162	117,049
		Avg.	1,052	879	5,174	413	751	624	1,446	173,999
Population Equivalents	1950	Avg.	18,270	5,820	25,679	11,315	114,700	3,737	22,940	577,496
		Max.	21,396	4,563	55,473	7,041	53,689	12,533	12,197	658,452
	1955	Min.	13,203	3,084	18,964	4,916	30,102	3,557	7,131	382,883
		Avg.	14,419	3,790	38,910	5,880	45,335	5,862	8,856	533,422

064087

Report of Waste Surveys

at

Rex Paper Company
Kalamazoo, Michigan

Survey Periods: (24-hours for each)

July 20, 1955
July 21, 1955
July 22, 1955
July 23, 1955
July 24, 1955
July 25, 1955
July 26, 1955

Summary of Results

Date	7-20	7-21	7-22	7-23	7-24	7-25	7-26
Flow, million gallons per day	1.110	1.245	1.212	1.095	0.511	1.305	1.203
Production, tons	12.96	28.15	22.05	19.41		19.86	21.92
5-Day B.O.D., lbs.	2,037	2,232	2,426	2,256	631	2,122	2,057
5-Day B.O.D., lbs per ton paper	157.17	79.28	110.02	116.22		106.84	93.84
Total Susp. Solids, lbs.	7,295	7,185	6,813	7,488	1,133	8,053	7,625
Total Susp. Solids, lbs./ton paper	562.89	255.24	308.98	385.78		405.49	347.85
Total Susp. Vol. Solids, lbs.	1,833	1,454	1,718	913	298	2,481	1,946
Total Susp. Vol. Solids, lbs./ton paper	141.43	51.66	77.91	47.04		124.92	88.78
Gallons Waste per ton of Paper	85,648	44,228	54,966	56,414		65,710	54,881
Population Equivalent	12,197	13,365	14,527	13,509	3,779	12,706	12,318
Settleable Solids Removal, per cent	91.32	65.83	63.79		101.41	59.82	61.58
Other Paper Processing Susp. Sol., lbs.	0.0	0.0	0.0	0.0		0.0	0.0
Other Paper Processing Susp. Sols., lbs./ ton of Paper	0.0	0.0	0.0	0.0		0.0	0.0

Type of Mill Production

De-ink

Mill Water Supply

Well water

Waste Control

All paper processing waste flows by gravity to a 50 foot diameter clarifier with a 10 foot side water depth. Recovered sludge is pumped to disposal beds.

Survey Procedure

Effluent from the clarifier is discharged through a weir box. A recording head meter was installed at the weir to obtain a continuous daily record of the flow. Samples were taken of the flow at fifteen minute intervals by an automatic sampler and composited for each survey period.

An influent sample was obtained by installing an automatic sampler in the gravity sewer line to the clarifier.

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Survey Data:

Influent							
Date	7-20	7-21	7-22	7-23	7-24	7-25	7-26
5-Day B.O.D., p.p.m.	840	460	520		845	480	445
Susp. Sol., p.p.m.	4,388	1,320	1,280		2,276	1,544	1,600
Susp. Vol. Sol., p.p.m.	2,180	916	560		1,080	628	624
2-hour Settleable Solids, p.p.m.	3,942	954	950		1,982	1,344	1,364
pH	8.0	8.3			7.3		7.4
Effluent							
5-Day B.O.D., p.p.m.	220	215	240	247	148	195	205
Susp. Sol., p.p.m.	788	692	674	820	266	740	760
Susp. Vol. Sol., p.p.m.	198	140	170	100	70	228	194
pH	7.7	7.9	6.9	7.1	6.9	7.2	7.3
Production, tons	12.96	28.15	22.05	19.41		19.86	21.92
Flow, million gallons per day	1.110	1.245	1.212	1.095	0.511	1.305	1.203

Survey Calculations

Pounds of 5-Day B.O.D. to River

7-20	1.110	x	8.34	x	220	=	2,037
7-21	1.245	x	8.34	x	215	=	2,232
7-22	1.212	x	8.34	x	240	=	2,426
7-23	1.095	x	8.34	x	247	=	2,256
7-24	0.511	x	8.34	x	148	=	631
7-25	1.305	x	8.34	x	195	=	2,122
7-26	1.203	x	8.34	x	205	=	2,057

Pounds of 5-Day B.O.D. per ton of paper

7-20	2,037	/	12.96	=	157.17
7-21	2,232	/	28.15	=	79.28
7-22	2,426	/	22.05	=	110.02
7-23	2,256	/	19.41	=	116.22
7-25	2,122	/	19.86	=	106.84
7-26	2,057	/	21.92	=	93.84

Population Equivalent

7-20	2,037	/	0.167	=	12,197
7-21	2,232	/	0.167	=	13,365
7-22	2,426	/	0.167	=	14,527
7-23	2,256	/	0.167	=	13,509
7-24	631	/	0.167	=	3,779
7-25	2,122	/	0.167	=	12,706
7-26	2,057	/	0.167	=	12,318

Total Pounds of Suspended Solids to River

7-20	1.110	x	8.34	x	788	=	7,295
7-21	1.245	x	8.34	x	692	=	7,185
7-22	1.212	x	8.34	x	674	=	6,813
7-23	1.095	x	8.34	x	820	=	7,488
7-24	0.511	x	8.34	x	266	=	1,133
7-25	1.305	x	8.34	x	740	=	8,053
7-26	1.203	x	8.34	x	760	=	7,625

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Total Pounds of Suspended Solids per ton of Paper

7-20	7,295	/	12.96	=	562.89
7-21	7,185	/	28.15	=	255.24
7-22	6,813	/	22.05	=	308.98
7-23	7,488	/	19.41	=	385.78
7-25	8,053	/	19.86	=	405.49
7-26	7,625	/	21.92	=	347.85

Total Pounds of Suspended Volatile Solids

7-20	1.110	x	8.34	x	198	=	1,833
7-21	1.245	x	8.34	x	140	=	1,454
7-22	1.212	x	8.34	x	170	=	1,718
7-23	1.095	x	8.34	x	100	=	913
7-24	0.511	x	8.34	x	70	=	298
7-25	1.305	x	8.34	x	228	=	2,481
7-26	1.203	x	8.34	x	194	=	1,946

Total Pounds of Suspended Volatile Solids per Ton of Paper

7-20	1,833	/	12.96	=	141.43
7-21	1,454	/	28.15	=	51.66
7-22	1,718	/	22.05	=	77.91
7-23	913	/	19.41	=	47.04
7-25	2,481	/	19.86	=	124.92
7-26	1,946	/	21.92	=	88.78

Gallons of Waste per Ton of Paper

7-20	1,110,000	/	12.96	=	85,648
7-21	1,245,000	/	28.15	=	44,228
7-22	1,212,000	/	22.05	=	54,966
7-23	1,095,000	/	19.41	=	56,414
7-25	1,305,000	/	19.86	=	65,710
7-26	1,203,000	/	21.92	=	54,881

Treatment Plant Efficiency
B.O.D. Removal

7-20	(840	-	220)	x	100	/	840	=	73.80%
7-21	(460	-	215)	x	100	/	460	=	53.26%
7-22	(520	-	240)	x	100	/	520	=	53.84%
7-24	(845	-	148)	x	100	/	845	=	82.48%
7-25	(480	-	195)	x	100	/	480	=	59.37%
7-26	(445	-	205)	x	100	/	445	=	53.93%

Suspended Solids Removal

7-20	(4,388	-	788)	x	100	/	4,388	=	82.04%
7-21	(1,320	-	692)	x	100	/	1,320	=	47.57%
7-22	(1,280	-	674)	x	100	/	1,280	=	47.34%
7-24	(2,276	-	266)	x	100	/	2,276	=	88.31%
7-25	(1,544	-	740)	x	100	/	1,544	=	52.07%
7-26	(1,600	-	760)	x	100	/	1,600	=	52.50%

064090

Suspended Volatile Solids Removal

7-20	(2,180	-	198)	x	100	/	2,180	= 90.91%
7-21	(916	-	140)	x	100	/	916	= 85.71%
7-22	(560	-	170)	x	100	/	560	= 69.64%
7-24	(1,080	-	70)	x	100	/	1,080	= 93.51%
7-25	(628	-	228)	x	100	/	628	= 63.69%
7-26	(624	-	194)	x	100	/	624	= 68.91%

Settleable Solids Removal

7-20	(4,388	-	788)	x	100	/	3,942	= 91.32%
7-21	(1,320	-	692)	x	100	/	954	= 65.83%
7-22	(1,280	-	674)	x	100	/	950	= 63.79%
7-24	(2,276	-	266)	x	100	/	1,982	= 101.41%
7-25	(1,544	-	740)	x	100	/	1,344	= 59.82%
7-26	(1,600	-	760)	x	100	/	1,364	= 61.58%

Remarks:

The following is the theoretical detention time in the settling tank for the average daily flow on each of the survey dates:

7-20	3.18 hours
7-21	2.84 hours
7-22	2.92 hours
7-23	3.23 hours
7-24	6.92 hours
7-25	2.71 hours
7-26	2.94 hours

Survey written and supervised by
Ralph Purdy

Field Work by
Howard Liechti

Chemical Analyses by
Russell Krueger

064091

Report of Waste Survey

at

Allied Paper Company
(King Division)
Kalamazoo, Michigan

Survey Periods: (24 hours for each)

January 10, 1956
January 11, 1956
January 12, 1956
January 13, 1956
January 14, 1956
January 15, 1956
January 16, 1956

Summary of Results:

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
Flow, million g.p.d.	5.5127	6.311	6.4724	6.6989	6.5597		7.678
Production, tons	194.64	207.78	199.70	199.10	196.07	0.0	156.66
5-day B.O.D., lbs.	13,333	9,474	17,543	18,437	14,948		19,210
5-day B.O.D.,lbs/ton of paper	68.50	45.60	87.85	92.60	76.24		122.62
Total Susp.Sol.,lbs.	28,965	24,738	46,564	44,136	40,969		29,456
Total Susp.Sol.,lbs/ton paper	148.81	119.06	208.13	221.68	208.95		188.03
Total Susp.Vol.Sol. lbs/ton paper	8,506	6,842	10,796	15,085	13,841		10,886
Total Susp.Vol.Sol.,lbs	43.70	32.93	54.06	75.77	70.59		69.49
Gal. Waste/ton of paper	28,323	30,373	32,411	30,080	33,456		49,011
Population Equivalents	79,838	56,731	105,047	110,401	89,508		115,029
Settleable Sol. Removal, percent		104.61	82.91	75.83	46.74	73.54	103.58
Other Paper Processing Susp.Sol., lbs.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Paper Processing Susp.Sol.,lbs/ton paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Type of Mill Production:

De-ink Mill

Mill Water Supply:

Well water

063792

Allied Paper Company -
(King Division)

Waste Control:

All paper processing waste and de-ink waste water flows by gravity to a pump station. The waste at this point is pumped to a 110-foot diameter clarifier with a 13-foot side water depth. The effluent is discharged to a city storm sewer that empties into the Kalamazoo River.

Survey Procedure:

Effluent from the clarifier is discharged through a weir box. A company installed recorded recording head meter was used to obtain a continuous record of the flow. A composite sample of the effluent was obtained by installing an automatic sampler.

An influent sample was obtained from the discharge line from the pump house. A constant size sample is taken at set intervals by a timing device and valve arrangement.

Sludge is discharged to one of several large lagoons.

Survey Data:

Influent

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
5-Day B.O.D., p.p.m.		500	405	300	210	175	480
Susp. Sol., p.p.m.		3190	2100	1700	1200	596	2540
Susp. Vol. Sol., p.p.m.		1520	1080	700	700	362	1460
2 hr. Settleable Sol., p.p.m.		2600	1604	1200	984	446	2008
pH		7.2	7.6				

Effluent

5-Day B.O.D., p.p.m.	290	180	325	330	270	115	300
Susp. Sol., p.p.m.	630	470	770	790	740	268	460
Susp. Vol. Sol., p.p.m.	185	130	200	270	250	128	170
pH	8.2	7.3	7.2				
Flow, million g.p.d.	5.5127	6.3111	6.4724	6.6989	6.5597		7.6780
Production, tons	194.64	207.78	199.70	199.10	196.07	0.0	156.66

Survey Calculations:

Pounds of 5-day B.O.D. to River

1-10	5.5127 x 8.34 x 290 = 13,333
1-11	6.3111 x 8.34 x 180 = 9,474
1-12	6.4724 x 8.34 x 325 = 17,543
1-13	6.6989 x 8.34 x 330 = 18,437
1-14	6.5597 x 8.34 x 270 = 14,948
1-15	Data incomplete
1-16	7.678 x 8.34 x 300 = 19,210

Pounds of 5-day B.O.D. per ton of paper

1-10	13,333 / 194.64 = 68.50
1-11	9,474 / 207.78 = 45.60
1-12	17,543 / 199.70 = 87.85
1-13	18,437 / 199.10 = 92.60
1-14	14,948 / 196.07 = 76.24
1-16	19,210 / 156.66 = 122.62

Population Equivalents

1-10	13,333 / 0.167 = 79,838
1-11	9,474 / 0.167 = 56,731
1-12	17,543 / 0.167 = 105,047
1-13	18,437 / 0.167 = 110,401
1-14	14,948 / 0.167 = 89,508
1-15	Data incomplete
1-16	19,210 / 0.167 = 115,029

Total Pounds of Suspended Solids to River

1-10	5.5127 x 8.34 x 630 = 28,965
1-11	6.3111 x 8.34 x 470 = 24,738
1-12	6.4724 x 8.34 x 770 = 41,564
1-13	6.6989 x 8.34 x 790 = 44,136
1-14	6.5597 x 8.34 x 740 = 40,969
1-15	Data incomplete
1-16	7.678 x 8.34 x 460 = 29,456

Total Pounds of Suspended Solids per ton of paper

1-10	28,965 / 194.64 = 148.81
1-11	24,738 / 207.78 = 119.06
1-12	41,564 / 199.70 = 208.13
1-13	44,136 / 199.10 = 221.68
1-14	40,969 / 196.07 = 208.95
1-15	Data incomplete
1-16	29,456 / 156.66 = 188.03

Total Pounds of Suspended Volatile Solids to River

1-10	5.5127 x 8.34 x 185 = 8,506
1-11	6.3111 x 8.34 x 130 = 6,842
1-12	6.4724 x 8.34 x 200 = 10,796
1-13	6.6989 x 8.34 x 270 = 15,085
1-14	6.5597 x 8.34 x 250 = 13,841
1-15	Data incomplete
1-16	7.678 x 8.34 x 170 = 10,886

Total Pounds of Suspended Volatile Solids per ton of Paper

1-10	8,506 / 194.64 = 43.70
1-11	6,842 / 207.78 = 32.93
1-12	10,796 / 199.70 = 54.06
1-13	15,085 / 199.10 = 75.77
1-14	13,841 / 196.07 = 70.59
1-15	Data incomplete
1-16	10,886 / 156.66 = 69.49

Gallons of Wastes per ton of Paper

1-10	5,512,700 / 194.64 = 28,323
1-11	6,311,000 / 207.78 = 30,373
1-12	6,472,400 / 199.70 = 32,411
1-13	6,698,900 / 199.10 = 30,080
1-14	6,559,700 / 196.07 = 33,456
1-15	Data incomplete
1-16	7,678,000 / 156.66 = 49,011

Treatment Plant Efficiency - B.O.D. Removal

1-10	Data incomplete
1-11	(500 - 180) x 100/500 = 64.00%
1-12	(405- 325) x 100/405 = 19.75%
1-13	(300 - 330) x 100/300 = - -
1-14	(210 - 270) x 100/210 = - -
1-15	(175 - 115) x 100/175 = 34.28%
1-16	(480 - 300) x 100/480 = 37.50%

Suspended Solids Removal

1-10	Data incomplete
1-11	(3190 - 470) x 100/3190 = 85.26%
1-12	(2100 - 770) x 100/2100 = 63.33%
1-13	(1700 - 790) x 100/1700 = 53.52%
1-14	(1200 - 740) x 100/1200 = 38.33%
1-15	(596 - 268) x 100/596 = 55.03%
1-16	(2540 - 460) x 100/2540 = 81.88%

Suspended Volatile Solids Removal

1-10	Data incomplete
1-11	(1520 - 130) x 100/1520 = 91.44%
1-12	(1080 - 200) x 100/1080 = 81.48%
1-13	(700 - 270) x 100/700 = 61.42%
1-14	(700 - 250) x 100/700 = 64.28%
1-15	(362 - 128) x 100/362 = 64.64%
1-16	(1460 - 170) x 100/1460 = 88.35%

Settleable Solids Removal

1-10	Data incomplete
1-11	(3190 - 470) x 100/2600 = 104.61%
1-12	(2100 - 770) x 100/1604 = 82.91%
1-13	(1700 - 790) x 100/1200 = 75.83%
1-14	(1200 - 740) x 100/984 = 46.74%
1-15	(596 - 268) x 100/446 = 73.54%
1-16	(2540 - 460) x 100/2008 = 103.58%

Theoretical Detention Time

1-10	4.03 hours
1-11	3.52 hours
1-12	3.44 hours
1-13	3.32 hours
1-14	3.39 hours
1-15	Data incomplete
1-16	2.89 hours

Remarks:

A floating scum covering the entire surface of the clarifier is no doubt interfering with the efficiency of this treatment unit. It is hoped that a new mechanically cleaned bar screen, that is now on order, will allow an uninterrupted flow to the wet well and eliminate the problem.

Field Work By:

Robert Courchaine

Survey written & supervised by:

Ralph W. Purdy

Chemical Analyses by:

Russ Krueger and Ralph W. Purdy

Report of Waste Surveys
at
Allied Paper Company
(Monarch Division)
Kalamazoo, Michigan

Survey Periods (24 hours for each)

January 10, 1956
January 11, 1956
January 12, 1956
January 13, 1956
January 14, 1956
January 15, 1956
January 16, 1956

Summary of Results:

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
Flow, million g.p.d.	3.5366	3.7333	3.6860	3.5262	3.4319	0.6463	4.0465
Production, tons	113.28	101.88	110.50	94.64	97.94		83.02
5-Day B.O.D., lbs.	10,255	9,029	12,106	6,718	6,476		10,256
5-Day B.O. D., lbs/ton paper	90.52	88.63	109.55	70.98	66.12		123.53
Total Susp. Sol., lbs.	16,255	17,280	20,056	21,256	15,565		14,936
Total Susp. Sol.,lbs/ton paper	143.49	169.96	181.50	224.59	158.92		179.90
Total Susp.Vol.Sol., lbs.	6,218	4,359	5,525	6,578	5,164		4,739
Total Susp.Vol.Sol., lbs/ton paper	54.89	42.79	50.00	69.51	52.73		57.08
Gallons Waste per ton paper	31,219	36,644	33,357	37,259	35,040		48,741
Population Equivalent	61,407	54,066	72,491	40,228	38,778		61,413
Settleable Solids Removal, %		91.23	93.21	68.49	75.81		86.73
Other Paper Processing Susp. Sol., lbs.	1,212		1,150	670	453		256
Other Paper Processing Susp. Sol., lbs/ton paper	10.70		10.41	7.08	4.63		3.08

Type of Mill Production:

De-ink Mill

Mill Water Supply:

Well water and Portage Creek

Waste Control:

De-ink waste and bleach plant waste flows by gravity to the main pump house. White water is pumped to the gravity line. De-ink waste, bleach water and white water are pumped to a 90-foot diameter clarifier with a 12-foot side water depth. Effluent is discharged to Portage Creek. Sludge is discharged to a large lagoon. Occasional white water overflows and coating room wastes are discharged to Portage Creek through the Cork Street weir.

Survey Procedure:

Effluent from the clarifier is discharged through a weir box. A company installed recording head meter was used to obtain a continuous record of the flow. A composite sample of the effluent was obtained from the company's sampling device (water wheel type sampler).

An influent sample was obtained from the discharge line from the pump house. A constant size sample is taken at set time intervals by a timing device and valve arrangement.

White water overflows and other miscellaneous wastes plus uncontaminated were measured at a previously constructed weir in a culvert underneath Cork Street. A recording head meter was installed at the weir to obtain a continuous daily record of the flow. Samples were taken by an automatic sampler and composited for each survey period.

Survey Data:

Influent							
Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
5-Day B.O.D., ppm	420	380	495	285	285	30	395
Susp. Sol., ppm	1500	1440	1590	1500	1130	140	1370
Susp. Vol. Sol., ppm	870	800	870	780	770	110	790
2-hr. Settleable Sol.,ppm		970	1046	1168	794		1078
pH	8.2	7.3	6.9				
Effluent							
5-Day B.O.D., ppm	340	290	370	225	225		285
Susp. Sol, ppm	510	555	615	700	528		435
Susp. Vol. Sol., ppm	180	140	165	210	168		135
pH	7.8	7.1	7.2				
Flow, million gals/day	3.5366	3.7333	3.6860	3.5262	3.4319	0.6463	4.0465
Other wastes							
5-Day B.O.D., ppm	8		23	5.0	3.5	37	4.2
Susp. Sol., ppm	32		33	20	19	210	14
Susp. Vol. Sol., ppm	24		13	12	15	68	10
pH	8.1		7.7				
Flow, million gals/day	4.543	4.3018	4.1770	4.0200	2.8605		2.1884
Portage Creek							
5-Day B.O.D., ppm			3.1				1.4
Susp. Sol., ppm			0				0.0
Production, tons	113.28	101.88	110.50	94.64	97.94	0	83.02

Survey Calculations

Pounds of 5-Day B.O.D. to River

1-10 $3.5366 \times 8.34 \times 340 = 10{,}028$

$4.543 \times 8.34 \times (8 - 2) = 227$

Total 10,255

1-11	3.7333 x 8.34 x 290	=	9,029	
	Total			9,029
1-12	3.6860 x 8.34 x 370	=	11,374	
	4.1770 x 8.34 x (23-2)	=	732	
	Total			12,106
1-13	3.5262 x 8.34 x 225	=	6,617	
	4.0200 x 8.34 x (5-2)	=	101	
	Total			6,718
1-14	3.4319 x 8.34 x 225	=	6,440	
	2.8605 x 8.34 x (3.5-2)	=	36	
	Total			6,476
1-16	4.0465 x 8.34 x 285	=	9,618	
	2.1884 x 8.34 x (37-2)	=	638	
	Total			10,256

Pounds of 5-Day B.O.D. per ton of paper

1-10	10,255 / 113.28	=	90.52
1-11	9,029 / 101.88	=	88.63
1-12	12,106 / 110.50	=	109.55
1-13	6,718 / 94.64	=	70.98
1-14	6,476 / 97.94	=	66.12
1-16	10,256 / 83.02	=	123.53

Population Equivalent

1-10	10,255 / 0.167	=	61,407
1-11	9,029 / 0.167	=	54,066
1-12	12,106 / 0.167	=	72,491
1-13	6,718 / 0.167	=	40,228
1-14	6,476 / 0.167	=	38,778
1-15	No data		
1-16	10,256 / 0.167	=	61,413

Total pounds of suspended solids to river

1-10	3.5366 x 8.34 x 510	=	15,043	
	4.543 x 8.34 x 32	=	1,212	
	Total			16,255
1-11	3.733 x 8.34 x 555	=	17,280	
	Total			17,280
1-12	3.6860 x 8.34 x 615	=	18,906	
	4.1770 x 8.34 x 33	=	1,150	
	Total			20,056
1-13	3.5262 x 8.34 x 700	=	20,586	
	4.0200 x 8.34 x 20	=	670	
	Total			21,256
1-14	3.4319 x 8.34 x 528	=	15,112	
	2.8605 x 8.34 x 19	=	453	
	Total			15,565

1-15 No data

1-16	4.0465 x 8.34 x 435	=	14,680	
	2.1884 x 8.34 x 14	=	256	
	Total			14,936

Total Pounds of Suspended Solids per ton of paper

1-10	16,255 / 113.28	=	143.49
1-11	17,280 / 101.88	=	169.96
1-12	20,056 / 110.50	=	181.50
1-13	21,256 / 94.64	=	224.59
1-14	15,565 / 97.94	=	158.92
1-16	14,936 / 83.02	=	179.90

Total Pounds of Suspended Volatile Solids to river

1-10	3.5366 x 8.34 x 180	=	5,309	
	4.543 x 8.34 x 24	=	909	
	Total			6,218
1-11	3.733 x 8.34 x 140	=	4,359	
	Total			4,359
1-12	3.6860 x 8.34 x 165	=	5,072	
	4.1770 x 8.34 x 13	=	453	
	Total			5,525
1-13	3.5262 x 8.34 x 210	=	6,176	
	4.0200 x 8.34 x 12	=	402	
	Total			6,578
1-14	3.4319 x 8.34 x 168	=	4,808	
	2.8605 x 8.34 x 15	=	356	
	Total			5,164
1-15	No data			
1-16	4.0465 x 8.34 x 135	=	4,556	
	2.1884 x 8.34 x 10	=	183	
	Total			4,739

Total Pounds of Suspended Volatile Solids per ton of paper

1-10	6,218 / 113.28	=	54.89
1-11	4,359 / 101.88	=	42.79
1-12	5,525 / 110.50	=	50.00
1-13	6,578 / 94.64	=	69.51
1-14	5,164 / 97.94	=	52.73
1-16	4,739 / 83.02	=	57.08

Gallons Waste per ton of paper

1-10	(3,536,600)	/	113.28	=	31,219
1-11	(3,733,300)	/	101.88	=	36,644
1-12	(3,686,000)	/	110.50	=	33,357
1-13	(3,526,200)	/	94.64	=	37,259
1-14	(3,431,900)	/	97.94	=	35,040
1-16	(4,046,500)	/	83.02	=	48,741

Treatment Plant Efficiency

B.O.D. Removal

1-10	(420 - 340) x 100 / 420	=	19.05%
1-11	(380 - 290) x 100 / 380	=	23.68%
1-12	(495 - 370) x 100 / 495	=	25.25%
1-13	(285 - 225) x 100 / 285	=	21.05%
1-14	(285 - 225) x 100 / 285	=	21.05%
1-15	No data		
1-16	(395 - 285) x 100 / 395	=	27.85%

Suspended Solids Removal

1-10	(1500 - 510) x 100 / 1500	=	66.00%
1-11	(1440 - 555) x 100 / 1440	=	61.45%
1-12	(1590 - 615) x 100 / 1590	=	61.32%
1-13	(1500 - 700) x 100 /1500	=	53.33%
1-14	(1130 - 528) x 100 / 1130	=	53.27%
1-15	No data		
1-16	(1370 - 435) x 100 / 1370	=	68.24%

Suspended Volatile Solids Removal

1-10	(870 - 180) x 100 / 870	=	79.31%
1-11	(800 - 140) x 100 / 800	=	82.50%
1-12	(870 - 165) x 100 / 870	=	81.03%
1-13	(780 - 210) x 100 / 780	=	73.07%
1-14	(770 - 168) x 100 / 770	=	78.18%
1-15	No data		
1-16	(790 - 135) x 100 / 790	=	82.91%

Settleable Solids Removal

1-10	No data		
1-11	(1440 - 555) x 100 / 970	=	91.23%
1-12	(1590 - 615) x 100 / 1046	=	93.21%
1-13	(1500 - 700) x 100 / 1168	=	68.49%
1-14	(1130 - 528) x 100 / 794	=	75.81%
1-15	No data		
1-16	(1370 - 435) x 100 / 1078	=	86.73%

Theoretical Detention time:

1-10	3.89 hours
1-11	3.69 hours
1-12	3.73 hours
1-13	3.90 hours
1-14	4.01 hours
1-15	21.29 hours
1-16	3.40 hours

Other Paper Processing Suspended Solids per ton Paper

1-10	1212 / 113.28	=	10.70
1-11	No data		
1-12	1150 / 110.50	=	10.41
1-13	670 / 94.64	=	7.08
1-14	453 / 97.94	=	4.63
1-15	No data		
1-16	256 / 83.02	=	3.08

063801

Remarks:

Since the July 1955 surveys, the bleach water discharged was relocated so that it receives waste treatment along with other de-ink wastes. This has decreased the quantity of suspended solids in those wastes that are classified as resulting from other paper processing operations to a point where they are within the limit set by this Commission. Other changes evidently were made that resulted in a decrease in waste flow to the treatment plant so that even after the addition of the bleach waste, the resulting flow to the unit is below the July 1955 levels. The result has been a substantial decrease in the quantity of B.O.D. and suspended solids remaining in the effluent.

The formation of a scum layer on the clarifier is no doubt decreasing the efficiency of this unit. If this can be eliminated, the treatment plant removals should increase.

Survey written and supervised by:
Ralph Purdy

Field work by:
Robert Courchaine

Chemical Analyses by:
Russell Krueger & Ralph Purdy

RWP:mj

067807

File Allied Paper Company (Monarch Division)

1950 Results

91.02	tons of production		
6.055	million gallons of waste per day		
10,100	pounds of B.O.D.	113.6	lbs/ton
31,900	pounds of total suspended solids	354.7	lbs/ton

1956 Results

Biochemical Oxygen Demand

	Untreated		Effluent to River	
	lbs.	lbs/ton	lbs.	lbs/ton
1-10	12,615	111.36	10,255	90.52
1-11	11,831	116.13	9,029	88.63
1-12	15,949	144.33	12,106	109.55
1-13	8,482	89.62	6,718	70.98
1-14	8,193	83.65	6,476	66.12
1-15	No Data			
1-16	13,968	168.24	10,256	123.53

Total Suspended Solids

1-10	45,455	401.26	16,255	143.49
1-11	44,835	440.08	17,280	169.96
1-12	50,029	452.75	20,056	181.50
1-13	44,783	473.19	21,256	224.59
1-14	32,796	334.85	15,565	158.92
1-15	No Data			
1-16	46,490	559.98	14,936	179.90

Settleable Solids

	W.T.P. Inf. lbs	W.T.P. Eff. lbs	% Removal
1-10	No Data		
1-11	30,202	2,649	91.23
1-12	32,155	2,183	93.21
1-13	34,349	10,823	68.49
1-14	22,726	5,497	75.81
1-15	No Data		
1-16	36,380	4,828	86.73

	Total Mill Prod. tons	Total Mill Flow million gallons
1-10	113.28	3.5366
1-11	101.88	3.7333
1-12	110.50	3.6860
1-13	94.64	3.5262
1-14	97.94	3.4319
1-15		0.6463
1-16	83.02	4.0465

063819

	lbs.	Other Paper Processing Waste lbs/ton
1-10	1212	10.70
1-11	No Data	
1-12	1150	10.41
1-13	670	7.08
1-14	453	4.63
1-15	No Data	
1-16	256	3.08

Ralph W. Purdy

Allied Paper Company (Monarch Division)

1950 Results

91.02	tons of production		
6.055	million gallons of waste per day		
10,100	pounds of B.O.D.	113.6	lbs/ton
31,900	pounds of total suspended solids	354.7	lbs/ton

1955 Results

Biochemical Oxygen Demand

	Untreated		Effluent to River	
	lbs.	lbs/ton	lbs	lbs/ton
7-28	26,373	262.67	14,759	147.02
7-29	24,452	244.40	13,779	137.55
7-30	22,413	208.10	16,504	153.19
7-31	1,583		1,819	
8-1	16,690	155.98	13,784	128.78
8-2	17,288	146.01	15,039	127.05
8-3	9,524	110.61	8,158	94.75

Total Suspended Solids

7-28	53,812	535.97	20,745	206.64
7-29	58,286	581.69	28,402	283.53
7-30	54,164	502.91	27,969	259.62
7-31	4,453		5,163	
8-1	56,306	526.22	28,735	268.47
8-2	60,760	513.17	26,387	222.91
8-3	44,812	520.42	17,826	207.03

Settleable Solids

	W.T.P. Inf. lbs.	W.T.P. Eff. lbs.	% Removal
7-28	32,657	0.0	101.25
7-29	36,094	6,208	82.80
7-30	32,104	5,907	81.59
7-31	1,128	1,838	-62.90
8-1	29,217	1,578	94.36
8-2	35,016	630	98.17
8-3	23,570	0.0	114.49

Allied (Monarch Div.)

	Total Mill Prod. Tons	Total Mill Flow Million Gallons
7-28	100.39	5,797
7-29	100.17	5,578
7-30	107.73	5,864
7-31		4,749
8-1	107.03	5,530
8-2	118.37	5,750
8-3	86.10	5,277

Other Paper Processing Waste

	lbs.	lbs/ton
7-28	5,305	52.84
7-29	5,504	54.95
7-30	6,960	64.61
7-31	3,234	
8-1	11,431	106.80
8-2	7,754	65.51
8-3	4,845	56.27

			Allied Paper Co. King	Allied Paper Co. Monarch	Kalamazoo Paper Co.	Michigan Paper Co.	Rex Paper Company	St. Regis	Mac Si Bar
Production, tons	1950	Avg.	179.31	91.02	214.16	73.86	31.74	149.36	261.0
		Max.	207.78	113.28	259	101.62	28.15	196.21	287.5
	1955	Min.	156.66	83.02	210	83.38	12.96	171.35	211.0
		Avg.	192.32	100.21	237.25	93.51	20.86	181.33	268.0
Waste Flow, Million gallons per day	1950	Avg.	7.475	6.055	9.544	3.591	1.475	5.042	4.840
		Max.	7.6780	4.047	8.543	1.4105	1.305	7.044	3.017
	1955	Min.	5.5127	3.4319	7.549	1.3215	1.095	6.375	2.009
		Avg.	6.5381	3.660	8.087	1.3737	1.178	6.771	2.378
5-Day B.O.D., pounds per day	1950	Avg.	16,340	10,120	13,612	3,294	2,727	11,116	5,420
		Max.	19,210	12,106	18,789	4,409	2,426	18,897	6,254
	1955	Min.	9,474	6,476	14,083	2,870	1,953	12,337	3,229
		Avg.	15,501	9,140	16,422	3,722	2,140	16,837	4,770
Total Suspended Solids, pounds per day	1950	Avg.	53,720	31,868	78,313	22,098	10,340	76,544	15,69
		Max.	44,136	21,256	57,888	19,287	8,053	68,371	6,301
	1955	Min.	28,965	14,936	13,016	11,892	5,085	37,642	1,040
		Avg.	34,970	17,558	33,258	14,645	6,953	53,475	2,801
Population Equivalents	1950	Avg.	97,900	60,580	81,500	19,720	16,330	66,530	32,47
		Max.	115,029	72,491	112,508	26,401	14,527	113,155	37,44
	1955	Min.	56,731	38,778	84,329	17,185	11,694	73,874	19,33
		Avg.	92,820	54,731	98,335	22,287	12,814	100,820	28,56

063823

			National Gypsum	Sutherland Div. 1	Sutherland Div. 4&7	Hawthorne	Otsego Falls Paper Mills	K. V. P. Mill 1	K. V. P. Mill 2	Totals
Production, tons	1950	Avg.	129.59	95.52	444.93	34.70	77.06	70.18	219.15	2,071.58
		Max.	155.0	123.4	485.62	43.69	89.86	88.0	229.4	2,408.51
	1955	Min.	145.0	99.4	314.08	39.71	74.83	61.7	180.1	1,843.19
		Avg.	150.10	112.73	437.47	41.90	83.04	75.07	205.78	2,199.57
Waste Flow, Million gallons per day	1950	Avg.	1.651	2.284	9.163	1.697	1.097	3.070	5.232	62.216
		Max.	1.163	0.870	10.041	0.894	0.376	1.949	4.695	53.0282
	1955	Min.	0.538	0.835	9.499	0.797	0.301	1.765	4.260	45.2891
		Avg.	0.815	0.858	9.768	0.845	0.327	1.872	4.449	48.9198
5-Day B.O.D., pounds per day	1950	Avg.	3,051	972	4,289	1,889	19,124	624	3,831	96,409
		Max.	3,573	762	9,264	1,176	8,966	2,093	2,037	109,962
	1955	Min.	2,205	515	3,167	821	5,027	594	1,191	63,942
		Avg.	2,408	633	6,498	982	7,571	979	1,479	89,082
Total Suspended Solids, pounds per day	1950	Avg.	3,877	1,942	25,919	6,879	5,193	4,812	16,946	354,148
		Max.	3,317	1,320	15,836	500	1,130	721	1,800	249,916
	1955	Min.	351	265	1,424	339	475	412	1,162	117,049
		Avg.	1,052	879	5,174	413	751	624	1,446	173,999
Population Equivalents	1950	Avg.	18,270	5,820	25,679	11,315	114,700	3,737	22,940	577,496
		Max.	21,396	4,563	55,473	7,041	53,689	12,533	12,197	658,452
	1955	Min.	13,203	3,084	18,964	4,916	30,102	3,557	7,131	382,883
		Avg.	14,419	3,790	38,910	5,880	45,335	5,862	8,856	533,422

06 824

Allied Paper Company (King Division)

1950 Results

179.31	tons of production		
7.475	million gallons of waste per day		
16,300	pounds of B.O.D.	90.9	lbs/ton
53,700	pounds of total suspended solids	301.2	lbs/ton

1956 Results

Biochemical Oxygen Demand

	Untreated		Effluent to River	
	lbs.	lbs/ton	lbs.	lbs/ton
1-10	No Data		13,333	68.50
1-11	26,317	126.65	9,474	45.60
1-12	21,862	109.47	17,543	87.85
1-13	16,761	84.18	18,437	92.60
1-14	11,489	58.59	14,948	76.24
1-15	Data incomplete			
1-16	30,737	196.19	19,210	122.62

Total Suspended Solids

1-10	No Data		28,965	148.81
1-11	167,904	808.05	24,738	119.06
1-12	113,358	567.61	41,564	208.13
1-13	94,977	477.03	44,136	221.68
1-14	65,649	334.82	40,969	208.95
1-15	Data incomplete			
1-16	162,648	1,038.21	29,456	188.03

Settleable Solids

	W.T.P. Inf. lbs	W.T.P. Eff. lbs	% Removal
1-10	No Data		
1-11	136,850	0.0	100.00
1-12	86,584	14,797	82.91
1-13	67,043	16,204	75.83
1-14	53,832	28,671	46.74
1-15	Data incomplete		73.54
1-16	128,581	0.0	100.00

	Total Mill Prod. tons	Total Mill Flow Million gallons
1-10	194.64	5.5127
1-11	207.78	6.3111
1-12	199.70	6.4724
1-13	199.10	6.6989
1-14	196.07	6.5597
1-15	0.0	No data
1-16	156.66	7.6780

063825

			Allied Paper Co. King	Allied Paper Co. Monarch	Kalamazoo Paper Co.	Michigan Paper Co.	Rex Paper Company	St. Regis	Mac Si Bar
Production, tons	1950	Avg.	179.31	91.02	214.16	73.86	31.74	149.36	261.0
		Max.	207.78	113.28	259	101.62	28.15	196.21	287.5
	1955	Min.	156.66	83.02	210	83.38	12.96	171.35	211.0
		Avg.	192.32	100.21	237.25	93.51	20.86	181.33	268.0
Waste Flow, Million gallons per day	1950	Avg.	7.475	6.055	9.544	3.591	1.475	5.042	4.840
		Max.	7.6780	4.047	8.543	1.4105	1.305	7.044	3.017
	1955	Min.	5.5127	3.4319	7.549	1.3215	1.095	6.375	2.009
		Avg.	6.5381	3.660	8.087	1.3737	1.178	6.771	2.378
5-Day B.O.D., pounds per day	1950	Avg.	16,340	10,120	13,612	3,294	2,727	11,116	5,4[illegible]
		Max.	19,210	12,106	18,789	4,409	2,426	18,897	6,254
	1955	Min.	9,474	6,476	14,083	2,870	1,953	12,337	3,229
		Avg.	15,501	9,140	16,422	3,722	2,140	16,837	4,770
Total Suspended Solids, pounds per day	1950	Avg.	53,720	31,868	78,313	22,098	10,340	76,544	15,69
		Max.	44,136	21,256	57,888	19,287	8,053	68,371	6,301
	1955	Min.	28,965	14,936	13,016	11,892	5,085	37,642	1,040
		Avg.	34,970	17,558	33,258	14,645	6,953	53,475	2,801
Population Equivalents	1950	Avg.	97,900	60,580	81,500	19,720	16,330	66,530	32,47
		Max.	115,029	72,491	112,508	26,401	14,527	113,155	37,44
	1955	Min.	56,731	38,778	84,329	17,185	11,694	73,874	19,33
		Avg.	92,820	54,731	98,335	22,287	12,814	100,820	28,56

063826

			National Gypsum	Sutherland Div. 1	Sutherland Div. 4&7	Hawthorne	Otsego Falls Paper Mills	K. V. P. Mill 1	K. V. P. Mill 2	Totals
Production, tons	1950	Avg.	129.59	95.52	444.93	34.70	77.06	70.18	219.15	2,071.58
		Max.	155.0	123.4	485.62	43.69	89.86	88.0	229.4	2,408.51
	1955	Min.	145.0	99.4	314.08	39.71	74.83	61.71	180.1	1,843.19
		Avg.	150.10	112.73	437.47	41.90	83.04	75.07	205.78	2,199.57
Waste Flow, Million gallons per day	1950	Avg.	1.651	2.284	9.163	1.697	1.097	3.070	5.232	62.216
		Max.	1.163	0.870	10.041	0.894	0.376	1.949	4.695	53.0282
	1955	Min.	0.538	0.835	9.499	0.797	0.301	1.765	4.260	45.2891
		Avg.	0.815	0.858	9.768	0.845	0.327	1.872	4.449	48.9198
5-Day B.O.D., pounds per day	1950	Avg.	3,051	972	4,289	1,889	19,124	624	3,831	96,409
		Max.	3,573	762	9,264	1,176	8,966	2,093	2,037	109,962
	1955	Min.	2,205	515	3,167	821	5,027	594	1,191	63,942
		Avg.	2,408	633	6,498	982	7,571	979	1,479	89,082
Total Suspended Solids, pounds per day	1950	Avg.	3,877	1,942	25,919	6,879	5,193	4,812	16,946	354,148
		Max.	3,317	1,320	15,836	500	1,130	721	1,800	249,916
	1955	Min.	351	265	1,424	339	475	412	1,162	117,049
		Avg.	1,052	879	5,174	413	751	624	1,446	173,999
Population Equivalents	1950	Avg.	18,270	5,820	25,679	11,315	114,700	3,737	22,940	577,496
		Max.	21,396	4,563	55,473	7,041	53,689	12,533	12,197	658,452
	1955	Min.	13,203	3,084	18,964	4,916	30,102	3,557	7,131	382,883
		Avg.	14,419	3,790	38,910	5,880	45,335	5,862	8,856	533,422

063827

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Report of Survey

ALLIED PAPER CORPORATION - BRYANT MILL
Kalamazoo, Michigan

Survey Periods: -(24 hours each)

#1 - May 27 & 28, 1957, 8 a.m. to 8 a.m.
#2 - May 28 & 29, 1957, 8 a.m. to 8 a.m.

Summary of Results:

	#1		#2	
Flow, million gal. per day	5.36	5.17	5.81	5.68
Production, tons	150.45	—	186.31	—
5 Day B.O.D., lbs.	7,823	7,140	16,959	19,750
5 Day B.O.D., lbs. per ton paper	52	47	91	106
Susp. Solids, lbs.	21,234	17,200	48,455	44,600
Susp. Solids, lbs. per ton paper	141	114	260	239
Susp. Volatile Solids, lbs.	6,034	6,060	17,202	17,050
Susp. Volatile solids, lbs. per ton paper	40	40	92	92
2 Hr. Settleable Solids, % removal	86	—	73	—
Population Equivalent	46,844	47,800	101,551	119,000
pH	7.4	7.9	7.9	8.2

Type of Production: De-ink Mill

Mill Water Supply: Portage Creek water from above Allied Monarch Division augmented with city water.

Waste Treatment: See Report of Survey St. Regis Paper Company, July 20-26, 1955, by R.W. Purdy.

Survey Procedure: Twenty-four hour composite samples and charts of flow were obtained from the Allied Corp. sampling and recording equipment.

Survey Data:

	#1		#2	
Flow, M.G.D.	5.36	5.17	5.81	5.68
Production, tons	150.45	—	186.31	—
Influent:				
5 Day B.O.D., ppm	370	445	480	457
Susp. Solids, ppm	1720	1643	2300	2180
Susp. Volatile Solids, ppm	820	803	1000	760
2 Hr. Settleable Solids	1440	—	1780	—
pH	7.3	8.1	7.1	7.4
Effluent:				
5 Day B.O.D., ppm	175	165	350	416
Suspended Solids, ppm	475	401	1000	940
Suspended Volatile Solids, ppm	135	141	355	360
~~2 Hr. Settleable Solids, ppm~~	~~123~~	—	~~500~~	—
pH	7.4	7.9	7.9	8.2

BOD Removal 57.7%

BOD Removal 77.1

Calculations:

Pounds of 5 day B.O.D. to River
#1 - 8.34 x 5.36 x 175 = 7,823 lbs.
#2 - 8.34 x 5.81 x 350 = 16,959 lbs.

Pounds of 5 Day B.O.D. per ton of paper
#1 - 7,823/150.45 = 52 lbs.
#2 - 16,959/186.31 = 91 lbs.

Population equivalent
#1 - 7,823/.167 = 46,844 persons
#2 - 16,959/.167 = 101,551 persons

% Removal 5 day B.O.D.
#1 - 195/370 = 53 percent
#2 - 130/480 = 27 percent

Pounds of suspended solids to River
#1 - 8.34 x 5.36 x 475 = 21,234 lbs.
#2 - 8.34 x 5.81 x 1000 = 48,455 lbs.

Pounds of Susp. Solids per ton of paper
#1 - 21,234/150.45 = 141 lbs.
#2 - 48,455/186.31 = 260 lbs.

Percent removal Suspended Solids
#1 - 1245/1720 = 72 percent
#2 - 1300/2300 = 57 percent

Pounds of Susp. Volatile Solids to River
#1 - 8.34 x 5.36 x 135 = 6,035 lbs.
#2 - 8.34 x 5.81 x 355 = 17,202 lbs.

Pounds of Susp. Volatile Solids per ton of paper
#1 - 6,035/150.45 = 40 lbs.
#2 - 17,202/186.31 = 92 lbs.

Percent Removal of Susp. Volatile Solids
#1 - 685/820 = 84 percent
#2 - 645/1000 = 65 percent

Percent Removal of 2 Hr. Settleable Solids
#1 - 1245/1440 = 86 percent
#2 - 1300/1780 = 73 percent

Remarks: Practically all of the de-ink waste was going to the treatment plant at the time of the survey.

Survey and report by: E. Shannon
Chemical Analysis by: R. Krueger
Supervised by: R. Purdy

[illegible] PAPER CORPORATION
KALAMAZOO, MICHIGAN

June 5, 1957

To: W. A. Kirkpatrick

From: W. E. Kendrick

SUBJECT: Results of tests on King and Bryant waste treatment tanks during check by WRC, and a comparison of our method of suspended solids determination with the WRC method.

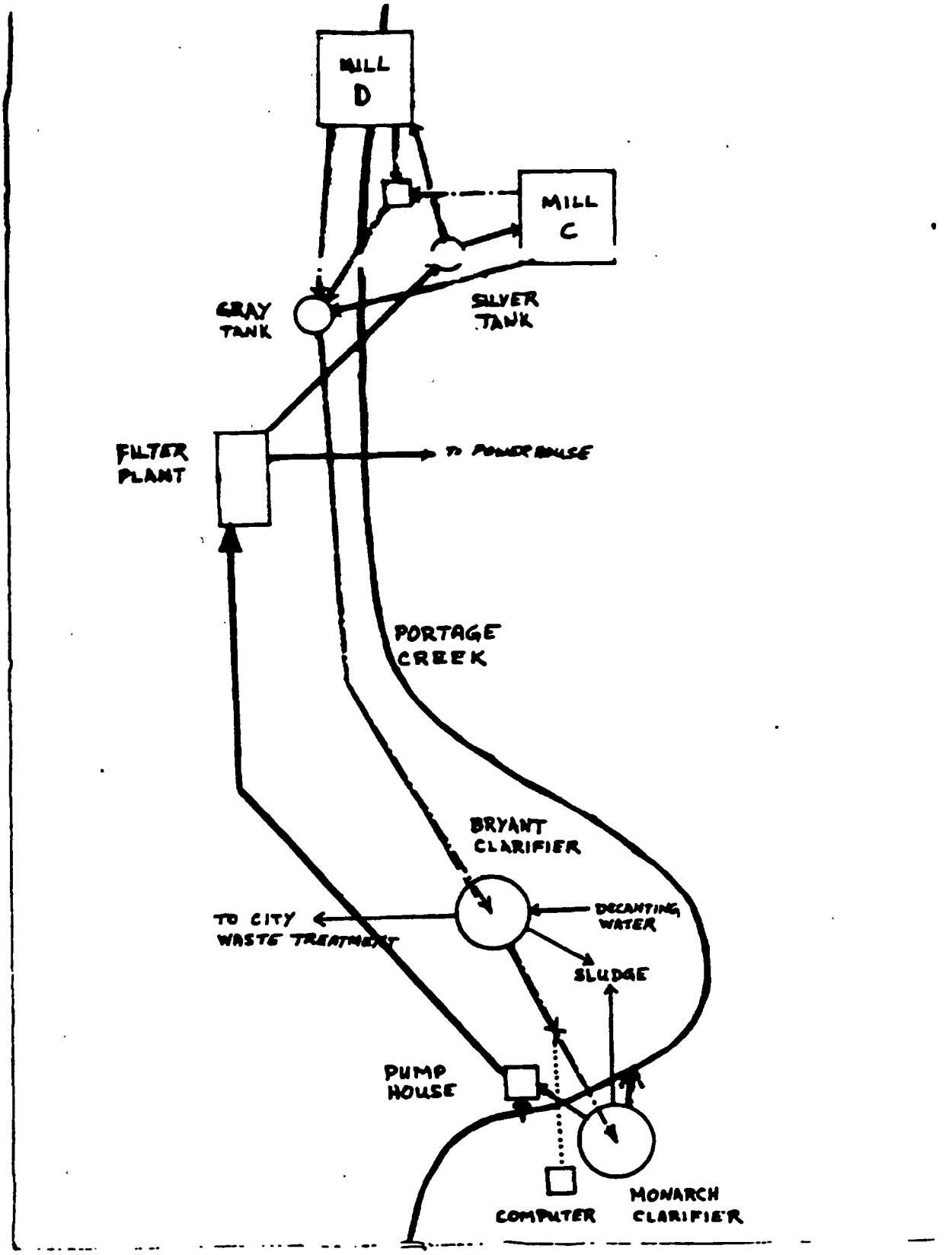
Results: With regards to suspended solids, both mills seem to be within the allowable limits, but above on the BOD limits. The one low BOD recorded at Bryant can probably be attributed to the fact that it was a Monday test and the pulp mill was down at least a third of the day.

As can be seen in the table, the gooch crucible and fiberglass filter discs method (used by the WRC) gives higher results than our own method of using filter paper and buchner funnel.

Procedure: During the two day period all samples were picked up by me and then picked up from me by the state man at the end of thetwo days.

The gooch crutible method was run by Tony Palladino while I ran our regular tests. The analytical balance was used for weighing the gooch samples. A 25 ml. sample was used in the gooch method and a 500 ml. sample in our regular method.

Data: It can be expected that the WRC results will be more closely in line with the gooch crucible results.


MILL D
MILL C
GRAY TANK
SILVER TANK
FILTER PLANT
TO POWER HOUSE
PORTAGE CREEK
BRYANT CLARIFIER
DECANTING WATER
TO CITY WASTE TREATMENT
SLUDGE
PUMP HOUSE
COMPUTER
MONARCH CLARIFIER

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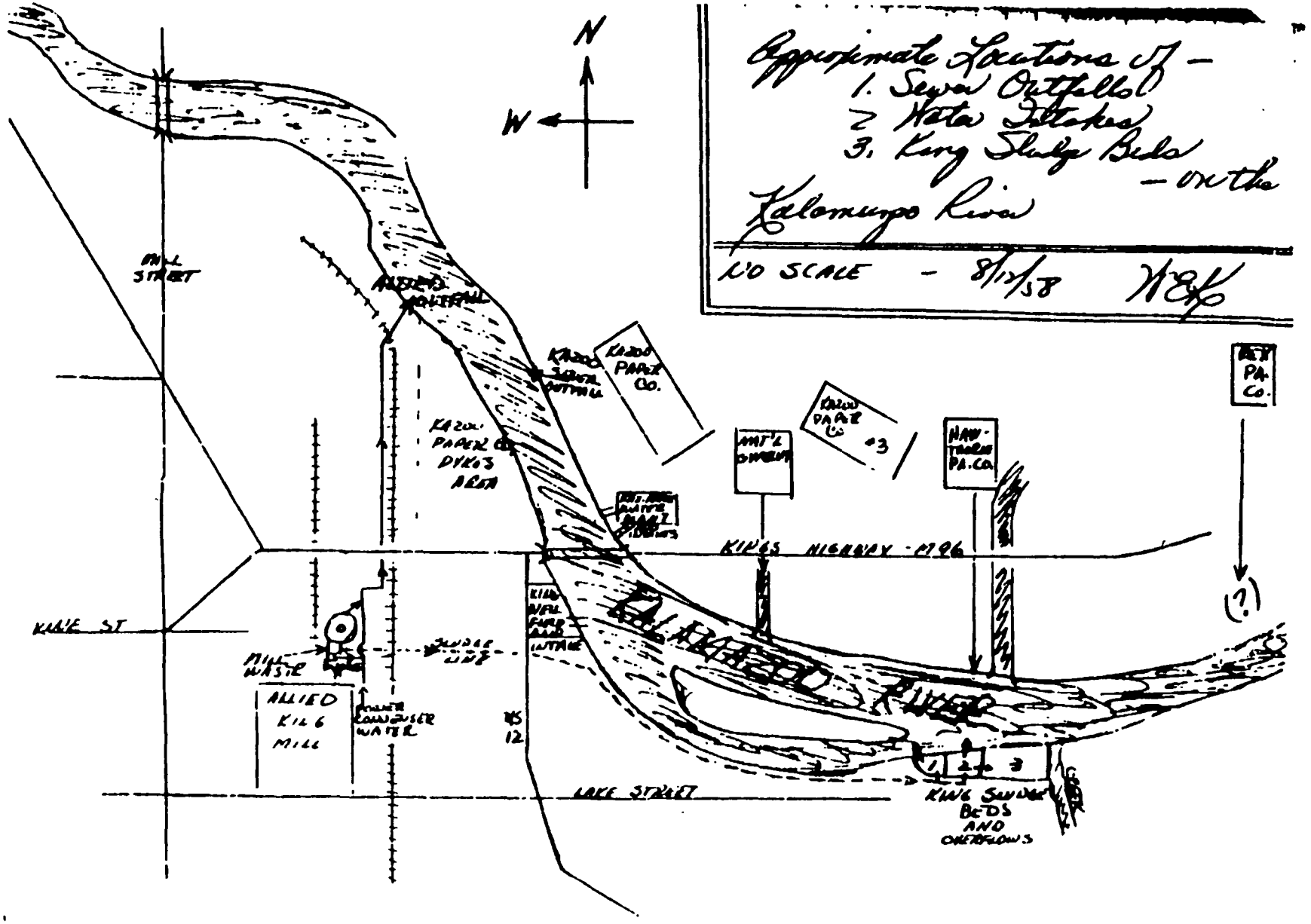

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Report of Survey

ALLIED PAPER CORPORATION - KING DIVISION
Kalamazoo, Michigan

Survey Periods: (24 hours each)

#1 - May 27 and 28, 1957, 8 a.m. - 8 a.m.
#2 - May 28 and 29, 1957, 8 a.m. - 8 a.m.

Summary of Results:

	1	2
Flow - million gal./day	8.20	7.85
Production, tons	146.8	185.2
5 day B.O.D., lbs.	14,020	17,677
5 day B.O.D., lbs./ton of paper	95.5	95.4
Susp. Solids, lbs.	39,323	48,447
Susp. Solids, lbs./ton	268	262
Susp. Vol. Solids, lbs.	9,232	12,112
Susp. Vol. Solids, lbs./ton	63	65
2 hr. Settleable Solids % removal	--	92
Population Equivalent	83,952	105,850
pH	6.9	7.8

Type of Production: De-ink Mill

Water Supply: Well Water

Waste Control: See report of survey January 10-16, 1956 by R. W. Purdy.

Survey Procedure:

Twenty four hour composite samples and charts of flow were obtained from the Allied Corporation sampling and recording equipment.

Survey Data:

	1	2
Influent		
5 Day B.O.D., ppm	330	420
Susp. Solids, ppm	1540	2580
Susp. Vol. Solids, ppm	650	630
2 hr. settleable solids	--	2000
pH	6.9	7.8
Flow, million gal./day	8.20	7.85
Production, tons	146.8	185.2
Effluent		
5 Day B.O.D., ppm	205	270
Susp. Solids, ppm	575	740
Susp. Vol. Solids, ppm	135	185
~~2 hr. Settleable solids~~	~~279~~	~~460~~
pH	6.7	7.6

063789

Calculations:

Pounds of 5 Day B.O.D. to River
Survey period #1 - 8.34 x 8.20 x 205 = 14,020 pounds per day
Survey period #2 - 8.34 x 7.85 x 270 = 17,677 pounds per day

Population equivalent
Survey period #1 - 14,020/.167 = 83,952
Survey period #2 - 17,677/.167 = 105,848

Pounds of 5 Day B.O.D. per ton of paper
Survey period #1 - 14,020/146.8 = 95.5 pounds per ton
Survey period #2 - 17,677/185.2 = 95.4 pounds per ton

% Removal 5 day B.O.D.
Survey period #1 - 125/330 = 38%
Survey period #2 - 150/420 = 36%

Pounds of Suspended Solids to River
Survey period #1 = 8.34 x 8.20 x 575 = 39,323 pounds per day
Survey period #2 - 8.34 x 7.85 x 740 = 48,447 pounds per day

Pounds of Suspended Solids per ton of paper
Survey period #1 - 39,323/146.8 = 268 pounds per ton
Survey period #2 - 48,447/185.2 = 262 pounds per ton

% Removal Suspended Solids
Survey period #1 - 965/1540 = 63%
Survey period #2 - 1840/2580 = 71%

Pounds of Suspended Volatile Solids to River
Survey Period #1 - 8.34 x 8.20 x 135 = 9,232 pounds per day
Survey period #2 - 8.34 x 7.85 x 185 = 12,112 pounds per day

Pounds of Suspended Vol. Solids per ton of paper
Survey Period #1 - 9,232/146.8 = 63 pounds per ton
Survey Period #2 - 12,112/185.2 = 65 pounds per ton

% Removal Suspended Volatile Solids
Survey period #1 - 515/650 = 79%
Survey period #2 - 445/630 = 71%

% Removal 2 Hr. Settleable Solids
Survey period #1 ----------
Survey period #2 - 1840 /2000 = 92%

063790

Remarks:

The total daily waste flow from this plant was about 1.5 million gallons per day more than the average daily flow during the seven day survey of January, 1956. The 5 day B.O.D. expressed in pounds per ton of paper produced was about the same as the average of the 1956 survey. The suspended solids load being discharged in pounds per ton of paper produced was about 50 percent

above the 1956 survey, and the suspended volatile solids per ton of paper was about the same as that being discharged in 1956. About 75 percent of the 2 hour freely settleable solids were being removed at the time of the survey.

Survey and report by: E. Shannon
Chemical analysis by: R. Krueger

063791

Report of Survey

REX PAPER COMPANY

Kalamazoo, Mich.

Survey Periods: (24 hours each)

No. 1 - May 21 & 22, 1957
No. 2 - May 23 & 24, 1957

Summary of Results of Survey:

Survey Period	No. 1	No. 2
Flow, million gal. per day	0.995	1.23
Production, tons	22.70	20.24
Total 5 day B.O.D., lbs.	1,120	1,795
Total 5 day B.O.D.,lbs./T.paper	49.3	88.7
Total Susp. Solids, lbs.	3,054	7,899
Total Susp. Solids,lbs./T.paper	134.5	390.3
Total Susp.Vol. Solids, lbs.	830	1641
Total Susp.Vol.Solids,lbs./T.paper	36.6	81.1
Gal. waste per ton of paper	43,833	60,770
Population Equivalent	6,707	10,748
Settleable Solids, % Removal	87%	72%
pH	7.4	8.1

Type of Mill Production: de-ink

Mill water supply: Well water

Waste Control: All de-ink and paper processing water flows by gravity to a 50 foot clarifier with 10 foot side depth. Recovered sludge is pumped to disposal beds.

Survey Procedure: A water level recorder was installed on the outlet weir of the clarifier to obtain a continuous 24 hour record of flow for each survey period. Automatic samplers were installed on the influent distribution box and effluent weir box to obtain samples taken at fifteen minute intervals and composited for each 24 hour survey period.

Survey Data:

Influent	No. 1	No. 2
5 Day B.O.D., ppm	400	205
Susp. Solids, ppm	1860	1950
Susp. Vol. Solids, ppm	820	900
2 hr.settleable solids, ppm	1708	1630
pH	7.9	7.9

Effluent	No. 1	No. 2
5 Day B.O.D., ppm	135	175
Susp. Solids, ppm	368	770
Susp. Vol. Solids, ppm	100	160
pH	7.4	8.1

064097

Production, tons	22.7	20.24
Flow, mgd.	0.995	1.23

Computations:

Pounds of 5 Day B.O.D. to River
#1 8.34 x 0.995 x 135 = 1,120
#2 8.34 x 1.23 x 175 = 1,795

Population Equivalent
#1 1,120/.167 = 6,707
#2 1,795/.167 = 10,748

% Removal B.O.D.
#1 265/400 = 66%
#2 30/205 = 15%

Pounds of Susp. Solids to River
#1 8.34 x 0.995 x 368 = 3,054
#2 8.34 x 1.23 x 770 = 7,899

% Removal Susp. Solids
#1 1492/1860 = 80%
#2 1180/1950 = 60%

Pounds of Susp. Vol. Solids to River
#1 8.34 x 0.995 x 100 = 830
#2 8.34 x 1.23 x 160 = 1,641

% Removal Susp. Volatile Solids
#1 720/820 = 88%
#2 740/900 = 82%

% Removal 2 hr. settleable solids
#1 1492/1708 = 87%
#2 1180/1630 = 72%

Gal. of water per ton of paper
#1 995,000/22.7 = 43,833 gal.
#2 1,230,000/20.24 = 60,770 gal.

Pounds of 5 Day B.O.D. per ton of paper
#1 1,120/22.7 = 49.3
#2 1,795/20.24 = 88.7

Pounds of Susp. Solids per ton of paper
#1 3,054/22.7 = 134.5 lbs.
#2 7,899/20.24 = 390.3 lbs.

Pounds of Susp. Vol. Solids per ton of paper
#1 830/22.7 = 36.6 lbs.
#2 1641/20.24 = 81.1 lbs.

Remarks: The effluent sample jug broke during the May 22 and 23 survey period necessitating the continuance of the survey to include May 23 & 24.

The theoretical detention time in the settling tank for the average daily flow during the survey periods is as follows:

Survey period #1 - 3.6 hrs.
Survey period #2 - 2.9 hrs.

Survey & Report by: E. Shannon
Chemical Analysis by: R. Krueger

92-216 T

STATE OF MICHIGAN
WATER RESOURCES COMMISSION
G. MENNEN WILLIAMS, GOVERNOR

STAFF OFFICES
[illegible]

STATION 8
LANSING 13, MICHIGAN

April 9, 1958

RECEIVED APR 11 1958 ALLIED PAPER MILLS

Mr. W. A. Kirkpatrick
Vice President
Allied Paper Corporation
Kalamazoo, Michigan

Dear Mr. Kirkpatrick:

The Commission is planning to resume its consideration of Kalamazoo area pollution problems on Wednesday, May 28, 1958 in Kalamazoo at 1:30 P. M. Dr. Nadelman and Western Michigan University are making available for this session, Room B-11 in the new Paper Institute Laboratory on the new university campus.

This conference is intended primarily to bring together all paper mill and municipal officials. A few representatives of conservation groups, the chamber of commerce, the press and local area members of the legislature and other interested citizens will be welcome observers should they care to attend.

The problem before the Commission is this. With municipal sewage collection and treatment and waste reduction by industry now in effect, all pursuant to previously adopted orders of the Commission, a stretch of Portage Creek and many miles of the river are seasonally at least a liability rather than an asset. Conditions here preclude any further expansion by the principal water using industry or others dependent on river water use. Offensive odor, riparian injuries and a water habitat unfit for fish and aquatic life are necessarily the rule rather than the exception.

As an aid to exploring the direction in which further progress can and should be made, please note the results of our 1956 Staff Survey, copy of which is enclosed. In addition paper mill managements addressed will receive a second page of this letter having reference to their particular problem and possible potential future obligations.

The Commission feels that the conference time should not be taken up with technicalities or clarification of technical details that can best be ironed out in advance of the meeting between the technical people. Accordingly it has directed that key members of our technical staff make themselves available upon request to meet individually or with the paper mill technicians as a group, at a mutually convenient time and place to discuss technical aspects of the report which may require further explanation. These preliminary discussions should be concluded prior to May 16th. Your cooperation and participation will be appreciated.

Very truly yours,
WATER RESOURCES COMMISSION

Milton P. Adams
Executive Secretary

SA 029157

GENERAL STATEMENT

Figure 7 (page 18) shows observed river conditions during the intensive river survey of August, 1956. Note extent of zero dissolved oxygen depletion of the river, with a flow of 510 c.f.s. about 2-1/2 times the recorded minimum flow.

The report was prepared to predict the expected river condition under reduced waste loads and various river flows. As an example of how it can be used, we might assume that the Commission proposes to maintain the minimum mean daily concentration of dissolved oxygen in the river at or above 30% of the saturation value (2.46 p.p.m.) with a river temperature of 26° C. and flow of 260 cubic feet per second. In addition we will assume that the rate of self purification in the river will decrease to 86% of the observed rate in 1956. Under these conditions the maximum daily oxygen demanding load that can be discharged to the river from Comstock through Otsego is approximately 254,000 population equivalent or 42,400 pounds of 5-day biochemical oxygen demand.

Specific possible solutions for Allied Paper Corporation, King Division

Two schemes of allocation of this resource can be used: (a) Require 61.-% reduction of all waste loads from the 1950 level; (b) Require a 75% reduction of the 1950 de-ink mill waste loads with all other waste sources limited to their 1955-56 level. Under these two schemes your share of this allocation would be either -

(a) 6,293 of 5-day B.O.D. or population equivalent of 37,683

(b) 4,075 of 5-day B.O.D. or population equivalent of 24,400

Ralph W. Purdy

Robert Courchaine

GENERAL STATEMENT

Figure 7 (page 18) shows observed river conditions during the intensive river survey of August, 1956. Note extent of zero dissolved oxygen depletion of the river, with a flow of 610 c.f.s. about 2-1/2 times the recorded minimum flow.

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Specific possible solutions for Allied Paper Corporation, Monarch Division

Two schemes of allocation of this resource can be used: (a) Require 61.4% reduction of all waste loads from the 1950 level; (b) Require a 75% reduction of the 1950 de-ink mill waste loads with all other waste sources limited to their 1955-56 level. Under these two schemes your share of this allocation would be either -

(a) 3,000 of 5-day B.O.D. or population equivalent of 23,359

(b) 2,126 of 5-day B.O.D. or population equivalent of 15,125

Ralph W. Purdy

Robert Courchaire

GENERAL STATEMENT

Figure 7 (page 18) shows observed river conditions during the intensive river survey of August, 1956. Note extent of zero dissolved oxygen depletion of the river, with a flow of 610 c.f.s. about 2-1/2 times the recorded minimum flow.

The report was prepared to predict the expected river condition under reduced waste loads and various river flows. As an example of how it can be used, we might assume that the Commission proposes to maintain the minimum mean daily concentration of dissolved oxygen in the river at or above 30% of the saturation value (2.46 p.p.m.) with a river temperature of 26° C. and flow of 260 cubic feet per second. In addition we will assume that the rate of self purification in the river will decrease to 86% of the observed rate in 1956. Under these conditions the maximum daily oxygen demanding load that can be discharged to the river from Comstock through Otsego is approximately 254,000 population equivalent or 42,400 pounds of 5-day biochemical oxygen demand.

Specific possible solutions for Allied Paper Corporation, Bryant Division

Two schemes of allocation of this resource can be used: (a) Require 51.4% reduction of all waste loads from the 1950 level; (b) Require a 75% reduction of the 1950 de-ink mill waste loads with all other waste sources limited to their 1955-56 level. Under these two schemes your share of this allocation would be either -

(a) 4,288 of 5-day B.O.D. or population equivalent of 25,676

(b) 2,776 of 5-day B.O.D. or population equivalent of 16,625

Ralph W. Purdy

Robert Courchaine

SA 029170

COPY

Report of Waste Surveys
at
Allied Paper Company
(Monarch Division)
Kalamazoo, Michigan

Survey Periods (24 hours for each)

January 10, 1956
January 11, 1956
January 12, 1956
January 13, 1956
January 14, 1956
January 15, 1956
January 16, 1956

Summary of Results:

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
Flow, million g.p.d.	3.5366	3.7333	3.6860	3.5262	3.4319	0.6463	4.0465
Production, tons	113.28	101.88	110.50	94.64	97.94		83.02
5-Day B.O.D., lbs.	10.255	9,029	12,106	6,718	6,476		10,256
5-Day B.O.D., lbs/ton paper	90.52	88.63	109.55	70.96	66.12		123.53
Total Susp. Sol., lbs.	16,255	17,280	20,056	21,256	15,565		14,936
Total Susp. Sol., lbs/ton paper	143.49	169.96	181.50	224.59	158.92		179.90
Total Susp. Vol. Sol., lbs.	6,218	4,359	5,525	5,578	5,164		4,739
Total Susp. Vol. Sol., lbs/ton paper	54.90	42.79	50.00	69.51	52.73		57.08
Gallons waste per ton paper	31,219	36,644	33,357	37,259	35,040		48,741
Population Equivalent	61,407	54,066	72,491	40,228	38,776		61,413
Settleable Solids Removals		91.23	93.21	68.49	75.51		86.73
Other Paper Processing Susp. Sol. lbs.	1,212		1,150	670	453		256
Other Paper Processing Susp. Sol., lbs/ton Paper	10.70		10.41	7.08	4.63		3.08

#1 day

Type of Mill Production:

De-ink Mill

Mill Water Supply:

Well Water and Portage Creek

Waste Control:

De-ink waste and bleach plant waste flows by gravity to the main pump house. White water is pumped to the gravity line. De-ink waste, bleach water and white water are pumped to a 90-foot diameter clarifier with a 12-foot side water depth. Effluent is discharged to Portage Creek. Sludge is discharged to a large lagoon. Occasional white water overflows and coating room wastes are discharged to Portage Creek through the Cork Street weir.

Survey Procedure:

Effluent from the clarifier is discharged through a weir box. A company installed recording head meter was used to obtain a continuous record of the flow. A composite sample of the effluent was obtained from the compan's sampling device (water wheel type sampler).

An influent sample was obtained from the discharge line from the pump house. A constant size sample is taken at set time intervals by a timing device and valve arrangement.

White water overflows and other miscellaneous wastes plus uncontaminated were measured at a previously constructed weir in a culvert underneath Cork Street. A recording head meter was installed at the weir to obtain a continuous daily record of the flow. Samples were taken by an automatic sampler and composited for each survey period.

Survey Data:

Influent							
Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
5-Day B.O.D., ppm	420	380	495	285	285	30	395
Susp. Sol., ppm	1500	1440	1590	1500	1130	140	1370
Susp. Vol. Sol., ppm	870	800	870	780	770	110	790
2-hr. Settleable Sol., ppm		970	1046	1169	794		1078
pH	8.2	7.3	6.9				
Effluent							
5-Day B.O.D., ppm	340	290	370	225	225		285
Susp. Sol. ppm	510	555	615	700	523		435
Susp. Vol. Sol. ppm	130	140	165	210	165		135
pH	7.8	7.1	7.2				
Flow, million gals/day	3.5366	3.7333	3.6860	3.5232	3.4319	0.5463	4.0465
Other wastes							
5-Day B.O.D., ppm	8		23	5.0	3.5	37	4.2
Susp. Sol., ppm	32		33	20	19	210	14
Susp. Vol. Sol., ppm	24		13	12	15	68	10
pH	8.1		7.7				
Flow, million gals/day	4.543	4.3018	4.1770	4.0200	2.8605		2.1884
Portage Creek							
5-Day B.O.D., ppm			3.1				1.4
Susp. Sol., ppm			0				0.0
Production, tons	113.28	101.86	110.50	94.64	97.94	0	83.02

Survey Calculations:

Pounds of 5-Day B.O.D. to River

1-10 3.5366 x 8.34 x 340 = 10,028

4.543 x 8.34 x (8-2) = 227

Total 10,255

1-11	3.7333 x 8.34 x 290	=	9,029	
	Total			9,029
1-12	3.6860 x 8.34 x 370	=	11,374	
	4.1770 x 8.34 x (23-2)	=	732	
	Total			12,106
1-13	3.5262 x 8.34 x 225	=	6,617	
	4.0200 x 8.34 x (5-2)	=	101	
	Total			6,718
1-14	3.4319 x 8.34 x 225	=	6,440	
	2.8605 x 8.34 x (3.5-2)	=	36	
	Total			6,476
1-16	4.0465 x 8.34 x 285	=	9,618	
	2.1884 x 8.34 x (37-2)	=	638	
	Total			10,256

Pounds of 5-Day B.O.D. per ton of paper 6 | 54540 / 9142

1-10	10,255 / 113.28	=	90.52
1-11	9,029 / 101.38	=	88.63
1-12	12,106 / 110.50	=	109.55
1-13	6,718 / 94.64	=	70.96
1-14	6,476 / 97.94	=	66.12
1-16	10,256 / 83.02	=	123.53

Population Equivalent

1-10	10,255 / 0.167	=	61,407
1-11	9,029 / 0.167	=	54,066
1-12	12,106 / 0.167	=	72,491
1-13	6,718 / 0.167	=	40,228
1-14	6,476 / 0.167	=	38,779
1-15	No Data		
1-16	10,256 / 0.167	=	61,413

Total pounds of suspended solids to river

1-10	3.5366 x 8.34 x 510	=	15,043		7270
	4.543 x 8.34 x 32	=	1,212		992
	Total			16,255	8262
1-11	3.733 x 8.34 x 555	=	17,280		6750
	Total			17,280	
1-12	3.6860 x 8.34 x 615	=	18,906		13600
	4.1770 x 8.34 x 33	=	1,150		
	Total			20,056	
1-13	3.5262 x 8.34 x 700	=	20,586		12,570
	4.0200 x 8.34 x 20	=	670		1278
	Total			21,256	13,848
1-14	3.4319 x 8.34 x 528	=	15,112		7850
	2.8605 x 8.34 x 19	=	453		433
	Total			15,565	8283

1-15 No data

1-16 4.0465 x 8.34 x 435 = 14,680
2.1884 x 8.34 x 14 = 256
Total 14,936

Total Pounds of Suspended Solids per ton of paper

1-10	16,255 / 113.28	=	143.49
1-11	17,280 / 101.88	=	169.96
1-12	20,056 / 110.50	=	181.50
1-13	21,256 / 94.64	=	224.59
1-14	15,565 / 97.94	=	158.92
1-16	14,936 / 83.02	=	179.90

Total Pounds of Suspended Volatile Solids to river

1-10 3.5366 x 8.34 x 180 = 5,309
4.543 x 8.34 x 24 = 909
Total 6,218

1-11 3.733 x 8.34 x 140 = 4,359
Total 4,359

1-12 3.6860 x 8.34 x 165 = 5,072
4.1770 x 8.34 x 13 = 453
Total 5,525

1-13 3.5252 x 8.34 x 210 = 6,176
4.0200 x 8.34 x 12 = 402
Total 6,578

1-14 3.4319 x 8.34 x 168 = 4,808
2.8605 x 8.34 x 15 = 356
Total 5,164

1-15 No data

1-16 4.0465 x 8.34 x 135 = 4,556
2.1884 x 8.34 x 10 = 183
Total 4,739

Total Pounds of Suspended Volatile Solids per ton of paper

1-10	6,218 / 113.28	=	54.89
1-11	4,359 / 101.88	=	42.79
1-12	5,525 / 110.50	=	50.00
1-13	6,578 / 94.64	=	69.51
1-14	5,164 / 97.94	=	52.73
1-16	4,739 / 83.02	=	57.08

Gallons Waste per ton of paper

1-10	(3,536,600) / 113.28	=	31,219
1-11	(3,733,300) / 101.88	=	36,644
1-12	(3,686,000) / 110.50	=	33,357
1-13	(3,526,200) / 94.64	=	37,259
1-14	(3,421,900) / 97.94	=	35,040
1-16	(4,046,500) / 83.02	=	48,741

Treatment Plant Efficiency

B.C. D. Removal

1-10	(420 - 340) x 100 / 420	=	19.05%	
1-11	(380 - 290) x 100 / 380	=	23.68%	
1-12	(495 - 370) x 100 / 495	=	25.25%	
1-13	(285 - 225) x 100 / 285	=	21.05%	
1-14	(285 - 225) x 100 / 285	=	21.05%	
1-15	No data			
1-16	(395 - 285) x 100 / 395	=	27.85%	

Suspended Solids Removal

1-10	(1500 - 510) x 100 / 1500	=	66.00%	- 79.6
1-11	(1440- 555) x 100 / 1440	=	61.45%	- 82.0
1-12	(1590 - 615) x 100 / 1590	=	61.32%	- 67.3
1-13	(1500 - 700) x 100 / 1500	=	53.33%	- 65.7
1-14	(1130 - 528) x 100 / 1130	=	53.27%	- 77.7
1-15	No data			
1-16	(1370 - 435) x 100 / 1370	=	68.24%	- 74.2

Suspended Volatile Solids Removal

1-10	(870 - 180) x 100 / 870	=	79.31%
1-11	(800 - 140) x 100 / 800	=	82.50%
1-12	(870 - 165) x 100 / 870	=	81.03%
1-13	(780 - 210) x 100 / 780	=	73.07%
1-14	(770 - 168) x 100 / 770	=	78.18%
1-15	No data		
1-16	(790 - 135) x 100 / 790	=	82.91%

Settleable Solids Removal

1-10	No data		
1-11	(1440 - 555) x 100 / 970	=	91.23%
1-12	(1590 - 615) x 100 / 1046	=	93.21%
1-13	(1500 - 700) x 100 / 1168	=	68.49%
1-14	(1130 - 528) x 100 / 794	=	75.81%
1-15	No data		
1-16	(1370 - 435) x 100 / 1078	=	86.73%

Theoretical Detention Time:

1-10	3.85 hours
1-11	3.59 hours
1-12	3.73 hours
1-13	3.90 hours
1-14	4.01 hours
1-15	21.29 hours
1-16	3.40 hours

Other Paper Processing Suspended Solids per ton paper

1-10	1212 / 113.28	=	10.70
1-11	no data		
1-12	1150 / 110.50	=	10.41
1-13	670 / 94.64	=	7.08
1-14	453 / 97.94	=	4.63
1-15	no data		
1-16	256 / 83.02	=	3.08

Remarks:

Since the July 1955 surveys, the bleach water discharged was relocated so that it receives waste treatment along with other de-ink wastes. This has decreased the quantity of suspended solids in those wastes that are classified as resulting from other paper processing operations to a point where they are within the limit set by this Commission. Other changes evidently were made that resulted in a decrease in waste flow to the treatment plant so that even after the addition of the bleach waste, the resulting flow to the unit is below the July 1955 levels. The result has been a substantial decrease in the quantity of B.O.D. and suspended solids remaining in the effluent.

The formation of a scum layer on the clarifier is no doubt decreasing the efficiency of this unit. If this can be eliminated, the treatment plant removals should increase.

Survey written and supervised by:
Ralph Purdy

Field work by:
Robert Courchaine

Chemical Analyses by:
Russell Krueger & Ralph Purdy

RPm,

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Report of Waste Survey

at

Allied Paper Company
(King Division)
Kalamazoo, Michigan

Survey Periods: (24 hours for each)

January 10, 1956
January 11, 1956
January 12, 1956
January 13, 1956
January 14, 1956
January 15, 1956
January 16, 1956

Summary of Results:

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
Flow, million g.p.d.	5.5127	6.311	5.4724	6.6989	[illegible]		7.678
Production, tons	194.64	207.78	199.70	199.10	196.07	0.0	156.66
5-day B.O.D., lbs.	13,333	9,474	17,543	18,407	14,348		19,210
5-day B.O.D., lbs/ton of paper	68.50	45.60	87.85	92.64	76.24		122.62
Total Susp.Sol., lbs.	28,965	24,738	4,560	44,135	40,969		29,456
Total Susp.Sol., lbs/ton paper	148.91	119.06	208.13	221.68	208.95		188.03
Total Susp.Vol.Sol. lbs/ton paper	8.506	6,[illegible]	10,796	15,085	13,841		10,886
Total Susp.Vol.Sol., lbs	[illegible].70	32.[illegible]	[illegible].06	75.77	70.[illegible]		69.49
Cal. Waste/ton of paper	28,323	30,373	32,411	30,080	33,455		49,011
Population Equivalents	79,538	56,[illegible]	103,047	110,401	84,508		115,029
Settleable Sol. Removal, percent		10[illegible].61	84.97	75.85	46.75	73.34	103.58
Other Paper Processing Susp.Sol., lbs.	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Paper Processing Susp.Sol., lbs/ton paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Type of Mill Production:

De-ink Mill

Mill Water Supply:

Well water

Allied Paper Company-2
(King Division)

Waste Controll:

All paper processing waste and de-ink waste water flows by gravity to a pump station. The waste at this point is pumped to a 110-foot diameter clarifier with a 13-foot side water depth. The effluent is discharged to a city storm sewer that empties into the Kalamazoo River.

Survey Procedure:

Effluent from the clarifier is discharged through a weir box. A company installed recorded recording head meter was used to obtain a continuous recor of the flow. A composite sample of the effluent was obtained by installing an automatic sampler.

An influent sample was obtained from the discharge line from the pump house. A constant size sample is taken at set intervals by a timing device and valve arrangement.

Sludge is discharged to one of several large lagoons.

Survey Data:

Influent

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
5-Day B.O.D., p.p.m.		500	405	300	210	175	480
Susp. Sol., p.p.m.		3190	2100	1700	1200	596	2540
Susp. Vol. Sol., p.p.m.		1520	1080	700	700	362	1460
2 hr. Settleable Sol., p.p.m.		2600	1604	1200	984	446	2008
pH		7.2	7.5				

Effluent

Date	1-10	1-11	1-12	1-13	1-14	1-15	1-16
5-Day B.O.B., p.p.m.	290	180	325	330	270	115	300
Susp. Sol., p.p.m.	630	470	770	790	740	268	460
Susp. Vol.Sol.,p.p.m.	185	130	200	270	250	128	170
pH	8.2	7.3	7.2				
Flow, million g.p.d.	5.5127	5.3111	5.4724	6.5989	5.5597		7.6780
Production, tons	194.64	207.78	193.70	199.10	196.07	0.0	156.66

Allied Paper Company-3
(King Division)

Survey Calculations:

Pounds of 5-day B.O.D. to River

1-10	5.5127 x 8.34 x 290=	13,333
1-11	6.3111 x 8.34 x 180=	9,474
1-12	6.4724 x 8.34 x 325=	17,543
1-13	6.6389 x 8.34 x 330=	18,437
1-14	6.5597 x 8.34 x 270=	14,948
1-15	Data incomplete	
1-16	7.678 x 8.34 x 300=	19,210

Pounds of 5-day B.O.D. per ton of paper

1-10	13,333 / 194.64=	68.50
1-11	9,474 / 207.78=	45.60
1-12	17,543 / 199.70=	87.85
1-13	18,437 / 199.10=	92.60
1-14	14,948 / 196.07=	76.24
1-16	19,210 / 156.66=	122.62

Population Equivalents

1-10	13,333 / 0.167=	79,838
1-11	9,474 / 0.167=	56,731
1-12	17,543 / 0.167=	105,047
1-13	18,437 / 0.167=	110,401
1-14	14,948 / 0.167=	89,508
1-15	Data incomplete	
1-16	19,210 / 0.167=	115,029

Total Pounds of Suspended Solids to River #1 day

1-10	5.5127 x 8.34 x 630=	28,965	21,250
1-11	6.3111 x 8.34 x 470=	24,738	
1-12	6.4724 x 8.34 x 770=	41,564	42,400
1-13	6.6389 x 8.34 x 790=	44,136	40,200
1-14	6.5597 x 8.34 x 740=	40,969	30,600
1-15	Data incomplete		
1-16	7.678 x 8.34 x 460=	29,456	31,800

Total Pounds of Suspended Solids per ton of paper

1-10	28,965 / 194.64=	148.81	109.2
1-11	24,738 / 207.78=	119.06	
1-12	41,564 / 199.70=	208.13	212.5
1-13	44,136 / 199.10=	221.63	202.8
~~1-14~~	40,969 / 196.07=	208.95	158.6
1-15	Data incomplete		
1-16	29,456 / 156.66=	188.03	203.0

Allied Paper Company
(King Division)

Total Pounds of Suspended Volatile Solids to River

1-10	[illegible] x 8.34 x 165=	8,506
1-11	6.3111 x 8.34 x 130=	6,842
1-12	6.[illegible]24 x 8.34 x 200=	10,796
1-13	6.6989 x 8.34 x 270=	15,085
1-14	[illegible].5507 x 8.34 x 250=	13,841
1-15	Data Incomplete	
1-16	7.678 x 8.34 x 170=	10,88[illegible]

Total Pounds of Suspended Volatile Solids per ton of paper

1-10	8,506 / 194.64=	43.70
1-11	6,8[illegible] / 2[illegible].78=	32.93
1-12	10,796 / 199.10=	54.00
1-13	15,085 / 199.10=	75.77
1-14	13,841 / 196.07=	70.59
1-15	Data Incomplete	
1-16	10,88[illegible] / 136.66=	59.49

Gallons of Wastes per ton of Paper

1-10	5,512,700 / 194.64=	28,323
1-11	6,311,000 / 207.78=	30,373
1-12	6,472,[illegible]00 / 199.70=	32,411
1-13	6,[illegible]8,900 / 199.10=	30,080
1-14	[illegible],[illegible]9,700 / 196.07=	33,456
1-15	Data Incomplete	
1-16	7,678,000 / 156.66=	49,011

Treatment Plant Efficiency - B.O.D. Removal

1-10	Data Incomplete	
1-11	(500 - 180) x 100/500=	64.00%
1-12	(405 - 325) x 100/405=	19.75%
1-13	(300 - 330) x 100/300=	---
1-14	(210 - 275) x 100/210=	---
1-15	(175 - 115) x 100/175=	34.28%
1-16	(480 - 300) x 100/480=	37.50%

Suspended Solids Removal

1-10	Data Incomplete	
1-11	(3190 - 470) x 100/3190=	85.26%
1-12	(2100 - 770) x 100/2100=	63.33%
1-13	(1700 - 79[illegible]) x 100/1700=	53.52%
1-14	(1200 - 7[illegible]) x 100/1200=	38.33%
1-15	(596 - [illegible]) x 100/596 =	[illegible].03%
1-16	(3540 - [illegible]) x 100/3540=	61.86%

Allied Paper Company
([illegible])

Suspended Volatile Solids Removal

1-1	Data incomplete			
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]%
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]%
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]%
1-1[illegible]	([illegible] - 1[illegible])	x 1[illegible]	=	[illegible]
1-1[illegible]	([illegible] - 1[illegible])	x 1[illegible]	=	[illegible]

Settleable Solids Removal

1-1[illegible]	Data incomplete			
1-11	([illegible] - [illegible])	x 1[illegible]	=	1[illegible]%
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]
1-1[illegible]	([illegible] - [illegible])	x 1[illegible]	=	[illegible]

Theoretical Detention Time

1-1	[illegible] hours
1-11	3.[illegible] hours
1-1[illegible]	[illegible] hours
1-1[illegible]	[illegible] hours
1-1[illegible]	[illegible] hours
1-1[illegible]	Data incomplete
1-1[illegible]	[illegible] hours

Remarks:

A floating scum covering the entire surface of the clarifier is no doubt interfering with the efficiency of this treatment unit. It is hoped that a new mechanically cleaned bar screen, that is now on order, will allow an uninterrupted flow to the wet well and eliminate the problem.

Field Work by: Robert Courchaine

Survey written & supervised by: Ralph W. Purdy

Chemical Analyses by: Russ [illegible] and Ralph W. Purdy

Report of Waste Survey

REX PAPER COMPANY

Kalamazoo, Michigan

June 23, 24, and 25, 1959

Survey Periods: (24 hours each)

No. 1: June 23 and 24, 1959 2:30 p.m. - 2:30 p.m.
No. 2: June 24 and 25, 1959 2:30 p.m. - 2:30 p.m.

Summary of Survey Results:

	Survey Period No. 1	Survey Period No.
Flow (Million Gals. per Day)	1.057	1.063
Paper Production (tons)	24.8	30.4
Pounds 5-day BOD Discharged	2,062	2,180
Pounds BOD per Ton Paper	83.15	71.71
Pounds Suspended Solids	6,134	4,041
Pounds Susp. Solids per Ton Paper	247.34	132.93
Pounds Susp. Volatile Solids	1,410	993
Pounds Susp. Volatile Solids per Ton Paper	56.85	32.66
Gallons Waste per Ton Paper	42,621	34,967
BOD Population Equivalent	12,347	13,054
pH	6.9	6.8

Type of Mill Production

De-Ink

Mill Water Supply

Well Water

Waste Control

All paper processing waste flows by gravity to a 50 foot diameter clarifier with 10 foot side water depth. Recovered sludge is pumped to sludge drying beds.

Survey Procedure:

Effluent from the clarifier is discharged through a weir box. A water level recorder was installed at the weir to obtain a continuous 24 hour record of the flow. Samples were taken proportional to the flow at fifteen minute intervals by an automatic sampler and composited for each survey period.

An influent sample was obtained by an automatic sampler set in the gravity sewer line to the clarifier.

Survey Data:

Influent	Period No. 1	Period No. 2
5-day BOD (ppm)	470	315
Susp. Solids (ppm)	2,440	2,490
Susp. Volatile Solids (ppm)	1,080	1,110
pH	5.9	6.7
Effluent		
5-day BOD (ppm)	234	246
Susp. Solids (ppm)	696	456
Susp. Volatile Solids (ppm)	160	112
pH	6.9	6.8
Production (tons)	24.8	30.4
Flow (Million Gals. per Day)	1.057	1.063

Calculations:

Pounds of 5-day BOD Discharged to River

Period No. 1 1.057 x 8.34 x 234 = 2,062
Period No. 2 1.063 x 8.34 x 246 = 2,180

Pounds of 5-day BOD Discharged per ton of Paper

Period No. 1 2,062 ÷ 24.8 = 83.15
Period No. 2 2,180 ÷ 30.4 = 71.71

Population Equivalent

Period No. 1 2,062 ÷ 0.167 = 12,347
Period No. 2 2,180 ÷ 0.167 = 13,054

Pounds of Suspended Solids Discharged to River

Period No. 1 1.057 x 8.34 x 696 = 6,134
Period No. 2 1.063 x 8.34 x 456 = 4,041

Pounds of Suspended Solids per ton of Paper

Period No. 1 6,134 ÷ 24.8 = 247.34
Period No. 2 4,041 ÷ 30.4 = 132.93

Pounds of Suspended Volatile Solids Discharged to River

Period No. 1 1.057 x 8.34 x 160 = 1,410
Period No. 2 1.063 x 8.34 x 112 = 993

Pounds of Suspended Volatile Solids per ton of Paper

Period No. 1 1,410 ÷ 24.8 = 56.85
Period No. 2 993 ÷ 30.4 = 32.66

Gallons of Waste per ton of Paper

Period No. 1 1,057,000 ÷ 24.8 = 42,621
Period No. 2 1,063,000 ÷ 30.4 = 34,967

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Efficiency of Waste Treatment

BOD Removal

Period No. 1 (470-234) ÷ 470 = 50.2%
Period No. 2 (315-246) ÷ 315 = 21.9%

Suspended Solids Removal

Period No. 1 (2,440-696) ÷ 2,440 = 71.5%
Period No. 2 (2,490-456) ÷ 2,490 = 81.7%

Suspended Volatile Solids Removal

Period No. 1 (1,080-160) ÷ 1,080 = 85.2%
Period No. 2 (1,110-112) ÷ 1,110 = 89.9%

Robert J. Courchaine

064096

Report of Waste Survey
at
Allied Paper Corporation
(Monarch, Bryant & King Divisions)

Kalamazoo, Michigan

June 27 & 28, 1961

Summary of Results

	Monarch	Bryant	King	Total
Flow, million gallons/24 hrs.	1.506	4.233	7.399	13.138
5-day B.O.D., lbs./24 hrs.	780	16,580	28,400	45,760
Suspended Solids, lbs./24 hrs.	214	53,280	103,000	156,494
Suspended Vol. Solids, lbs./24 hrs.	125	16,140	41,950	58,215
Settleable Solids Removal, per cent		64.2	52.7	

Monarch Division

Survey Period

8 a.m., June 27, 1961 to 8 a.m., June 28, 1961.

Survey Procedure

A company installed recording head meter at the effluent weir box on the clarifier was used to obtain a continuous record of the flow. A composite sample of the effluent was obtained by the installation of a WRC automatic sampler.

Survey Data

	Effluent
Flow, million gallons/24 hrs.	1.506
5-day B.O.D. mg/l	62
Suspended Solids mg/l	17
Suspended Vol. Solids mg/l	10
pH	7.4

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

$1.506 \times 8.34 \times 62 = 780$

lbs. of Suspended Solids per 24 hrs.

$1.506 \times 8.34 \times 17 = 214$

lbs. of Suspended Vol. Solids per 24 hrs.

$1.506 \times 8.34 \times 10 = 125$

0002779

Bryant Division

Survey Period

8 a.m., June 27 to 8 a.m., June 28, 1961.

Survey Procedure

Effluent:

A Stevens type F recording head meter was installed at the effluent weir box on the clarifier to obtain a continuous record of this flow. A composite sample was obtained by the installation of a WRC automatic sampler.

Influent to Clarifier:

A composite sample was obtained by continuously bleeding a small portion of the influent flow from the pump house discharge line through a small box equipped with a WRC automatic sampler.

Raw Waste By-pass:

The diversion dam in a manhole near the pump house served as a rough weir. Head over the weir was recorded continuously by a Stevens type F water level recorder. No samples were obtained since the quality is nearly identical with the influent to the clarifier. Flow for the 24 hour period was 367,000 gallons.

Bleach Plant Waste (Acid Wash):

Flow approximated at 300,000 gallons per 24 hours. Composite sample made up of three grab samples obtained at 8 hour intervals.

White Water By-pass:

Flow approximated at 288,000 gallons per 24 hours. Composite sample made up of three grab samples obtained at 8 hour intervals.

Survey Data

	Raw Waste	Clarifier Effluent	Bleach Waste	White Water
Flow, million gallons/24 hrs.		3.866	.300	.288
5-day B.O.D. mg/l	780	440	160	170
Suspended Solids mg/l	2870	1380	160	760
Suspended Vol. Solids mg/l	1270	380	74	328
2 hr. Settleable Solids mg/l	2320			
pH	9.4	7.3	2.3	7.0

0002780

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

3.866 x 8.34 x 440 = 14,190
0.367 x 8.34 x 780 = 2,390
Total 16,580

lbs. of Suspended Solids per 24 hrs.

3.866 x 8.34 x 1380 = 44,500
0.367 x 8.34 x 2870 = 8,780
Total 53,280

lbs. of Suspended Vol. Solids per 24 hrs.

3.866 x 8.34 x 380 = 12,250
0.367 x 8.34 x 1270 = 3,890
Total 16,140

Settleable Solids removal by clarifier

(2870 - 1380) x 100/2320 = 64.2%

King Division

Survey Period

8 a.m., June 27, 1961 to 8 a.m., June 28, 1961.

Survey Procedure

Effluent:

A company installed recording head meter at the weir box on the clarifier was used to obtain a continuous record of the flow. A composite sample was obtained from the company's sampling device (water wheel type sample).

Influent to Clarifier:

A composite sample was obtained by continuously bleeding a small portion of the influent flow from the pump house discharge line through a small box equipped with a WRC automatic sampler.

Survey Data

	Raw Waste	Clarifier Effluent
Flow, million gallons/24 hrs.		7.399
5-day B.O.D. mg/l	700	460
Suspended Solids mg/l	2640	1670
Suspended Vol. Solids mg/l	1230	680
2 hr. Settleable Solids mg/l	1840	
pH	7.6	7.1

0002781

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

7.399 x 8.34 x 460 = 28,400

lbs. of Suspended Solids per 24 hrs.

7.399 x 8.34 x 1670 = 103,000

Lbs. of Suspended Vol. Solids

7.399 x 8.34 x 680 = 41,950

Settleable Solids removal by clarifier

(2640 - 1670) x 100/1840 = 52.7%

Remarks

The great decrease in waste load to the river at the Monarch Division from previously observed levels is due to the discontinuance of de-ink operations.

At Bryant Division, untreated waste is by-passing directly to Portage Creek at two locations. One is white water and the other is de-ink waste. The white water by-pass is due to mechanical troubles with both pumps at the pump station. Repairs are on order. De-ink waste by-passes due to the plugging of the hand cleaned bar grate at the main pump station. A new mechanically cleaned bar grate is on order.

Bleach waste (acid wash) goes directly to Portage Creek.

At King Division, an undetermined amount of by-passing takes place at the back water gate on the by-pass sewer line. This by-passing was confirmed by the use of a tracer dye. This situation could be easily corrected by the construction of a weir in the by-pass line with the crest set at such a level as to prevent flooding problems.

The actual waste load to the river for the 24 hour survey period, as shown in the summary of results, would be somewhat larger if data on King raw waste by-pass, and bleach waste and white water data at Bryant mill were available and included as a part of this report.

Report by: Chester Harvey

Field Survey by: John Bohunsky
Jim McDonald
Frank Vining
Chester Harvey

0002782

92-2223

STATE OF MICHIGAN
WATER RESOURCES COMMISSION
JOHN B. SWAINSON, GOVERNOR

COMMISSION
ALBERT E. HEUSTIS, M.D., Chairman
State Health Commissioner
GEORGE F. LIDDLE, Muskegon, V. Chairman
Municipal Groups
GERALD E. EDDY
Director of Conservation
JOHN C. MACKIE
State Highway Commissioner
GEORGE S. McINTYRE
Director of Agriculture
~~CARL E. SCHULTZ, St. Joseph~~
Industrial Management Groups
~~LYNN F. SALZBURG, Eaton Rapids~~
Conservation Groups

STAFF OFFICES
200 Mill Street
TEL. IV-[illegible], Ext. [illegible]

STATION B
LANSING 13, MICHIGAN

LEGAL COUNSEL
PAUL L. ADAMS
Attorney General

STAFF
MILTON P. ADAMS
Executive Secretary
LORING F. OEMING
Chief Engineer
NORMAN BILLINGS
Chief Hydrology Division
JOHN L. DESMOND
Office Manager

August 2, 1961

Dr. Ward Harrison, President
Allied Paper Corporation
Kalamazoo, Michigan

Dear Dr. Harrison:

Enclosed herewith is a copy of a report of waste survey at Allied Paper Corporation (Monarch, Bryant, and King Divisions), Kalamazoo, June 27 and 28, 1961.

We would like to draw your particular attention to the by-passing of waste, prior to sedimentation, at the Bryant and King Divisions. We understand that new equipment is on order to correct the deficiencies at Bryant Division. Steps should also be taken to correct the problem at King Division.

If you or any of your technical people wish to discuss our report further, we would welcome this opportunity.

Very truly yours,

Loring F. Oeming
Chief Engineer

RWP:jb
cc: C. Harvey

0002778

SA 010966

Report of Waste Survey
at
Allied Paper Corporation
(Monarch, Bryant & King Divisions)

Kalamazoo, Michigan

June 27 & 28, 1961

Summary of Results

	Monarch	Bryant	King	Total
Flow, million gallons/24 hrs.	1.506	4.233	7.399	13.13
5-day B.O.D., lbs./24 hrs.	780	16,580	28,400	45,760
Suspended Solids, lbs./24 hrs.	214	53,280	103,000	156,494
Suspended Vol. Solids, lbs./24 hrs.	125	16,140	41,950	58,215
Settleable Solids Removal, per cent		64.2	52.7	

Monarch Division

Survey Period

8 a.m., June 27, 1961 to 8 a.m., June 28, 1961.

Survey Procedure

A company installed recording head meter at the effluent weir box on the clarifier was used to obtain a continuous record of the flow. A composite sample of the effluent was obtained by the installation of a WRC automatic sampler.

Survey Data

	Effluent
Flow, million gallons/24 hrs.	1.506
5-day B.O.D. mg/l	62
Suspended Solids mg/l	17
Suspended Vol. Solids mg/l	10
pH	7.4

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

$1.506 \times 8.34 \times 62 = 780$

lbs. of Suspended Solids per 24 hrs.

$1.506 \times 8.34 \times 17 = 214$

lbs. of Suspended Vol. Solids per 24 hrs.

$1.506 \times 8.34 \times 10 = 125$

0002779

Bryant Division

Survey Period

8 a.m., June 27 to 8 a.m., June 28, 1961.

Survey Procedure

Effluent:

A Stevens type F recording head meter was installed at the effluent weir box on the clarifier to obtain a continuous record of this flow. A composite sample was obtained by the installation of a WRC automatic sampler.

Influent to Clarifier:

A composite sample was obtained by continuously bleeding a small portion of the influent flow from the pump house discharge line through a small box equipped with a WRC automatic sampler.

Raw Waste By-pass:

The diversion dam in a manhole near the pump house served as a rough weir. Head over the weir was recorded continuously by a Stevens type F water level recorder. No samples were obtained since the quality is nearly identical with the influent to the clarifier. Flow for the 24 hour period was 367,000 gallons.

Bleach Plant Waste (Acid Wash):

Flow approximated at 300,000 gallons per 24 hours. Composite sample made up of three grab samples obtained at 8 hour intervals.

White Water By-pass:

Flow approximated at 288,000 gallons per 24 hours. Composite sample made up of three grab samples obtained at 8 hour intervals.

Survey Data

	Raw Waste	Clarifier Effluent	Bleach Waste	White Water
Flow, million gallons/24 hrs.		3.866	.300	.288
5-day B.O.D. mg/l	780	440	160	170
Suspended Solids mg/l	2870	1380	160	760
Suspended Vol. Solids mg/l	1270	380	74	328
2 hr. Settleable Solids mg/l	2320			
pH	9.4	7.3	2.3	7.0

0002780

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

3.866 x 8.34 x 440 = 14,190
0.367 x 8.34 x 780 = 2,390
Total 16,580

lbs. of Suspended Solids per 24 hrs.

3.866 x 8.34 x 1380 = 44,500
0.367 x 8.34 x 2870 = 8,780
Total 53,280

lbs. of Suspended Vol. Solids per 24 hrs.

3.866 x 8.34 x 380 = 12,250
0.367 x 8.34 x 1270 = 3,890
Total 16,140

Settleable Solids removal by clarifier

(2870 - 1380) x 100/2320 = 64.2%

King Division

Survey Period

8 a.m., June 27, 1961 to 8 a.m., June 28, 1961.

Survey Procedure

Effluent:

A company installed recording head meter at the weir box on the clarifier was used to obtain a continuous record of the flow. A composite sample was obtained from the company's sampling device (water wheel type sample).

Influent to Clarifier:

A composite sample was obtained by continuously bleeding a small portion of the influent flow from the pump house discharge line through a small box equipped with a WRC automatic sampler.

Survey Data

	Raw Waste	Clarifier Effluent
Flow, million gallons/24 hrs.		7.399
5-day B.O.D. mg/l	700	460
Suspended Solids mg/l	2640	1670
Suspended Vol. Solids mg/l	1230	680
2 hr. Settleable Solids mg/l	1840	
pH	7.6	7.1

0002781

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

7.399 x 8.34 x 460 = 28,400

lbs. of Suspended Solids per 24 hrs.

7.399 x 8.34 x 1670 = 103,000

Lbs. of Suspended Vol. Solids

7.399 x 8.34 x 680 = 41,950

Settleable Solids removal by clarifier

(2640 - 1670) x 100/1840 = 52.7%

Remarks

The great decrease in waste load to the river at the Monarch Division from previously observed levels is due to the discontinuance of de-ink operations.

At Bryant Division, untreated waste is by-passing directly to Portage Creek at two locations. One is white water and the other is de-ink waste. The white water by-pass is due to mechanical troubles with both pumps at the pump station. Repairs are on order. De-ink waste by-passes due to the plugging of the hand cleaned bar grate at the main pump station. A new mechanically cleaned bar grate is on order.

Bleach waste (acid wash) goes directly to Portage Creek.

At King Division, an undetermined amount of by-passing takes place at the back water gate on the [redacted]. This by-passing was confirmed by the use of a tracer dye. This situation could be easily corrected by the construction of a weir in the by-pass line with the crest set at such a level as to prevent flooding problems.

The actual waste load to the river for the 24 hour survey period, as shown in the summary of results, would be somewhat larger if data on King raw waste by-pass, and bleach waste and white water data at Bryant mill were available and included as a part of this report.

Report by: Chester Harvey

Field Survey by: John Bohunsky
Jim McDonald
Frank Vining
Chester Harvey

0002782

August 3, 1961

(b)

Mr. J. E. Lean, President
Rex Paper Company
Kalamazoo, Michigan

Dear Mr. Lean:

Enclosed herewith is a copy of a report of waste survey at Rex Paper Company, Kalamazoo, June 27 and 28, 1961 for your information.

Very truly yours,

Loring F. Oeming
Chief Engineer

RWP:jb
cc: R. Purdy

064092

Report of Waste Survey
at
Rex Paper Company

Kalamazoo, Michigan

June 27 & 28, 1961

Summary of Results

Flow, million gallons/24 hrs.	1.583
5-day B.O.D., lbs./24 hrs.	3,040
Suspended Solids, lbs./24 hrs.	17,160
Suspended Vol. Solids, lbs./24 hrs.	7,140

Survey Period

8 a.m., June 27 to 8 a.m., June 28, 1961.

Survey Procedure

A Stevens type F recording head meter was installed at the effluent weir box at the clarifier to obtain a continuous record of the waste flow. A composite sample was obtained by the installation of a WRC automatic sampler.

Survey Data

Flow, million gallons/24 hrs.	1.583
5-day B.O.D. mg/l	230
Suspended Solids mg/l	1,300
Suspended Vol. Solids mg/l	540
pH	7.0

Survey Calculations

lbs. of 5-day B.O.D. per 24 hrs.

$1.583 \times 8.34 \times 230 = 3,040$

lbs. of Suspended Solids per 24 hrs.

$1.583 \times 8.34 \times 1,300 = 17,160$

lbs. of Suspended Vol. Solids per 24 hrs.

$1.583 \times 8.34 \times 540 = 7,140$

Report by: Chester Harvey

Field Survey by: John Bohunsky
Jim McDonald
Frank Vining
Chester Harvey

MICHIGAN WATER RESOURCES COMMISSION
Waste Water Survey
Allied Paper Corporation INC.
Bryant, Monarch, & King Divisions
~~May~~ JUNE 13, 14, 15, 1967

0012640

A 40 hour waste water survey was conducted at the Bryant, Monarch & King Divisions of the Allied Paper Corporation in Kalamazoo on May 13-15, 1967. The purpose of the survey was to determine the quality and quanity of waste water being discharged to the Kalamazoo River by the company and to determine the extent of compliance with an agreement between the company and the Water Resources Commission dated November 30, 1961 and the Final Order of Determination adopted by the Commission October 24, 1951.

Operations

Bryant Division

The Bryant Division employs 900 people in a 6-day operation. This plant has 5 paper machines and a de-inking mill. Book printing paper from bleached kraft and de-inked stock is produced on the 5 paper machines. The water supply is from Portage Creek and a private well in the proportion of 6:1. The waste water consists of waste from the de-inking mill and excess white water from the paper machines. The waste control devices are saveralls on each paper machine and a clarifier 100 feet in diameter.

Monarch Division

The Monarch Division employs 200 people on a 7-day schedule. The plant has two paper machines which produce carbon tissue and book printing paper. The raw materials are bleached and unbleached kraft and de-inked stock. The waste water treatment consists of a clarifier 90 feet in diameter which discharges to Portage Creek.

King Division

The King Division employs 400 people and operates on a 6 day schedule. The main product is book printing material which is produced on 4 paper machines. The plant water supply is a private well for processing and the Kalamazoo River water for cooling. The waste water treatment consists of save-alls on each paper machine and a 110 feet in diameter clarifier. At this division, a large part of the clarified water is re-used.

Survey Procedure

All the clarifiers had existing weirs on the discharges. We installed automatic samplers and water level recorders at each clarifier discharge. The automatic sampler took samples proportial to the instantaneous flow at 15 minute intervals. The water level recorder measured the head over the weir on a time chart from which we computed the flow.

Flow Data & Survey Periods

Survey Period #1 Starting ~~May~~ JUNE 13, 1967 at 8:00 a.m. EST
Ending May 14, 1967 at 9:00 a.m. EDST

Survey Period #2 Starting May 14, 1967 at 9:00 a.m. EDST
Ending May 15, 1967 at 9:00 a.m. EDST

SA 026433

	Period #1	Period #2
King Division	.972 MGD	.571 MGD
Bryant Division	4.79 MGD	3.43 MGD
Monarch Division	2.128 MGD	1.86 MGD
Total	7.89 MGD	5.86 MGD

TABLE 1 Laboratory analysis of composite samples

Parameter	King 1	King 2	Bryant 1	Bryant 2	Monarch 1	Monarch 2
Survey Period						
Concentration	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
5 day BOD	120	170	280	240	32	13
Suspended solids	72	46	204	214	28	16
Suspended volatile solids	29	32	74	62	13	12
Settleable solids	37	16	17	16	22	11
pH	6.9	7.3	6.6	7.1	7.3	7.5

TABLE 2 Pounds per day to Kalamazoo River

Period #1	King	Bryant	Monarch	Total
5 day BOD	972	11,200	568	12,740 #/day
Suspended solids	583	8,140	496	9,219 #/day
Suspended volatile solids	235	2,960	231	3,426 #/day
Settleable solids	299	679	390	1,368 #/day
Period #2				
5 day BOD	810	6,860	202	7,872
Suspended solids	220	6,120	248	6,588
Suspended volatile solids	153	1,775	186	2,114
Settleable solids	76.4	457	171	704.4

Pound per day was computed using following formula:

Flow (MGD) x concentration (mg/l) x unit wt. of water (8.34 lbs/gal) = lbs/day

TABLE 3 Paper production in tons during survey period

	King	Bryant	Monarch	Total
Period #1	234	211.5	82.5	528
	De-inking mill input 114 tons			
	output 91.6 tons			
Period #2	145.8	216.0	51.5	413.3
	De-inking mill input 109 tons			
	output 87 tons			

TABLE 4 Gallons of waste water discharged per ton of paper products

Period #1	4,154	22,650	25,790	14,940
Period #2	2,640	23,530	36,200	14,120

0012641

TABLE 5 Suspended solids discharged per ton of paper produced

	King	Bryant	Monarch	Ave. of Total
Period #1	2.49	38.6	6.04	17.45
Period #2	.973	42.0	4.81	15.95

TABLE 6 Pounds of BOD discharged per ton of paper produced

	King	Bryant	Monarch	Ave. of Total
Period #1	4.15	53.0	6.9	24.2
Period #2	3.85	47.0	3.99	19.05

Limits set forth in agreement between the company and the Water Resources Commission of November 30, 1961 and the Order of Determination of October 24, 1951 are as follows:

1. Total pounds of BOD 14,490 lbs/day

2. Suspended solids not to exceed 10 lbs/ton of paper produced.

3. No freely settleable solids

Discussion

During the first period of the survey the BOD load was 12,740 lbs/day with a production load of 528 tons. The second survey period the production was reduced by 22% and the BOD was reduced by 38%.

The King and Monarch plants seem to have adequate solids control to meet the order but the Bryant Division is in excess of the order by 30 lbs to the ton of paper produced. The average pounds of suspended solids per ton from all three plants exceeds the 10 pounds stipulated in the Order by 7.45 and 5.95 pounds per ton.

Survey by: G. Kilmer, Sanitary Engineer
J. Rydquist, Sanitary Engineer
R. Coltrider, Sanitary Engineer
L. Vuhovick, Water Pollution Investigat

Laboratory analyses by: R. Krueger, Chemist

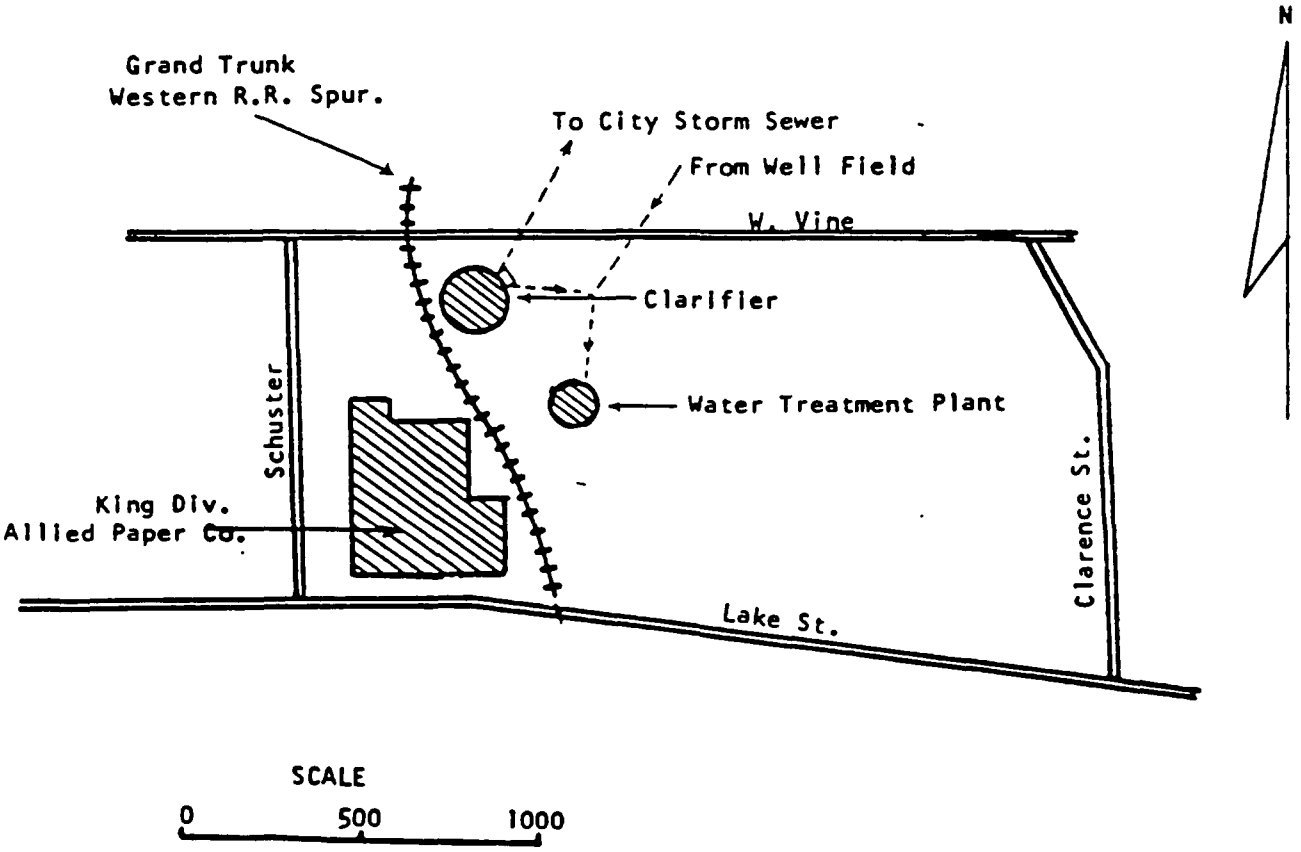
Report by: G. Kilmer

0012642

pb

Michigan Water Resources Commission

Report of Survey
King Division, Allied Paper Co.
June 13, 14, 15, 1967



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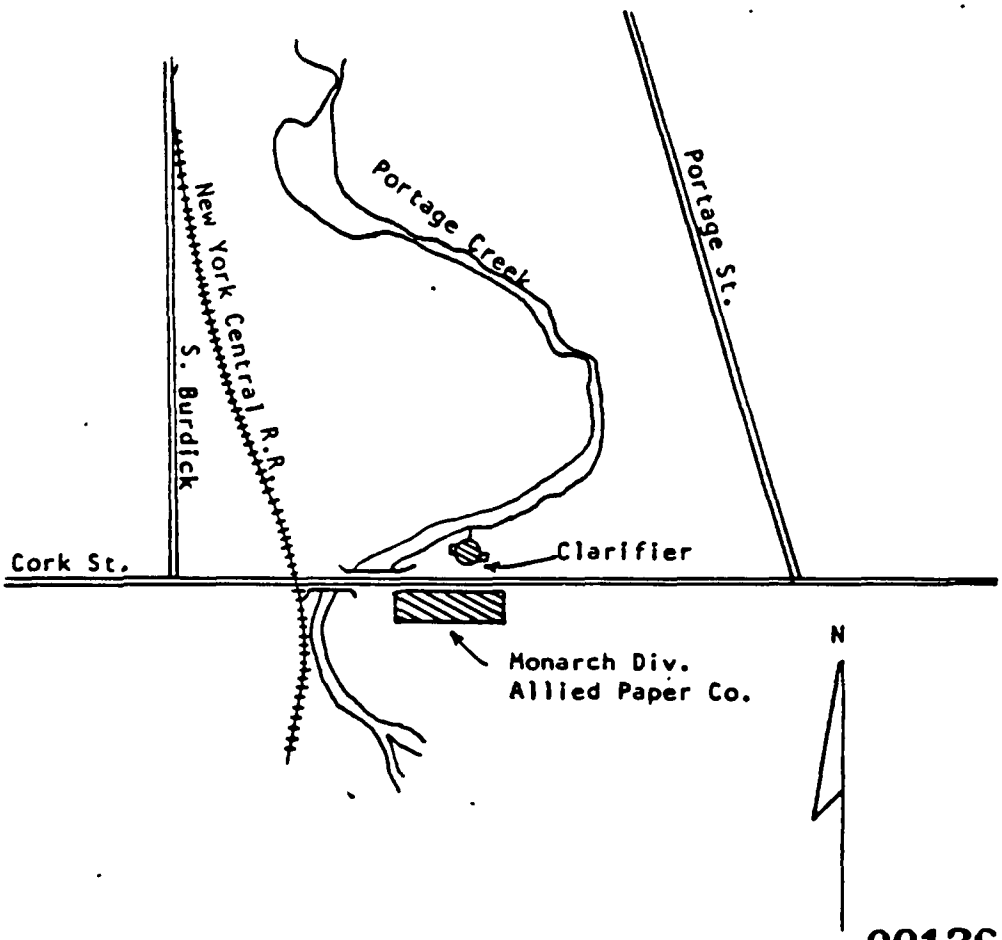
L.J.V. 6-21-67

SA 026436

MICHIGAN WATER RESOURCES COMMISSION

Report of Survey
Monarch Division, Allied Paper Co.
June 13, 14, 15, 1967



0012644

SCALE

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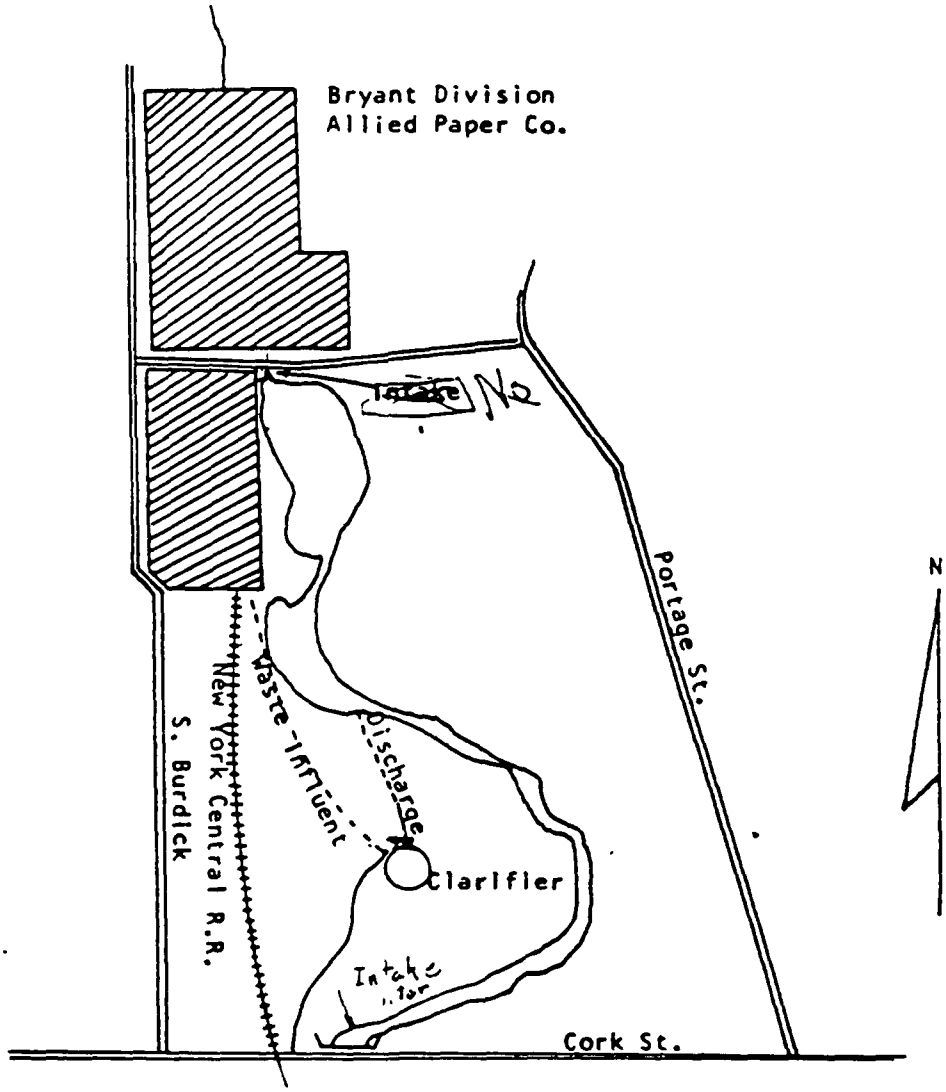
LJK 6-20-

SA 026437

MICHIGAN WATER RESOURCES COMMISSION

Report of Survey
Bryant Division, Allied Paper Co.
June 13, 14, 15, 1965



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0012645

MONARCH AND BRYANT DIVISION EFFLUENT RESULTS
AS PER WATER RESOURCE COMMISSION SURVEYS MADE IN 1955, 1961, and 1967

1955 Surveys

	BRYANT	MONARCH	TOTAL
Flow M. G. D.	6.771	5.633	12.404
5 Day B.O.D. #/day	16,838	13,671	30,509
Suspended Solids #/day	53,475	25,011	75,486
Suspended Volatile Solids #/day	15,989	9,011	25,000

1961 Surveys

	BRYANT	MONARCH	TOTAL	*PERCENT REDUCTION
Flow M.G.D.	4.233	1.506	5.739	53.7
5 Day B.O.D. #/day	16,580	780	17,360	43.1
Suspended Solids #/day	53,280	214	53,494	31.8
Suspended Volatile Solids #/day	16,140	125	16,265	34.9

1967 Surveys

	BRYANT	MONARCH	TOTAL	*PERCENT REDUCTION
Flow M.G.D.	4.110	1.994	6.104	50.8
5 Day B.O.D. #/day	9,030	385	9,415	69.1
Suspended Solids #/day	7,130	372	7,502	90.4
Suspended Volatile Solids #/day	2,367	209	2,576	89.7

1955 Survey - Monarch - July 28-August 3, 1955
Bryant - July 20-26, 1955
1961 Survey - Monarch and Bryant - June 27 and 28, 1961
1967 Survey - Monarch and Bryant - June 13-15, 1967

*Percent Reduction from 1955 survey results.

000716

[redacted]

April 13, 1967

Bryant

W. Buenger
F. Hyet
D. Falvey
B. Herbert

		4/3 Mon.	4/4 Tues.	4/5 Wed.	4/6 Thurs.	4/7 Fri.	Av.
(#/day) Influent	* Flow (MGD)	***					
	Susp. Solids	54,700	55,000	45,600	38,700	66,200	52,04
	Fiber	9,600	10,500	8,500	6,300	12,700	9,52
	Solubles	31,800	24,800	22,800	35,000	28,500	28,58
	BOD	11,400	13,600	11,100	11,100	13,600	12,16
	** Flow (MGD)	3.815	3.715	3.914	3.815	3.815	3.81
	Susp. Solids	7,000	1,800	2,000	1,000	7,600	3,88
	Fiber	0	0	0	0	0	
	Solubles	31,800	24,800	22,800	25,500	28,500	26,68
	BOD	6,000	7,400	7,500	7,900	9,500	7,66
	Solids	82.7	96.8	95.6	95.0	88.7	91.8
	Fiber	100.0	100.0	100.0	100.0	100.0	100.0
	Solubles	0	0	0	27.2	0	5.4
	BOD	47.3	45.6	32.4	28.9	30.1	36.

* Total Flow = Effluent weir flow and magnetor reading to accelator (Bin. Di. [illegible])

** Net Flow to river (Effluent weir flow)

Remarks.

*** Bypassing directly into creek on these days, instead of going to the clarifier.

Rohrer
EXHIBIT NO. 11
M. LANTIS 3/4/

SCM CONFIDENTIAL

SA 035615

4036 Plainfield, N. E.
Grand Rapids, Michigan 49505

August 15, 1967

Allied Paper Corporation
Kalamazoo, Michigan

Attention: Mr. E. J. Gilman
Vice President, Manufacturing

Dear Mr. Gilman:

Enclosed is a copy of waste survey reports made during May, 1967. The reports cover the discharge of the wastes from the King, Bryant, and Monarch Divisions.

The data in the report and the discussion is self-explanatory. However, I would like to call to your attention the load from the Bryant Division. The 5-day B.O.D. load from this division accounts for 88% of the total. The suspended solids loading is even greater, ranging from 88.5% to 93% of the total mill output.

While substantial reductions in the total mill's effluent can be shown, the Bryant Division with its discharge to the Portage Creek still requires considerable improvement. As the Kalamazoo area moves ahead on waste collection and treatment, the problems in the Portage area will surely stand out as one that must have greater control.

Your comments will be appreciated.

Very truly yours,

WATER RESOURCES COMMISSION

Chester Harvey
District Engineer

CH:as

Enclosure

cc: W.R.C., Lansing

0002698

SH 011387

93-1298

ALLIED PAPER CORPORATION
WASTE TANK TREATMENT TEST

To: U. G. Stoeffler

From: R. J. Willie

Date: December 8, 1967

Division Bryant

cc: W. Harrison, E. Klimczak, R. Levy, E. Gilman, F. Fragomeli, H. Horrocks, A. Vickery, R & D File, W. Suenger, F. Hyet, D. Falvey, B. Herbert

		Mon. 11/27	Tues. 11/28	Wed. 11/29	Thurs. 11/30	Fri. 12/1	Ave.
(#/Day) Influent	Flow (MGD)						
	Susp. Solids	40,000	50,600	38,900	38,600	41,000	41,200
	Fiber	9,900	10,600	7,300	8,200	12,100	9,200
	Solubles	40,200	44,200	36,000	27,500	36,800	36,900
	BOD	13,300	16,500	12,200	15,500	11,100	13,700
(#/Day) Effluent	Flow (MGD)	3.715	3.528	*** 3.341	*** 4.113	*** 4.013	3.742
	Susp. Solids	6,200	1,200	1,700	1,400	3,300	2,700
	Fiber	0	0	0	0	0	0
	Solubles	34,100	41,200	33,400	17,200	23,400	29,900
	BOD	5,900	10,300	6,700	7,500	7,300	7,500
Removal % Efficiency	Solids	84.4	97.4	95.6	96.3	92.0	93.1
	Fiber	100.0	100.0	100.0	100.0	100.0	100.0
	Solubles	15.2	6.8	7.2	37.5	41.8	21.7
	BOD	70.7	37.6	45.0	51.6	34.1	47.0
	Total BOD for all divisions	****		****+		****	
	BOD	8,700		9,100		8,200	
	Date	11/27		11/29		12/1	

Remarks:

*** Bypassing directly to creek below the dam - estimated about 6 inches through a 24 inch line

**** Includes 200# load at Monarch

92067-8-2.3/032

SCM CONFIDENTIAL

Rohrer
EXHIBIT NO. 12
M. LANTIS 7-10-

SA 035586

ALLIED PAPER CORPORATION
WASTE TANK TREATMENT TEST

To: U. G. Stoeffler

From: R. J. Willie

Date: December 21, 1967

Division Bryant

cc: W. Harrison, E. Milinczak, R. Levy, E. Silman, F. Fragomeli, H. Herrocks, A. Vickery, R. D File, W. Buenger, F. Hyet, D. Falvey, B. Herbert

		12/11 Mon.	12/12 Tues.	12/13 Wed.	12/14 Thurs.	12/15 Fri.	Ave.
(#/Day) Influent	Flow (MGD)	**					
	Susp. Solids	-	47,700	94,200	73,200	53,500	67,000
	Fiber	-	9,100	18,600	13,700	10,800	13,000
	Solubles	-	24,600	43,200	36,000	28,700	33,100
	BOD	-	17,800	22,600	24,000	18,200	20,650
(#/Day) Effluent	Flow (MGD)	* 4.216	* 4.216	* 4.320	4.320	4.320	4.278
	Susp. Solids	3,500	3,600	4,400	7,900	7,300	5,300
	Fiber	0	0	0	0	0	0
	Solubles	38,600	21,200	43,200	32,400	25,200	32,100
	BOD	9,600	11,600	13,400	14,600	12,900	12,400
Removal % Efficiency	Solids	-	92.5	95.4	88.0	86.4	90.5
	Fiber	100.0	100.0	100.0	100.0	100.0	100.0
	Solubles	-	13.8	0	10.0	12.2	9.0
	BOD	-	34.9	40.7	39.1	29.1	35.9
	Total BOD for all divisions BOD Date	*** 12,200 12/11	11,900 12/12	16,500 12/13	14,900 12/14	16,200 12/15	

Remarks: * Bypassing below dam - Estimated flow

12/11	12/12	12/13	12/14	12/15
4"	4"	4"	4"	4"

** No influent sample - Repairing pumps and lines in pumphouse.
*** Includes 300# load from Monarch

SCM CONFIDENTIAL

Rohrer
EXHIBIT NO. 13
M. LANTIS 3/6/92

MICHIGAN WATER RESOURCES COMMISSION

Wastewater Survey
Monarch Division
Allied Paper Inc., Kalamazoo
June 4 - 6, 1968

File

Two consecutive 24-hour wastewater surveys were conducted at the Monarch Division of the Allied Mills Inc. at Kalamazoo. The purpose of the survey was to determine the quality and quantity of wastewater being discharged from the Monarch Division to Portage Creek.

Operation and Waste Treatment

The Monarch Division employs 200 people on a 7-day schedule. The plant has two paper machines which produce carbon tissue and book printing paper. The raw materials are bleached and unbleached kraft and de-ink stock. The waste is treated in a clarifier (90 foot in diameter) before discharging to Portage Creek.

Survey Procedure and Results

The effluent of the clarifier passed over a 48-inch full channel weir enroute to Portage Creek. The weir was equipped with a water level recorder and an automatic sampler. The water level recorder provided a continuous account of the head over the weir on a head-time chart from which the total 24-hour flow could be computed. The automatic sampler took samples proportional to the instantaneous flow at fifteen minute intervals and deposited them in a glass container to make up a composite sample. The composite samples were transported to the Water Resources Commission laboratories in Lansing, for analyses.

Table 1. Flow data and survey period, Allied Paper Inc., Monarch Division

	Starting	Ending	Total 24-hr. fl
Survey period 1	Tuesday 6-4-68 @ 0900	Wednesday 6-5-68 @ 0800	2,127,000 gal
Survey period 2	Wednesday 6-5-68 @ 0800	Thursday 6-6-68 @ 0800	1,895,000 gal

Table 2. Laboratory analyses of composite samples and computed pounds per day of various constituents being discharged to Portage Creek from the Monarch Division of Allied Paper Inc.

Parameter	First survey period Concentration*	First survey period Pounds/day**	Second survey period Concentration*	Second survey period Pounds/day**
5 day BOD	33	583	45	709
COD	49	866	90	1,418
Suspended solids	22	388	3[illegible]	535
Suspended volatile solids	14	247	26	409
Settleable solids	12	212	14	220
Total phosphorus	0.13	2.35	1.26	19.9
Soluble ortho phosphorus	0.0	0.0	0.0	0.0
Organic nitrogen	2.1	37	3.3	52
Ammonia nitrogen	0.4	7.0	0.0	0.0
Nitrate nitrogen	0.0	0.0	0.0	0.0
Turbidity	40	--	45	--
pH	7.5	--	7.4	--

*All concentrations expressed as mg/l except pH and turbidity. Turbidity expressed as Jackson units.

**Pounds per day are computed from the following formula: Lbs/day = flow (mgd) x unit weight of water (8.34 lbs/gallon).

Table 3. Tons of paper produced during the survey periods.

Survey period 1	35.5 tons
Survey period 2	64.7 tons

Table 4. Calculations relating tons of paper produced to gallons of water used and pounds of waste constituents discharged to Portage Creek during survey periods.

Parameter	Survey period 1 per ton of paper	Survey period 2 per ton of paper
Gallons of water	60,000	29,300
Pounds of BOD	16.4	10.9
Pounds of COD	24.2	21.9
Pounds of suspended solids	10.9	8.3
Pounds of suspended vol. solids	6.9	6.3
Pounds of settleable solids	6.0	5.4

MICHIGAN WATER RESOURCES COMMISSION

Report of
Wastewater Survey

King Division of
Allied Mills Inc., Kalamazoo
June 4 - 6, 1968

File

Two consecutive 24-hour wastewater surveys were conducted at the King Division of the Allied Mills Inc. in Kalamazoo starting June 4, 1968. The purpose of the surveys were to determine the quality and quantity of wastewater being discharged to the Kalamazoo River from the King Division.

Operation and Waste Treatment

The King Division employs 400 people and operates on a 6-day schedule. The main product is book printing material which is produced on 4 paper machines. The water supply for processing is from private wells. Both well water and Kalamazoo River water is used for cooling purposes. The waste treatment consists of save-alls for each machine and a large clarifier which is 110 feet in diameter. A large portion of the clarified effluent is reused in the process at this plant.

Survey procedure and Results

The wastewater from the clarifier which is discharged to the Kalamazoo River passes over a 6 foot full channel weir enroute to the River. The weir was equipped with an automatic sampler and a water level recorder. The automatic sampler took samples proportional to the instantaneous flow at fifteen minute intervals and deposited them in a clean glass container to make up a 24-hour composite sample. The water level recorder provided a continuous account of the head over the weir on a head-time chart from which the total daily flow could be computed. The composite samples were transported to the Water Resources Commission laboratories in Lansing where certain quantitative chemical and physical analyses were performed.

Table 1. Flow data and survey period

	Starting	Ending	Total flow
Survey period 1	Tuesday 6-4-68 @ 0815	Wednesday 6-5-68 @ 0800	2,339,000 gal
Survey period 2	Wednesday 6-5-68 @ 0900	Thursday 6-6-68 @ 0900	2,730,000 gal

Laboratory analyses of composite samples collected at King Division and computed pounds per day of various constituents discharged to the Kalamazoo River.

Parameter	First Survey Period Conc.*	First Survey Period Lbs/day**	Second Survey Period Conc.*	Second Survey Period Lbs/day**
5 day BOD	64	1,234	87	1,973
COD	98	1,904	155	3,513
Suspended solids	18	349	18	408
Suspended volatile solids	14	272	14	317
Settleable solids	14	272	8	181
Total phosphrus	0.1	1.9	0.05	1.1
Soluble othro phosphrus	0.0	0.0	0.0	0.0
Organic nitrogen	3.1	60	7.4	168
Ammonia nitrogen	0.3	5.8	0.50	11.3
Nitrate nitrogen	0.0	0.0	0.0	0.0
Turbidity	45	--	20	--
pH	7.5	--	7.4	--

*Concentrations expressed as mg/l except pH and turbidity. Turbidity expressed as Jackson units.

**The pounds per day are computed from the following formula: Lbs/day = flow (mgd) x concentration (mg/l) x unit weight of water (8.34 lbs/gallon)

Table 3. Pounds of paper produced at the King Division during survey periods.

Survey period 1	209.24 tons
Survey period 2	159.3 tons

Table 4. Calculations of various constituents discharged to the Kalamazoo River as related to the tons of paper produced, and water usage per ton.

Survey period 1	Survey period 2
11,150 gallons/ton	12,400 gallons/ton
59 lbs BOD/ton	12.4 lbs BOD/ton
9. lbs COD/ton	22 lbs of COD/ton
1.67 lbs of susp. solids/ton	2.56 lbs of susp. solids/ton
1.3 lbs of susp. vol. solids/ton	1.99 lbs of susp. vol. solids/ton
1.3 lbs of settleable solids/ton	1.13 lbs of settleable solids/ton

Discussion of Results

The wastewater from the King Division clarifier was fairly clear and solids were not apparent. Those solids present appeared to be the sloughing of slime growths within the clarifier. The turbidity of the waste was low for paper mill effluents (40-20).

Survey by:	Galen Kilmer, Sanitary Engineer
	Leroy Vahovick, Water Pollution Investigator
Laboratory analyses by:	Russel Krueger, Chemist
Contact with management:	Les Stoeffler
Report by:	Galen Kilmer
	Leroy Vahovick
	Michigan Water Resources Commission
	Water Quality Appraisal Unit
	7-23-68

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7-30-68

MICHIGAN WATER RESOURCES COMMISSION
Wastewater Survey
Bryant Division
Allied Mills, Kalamazoo
6-4,5,&6-68

Two consecutive twenty-four-hour wastewater surveys were conducted at the Bryant Division of the Allied Mills in Kalamazoo. The purpose of these surveys was to determine the quality and quantity of waste water being discharged to Portage Creek by the company.

Operation and Waste Treatment

The Bryant Division of the Allied Mills in Kalamazoo has five paper machines and a de-inking mill. The excess white water and a portion of the waste water from the de-inking mill is collected at a pump station near the de-inking mill and pumped to the 100-foot clarifier which is located further south (between Cork and Alcot Streets). The waste water from the clarifier is discharged to Portage Creek. Other waste waters are from the chlorine operation of the de-inking mill and are discharged to the mill pond on Portage Creek. The pumping station at the de-inking mill receiving the raw waste to be pumped to the clarifier occasionally by-passes. The influent rate to the wet well exceeds the pump rate. The Bryant Division employs approximately 600 people.

Survey Procedure

The waste water from the clarifier was measured and sampled at the weir on the clarifier. A weir box was constructed to intercept the waste water from the chlorine process at the de-inking mill. The quantity of waste water being by-passed was measured at the overflow baffle in a manhole by the pump station.

Automatic samplers and water level recorders were installed at the effluent weir of the clarifier and at the box intercepting the waste from the chlorine process at the de-inking mill. The automatic samplers took samples proportional to the instantaneous flow at fifteen-minute intervals and deposited them in clean glass containers to make up twenty-four-hour composite samples. The water level recorders provided a continuous account of the liquid level passing over the weirs on head-time charts from which the total flows could be computed.

The company has a water level recorder to measure the head of liquid passing over the baffle in the manhole at the point of by-pass. The water passing over the baffle by-passes the clarifier and goes directly to Portage Creek without treatment. The baffle is constructed diagonally across the corner of a square vault. The length of the baffle is 46" inches on the short side; therefore, it was considered to be equivalent to a 44" sharp crested weir. Since the baffle is constructed of 4" lumber and has worn rounded on the upstream side, this assumption should be conservative. The float line of a WRC water level recorder was attached to the float line of the company's recorder to provide an account of the head over the baffle.

MDNR 003697

Table 1
Survey Periods and Flow Data

Period	Starting	Ending	Hours Monitored	Gallons Monitored	Projected Flow for 24 hours
Bryant Division By-pass					
	Monday, 6-3-68, @ 1800	Tuesday, 6-4-68, @ 0800	14	114,000	196,000 gal
1	Tuesday, 6-4-68, @ 0800	Wednesday, 6-5-68, @ 0800	24	14,600	14,600 gal
2	Wednesday, 6-5-68, @ 0800	Thursday, 6-6-68, @ 0800	24	96,000	96,000 gal
	Thursday, 6-6-68, @ 0800	Thursday, 6-6-68, @ 1945	11.75	28,000	60,000 gal
De-inking Mill--chlorine process discharge 28-inch full channel weir					
1	Tuesday, 6-4-68, @ 2000	Wednesday, 6-5-68, @ 0830	12.5	282,300	542,100 gal
2	Wednesday, 6-5-68, @ 0900	Thursday, 6-6-68, @ 0830	23.5	504,600	515,300 gal
3	Thursday, 6-6-68, @ 0900	Friday, 6-7-68, @ 0900	24	458,600	458,600 gal
Bryant Division clarifier effluent 48" weir ½ rectangular ½ full channel					
1	Tuesday, 6-4-68, @ 0830	Wednesday, 6-5-68, @ 0815	23.75	2,815,000	2,845,000 gal
2	Wednesday, 6-5-68, @ 0830	Thursday, 6-6-68, @ 0800	23.5	2,944,000	2,991,000 gal

MDNR 001698

Table 3
Laboratory Analyses and Computed Pounds Per Day of Various Constituents
to
Portage Creek from the Bryant Division of Allied Paper Corporation, Kalamazoo

First Survey Period -- Tuesday, 6/4/68, @ 0800 - Wednesday, 6/5/68, @ 0800

Parameter	Clarifier effluent conc.*	Clarifier effluent lbs/day**	Chlorine process conc.*	Chlorine process lbs/day***	By-pass conc.****	By-pass Lbs/day**	Lbs/day to Portage Creek from Bryant Division
Five-day BOD	300	7,005	74	334	840	102.0	7,441
COD	500	11,676	330	1,490	2,000	243	13,410
Suspended Solids	90	2,101	228	1,060	2,180	265	3,426
Suspended Volatile Solids	45	1,050	96	434	1,120	136	1,620
Settleable Solids	10	233	148	668	2,100	255	1,156
Chloroform Extractables	18	420	18	81.4			500
Total PO_4-P	0.9	21	2.6	12.2			33.2
Soluble Ortho PO_4-P	0.0	0	1.4	6.3			6.3
Organic N-N	4.5	105	1.9	8.6			114
Ammonia N-N	0.0	0	0.0	0.0			0.0
Nitrate N-N	0.0	0	0.3	1.4			1.4
Turbidity	270		550				
pH	7.4		3.0		10.7		
Total Solids			1,230	5,550			

*Concentrations expressed as mg/l except pH and Turbidity
**Pounds per day computed from the following formula:
lbs/day = flow (mgd) x conc. (mg/l) x unit weight of water (8.34 lbs/gal)
***Lbs/day computed using the projected 24-hour flow
****Concentrations based on a grab sample obtained while the sewer was overflowing 6-5-68 @ 1715

MDNR 003599

Table 2

Production at Bryant Mill

Paper Machines		De-inking Tons In	(80% In) Tons Out
First Survey Period	209.2 Tons	137	109.9
Second Survey Period	172.9 Tons	118	94.5

MONE 883308

Laboratory Analyses and Computed Pounds Per Day of Various Constituents
to
Portage Creek from the Bryant Division of Allied Paper Corporation, Kalamazoo

Second Survey Period -- Wednesday, 6/5/68, @ 0800 - Thursday, 6/6/68, @ 0800

Parameter	Clarifier effluent conc.*	Clarifier effluent lbs/day**	Chlorine process conc.*	Chlorine process lbs/day**	By-pass conc.***	By-pass Lbs/day**	Total lbs/day to Portage Creek
Five-day BOD	280	6,818	87	373	840	672	7,863
COD	540	13,150	400	1,718	2,000	1,600	16,468
Suspended Solids	105	2,557	300	1,288	2,180	1,745	5,590
Suspended Volatile Solids	60	1,461	120	515	1,120	895	2,871
Settleable Solids	37	901	240	1,030	2,100	1,680	3,611
Chloroform Extractables	25	608	20	85			693
Total PO_4-P	1.5	36.5	3.9	16.8			53.3
Soluble Ortho PO_4-P	0.0	0.0	2.0	8.5			8.5
Organic N-N	5.2	126.6	4.0	17.1			143.7
Ammonia N-N	0.0	0.0	0.0	0.0			0.0
Nitrate N-N	0.0	0.0	0.7	3.0			3.0
Total Solids			1,320	5,669			
Turbidity	300		750				
pH	7.6		2.6				

*All concentrations expressed as mg/l except pH and Turbidity
**Pounds per day are computed using the following general formula:
lbs/day = flow (mgd) x concentration (mg/l) x unit weight of water (8.34 lbs/gal)
***Concentration based on a grab sample collected when sewer was overflowing 6/5/68 @ 1715

Chlorine Process at Bryant Division

Third Survey Period -- Thursday, 6/6/68, @ 0900 - Friday, 6/7/68, @ 0900

Parameter	Conc.*	Lbs/day**
BOD	120	457
COD	390	1,489
Total Solids	1,480	5,638
Suspended Solids	305	1,165
Suspended Volatile Solids	105	401
Settleable Solids	245	935
Chloroform Extractables	24	92
Turbidity	550	
pH	2.8	

*All concentrations expressed as mg/l except pH and Turbidity
**Pounds per day are computed from the following formula:
lbs/day = flow (mgd) x concentration (mg/l) x unit weight of water (8.34 lbs/gal)

MONR 003702

Discussion and Observations

The surveys at the clarifiers of the various mills were started at 8:00 a.m. to correspond with the production day of the plant. The measurement of the by-pass waste was started fourteen hours prior to beginning the surveys at the clarifiers. This fourteen-hour rate is more than double the flow rate during the remainder periods of survey.

Approximately 3.5 tons of BOD and one ton of suspended solids are being discharged to Portage Creek from the Bryant Division clarifier. Of the one ton of suspended solids discharged, approximately 50% were volatile. Also, approximately 500 pounds of chloroform extractables and 30 pounds of phosphorous are being discharged to Portage Creek each day from the clarifier.

The de-inking mill contributes one-seventh of the total flow from this plant but provides 30% of the total amount of suspended solids, when the by-pass is not flowing. The suspended solids from the chlorine process were between 60 and 80% settleable. The pH of the waste from the chlorine process was between 2.6 and 3.0. It was found in the WRC laboratories that, if the pH was raised to 7.5, a very heavy floc was formed which settled readily, resulting in a very clear supernatant. Also, approximately 85 pounds of chloroform extractables were being discharged to Portage Creek from the chlorine process. Before the survey started, an inspection was made of the portion of Portage Creek which flows through the Bryant complex. Four separate discharges were noted between Bryant and Reed Streets. A twenty-four-inch clay tile, located ten feet north of Bryant Street on the east side of Portage Creek, was discharging a white turbid liquid into the creek. Before the survey started, a leak in a process waste line was discovered and repaired, thus the flow ceased. Approximately 150 feet north of Bryant Street, a discharge of approximately 500 gpm was noted. We were informed this was turbine tail water. Approximately 250 feet north of Bryant Street, a discharge of approximately 20 gpm was noted. The survey staff was informed that this was waste water from the lime-soda water softener and that plans were to combine it with the process waste. Approximately 250 feet north of Bryant Street, a discharge was noted. Below this discharge there was a large build-up of deposited solids. This was found to be a relief valve on a pump that discharges to the creek. It was also corrected by connection to the process line before the survey started.

A heavy deposit of solids was noted in the mill pond in the vicinity of the chlorine process outlet. The survey staff was informed that a failure in the process during the spring had allowed a large amount of fiber to be discharged to the pond. This deposit extended into the pond approximately 150 feet from the outlet in all directions.

The esthetic appeal of the stream above the discharges is more desirable than below the discharges. The turbidity of the clarifier waste water was 270 to 300 and 550 to 750 from the chlorine process at the de-inking mill. Mats of sludge and gas bubbles were observed rising from the bottom of the Mill pond. The mats of sludge break up as they float over the dam at Alcot Street.

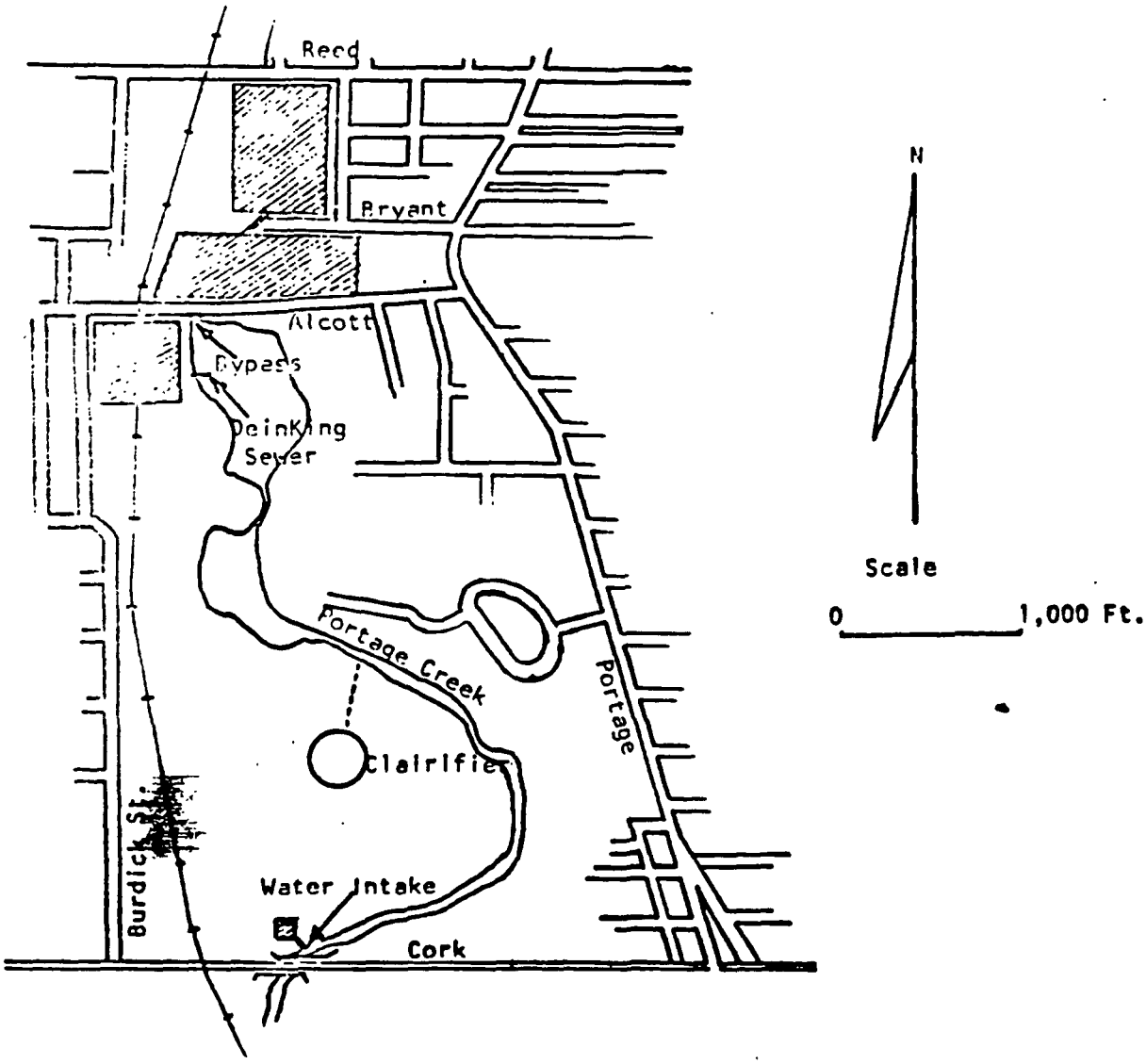
Survey by:
Galen Kilmer, Sanitary Engineer
Leroy Vahovick, Water Pollution Investigator
Laboratory analyses by:
Russel Krueger, Chemist
Contact with management:
Les Stoeffler
Report by:
Galen Kilmer
Leroy Vahovick
Water Quality Appraisal Unit
MICHIGAN WATER RESOURCES COMMISSION
7-25-68

MICHIGAN WATER RESOURCES COMMISSION

Report of Survey

Bryant Division, Allied Paper Co.

June 4,5,6, 1968



4056 Plainfield, N. E.
Grand Rapids, Michigan 49505

September 4, 1968

Mr. Les Stoeffler, Manager
Process Development
Allied Paper Corporation
Kalamazoo, Michigan 49001

Dear Mr. Stoeffler:

Enclosed you will find a copy of a waste survey report in reference to the King and Monarch Divisions of the Allied Mills. These surveys covered two consecutive 24-hour periods at each of the mills and were conducted June 4, 5, and 6, 1968. The tables included in each report give pertinent data related to volume and pounds on a per-day basis as well as expressing the information on per ton of paper produced basis.

The following table compares our May 1967 with June 1968 surveys:

	KING DIVISION		MONARCH DIVISION	
	1967	1968	1967	1968
Flow mgd.	.972	2.33	2.12	2.12
	.571	2.72	1.86	1.89
Pounds of B.O.D.	972	1234	568	583
Per Day	810	1973	202	709
Pounds of Susp.	583	349	496	388
Solids/Day	220	408	248	535
Paper Production	234	209	82.5	35.5
Tons/Day	145.8	159	51.5	64.7
Pounds of	4.15	5.9	16.4	6.9
B.O.D./Ton	3.85	12.4	10.9	3.9
Pounds of Susp.	2.49	1.67	10.9	6.04
Solids/Ton	0.97	2.56	8.3	4.81

MDNR 003714

MDNR00003714

MICHIGAN WATER RESOURCES COMMISSION

Report of Sampling

[redacted]
Kalamazoo, Michigan

[redacted]
10 - 21 - 69

On September 29, 1969, a sample was taken from the Monarch clarifier effluent which now consists of white water from both Monarch and Bryant mills. De-ink waste waters are now directed into the Kalamazoo municipal sanitary system. The sample of white water effluent had analyses as follows:

5 day B.O.D.	32 mg/l
Suspended solids	92 mg/l
Susp. Volatile Solids	32 mg/l
pH	7.4

This waste flow barely discolored the Bryant mill pond and represented a marked improvement over past conditions. However, Portage Creek below Alcott Street appeared virtually unchanged. This is attributed to waste from the de-ink bleach water sewer which drains into the Bryant pond about 100 yards south of Alcott Street. This flow, previously measured at about .500 mgd., had analyses as follows:

5 day B.O.D.	>73 mg/l
Suspended solids	148 mg/l
Susp. Volatile solids	68 mg/l
Chlorine	250 mg/l
pH	3.1

Little impetus has been given to the abatement of oil pollution from Allied Paper. A real problem exists in this area and was discussed between the writer and Messrs. Gilman and Stoeffler of the company on August 26, 1969. On September29, 1969, a sample taken from Portage Creek at Reed Street contained 5.2 mg/l of chloroform extractable substances

At times oil from Portage Creek and namely Allied Paper Corporation has been of sufficient quantity to cover the Kalamazoo River with an irridescent film. (35 mm slides have been taken to depict this condition).

James L. Pope

JLP:as

0002618

MICHIGAN WATER RESOURCES COMMISSION
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF NATURAL RESOURCES

Report of
Industrial Wastewater Survey
Monarch & Bryant Division of Allied Paper Co.
Discharge to Portage Creek
Kalamazoo, Michigan

Sept. 15, 1970 to Sept. 17, 1970

Purpose of Survey

The purpose of this survey was to measure the quality and quantity of wastewaters discharged to Portage Creek from the Monarch and Bryant Division of the Allied Paper Company at Kalamazoo, Michigan.

Waste Treatment Facility

Excess white water from both the Bryant Division and Monarch Division of Allied Paper Company are treated in the 90-foot clarifier which formally handled only the Monarch excess white water. Following primary treatment in the clarifier the waste is discharged to Portage Creek near Cork Street.

Survey Procedure

The Allied Paper Company, Monarch Division, maintains a 4'-0" full channel weir, recording water level recorder, and an automatic sampler. The company's weir was equipped with BWM automatic sampler and recording water level recorder.

The automatic sampler is programmed to collect a sample every fifteen minutes. The cumulative samples are stored in clean sample jugs for delivery to the Bureau of Water Management laboratory at Lansing for selected qualitative physical and chemical analyses. The samplers are set so as to collect a proportional sample, i.e. the volume of the individual sample is proportional to the volume of wastewater flowing over the weir crest. The sampler is equipped with a scoop that is matched to the type of weir used, so that the combination of depth of sample and the shape of the sampling scoop provides for the collection of a proportionate sample, i.e., in relation to the volume of waste flowing through the weir at the time the sample is collected. The total of the individual samples is collected as a composite proportionate sample which is representative of the total flow from the clarifier during the survey period.

The water level recorder records the height of water surface above the weir crest on the attached head vs time chart. This chart is subsequently analyzed to compute the flow of wastewater through the weir during the survey period in million gallons per day (MGD).

The composite samples are analyzed quantitatively at the laboratories in Lansing by Bureau of Water Management chemists experienced in wastewater analyses. These results are reported as concentration in milligrams per liter (mg/l) except for pH.

Pounds per day of the various constituents discharged in the wastewater are computed from the formula: lbs/day = concentration (mg/l) x flow (MGD) x unit wt. of water (8.34 lbs/gallon) and are tabulated along with the qualitative analytical data.

Survey Results

Table 1 Survey period and quantity of wastewaters being discharged from the Monarch & Bryant Division of Allied Paper Company's clarifier to Portage Creek for the period September 16, 1970 to September 17, 1970.

Date	Time started	Time ended	Hours monitored	Flow MGD
9-16-70	2:30 pm			
9-17-70		2:00 pm	23.50	3.44

Table 2 Quantitative analyses of the composite sample collected and calculated pounds per day of the various constituents being discharged from the Monarch Division of Allied Paper Company's clarifier to Portage Creek, for the period September 16, 1970 to September 17, 1970. Flow = 3.44 MGD.

Parameter	Concentration	Lbs/day
Five day biochemical oxygen demand	57	1,635
Chemical oxygen demand	83	2,381
Total solids	560	16,066
Dissolved solids	504	14,459
Suspended solids	56	1,607
Suspended volatile solids	56	1,607
Organic nitrogen - N	1.5	43
Ammonia nitrogen - N	0.0	
Nitrate nitrogen - N	0.2	5.7
Total phosphorus - P	0.12	3.4
Soluble orthophosphate - P	0.00	
Chloride	44	1,262
Sodium	34	975
Sulfate	150	4,304
Turbidity	45	
pH	7.4	

6-25-75

MICHIGAN WATER RESOURCES COMMISSION
BUREAU OF WATER MANAGEMENT
ENVIRONMENTAL PROTECTION BRANCH
DEPARTMENT OF NATURAL RESOURCES

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER INC.
Monarch Mill
All Outfalls No. 390222
Kalamazoo County
Kalamazoo, Michigan
May 5-7, 1975

Survey Summary

Wastewater monitoring was performed during two twenty-four hour survey periods starting Monday, May 5, 1975.

The results of this survey met the initial limitations in the facility's National Pollutant Discharge Elimination System Permit (NPDES), No. MI0000779 except for three out of four pH grab samples. The pH of all the grab samples ranged from 5.8 to 6.5. The pH of the two 24-hour composite samples were 6.4 and 6.9 (Tables 1 and 2). Plant personnel said that the low pH was possibly due to a malfunction in the automatic alum feed system over the weekend before the survey.

The survey results agreed well with the results reported by the company in the monthly operating report (Table 4). The two twenty-four hour composite samples were split with the company and analyzed in their laboratory. The results of the company's analysis agrees well with our laboratory results (Table 5).

Survey Comments

The company is monitoring pH from a composite sample and using the hexane extractable test for measuring oil and grease.

The company appears to be reporting settleable solids in grams per liter on the monthly operating report.

A heavy flock was being discharged over the final weir on May 5, 1975 at 5:00 p.m. This problem was still occurring at 10:20 p.m. on the same day and a grab sample collected at that time showed 110 mg/l of suspended solids (Table 2). In the afternoon of May 6, 1975 there was foam in Portage Creek from the plant discharge which was evident approximately 2000 feet downstream.

Purpose of Survey

The purpose of the survey was to determine the quality and quantity of wastewater being discharged by Allied Paper Inc., a principal discharger, to Portage Creek and to check for compliance with the NPDES Permit No. 0000779.

Plant Processes

The wastewater treatment plant at the Monarch Mill of Allied Paper Inc. treats all of the wastewater from the Monarch Mill and some of the process wastewater from the Bryant Mill. The rest of the process wastewater from the Bryant Mill is discharged to the city sanitary system. Generally about one-third of the effluent from the treatment system originates in the Bryant Mill and two-thirds originates in the Monarch Mill. At the time of the survey the effluent from the wastewater treatment plant was approximately 50% Bryant Mill wastewater and 50% Monarch Mill wastewater.

The Monarch Mill produces bible paper and carbon tissue for "one time" carbon paper. The mill has two Fourdrinier paper machines which were operating during the survey.

The Bryant Mill produces bible paper and other speciality paper. Four of the five Fourdrinier paper machines at the Bryant Mill were operating during the survey.

Both plants use virgin pulp in a standard papermaking operation. Both plants were operating five days a week, 24 hours a day.

Water, Wastewater and Treatment

Potable water for the Monarch Mill is obtained from the City of Kalamazoo. All domestic wastewater goes to the Kalamazoo sanitary sewer system. Process water is obtained from Portage Creek. This water is treated using sand filters before being used in the mill.

The main source of process wastewater treated in Monarch Mill's 90-foot clarifier is excess white water from the paper machines. The backwash water from Monarch's sand filters are also treated in the clarifier. Alum and a floculating agent are added to influent to the clarifier to aid in floculation and settling. The effluent from the clarifier discharges to Portage Creek through outfall 390006. The sludge from the clarifier is disposed of on plant property adjacent to Portage Creek.

Survey Procedure

An existing 48-inch full-channel weir on the clarifier was used by the survey crew.

The weir was equipped with a water level recorder and an automatic sampler. The water level recorder provided a continuous account of the liquid level or head above the crest of the weir on a head versus time graph for the duration of each survey period. The total volume of wastewater over the weir during the survey period was computed from the graph. The automatic sampler obtained samples proportional to the instantaneous flow over the weir at 15-minute intervals. These individual samples were deposited in a clean container to make up a composite sample representative of the total flow over the weir during the survey period.

A series of individual grab samples were collected from outfall 390006 (002) for selected physical and chemical analyses.

All samples collected were preserved according to Table 6.

The composite and grab samples were transported to the Bureau of Water Management laboratory located in Lansing for selected quantitative physical and chemical analyses. The following formula was used to compute the pounds per day of various wastewater constituents discharged:

lbs/day = flow (mgd) x conc. (mg/l) x unit weight of water (8.34 lbs/gal).

The results of the physical and chemical analyses are presented in Tables 1 through 3.

Table 1 Quantitative analyses of the two composite samples collected from Allied Paper Inc., Monarch Mill discharge, 390006 (002), to Portage Creek to determine the concentration of the wastewater constituents present in the samples and the computed pounds per day (lbs/day) of these constituents being discharged. Also noted are the highest and lowest flow rates recorded during the respective survey periods.

From	4:55 pm - 5-5-75		4:00 pm - 5-6-75	
To	3:55 pm - 5-6-75		3:50 pm - 5-7-75	
Total flow monitored (gal)	2,640,000		3,340,000	
Computed flow rate (mgd) *	2.78		3.35	
Highest flow rate (mgd)	3.78		4.06	
Lowest flow rate (mgd)	1.79		2.64	
pH (S.U.)	6.4		6.9	
	mg/l	lbs/day	mg/l	lbs/day
5-day BOD	23	530	35	980
COD	57	1300	86	2400
TOC	22	510	41	1100
Total solids	484	11200	424	11800
Suspended solids	24	560	8	200
Settleable solids	2	50	< 8	--
Sulfates (SO_4)	--	--	156	4400
Color (S.U.)	4	--	8	--
Turbidity (J.C.U.)	59	--	54	--

* Flow rates used in the computation of lbs/day.

Table 2 Quantitative analyses of grab samples collected from Allied Paper Inc., Monarch Mill discharge 390006 (002) to determine concentrations of select physical and chemical constituents present in the wastewater.

Outfall	390006 (002)	390006 (002)	390006 (002)	390006 (002)
Time	10:20pm	8:40am	3:35pm	8:07am
Date	5-5-75	5-6-75	5-6-75	5-7-75
Temp. , °C	23	22.5	23	23.5
pH (S.U.)	5.8	6.3	6.5	6.4
	mg/l	mg/l	mg/l	mg/l
BOD	28	20	43	47
COD	110	47	75	170
TOC	--	17	42	46
Total solids	520	488	476	432
Suspended solids	110	2	15	1
Settleable solids	104	< 2	< 15	< 1
Oil & Grease	< 1	< 1	1	2
Sulfate	210	190	170	152
Color (S.U.)	4	6	7	16
Turbidity (J.C.U.)	250	26	90	46

Table 3 Quantitative analyses of a 48-hour grab composite sample collected from Allied Paper Inc., Monarch Mill discharge, 390006 (002) to the Portage Creek to determine concentrations of select chlorinated hydrocarbons.

Outfall	390006 (002)
Date	5-5-75 to 5-7-75
PCB 1242	< 0.01
PCB 1254	< 0.01
PCB 1260	< 0.01
DEHP	< 0.5
DBP	< 1.5

Note: Results reported in ug/l.

PCB - Polychlorinated biphenyls
DEHP - Diethylhexylphthalates
DBP - Dibutylphthalates

Table 4 Comparison of results obtained during the survey at Allied Paper Inc., Monarch Mill with the facility's NPDES Permit, No. MI0000779 and the monthly operating report for May, 1975.

Source - 390006 (002)

Parameter (Unit)	NPDES Permit Limitations		Monthly Operating Report				Survey Results *	
	Average	Maximum	5-5-75	5-6-75	5-7-75	Average	5-5-75 5-6-75	5-6-75 5-7-75
BOD_5 (lbs/day)	1205	2210	285	480	660	759	530	980
Suspended solids (lbs/day)	825	2300	460	280	235	327	560	200
Settleable sol.	--	--	10	10	5	--	104, <2, <15, <1	
Oil & Grease (mg/l)		10	--	--	0	0	<1, <1, 1, 2	
pH (range) (S.U.)	6.5 - 9.5		6.9	6.5	6.9	6.9	5.8, 6.3, 6.5, 6.4	

* - The survey results reported for BOD_5 and suspended solids are from 24-hour composite samples. The other survey results are from grab samples.

Table 5 Comparison of the analysis of the two composite samples collected at Allied Paper Inc., Monarch Mill, discharge 390006 (002). The composite samples were split with the company and analyzed by their laboratory (AP Lab) and the Water Resources Commission laboratory (WRC Lab).

	WRC Lab	AP Lab	WRC Lab	AP Lab
From	5-5-75	5-5-75	5-6-75	5-6-75
To	5-6-75	5-6-75	5-7-75	5-7-75
pH	6.9	7.2	7.2	7.35
	mg/l	mg/l	mg/l	mg/l
5-day BOD	23	19	35	27
Total solids	484	750	424	670
Suspended solids	24	5	8	2
Settleable solids	2	48	< 8	5
Turbidity	59	35	54	25

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Table 6 Sample Preservation

Parameter	Preservative
BOD	Cooled to 4°C.
COD	5 drops 1:1 H_2SO_4/125 ml. Cooled to 4°C.
General Chemistry	Cooled to 4°C.
Oil & Grease	1 ml 1:1 H_2SO_4/250 ml. Cooled to 4°C.
Pesticides, PCB's, Phthalate	100 ml hexane.

Survey by: Richard Christensen, Sanitary Engineer
L.J. McDonald, Water Quality Investigator
William Long, Water Quality Investigator

Contact with Management: Ray J. Willie

Certified Operator: Ray J. Willie

Chlorinated Hydrocarbon Analyses by: Christine Kazen, Chemist

Physical & Chemical Analyses by: James Bedford, Chemist

Bacteriological Analyses by: Michigan Department of Public Health
Bureau of Laboratories

Report by: Richard Christensen
L.J. McDonald
William Long
Point Source Survey Section
Michigan Water Resources Commission
Bureau of Water Management
Environmental Protection Branch
Department of Natural Resources

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER, INC.
MONARCH MILL
Kalamazoo County
Kalamazoo, Michigan
August 16-18, 1976

Survey Summary

Wastewater monitoring was performed during two twenty-four hour survey periods starting Monday, August 16, 1976.

The results of this survey met the initial limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000779 (Table 3).

Comparison of survey results with the company's August 1976 monthly operating report indicates the survey was representative of plant performance for the month of August (Table 3).

Composite samples from the two 24-hour surveys were split with the company for analysis in their laboratory. The company's BOD results compare well with the Environmental Protection Bureau laboratory results. Company's results for suspended solids and settleable solids were lower than EPB results (Table 4).

Comparison of the results of this survey with results of the May 1975 survey show a reduction in the concentration of most parameters while the flow increased by about 0.9 MGD (Table 5).

Leachate from the company's sludge lagoons is entering a ditch and flowing into Portage Creek. This leachate was sampled after it combined with the ditch flow (Figure 1).

The leachate had a concentration of 1242 PCB of 0.4 ug/l.

Survey Comments

This company appears to be reporting settleable solids in grams per liter.

Purpose of Survey

The purpose of the survey was to determine the quality and quantity of wastewater being discharged by Allied Paper, Inc., Monarch Mill, to Portage Creek and to check for compliance with the NPDES Permit No. MI0000779.

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SA00029820

This survey was conducted in conjunction with an intensive water quality study of the Kalamazoo River conducted by the Comprehensive Studies Section.

Plant Processes

Allied Paper, Inc. currently operates two mills in Kalamazoo, the Monarch Mill and the Bryant Mill (Figure 1). A third mill, the King Mill, is no longer in operation.

A total of 275 tons of paper products are produced at the mills under normal production. Both mills use virgin pulp in a standard papermaking operation.

The Monarch Mill utilizes two Fourdrinier paper machines to produce bible paper and carbon tissue for "one-time" carbon paper. Both machines were operating during the survey.

The Bryant Mill produces bible paper and other specialty papers using five Fourdrinier paper machines. One of the machines was out of service at the beginning of the survey.

The mills employ about 475 people. Both mills were shut down during the weekend prior to the survey, but production had resumed on the first day of the survey. Production is on a twenty-four hour a day basis, averaging six days per week.

Water, Wastewater and Treatment

Potable water for the mills is obtained from the City of Kalamazoo. Domestic wastewater is discharged to the Kalamazoo Wastewater Treatment System. Process water for the Monarch Mill is obtained from Portage Creek upstream of the Monarch dam and is treated using sand filters before being used in the mill. Process water for the Bryant Mill is obtained from Portage Creek near Cork Street and is also passed through sand filters prior to use.

A 90-foot circular clarifier at the Monarch Mill and a 110-foot circular clarifier at the Bryant Mill are used to treat process wastewater. All process wastewater from the Monarch Mill, consisting mainly of excess white water, paper machines, goes directly to the Monarch clarifier. Backwash water from the sand filters at the Monarch Mill is also discharged to the Monarch clarifier.

The Bryant clarifier receives a portion of the process waste from the Bryant Mill along with wastes from the zeolite and lime-soda ash softeners. The Bryant clarifier discharges to the Kalamazoo Wastewater Treatment System. The remainder of the flow from the Bryant Mill is then diverted to the Monarch clarifier for treatment.

Alum and a coagulation agent are added to the Monarch clarifier to increase settling and flocculation. The effluent from the clarifier discharges to

Portage Creek through outfall 390006. The sludge from the clarifier is disposed of on plant property across Portage Creek (Figure 2).

Sand filter backwash from the Bryant Mill's water system is discharged directly to Portage Creek. This discharge is not covered in the NPDES permit.

Leachate from this sludge disposal area was observed to be flowing into a ditch and eventually to Portage Creek, just upstream of the company's intake. The water was very dark at the beginning of the survey, however the company applied a large dosage of lime causing it to clear up. Results of samples collected from the sludge leachate are included in the tables.

Survey Procedure

The survey crew utilized a company constructed 48-inch full channel weir for flow measurement and proportional sample collection on outfall 390006 (002), the wastewater discharge from the company's clarifier. The survey crew constructed a 60-degree vee-notch weir on the sludge leachate.

Each weir was equipped with a water level recorder and an automatic sampler; scoop-type on sludge leachate and air-activated on 390006 (002). The water level recorder provided a continuous account of the liquid level or head above the crest of each weir on a head versus time graph for the duration of each survey period. The total volume of wastewater over each weir during the survey period was computed from the graph. The automatic scoop-type and air-activated samplers obtained samples proportional to the instantaneous flow over each weir at 5-minute intervals. These individual samples were deposited in a clean container to make up a composite sample representative of the total flow over each weir during the survey period.

A series of individual grab samples were collected from outfalls 390006 (002) and sludge leachate for selected physical, chemical and bacteriological analyses.

All samples collected were preserved according to Table 6.

The composite and grab samples were transported to the Environmental Protection Bureau laboratory located in Lansing for selected quantitative physical and chemical analyses. The following formula was used to compute the pounds per day of various wastewater constituents discharged:

lbs/day = flow (mgd) x conc. (mg/l) x unit weight of water (8.34 lbs/gal).

The bacteria samples were transported to the Michigan Department of Public Health, Bureau of Laboratories located in Lansing for selected quantitative bacteriological analyses.

The results of the physical, chemical and bacteriological analyses are presented in Tables 1 and 2.

Table 1 Quantitative analyses of the two 24-hour composite samples collected from Allied Paper, Inc., Monarch Mill discharge, 390006 (002) and sludge leachate, to Portage Creek to determine the concentration of the wastewater constituents present in the samples, plus the computed pounds per day (lbs/day) of these constituents being discharged. Also noted are the highest and lowest flow rates recorded during the respective survey periods.

Outfall		390006 (002)	
Survey Period	From	8-16-76 - 1300	8-17-76 - 1335
	To	8-17-76 - 1330	8-18-76 - 1335
Computed flow rate (mgd) *		3.64	4.28
Highest flow rate (mgd)		4.33 - 1510-8/16	4.67 - 1420-8/17
Lowest flow rate (mgd)		2.9 - 1620-8/16	2.25 - 0950-8/18
pH (S.U.)		7.3	6.9

	mg/l	lbs/day	mg/l	lbs/day
5-day BOD	14	430	17	600
20-day BOD	20	600	21	750
COD	20	600	30	1,100
T.O.C.	8.7	260	9.7	350
Suspended solids	6	200	2	70
Dissolved solids	468	14,200	448	16,000
Orthophosphate-P	< 0.01	--	0.01	0.4
Total phosphorus-P	0.02	0.6	0.06	2
Nitrite & nitrate nitrogen-N	0.49	15	0.66	24
Ammonia nitrogen-N	0.02	0.6	0.01	0.4
Organic nitrogen-N	0.25	8	0.72	26
Chlorides (Cl)	38	1,200	33	1,200
Sulfates (SO_4)	140	4,300	130	4,600
Phenols	0.68	18	0.45	16
Color (Pt. Co.)	3	--	2	--
Turbidity (F.T.U.)	16	--	8.0	--
	ug/l			
1242 PCB **	< 0.1			
1254 PCB **	< 0.1			
1260 PCB **	< 0.1			

* Flow rates used in the computation of lbs/day.
** PCB samples were composited over 48 hours.

Table 1 (continued)

Outfall	Sludge Leachate			
Survey Period From	8-16-76 - 1410		8-17-76 - 1415	
To	8-17-76 - 1410		8-18-76 - 1415	
Computed flow rate (mgd) *	0.03 (1)		0.03 (1)	
pH (S.U.)	8.4		10.6	
	mg/l	lbs/day	mg/l	lbs/day
5-day BOD	11	2.8	9	2.3
20-day BOD	13	3.3	11	2.8
COD	32	8.0	29	7.3
Suspended solids	535	130	280	70
Dissolved solids	324	80	224	60
Settleable solids	491	120	--	--
Orthophosphate-P	0.02	0.01	< 0.01	--
Total phosphorus-P	0.21	0.05	0.05	0.01
Nitrite & nitrate nitrogen-N	0.04	0.01	0.06	0.02
Ammonia nitrogen-N	0.39	0.1	0.49	0.1
Organic nitrogen-N	0.35	0.09	0.41	0.1
Chlorides (Cl)	24	6	26	7
Sulfates (SO_4)	96	20	72	20
Phenols	0.15	0.04	0.08	0.02
Color (Pt. Co.)	--	--	7	--
Turbidity (F.T.U.)	--	--	92	--
	ug/l			
1242 PCB **	0.40			
1254 PCB **	< 0.1			
1260 PCB **	< 0.1			

* Flow rates used in the computation of lbs/day.
** PCB samples were composited over 48 hours.
(1) - Flow was constant over survey period.

Table 2 Quantitative analyses of grab samples collected from Allied Paper, Inc., Monarch Mill discharges, 390006 (002) and leachate, to Portage Creek to determine concentrations of select physical, chemical and bacteriological constituents present in the wastewater.

Date	Time	Flow[1] MGD	Temp.[2] °C	pH[2] S.U.	Oil & Grease mg/l	BOD_5 mg/l	Susp. solids mg/l	Settle. solids mg/l	Ortho-phosphate mg/l	Total phos-phorus mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Organic nitrogen mg/l	D.(mg/
390006 (002)														
8-16-76	2115	3.72	25	6.9	1	16	21	13	< 0.01	0.03	0.53	0.06	0.26	7.(
8-17-76	0820	3.6	24.5	7.0	< 1	--	4	--	< 0.01	0.01	0.42	0.02	0.21	6.E
8-17-76	2130	4.6	27	7.3	2	--	6	--	< 0.01	0.01	0.69	0.04	0.67	6.:
8-18-76	1335	4.0	26	6.9	2	24	12	--	< 0.01	0.02	0.78	0.04	0.62	6.:
Sludge Leachate														
8-16-76	2055	0.03	15	7.4	--	16	--	--	0.21	0.29	0.01	0.07	0.63	1.4
8-17-76	0800	0.03	12.5	7.3	--	--	--	--	0.20	0.28	0.01	0.14	0.56	0.E
8-17-76	2115	0.03	15	11.8	--	--	--	--	< 0.01	0.04	0.07	0.50	0.32	0.E
8-18-76	1400	0.03	14.5	10	--	9	--	--	0.01	0.07	0.02	0.50	0.37	0.9

		Fecal Coliform cts/100 ml	Fecal Strep. cts/100 ml	Temperature °C
390006 (002)				
8-16-76	1300	30	< 10	21.5
8-16-76	2115	160	< 10	25
8-17-76	0820	50	< 10	24.5
8-17-76	2130	< 10	--	27
8-18-76	0840	60	--	--
8-18-76	1335	70	--	26
Geometric Mean		50		
Sludge Leachate				
8-16-76	1410	430	800	12.5
8-16-76	2055	210	790	15
8-17-76	0800	230	570	12.5
8-17-76	2115	< 10	--	15
8-18-76	0855	< 10	--	--
8-18-76	1400	10	--	14.5
Geometric Mean		50	700	

1 - Flow at time of grab sampling.
2 - Values determined in the field at time of sampling

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Table 3 Comparison of results obtained during the survey at Allied Paper, Inc., Monarch Mill with the facility's NPDES Permit, No. MI0000779, and monthly operating report for August, 1976.

Parameter (Unit)	NPDES Permit Initial Limitations		Monthly Operating Report					Survey Results			
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	8-16-76	8-17-76	8-18-76	1st 24	2nd 24	Grabs High	Grabs Low
390006 (002)											
Flow (MGD)	--	--	3.91	5.0	3.09	3.93	3.65	3.64	4.28	4.6	3.6
BOD_5 (lbs/day)	1205	2210	320	653	154	265	269	430	600	--	--
Susp. solids (lbs/day)	825	2300	196	964	258	197	304	200	70	--	--
Sett. solids (mg/l)	--	--	0.06	0.15	0.10	0.05	0.05	--	--	13	--
Oil & Grease (mg/l)	--	10	0.7	1.0	--	1.0	--	--	--	2	< 1
pH (S.U.)	not <6.5 nor >9.5		--	max 7.6 min 6.5	7.2	7.1	6.9	7.3	6.9	7.3	6.9

Table 4 Comparison of the laboratory analytical results obtained by Allied Paper, Inc., Monarch Mill and the Environmental Protection Bureau from the split composite samples.

Outfall	390006 (002)				Sludge Leachate			
	1st 24-hour		2nd 24-hour		1st 24-hour		2nd 24-hour	
	E.P.B.	Allied	E.P.B.	Allied	E.P.B.	Allied	E.P.B.	Allied
pH (S.U.)	7.3	6.9	6.9	6.7	8.4	9.2	10.6	10.4
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
5-day BOD	14	10.6	17	13.6	11	15	9	19.5
Suspended solids	6	2.8	2	1.0	535	513	280	2.8
Settleable solids	--	trace	--	trace	491	2.0	--	1.5

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Table 5 Comparison of the analytical results obtained on the previous survey of Allied Paper, Inc., Monarch Mill in May 1975 with the results obtained in this current survey.

Outfall		390006 (002)			
Survey Date	From	5/5/75-1655	5/6/75-1600	8/16/76-1300	8/17/76-1335
	To	5/6/75-1555	5/7/75-1550	8/17/76-1330	8/18/76-1335
Flow Rate (MGD)		2.78	3.35	3.64	4.28
pH (S.U.)		6.4	6.9	7.3	6.9
		mg/l	mg/l	mg/l	mg/l
5-day BOD		23	35	14	17
COD		57	86	20	30
TOC		22	41	8.7	9.7
Total solids		484	424	468	454
Suspended solids		24	8	6	2
Settleable solids		2	< 8	--	--
Sulfates (SO_4)		--	156	140	130
Color (S.U.)		4	8	3	2
Turbidity (F.T.U.)		59	54	16	8.0

Table 6 Sample Preservation

Parameter	Preservative
BOD	Cooled to 4°C.
COD	5 drops H_2SO_4/125 ml (to pH <2). Cooled to 4°C.
D.O.	Fixed on site.
General Chemistry	Cooled to 4°C.
Microbiology	2 drops 10% sodium thiosulfate/125 ml to dechlorinate sample. Cooled to 4°C.
Nutrients	Cooled to 4°C.
Oil & Grease	1 ml 1:1 H_2SO_4/250 ml (to pH <4). Cooled to 4°C.
Phthalate, PCB	Collected in glass bottle.

Survey by:	Dennis Bittner, Sanitary Engineer William Long, Water Quality Investigator Richard Irvin, General Foreman
Contact with Management:	U. G. Stoeffler
Hydrocarbon Analyses by:	Tom Wilcox, Chemist
Physical & Chemical Analyses by:	Ray Wimmer, Chemist
Bacteriological Analyses by:	Michigan Department of Public Health Bureau of Laboratories
Report by:	Dennis Bittner William Long Point Source Studies Section Environmental Services Division Environmental Protection Bureau Michigan Department of Natural Resources

Distribution "A"
MM

TABLE 5

KALAMAZOO RIVER SUR

Allied Paper Company, Monarch Division
Laboratory Analyses and Computed River Loadings

COMPOSITE SAMPLES
Outfall 002 - Treated Process

Survey Period	FROM:	8-16-76, 1300	8-17-76, 1335	
	TO:	8-17-76, 1300	8-18-76, 1335	
Flow rate (m^3/day)		13800	16200	
pH (SU)		7.3	6.9	
Color (Pt Co)		3	2	
Turbidity (F.T.U.)		16	8.0	
PARAMETER	mg/l	kg/day	mg/l	kg/day
5-day BOD[1]	14	190	17	280
20-day BOD[2]	20	280	21	340
COD	20	280	30	490
TOC	8.7	120	9.7	160
Suspended solids	6	80	2	30
Dissolved solids	468	6460	448	7260
Orthophosphate-P	<0.01	--	0.01	0.2
Total phosphorus-P	0.02	0.3	0.06	1
Nitrite + nitrate nitrogen-N	0.49	6.8	0.66	11
Ammonia nitrogen-N	0.02	0.3	0.01	0.2
Organic nitrogen-N	0.25	3.4	0.72	12
Chlorides (Cl)	38	520	33	530
Sulfates (SO_4)	140	1900	130	2100
Phenols	0.68	9.4	0.45	7.3

	ug/l
1242 PCB	<0.1
1254 PCB	<0.1
1260 PCB	<0.1

NOTE: PCB samples were composited over 48 hours.

Loading (kg/day) = Concentration (mg/l) x Flow (m^3/day) x .001.
[1] BOD_5 values include nitrification.
[2] BOD_{20} values are carbonaceous only, nitrification was inhibited.

MDNR 002982

MDNR00002982

TABLE 3

PARAMAUGO RIVER STUDY

Allied Paper Company, Monarch Division
Laboratory Analyses

GRAB SAMPLES
Outfall 002 - Treated Process

Date	8-16-76	8-17-76	8-17-76	8-18-76
Time	2115	0320	2130	1335
Flow[1] (m^3/day)	14100	14000	17000	15000
Temp. (°C)	25	24.5	27	26
pH (SU)	6.9	7.0	7.3	6.9
PARAMETER	mg/l	mg/l	mg/l	mg/l
Oil & grease	1	<1	2	2
BOD_5[2]	16	--	--	24
Suspended solids	21	4	6	12
Settleable solids	13	--	--	--
Orthophosphate-P	<0.01	<0.01	<0.01	<0.01
Total phosphorus-P	0.03	0.01	0.01	0.02
Nitrite + nitrate nitrogen-N	0.53	0.42	0.69	0.78
Ammonia nitrogen-N	0.06	0.02	0.04	0.04
Organic nitrogen-N	0.26	0.21	0.67	0.62
Dissolved oxygen	7.0	6.8	6.2	6.5

Outfall - Sludge Leachate

Date	8-16-76	8-17-76	8-17-76	8-18-76
Time	2055	0800	2115	1400
Flow[1] (m^3/day)	100	100	100	100
Temp. (°C)	15	12.5	15	14.5
pH (SU)	7.4	7.3	11.8	10
PARAMETER	mg/l	mg/l	mg/l	mg/l
BOD_5[2]	16	--	--	9
Orthophosphate-P	0.21	0.20	<0.01	0.01
Total phosphorus-P	0.29	0.28	0.04	0.07
Nitrite + nitrate nitrogen-N	0.01	0.01	0.07	0.02
Ammonia nitrogen-N	0.07	0.14	0.50	0.50
Organic nitrogen-N	0.63	0.56	0.32	0.37
Dissolved oxygen	1.4	0.8	0.8	0.9

[1] Flow at time of grab sampling.
[2] BOD_5 values include nitrification.

MDNR 002984

MDNR00002984

CHANGES SINCE 1976 SURVEY

Certain important changes have occured while this report was being prepared. These changes are cited here to make this report as accurate and up to date as possible.

Brown Company, Parchment: Significant improvements have been made in this waste treatment facility since the 1976 survey. They met their final permit limitations during a survey conducted in August, 1977. The toxicity of their effluent was also tested and no toxicity problems were discovered.

Allied Paper Company, Monarch Division, Kalamazoo: The sludge leachate was sampled for PCB's in July, 1977 and no detectable amounts were discovered (<0.1 ug/l).

Kalamazoo Wastewater Treatment Plant: The Kalamazoo WWTP discharge was sampled for PCB's in July, 1977 and no detectable amounts were discovered (<0.1 ug/l).

King Street Storm Sewer: Several previously unpermitted discharges to the King Street Storm sewer have been issued NPDES permits and are on a compliance schedule.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER, INC.
MONARCH MILL
Kalamazoo County
Kalamazoo, Michigan
August 16-18, 1976

Survey Summary

Wastewater monitoring was performed during two twenty-four hour survey periods starting Monday, August 16, 1976.

The results of this survey met the initial limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000779 (Table 3).

Comparison of survey results with the company's August 1976 monthly operating report indicates the survey was representative of plant performance for the month of August (Table 3).

Composite samples from the two 24-hour surveys were split with the company for analysis in their laboratory. The company's BOD results compare well with the Environmental Protection Bureau laboratory results. Company's results for suspended solids and settleable solids were lower than EPB results (Table 4).

Comparison of the results of this survey with results of the May 1975 survey show a reduction in the concentration of most parameters while the flow increased by about 0.9 MGD (Table 5).

Leachate from the company's sludge lagoons is entering a ditch and flowing into Portage Creek. This leachate was sampled after it combined with the ditch flow (Figure 1).

The leachate had a concentration of 1242 PCB of 0.4 ug/l.

Survey Comments

This company appears to be reporting settleable solids in grams per liter.

Purpose of Survey

The purpose of the survey was to determine the quality and quantity of wastewater being discharged by Allied Paper, Inc., Monarch Mill, to Portage Creek and to check for compliance with the NPDES Permit No. MI0000779.

This survey was conducted in conjunction with an intensive water quality study of the Kalamazoo River conducted by the Comprehensive Studies Section.

Plant Processes

Allied Paper, Inc. currently operates two mills in Kalamazoo, the Monarch Mill and the Bryant Mill (Figure 1). A third mill, the King Mill, is no longer in operation.

A total of 275 tons of paper products are produced at the mills under normal production. Both mills use virgin pulp in a standard papermaking operation.

The Monarch Mill utilizes two Fourdrinier paper machines to produce bible paper and carbon tissue for "one-time" carbon paper. Both machines were operating during the survey.

The Bryant Mill produces bible paper and other specialty papers using five Fourdrinier paper machines. One of the machines was out of service at the beginning of the survey.

The mills employ about 475 people. Both mills were shut down during the weekend prior to the survey, but production had resumed on the first day of the survey. Production is on a twenty-four hour a day basis, averaging six days per week.

Water, Wastewater and Treatment

Potable water for the mills is obtained from the City of Kalamazoo. Domestic wastewater is discharged to the Kalamazoo Wastewater Treatment System. Process water for the Monarch Mill is obtained from Portage Creek upstream of the Monarch dam and is treated using sand filters before being used in the mill. Process water for the Bryant Mill is obtained from Portage Creek near Cork Street and is also passed through sand filters prior to use.

A 90-foot circular clarifier at the Monarch Mill and a 110-foot circular clarifier at the Bryant Mill are used to treat process wastewater. All process wastewater from the Monarch Mill, consisting mainly of excess white water-paper machines, goes directly to the Monarch clarifier. Backwash water from the sand filters at the Monarch Mill is also discharged to the Monarch clarifier.

The Bryant clarifier receives a portion of the process waste from the Bryant Mill along with wastes from the zeolite and lime-soda ash softeners. The Bryant clarifier discharges to the Kalamazoo Wastewater Treatment System. The remainder of the flow from the Bryant Mill is then diverted to the Monarch clarifier for treatment.

Alum and a coagulation agent are added to the Monarch clarifier to increase settling and flocculation. The effluent from the clarifier discharges to

90001218

Portage Creek through outfall 390006. The sludge from the clarifier is disposed of on plant property across Portage Creek (Figure 2).

Sand filter backwash from the Bryant Mill's water system is discharged directly to Portage Creek. This discharge is not covered in the NPDES permit.

Leachate from this sludge disposal area was observed to be flowing into a ditch and eventually to Portage Creek, just upstream of the company's intake. The water was very dark at the beginning of the survey, however the company applied a large dosage of lime causing it to clear up. Results of samples collected from the sludge leachate are included in the tables.

Survey Procedure

The survey crew utilized a company constructed 48-inch full channel weir for flow measurement and proportional sample collection on outfall 390006 (002), the wastewater discharge from the company's clarifier. The survey crew constructed a 60-degree vee-notch weir on the sludge leachate.

Each weir was equipped with a water level recorder and an automatic sampler; scoop-type on sludge leachate and air-activated on 390006 (002). The water level recorder provided a continuous account of the liquid level or head above the crest of each weir on a head versus time graph for the duration of each survey period. The total volume of wastewater over each weir during the survey period was computed from the graph. The automatic scoop-type and air-activated samplers obtained samples proportional to the instantaneous flow over each weir at 5-minute intervals. These individual samples were deposited in a clean container to make up a composite sample representative of the total flow over each weir during the survey period.

A series of individual grab samples were collected from outfalls 390006 (002) and sludge leachate for selected physical, chemical and bacteriological analyses.

All samples collected were preserved according to Table 6.

The composite and grab samples were transported to the Environmental Protection Bureau laboratory located in Lansing for selected quantitative physical and chemical analyses. The following formula was used to compute the pounds per day of various wastewater constituents discharged:

lbs/day = flow (mgd) x conc. (mg/l) x unit weight of water (8.34 lbs/gal).

The bacteria samples were transported to the Michigan Department of Public Health, Bureau of Laboratories located in Lansing for selected quantitative bacteriological analyses.

The results of the physical, chemical and bacteriological analyses are presented in Tables 1 and 2.

Table 1 Quantitative analyses of the two 24-hour composite samples collected from Allied Paper, Inc., Monarch Mill discharge, 390006 (002) and sludge leachate, to Portage Creek to determine the concentration of the wastewater constituents present in the samples, plus the computed pounds per day (lbs/day) of these constituents being discharged. Also noted are the highest and lowest flow rates recorded during the respective survey periods.

Outfall		390006 (002)			
Survey Period	From	8-16-76 - 1300		8-17-76 - 1335	
	To	8-17-76 - 1330		8-18-76 - 1335	
Computed flow rate (mgd) *		3.64		4.28	
Highest flow rate (mgd)		4.33 - 1510-8/16		4.67 - 1420-8/17	
Lowest flow rate (mgd)		2.9 - 1620-8/16		2.25 - 0950-8/18	
pH (S.U.)		7.3		6.9	
		mg/l	lbs/day	mg/l	lbs/day
5-day BOD		14	430	17	600
20-day BOD		20	600	21	750
COD		20	600	30	1,100
T.O.C.		8.7	260	9.7	350
Suspended solids		6	200	2	70
Dissolved solids		468	14,200	448	16,000
Orthophosphate-P		< 0.01	--	0.01	0.4
Total phosphorus-P		0.02	0.6	0.06	2
Nitrite & nitrate nitrogen-N		0.49	15	0.66	24
Ammonia nitrogen-N		0.02	0.6	0.01	0.4
Organic nitrogen-N		0.25	8	0.72	26
Chlorides (Cl)		38	1,200	33	1,200
Sulfates (SO_4)		140	4,300	130	4,600
Phenols		0.68	18	0.45	16
Color (Pt. Co.)		3	--	2	--
Turbidity (F.T.U.)		16	--	8.0	--
		ug/l			
1242 PCB **		< 0.1			
1254 PCB **		< 0.1			
1260 PCB **		< 0.1			

* Flow rates used in the computation of lbs/day.
** PCB samples were composited over 48 hours.

9001219

Table 1 (continued)

Outfall		Sludge Leachate			
Survey Period	From	8-16-76 - 1410		8-17-76 - 1415	
	To	8-17-76 - 1410		8-18-76 - 1415	
Computed flow rate (mgd) *		0.03 (1)		0.03 (1)	
pH (S.U.)		8.4		10.6	
		mg/l	lbs/day	mg/l	lbs/day
5-day BOD		11	2.8	9	2.3
20-day BOD		13	3.3	11	2.8
COD		32	8.0	29	7.3
Suspended solids		535	130	280	70
Dissolved solids		324	80	224	60
Settleable solids		491	120	--	--
Orthophosphate-P		0.02	0.01	< 0.01	--
Total phosphorus-P		0.21	0.05	0.05	0.01
Nitrite & nitrate nitrogen-N		0.04	0.01	0.06	0.02
Ammonia nitrogen-N		0.39	0.1	0.49	0.1
Organic nitrogen-N		0.35	0.09	0.41	0.1
Chlorides (Cl)		24	6	26	7
Sulfates (SO_4)		96	20	72	20
Phenols		0.15	0.04	0.08	0.02
Color (Pt. Co.)		--	--	7	--
Turbidity (F.T.U.)		--	--	92	--
		ug/l			
1242 PCB **		0.40			
1254 PCB **		< 0.1			
1260 PCB **		< 0.1			

* Flow rates used in the computation of lbs/day.
** PCB samples were composited over 48 hours.
(1) - Flow was constant over survey period.

Table 2 Quantitative analyses of grab samples collected from Allied Paper, Inc., Monarch Mill discharges, 390006 and leachate, to Portage Creek to determine concentrations of select physical, chemical and bacteriological constituents present in the wastewater.

Date	Time	Flow[1] MGD	Temp.[2] °C	pH[2] S.U.	Oil & Grease mg/l	BOD5 mg/l	Susp. solids mg/l	Settle. solids mg/l	Ortho-phosphate mg/l	Total phos-phorus mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Organic nitrogen mg/l
390006 (002)													
8-16-76	2115	3.72	25	6.9	1	16	21	13	< 0.01	0.03	0.53	0.06	0.26
8-17-76	0820	3.6	24.5	7.0	< 1	--	4	--	< 0.01	0.01	0.42	0.02	0.21
8-17-76	2130	4.6	27	7.3	2	--	6	--	< 0.01	0.01	0.69	0.04	0.67
8-18-76	1335	4.0	26	6.9	2	24	12	--	< 0.01	0.02	0.78	0.04	0.62
Sludge Leachate													
8-16-76	2055	0.03	15	7.4	--	16	--	--	0.21	0.29	0.01	0.07	0.63
8-17-76	0800	0.03	12.5	7.3	--	--	--	--	0.20	0.28	0.01	0.14	0.56
8-17-76	2115	0.03	15	11.8	--	--	--	--	< 0.01	0.04	0.07	0.50	0.32
8-18-76	1400	0.03	14.5	10	--	9	--	--	0.01	0.07	0.02	0.50	0.37

	Fecal Coliform cts/100 ml	Fecal Strep. cts/100 ml	Temperature °C
390006 (002)			
8-16-76 1300	30	< 10	21.5
8-16-76 2115	160	< 10	25
8-17-76 0820	50	< 10	24.5
8-17-76 2130	< 10	--	27
8-18-76 0840	60	--	--
8-18-76 1335	70	--	26
Geometric Mean	50		
Sludge Leachate			
8-16-76 1410	430	800	12.5
8-16-76 2055	210	790	15
8-17-76 0600	230	570	12.5
8-17-76 2115	< 10	--	15
8-18-76 0855	< 10	--	--
8-18-76 1400	10	--	14.5
Geometric Mean	50	700	

1 - Flow at time of grab sampling.
2 - Values determined in the field at time of sampling.

9001220

Table 3 Comparison of results obtained during the survey at Allied Paper, Inc., Monarch Mill with the facility's NPDES Permit, No. MI0000779, and monthly operating report for August, 1976.

Parameter (Unit)	NPDES Permit Initial Limitations		Monthly Operating Report					Survey Results		
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	8-16-76	8-17-76	8-18-76	1st 24	2nd 24	Or High
390006 (002)										
Flow (MGD)	--	--	3.91	5.0	3.09	3.93	3.65	3.64	4.28	4.6
BOD_5 (lbs/day)	1205	2210	320	653	154	265	269	430	600	—
Susp. solids (lbs/day)	825	2300	196	964	258	197	304	200	70	—
Sett. solids (mg/l)	—	—	0.06	0.15	0.10	0.05	0.05	--	—	13
Oil & Grease (mg/l)	—	10	0.7	1.0	—	1.0	--	--	--	2
pH (S.U.)	not <6.5 nor >9.5		—	max 7.6 min 6.5	7.2	7.1	6.9	7.3	6.9	7.3

Table 4 Comparison of the laboratory analytical results obtained by Allied Paper, Inc., Monarch Mill and the Environmental Protection Bureau from the split composite samples.

Outfall	390006 (002)				Sludge Leachate			
	1st 24-hour		2nd 24-hour		1st 24-hour		2nd 24-hour	
	E.P.B.	Allied	E.P.B.	Allied	E.P.B.	Allied	E.P.B.	Allied
pH (S.U.)	7.3	6.9	6.9	6.7	8.4	9.2	10.6	10.4
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
5-day BOD	14	10.6	17	13.6	11	15	9	19.5
Suspended solids	6	2.8	2	1.0	535	513	280	2.8
Settleable solids	--	trace	—	trace	491	2.0	--	1.5

Table 5 Comparison of the analytical results obtained on the previous survey of Allied Paper, Inc., Monarch Mill in May 1975 with the results obtained in this current survey.

Outfall	390006 (002)					
Survey Date From To	5/5/75-1655 5/6/75-1555	5/6/75-1600 5/7/75-1550	8/16/76-1300 8/17/76-1330	8/17/76-1335 8/18/76-1335		
Flow Rate (MGD)	2.78	3.35	3.64	4.28		
pH (S.U.)	6.4	6.9	7.3	6.9		
	mg/l	mg/l	mg/l	mg/l		
5-day BOD	23	35	14	17		
COD	57	86	20	30		
TOC	22	41	8.7	9.7		
Total solids	484	424	468	454		
Suspended solids	24	8	6	2		
Settleable solids	2	<0	--	--		
Sulfates (SO4)	--	156	140	130		
Color (S.U.)	4	8	3	2		
Turbidity (F.T.U.)	69	54	16	8.0		

Table 6 Sample Preservation

Parameter	Preservative
BOD	Cooled to 4°C.
COD	5 drops H_2SO_4/125 ml (to pH <2). Cooled to 4°C.
D.O.	Fixed on site.
General Chemistry	Cooled to 4°C.
Microbiology	2 drops 10% sodium thiosulfate/125 ml to dechlorinate sample. Cooled to 4°C.
Nutrients	Cooled to 4°C.
Oil & Grease	1 ml 1:1 H_2SO_4/250 ml (to pH <4). Cooled to 4°C.
Phthalate, PCB	Collected in glass bottle.

9001221

Survey by: Dennis Bittner, Sanitary Engineer
William Long, Water Quality Investigator
Richard Irvin, General Foreman

Contact with Management: U. G. Stoeffler

Hydrocarbon Analyses by: Tom Wilcox, Chemist

Physical & Chemical Analyses by: Ray Wimmer, Chemist

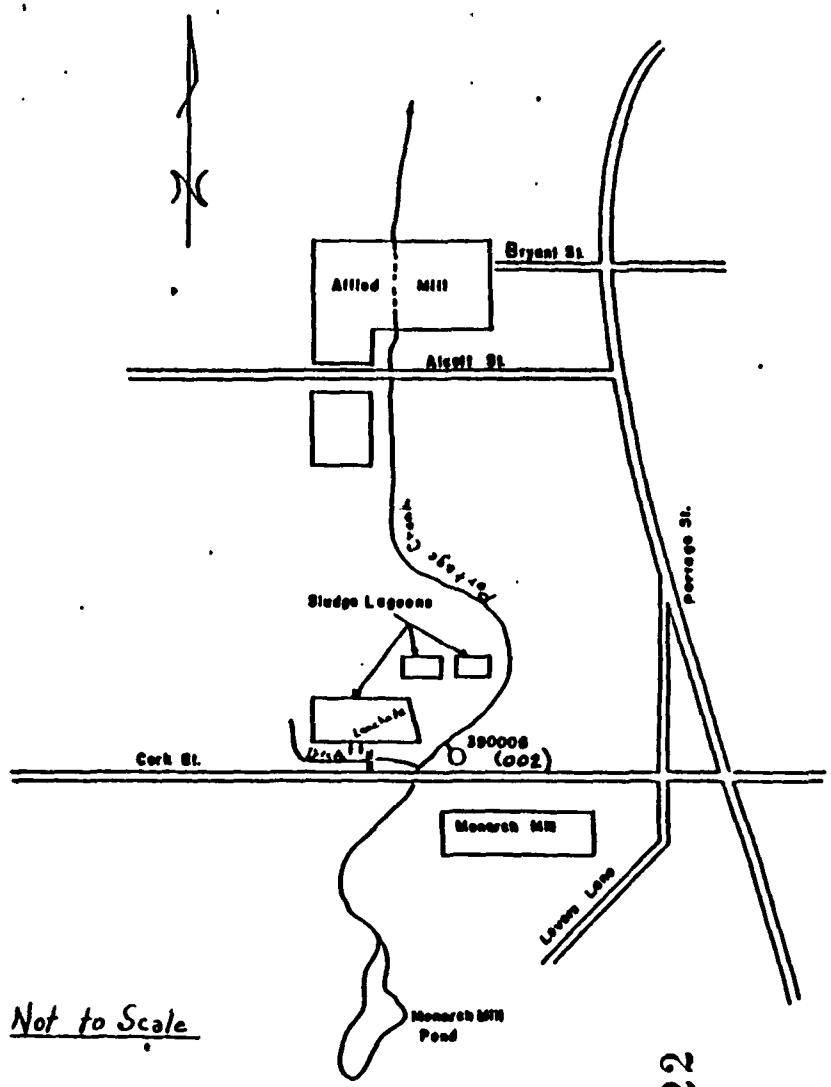
Bacteriological Analyses by: Michigan Department of Public Health
Bureau of Laboratories

Report by: Dennis Bittner
William Long
Point Source Studies Section
Environmental Services Division
Environmental Protection Bureau
Michigan Department of Natural Resources

Distribution "A"
MM

FIGURE. 1

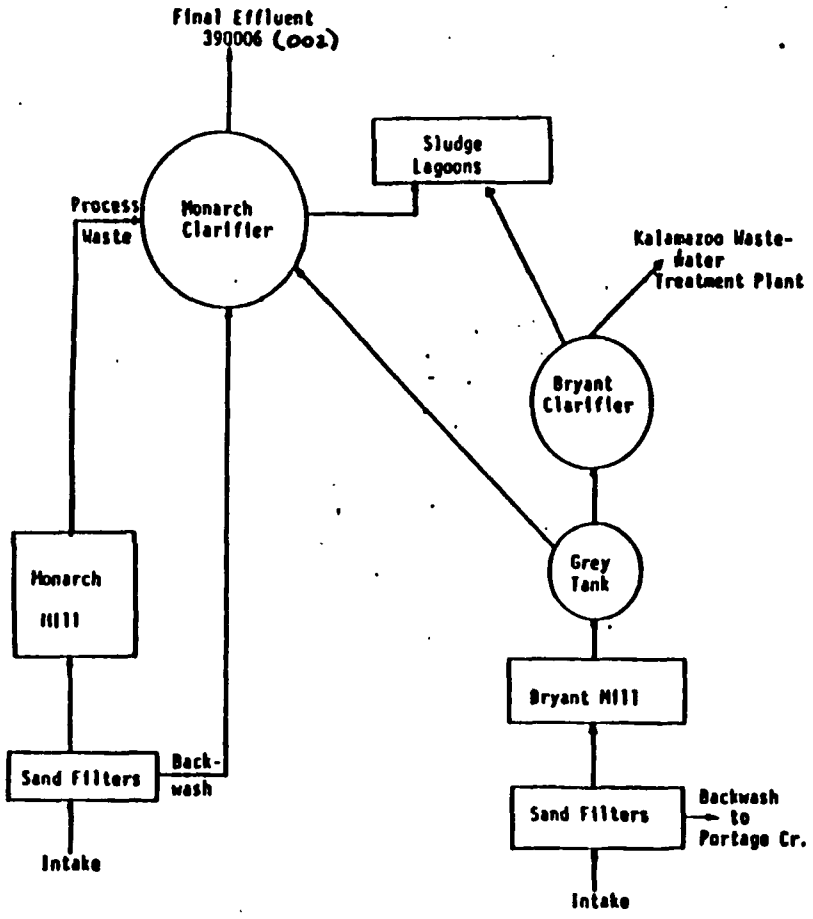
ALLIED PAPER MILLS
KALAMAZOO



Not to Scale

9001222

Figure 2 Allied Paper Incorporated, Kalamazoo Mills



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POINT SOURCE STUDIES
INSPECTION SHEET

Survey Date August 16-18, 1976
Survey By Biltner, Long, Irvin

Guenther
EXHIBIT NO. 16-b
1-2793
C. LYSTER

Plant Name Allied Paper Incorporated

Location 2030 Portage St. Kalamazoo

Personnel Contacted (U.G. Les Stoeffler)

Items to consider for enforcement action:

1. Permit revision to cover filter backwash from Bryant Mi
2. Further investigation of lagoon leachate and possible inclusion of some in permit
3. Review of company's sampling & preservation techniq as indicated below in comments.

Comments from survey

1. BOD samples are held from Mon-Thursday and set for incubation on Friday.
2. DO meter is not frequently calibrated
3. Composite samples are not refrigerated during collection
4. Composite sample is collected in 25-30 gallon drum from which small portion is drawn off after stirring of large sample. Could result in some loss of
5. Oil & Grease is still being analyzed with hexane (1977 limits no longer require numerical determinat
6. pH still being run on composite sampl
7. Leachate from sludge disposal site appears to be contaminating drainage ditch and Portage Creek. Addition of lime to the ditch by company results in composite pH of about 10.5 [illegible]

KA04800823

9001230

Outfall No. 002 (Monarch Clarifier) — Yes / No

Flow Measurement Equipment and Technique Adequate — [✓] Yes [ ] No

Plant's Method Leopold - Stevens Robert Shaw Capacitance meter

Sample Collection Equipment and Technique Adequate — [ ] Yes [✓] No

Plant's Method Composite Sample

Remarks Not refrigerated (See comments)

Oil Film or Sheen noticed at outfall during Survey — [ ] Yes [✓] No

Outfall No. 003 (Bryant Filter Backwash) Not Permitted

Flow Measurement Equipment and Technique Adequate — [ ] Yes [✓] No

Plant's Method None

Sample Collection Equipment and Technique Adequate — [ ] Yes [✓] No

Plant's Method None

Remarks

Oil Film or Sheen noticed at outfall during Survey — [ ] Yes [✓] No

Outfall No. 004 (Lagoon Leachate) Not Permitted

Flow Measurement Equipment and Technique Adequate — [ ] Yes [✓] No

Plant's Method None

Sample Collection Equipment and Technique Adequate — [ ] Yes [✓] No

Plant's Method None

Remarks

Oil Film or Sheen noticed at outfall during Survey — [✓] Yes [ ] No

Outfall No. _____

Flow Measurement Equipment and Technique Adequate — [ ] Yes [ ] No

Plant's Method

Sample Collection Equipment and Technique Adequate — [ ] Yes [ ] No

Plant's Method

Remarks

Oil Film or Sheen noticed at outfall during Survey — [ ] Yes [ ] No

KA04800824

9001231

	Yes	No
Laboratory Analysis accordance with permit proce[illegible]	[]	[✓]
Remarks O & G by Hexane		
Are Laboratory Analysis being done at the Plant	[✓] some []	[]
If not, what Laboratory is being used		
If using outside Laboratory, are the samples being preserved correctly	[]	[]
Remarks N A		
Pollution Incident Prevention Plan Submitted/Approved	[] ?	[]
Certified Operator at Plant During Visit	[✓]	[]
Certified Operators U.G. Stoeffler, R.J. Willie		
Accidental Loss Prevention Appears Adequate	[✓]	[]
Remarks		
Personnel Contacted Knowledgeable about		
a) Persons to Call in Case of Spill	[✓]	[✓]
b) Pollution Emergency Alerting System (PEAS) 517-373-7660 - 24 hours a day	[✓]	[✓]
Remarks		
Personnel Contacted Knowledgeable about NPDES Permit	[✓]	[]
Remarks		
Looked at and Inspected Latest MOR at Plant	[✓]	[]
Was Latest MOR Correctly Prepared	[✓]	[]
If incorrectly prepared nature of major errors		
Was General Maintenance of Treatment Facility Adequate	[✓]	[]
Remarks		
Solid and Liquid Wastes Hauled from Plant	[]	[]
What None		
By Whom		
9001232 Frequency/Amount		KA04800825
Where		
Are Adequate Records of Waste Haulage Being Kept	[]	[].

Completed by D R R[illegible] Date [illegible]

NATURAL RESOURCES COMMISSION
CARL T. JOHNSON
E. M. LAITALA
DEAN BRIDGEON
HILARY F. SNELL
HARRY N. WHITELEY
JEAN L. MOLPE
CHARLES B. YOUNGLOVE

M S Jr

WILLIAM G. MILLIKEN, Governor
DEPARTMENT OF NATURAL RESOURCES
HOWARD A. TANNER, Director

WATER QUALITY DIVISION
4056 Plainfield Avenue, N. E.
Grand Rapids, Michigan 49505

RECEIVED
DEC - 1 1976
U. G. STOEFFLER

November 29, 1976

Mr. U. G. Stoeffler, Manager
Process Development
Allied Paper Incorporated
Kalamazoo, Michigan 49003

Dear Mr. Stoeffler:

Enclosed are two copies of the "Report of An Industrial Wastewater Survey" conducted at Allied Paper's Monarch Mill on August 16-18, 1976. The report includes the volume of wastewater discharged and results of the chemical analyses performed on the composite of the collected effluent. In addition, grab samples were obtained for certain determinations.

The results of the survey indicate that Allied Paper's discharge to Portage Creek from the Monarch clarifier met the initial limitations contained in N.P.D.E.S. Permit No. MI 0000779 at the time of the survey. However, there are some items identified in the survey report which I would like to call to your attention.

A phenol concentration of 0.68 mg/l and 0.45 mg/l was detected in the Monarch clarifier discharge to Portage Creek (Table 1). This is in excess of the recommended discharge level of 0.03 mg/l for this parameter. What is the source of this material and what is the method for controlling the discharge of this material?

The survey also identified a discharge of leachate from the sludge disposal area which enters a ditch and flows into Portage Creek. Has Allied eliminated this leachate discharge? If not, the existing permit may be revised to include this discharge.

The sand filter backwash from the Bryant Mill's water system is not covered under the existing N.P.D.E.S. Permit. Your letter of August 6, 1976 indicated that this backwash water discharge is under study with the recommendation of introducing this backwash water into the Bryant clarifier. When is this scheduled to be completed?

You should also note the BOD versus TOC results in Table 1. Plans submitted by Allied Paper to meet the July 1, 1977 effluent BOD loadings

more

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MICHIGAN The Great Lake State

were predicated on the use of a TOC analyzer on the effluent discharge as a method for adjusting the BOD discharge to Portage Creek. This was based on a BOD/TOC factor of 1.02. You will note in the survey that the BOD/TOC factor is approximately 1.7. Therefore, we must stress the fact that the relationship between these two parameters must be evaluated and documented at frequent intervals and the proper adjustments made in calibration and discharge.

Lastly, Allied Paper should review their sampling and preservation techniques. This is in reference to the BOD samples being held from Monday to Thursday and set for incubation on Friday, infrequent calibration of the DO meter, composite sample not refrigerated, composite sample collected in a 30-gallon drum, and pH being run on the composite sample rather than a grab sample.

We would appreciate receiving your comments and/or course of action taken on the items cited by December 30, 1976.

Very truly yours,

WATER QUALITY DIVISION

Chester Harvey,
District Engineer

RP/mc
cc: Karl Zollner

9-7-77

7/19/77

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER, INC.
All Outfalls No. 390222
Kalamazoo County
Kalamazoo, Michigan
July 18-19, 1977

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Monday, July 18, 1977.

The results of this survey did not meet the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000779. The BOD_5 loading from outfall 390006 (002) was from 11 percent to 23 percent over limitations specified in the permit (Table 3).

Comparison of the results from the composite sample split between the company and the Environmental Protection Bureau (EPB) Laboratory show EPB concentrations higher for all parameters measured, except for settleable solids on outfall 002 (Table 4).

Comparison of the results of this survey with the survey performed on August 16-18, 1976 show that flow has decreased and TOC has increased slightly. (Table 5)

Underdrainage of the sludge disposal area, which is not covered in the permit, continues to discharge into Portage Creek (Table 1).

Survey Comments

Samples were collected from the Bryant clarifier discharge to the City of Kalamazoo sanitary sewer system (Table 1).

Purpose of Survey

The purpose of the survey was to determine the quality and quantity of wastewater being discharged by Allied Paper, Inc., to Portage Creek and to check for compliance with the NPDES Permit No. MI0000779.

Plant Processes

Allied Paper, Inc. operates two mills in Kalamazoo. The Monarch Mill utilizes two Fourdrinier paper machines to produce bible paper and carbon tissue for "one time" carbon paper. The Bryant Mill also produces bible paper and other specialty papers using five Fourdrinier paper machines. All the machines were in operation during the survey (Figure 1).

Under normal production 275 tons of paper products can be produced a day. Pulp utilized at both mills has previously been treated in the Kraft process at other locations.

Both mills together employ approximately 475 people. The mills operate on a 5 or 6 day a week schedule depending on demand. The week previous to the survey the mills operated for 6 days. Production when the mills are operating is 24 hours a day.

Water, Wastewater & Treatment

Process water used at both the Monarch and Bryant Mills is obtained from Portage Creek. Water for the Monarch Mill is obtained upstream from the Monarch Dam and water for the Bryant Mill is obtained across from Cork Street. Water for both mills is passed through sand filters prior to its use.

Wastewater generated at both mills is treated as depicted in Figure 2. Wastewater received at the 110-foot circular Bryant clarifier originates from the excess white water and from the zeolite and lime soda ash softening process used for boiler feed water. Treatment provided at the Bryant clarifier consists of settling with the effluent going to either the City of Kalamazoo treatment system or the Monarch clarifier. The split of the flow depends on how much additional loading can be placed on the Monarch clarifier without exceeding its discharge limitations into Portage Creek.

Wastewater loadings on the 90-foot circular Monarch clarifier, in addition to the flows from the Bryant clarifier, are excess white water and zeolite waste from the boiler feed water system. Alum and a coagulation agent are added in the Monarch clarifier to increase settling characteristics. The effluent from the clarifier discharges to Portage Creek through outfall 390006 (002).

Sludge from both clarifiers is disposed of on plant property across Portage Creek from the Monarch clarifier. The sand filter backwash from the Bryant Mill is discharged directly to Portage Creek. This discharge is not covered in the NPDES Permit.

Potable water for both mills is obtained from the City of Kalamazoo. Domestic wastewater is discharged into the city's treatment system.

Underdrainage from the sludge disposal area was observed being discharged into Portage Creek upstream from the Bryant Mill intake. Flow during the survey was monitored and results of samples collected are included in Table 1.

Survey Procedures

The flows and composite samples were obtained as follows:

Outfall	Flow Measurement	Sampling
390006 (002)	49" full channel weir - company installed. Stevens flow recorder.	Automatic air activated.
Sludge Leachate	60° v-notch weir - staff installed. Stevens flow recorder.	Automatic scoop type.
Bryant Mill discharge to City	46-3/4" rectangular weir w/end contractions - company installed. Stevens Flow Recorder.	Automatic air activated.

The water level recorders at 002, sludge leachate and at the Bryant Mill discharge to the city sewer provided a continuous account of the liquid level or head above the crest of each weir on a head versus time graph for the duration of the survey period. The total volume of wastewater over each weir during the survey period was computed from the graph.

The samplers at the sludge leachate obtained samples proportional to the instantaneous flow over the weir at a timed interval.

Individual grab samples were collected from each of the three outfalls for selected physical and chemical analyses.

The following formula was used to compute the kilograms per day of various wastewater constituents discharged: kg/day = flow (M^3/d) x conc. (mg/l) x 0.001.

The composite and grab samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

All samples were preserved according to Table 6. The results of the physical and chemical analyses are presented in Tables 1 & 2.

Allied Paper, Inc.

Table 1 Analyses of composite samples.

Outfalls	390006 (002)		Sludge Leachate		Bryant Mill Clarifier to City Sewer	
Survey Period From	7-18-77 - 1150		7-18-77 - 1225		7-18-77 - 1240	
To	7-19-77 - 1150		7-19-77 - 1225		7-19-77 - 1240	
Computed flow rate* (M^3/day)	11,500		74		8,800	
Highest flow rate (M^3/day)	20,700 @ 2315		130 @ 2330		16,400 @ 2258	
Lowest flow rate (M^3/day)	7,300 @ 0608		44 @ 1612		450 @ 0344	
	mg/l	kg/day	mg/l	kg/day	mg/l	kg/day
5-day BOD	19	220	< 5	--	100	880
COD	22	250	13	0.96	52	460
T.O.C.	12	140	--	--	--	--
Color (C.U.)	7	--	11	--	21	--
Turbidity (F.T.U.)	17	--	17	--	290	--
Suspended solids	7	80	32	2.4	69	610
Dissolved solids	470	5,400	420	31	580	5,100
Settleable solids	--	--	29	2.1	26	230
Phenols	< 0.00001	--	0.00003	0.000002	0.00004	0.0004
	ug/l		ug/l		ug/l	
PCB 1242	< 0.1	--	< 0.1	--	< 0.1	--
PCB 1254	< 0.1	--	< 0.1	--	< 0.1	--
PCB 1260	< 0.1	--	< 0.1	--	< 0.1	--

* Flow rates used in the computation of kg/day.
To obtain MGD multiply M^3/day by 0.000264
To obtain lbs/day multiply kg/day by 2.2046

SA 033502

Allied Paper, Inc.

Table 2 Analyses of grab samples.

Date	Time	Temp.[1] °C	pH[1] S.U.	Oil & Grease mg/l	BOD mg/l	Suspended solids mg/l	Settleable solids mg/l	D.O. mg/l
390006								
7-18-77	2145	32	6.6	3	13	15	--	5.4
7-19-77	0710	31	6.9	2.5	15	4	--	5.6
Sludge Leachate								
7-18-77	2200	17	7.3	--	< 5	12	--	--
7-19-77	0750	16	7.4	--	< 5	7	--	--
Bryant Discharge to City								
7-18-77	2230	33	6.7	--	120	78	25	--
7-19-77	0800	35.5	6.8	--	140	74	5	--

1 - Values determined in the field at time of sampling.

Table 3 Comparison of survey results with the facility's NPDES Permit and monthly operating report.

Parameter (Unit)	NPDES Permit Final Limitations		July Monthly Operating Report				Survey Results[1]
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	7-18-77	7-19-77	min. max.
390006 (002)							
Flow (M^3/day)	--	--	9,710	17,195	10,708	8,941	11,500* (10,400, 12,30
BOD_5 (kg/day)	--	177	138	334	64	79	220 (200, 230)
(mg/l)	--	--	--	--	--	--	19 (13, 15)
Total susp. sol. (kg/day)	--	230	127	380	21	170	80
(mg/l)	--	--	--	--	--	--	7 (15, 4)
Settleable solids (kg/day)	--	--	--	--	--	--	--
(mg/l)	--	--	0.04	0.05	0.05	0.05	--
Oil & Grease (mg/l)	--	--	--	--	--	--	(3, 2.5)
pH (S.U.)	not <6.5 nor >9.5		--	7.4 min. 6.5	6.9	6.8	(6.6, 6.9)

* Company reports flows for the same time span as 10,400 M^3/day.

1 - Survey results are for the composite sample. Grab sample ranges are shown in parantheses ( ).
To obtain MGD multiply M^3/day by 0.000264 To obtain lbs/day multiply kg/day by 2.2046

SA 033503

Allied Paper, Inc.

Table 2 Analyses of grab samples.

Date	Time	Temp.[1] °C	pH[1] S.U.	Oil & Grease mg/l	BOD mg/l	Suspended solids mg/l	Settleable solids mg/l	D.O. mg/l
390006								
7-18-77	2145	32	6.6	3	13	15	--	5.4
7-19-77	0710	31	6.9	2.5	15	4	--	5.6
Sludge Leachate								
7-18-77	2200	17	7.3	--	< 5	12	--	--
7-19-77	0750	16	7.4	--	< 5	7	--	--
Bryant Discharge to City								
7-18-77	2230	33	6.7	--	120	78	25	--
7-19-77	0800	35.5	6.8	--	140	74	5	--

1 - Values determined in the field at time of sampling.

Table 3 Comparison of survey results with the facility's NPDES Permit and monthly operating report.

Parameter (Unit)	NPDES Permit Final Limitations		July Monthly Operating Report				Survey Results[1]
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	7-18-77	7-19-77	min. max.
390006 (002)							
Flow (M^3/day)	--	--	9,710	17,195	10,708	8,941	11,500* (10,400, 12,30
BOD_5 (kg/day)	--	177	138	334	64	79	220 (200, 230)
(mg/l)	--	--	--	--	--	--	19 (13, 15)
Total susp. sol. (kg/day)	--	230	127	380	21	170	80
(mg/l)	--	--	--	--	--	--	7 (15, 4)
Settleable solids (kg/day)	--	--	--	--	--	--	--
(mg/l)	--	--	0.04	0.05	0.05	0.05	--
Oil & Grease (mg/l)	--	--	--	--	--	--	(3, 2.5)
pH (S.U.)	not <6.5 nor >9.5		--	7.4	6.9	6.8	(6.6, 6.9)
				min. 6.5			

* Company reports flows for the same time span as 10,400 M^3/day.

1 - Survey results are for the composite sample. Grab sample ranges are shown in parantheses ( ).
To obtain MGD multiply M^3/day by 0.000264 To obtain lbs/day multiply kg/day by 2.2046

SA 033503

Table 4 Comparison of the laboratory analytical results obtained by the Allied Paper, Inc. and the Environmental Protection Bureau from the split composite samples.

Outfall	390006 (002)		Sludge		Bryant Mill Discharge to City	
	E.P.B. mg/l	Allied Paper mg/l	E.P.B. mg/l	Allied Paper mg/l	E.P.B. mg/l	Allied Paper mg/l
5-day BOD	19	7.6	< 5	--	100	62
Suspended solids	7	2.0	32	18.0	69	42
Settleable solids	--	0 *	29	0.05 *	26	0.05 *

* Values reported as ml/l.

Table 5 Comparison of the previous survey results with the results obtained in this survey at Allied Paper, Inc.

Outfall	390006		390006		390006	
Survey Date From	8-16-76 - 1300		8-17-76 - 1335		7-18-77 - 1150	
To	8-17-76 - 1330		8-18-76 - 1335		7-19-77 - 1150	
Flow Rate (M^3/day)	13,800		16,200		11,500	
	mg/l	kg/day	mg/l	kg/day	mg/l	kg/day
5-day BOD	14	200	17	270	19	220
COD	20	270	21	340	22	250
T.O.C.	8.7	120	9.7	160	12	140
Suspended solids	6	90	2	32	7	80
Dissolved solids	468	6,450	448	7,260	470	5,400
Phenols	0.68	8.2	0.45	7.3	< 0.00001	--

SH 035504

Table 6 Sample Preservation

Parameter	Preservative
COD & TOC	10 drops H_2SO_4/250 ml (to pH <2).
D.O.	Fixed on site.
Oil & Grease	1 ml 1:1 H_2SO_4/250 ml (to pH <4).
Phenolics	2 ml 10% $CuSO_4$ + H_3PO_4 (to pH 4)/250 ml.

All samples cooled to 4°C upon collection.

Survey by: Gary Boersen, Sanitary Engineer
Larry Elmleaf, Water Quality Investigator
Richard Irvin, General Foreman

Contact with Management: U.G. Stoeffler

Hydrocarbon Analyses by: Tom Wilcox, Chemist

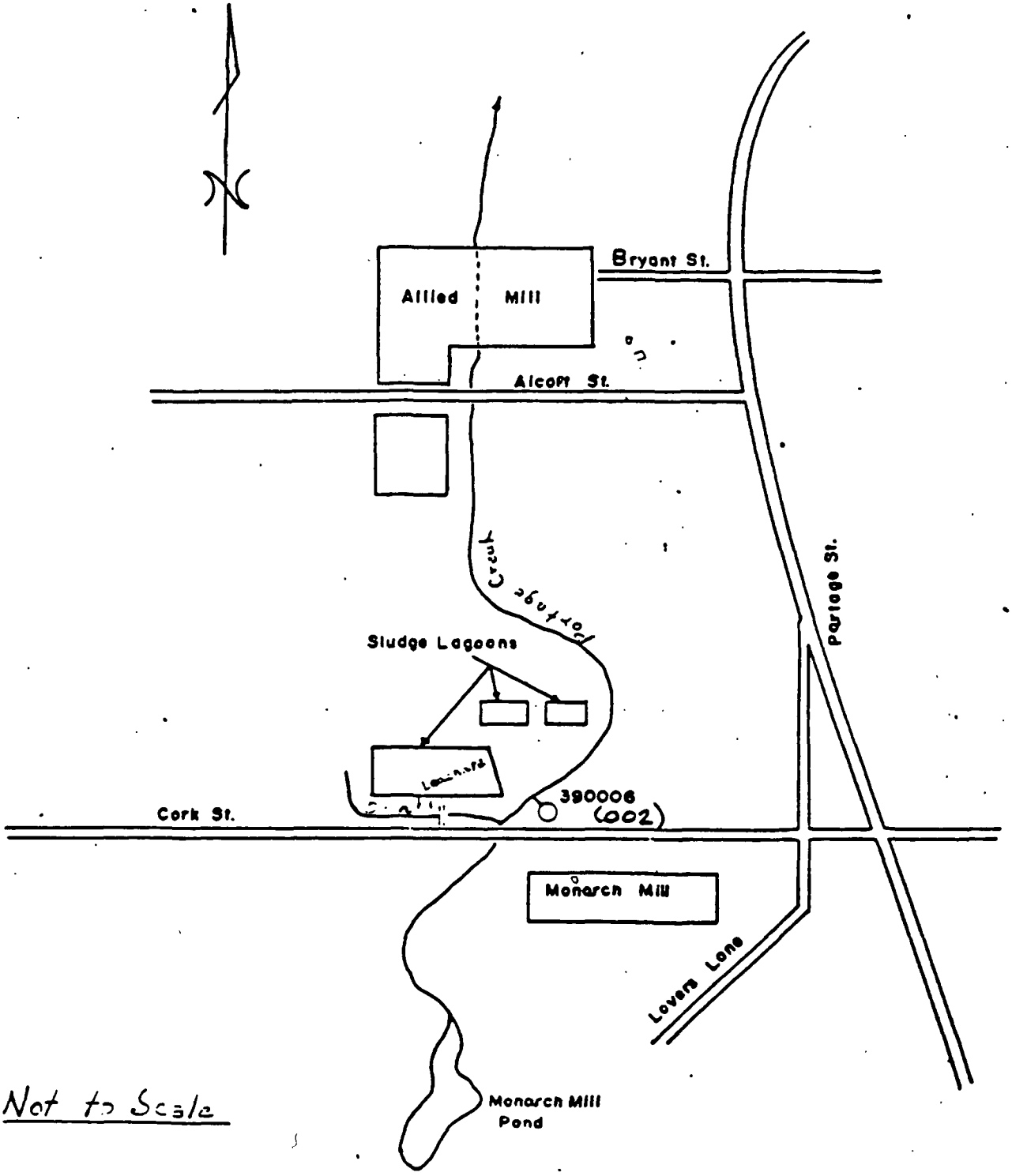
Physical & Chemical Analyses by: Ray Wimmer, Chemist

Report by: Gary Boersen
Larry Elmleaf
Point Source Studies Section
Environmental Services Division
Environmental Protection Bureau
Michigan Department of Natural Resources

Distribution "A"
MM

FIGURE. 1

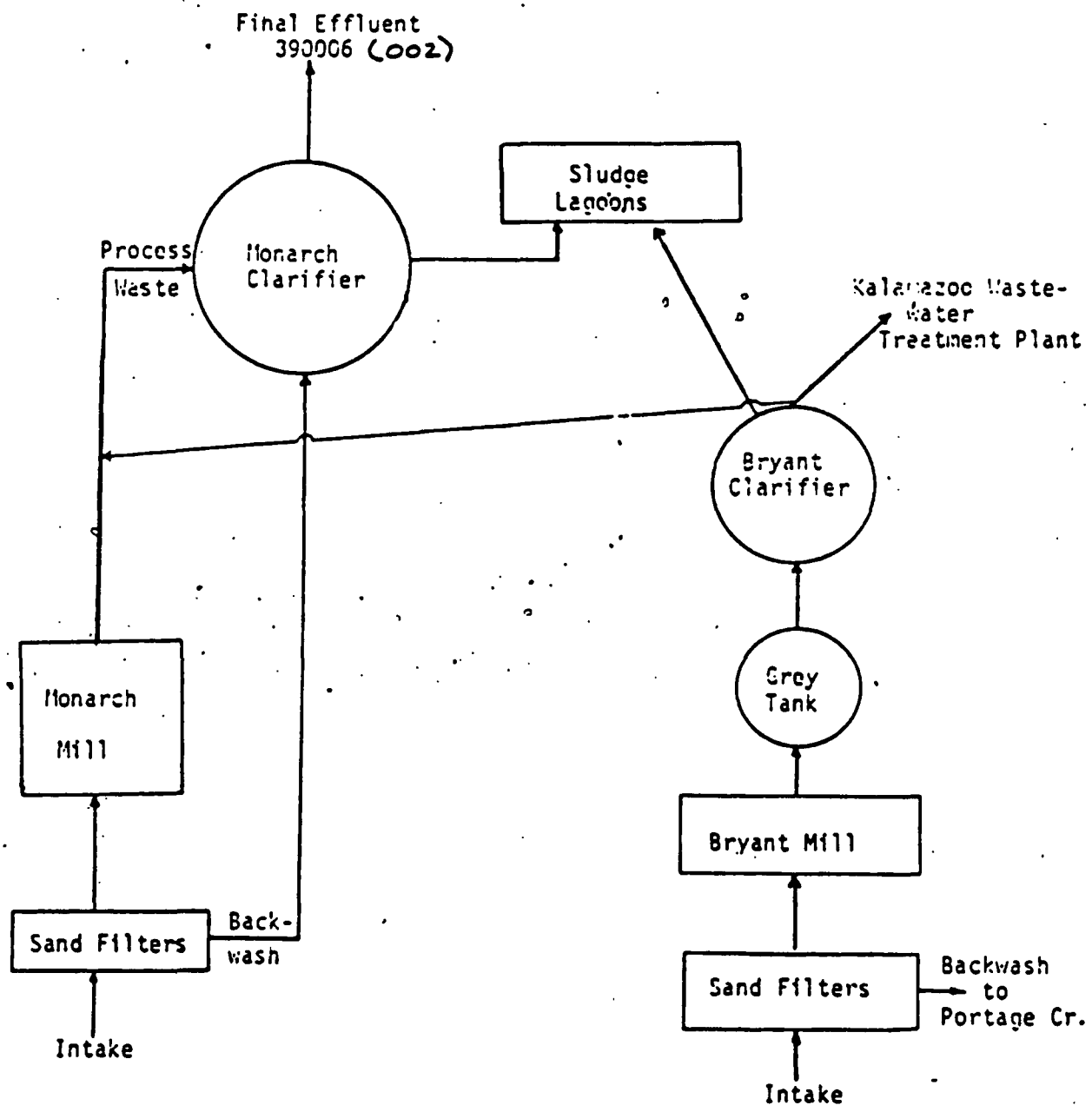
ALLIED PAPER MILLS
KALAMAZOO



Not to Scale

TEX 9-16-76

Figure 2 Allied Paper Incorporated, Kalamazoo Mills



Da Distributed 8-1-7

POINT SOURCE STUDIES
INSPECTION SHEET

Guenther
EXHIBIT NO. D-b
1-27-93
C. LYSTER

Survey Date July 18, 1977
Survey By Andersen, Elmlaff & Irwin

Plant Name Allied Paper Inc
Location 2030 Portage St., Kalamazoo
Personnel Contacted U.G. (Les) Stoeffler

Items to consider for enforcement action:

1. Revision to the permit to include Bryant Filter backwash.

Comments from survey

1. Composite samples are not refrigerated during collec and are collected in a large drum which is stirred before collection is made. This could result in a loss of solids.
2. Under drainage from the sludge disposal site continues to be discharged into Portage Creek. Plant personnel claim this is only water from springs in the area. The PCB sample from the last survey contained 0.40 µg/l of 1242 PCB.
3. Filter backwash from the Bryant Mill Sand Filt continues to be discharged to Portage Creek.

9001307

KA04800831

Outfall No. 002 (Monarch Clarifier)

	Yes	No
Flow Measurement Equipment and Technique Adequate	[✓]	[]
Plant's Method Leopold-Stevens Robert-Shaw Capacitance Meter		
Sample Collection Equipment and Technique Adequate	[]	[✓]
Plant's Method BOD samples collected on Tuesday & Thursday are set till the next day		
Remarks composite sampler (See comments)		
Oil Film or Sheen noticed at outfall during Survey	[]	[✓]

Outfall No. 003 (Bryant Filter Backwash) not permitted

Flow Measurement Equipment and Technique Adequate	[]	[✓]
Plant's Method None		
Sample Collection Equipment and Technique Adequate	[]	[✓]
Plant's Method None		
Remarks		
Oil Film or Sheen noticed at outfall during Survey	[]	[✓]

Outfall No. 004 (sludge leachate) not permitted

Flow Measurement Equipment and Technique Adequate	[]	[✓]
Plant's Method None		
Sample Collection Equipment and Technique Adequate	[]	[✓]
Plant's Method None		
Remarks		
Oil Film or Sheen noticed at outfall during Survey	[]	[✓]

Outfall No. Bryant Mill Clarifier to City

Flow Measurement Equipment and Technique Adequate	[✓]	[]
Plant's Method Full channel weir-B/F		
Sample Collection Equipment and Technique Adequate	[]	[✓]
Plant's Method composite		
Remarks		
Oil Film or Sheen noticed at outfall during Survey	[]	[✓]

KA0480832

9001308

Laboratory Analys. 'n accordance with permit proc. -e [✓] []

Remarks _____

_____

Are Laboratory Analysis being done at the Plant [✓] some [] []

If not, what Laboratory is being used

_____

If using outside Laboratory, are the samples being preserved correctly [] N.A. []

Remarks _____

Pollution Incident Prevention Plan Submitted/Approved [] ? []

Certified Operator at Plant During Visit [✓] []

Certified Operators U. G. Stoeffler, Martin Smith, Ber Hagard

Accidental Loss Prevention Appears Adequate [✓] []

Remarks _____

Personnel Contacted Knowledgeable about

a) Persons to Call in Case of Spill [✓] []

b) Pollution Emergency Alerting System (PEAS) 517-373-7660 - 24 hours a day [✓] []

Remarks _____

Personnel Contacted Knowledgeable about NPDES Permit [✓] []

Remarks _____

Looked at and Inspected Latest MOR at Plant [✓] []

Was Latest MOR Correctly Prepared [✓] []

If incorrectly prepared nature of major errors _____

_____

Was General Maintenance of Treatment Facility Adequate [✓] []

Remarks _____

Solid and Liquid Wastes Hauled from Plant [] [✓]

What NONE

By Whom _____

9001309 Frequency/Amount _____ KA04800833

Where _____

Are Adequate Records of Waste Haulage Being Kept [] N.A. []

Completed by Gary Boersen Date Feb 18 1977

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER, INC.
All Outfalls No. 390222
Kalamazoo County
Kalamazoo, Michigan
February 27-28, 1978

RECEIVED
APR 3 1978
DISTRICT 3
WATER QUALITY DIV.

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Monday, February 27, 1978.

The results of this survey were compared to the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000779. Based on that comparison, outfall 390006 (002) did not meet permit limitations for BOD loading (see Table 3).

The results of this survey were also compared to the company's Monthly Operating Report (MOR) results for February 1978. The survey results were not similar to the MOR values for the survey period for BOD or suspended solids loadings (see Table 3).

A portion of the composite sample was split with the company for analysis in their laboratory. The company results for BOD did not agree favorably with Environmental Protection Bureau results (see Table 4).

A survey was previously conducted at this company in July 1977. Since that survey, the flow rate and the concentrations of BOD, COD, and TOC have increased (see Table 5).

Purpose of Survey

The purpose of the survey was to determine the quality and quantity of wastewater being discharged by Allied Paper, Inc., to Portage Creek and to check for compliance with NPDES Permit No. MI0000779.

Plant Processes

Allied Paper, Inc. operates two mills in Kalamazoo. The Monarch Mill utilizes two Fourdrinier machines to produce bible paper and carbon tissue for "one time" carbon paper. The Bryant Mill produces bible paper and other specialty papers on five Fourdrinier machines. The fourdrinier machines were all operating during the survey.

Under normal production, the mills produce 275 tons of product per day. Pulp utilized at the mills has previously been treated by the Kraft process at other locations.

The mills employ a total of approximately 475 people. Operation is on a 24-hour per day, 5 or 6 day per week schedule depending on demand. Production during the survey was considered normal.

Water, Wastewater & Treatment

Portage Creek supplies the process water used at both mills. That water is passed through sand filters prior to its use. Potable water for the mills is obtained from the City of Kalamazoo. Domestic wastes are discharged to the city's sanitary sewer system.

A schematic of wastewater treatment is shown in Figure 1. Wastewater received at the 100-foot circular Bryant clarifier originates from excess white water and from the soda ash softening process used for boiler feed water. A coagulation agent is added to the Bryant clarifier to improve settling. The Bryant clarifier effluent is either discharged to the city sanitary sewer system or to the Monarch clarifier. The split of flow depends on how much additional loading can be placed on the Monarch clarifier without exceeding permit limitation for discharge to Portage Creek.

Wastewater entering the 90-foot circular Monarch clarifier, in addition to effluent from the Bryant clarifier, is excess white water and zeolite waste from the boiler feed water system at the Monarch Mill. Alum and a coagulation agent are added to the Monarch clarifier to improve settling. Monarch clarifier effluent discharges to Portage Creek via outfall 390006 (002).

Sludge from both clarifiers is disposed of on plant property. The sand filter backwash from the Bryant Mill is currently discharged directly to Portage Creek. Although the filter discharge is not covered in the NPDES permit, efforts are being made to connect it to the city sanitary sewer.

The outfall locations are shown in Figure 2.

Survey Procedure

The flow and composite sample were obtained as follows:

Outfall	Flow Measurement	Sampling
390006 (002)	48" company's full channel weir.	Automatic air activated sampler.

The water level recorder at 390006 (002) provided a continuous account of the liquid level or head above the crest of the weir on a head versus time graph

MDNR 003986
MDNR00003986

for the duration of the survey period. The total volume of wastewater over the weir during the survey period was computed from the graph.

The samplers at 390006 (002) obtained samples proportional to the instantaneous flow over the weir at a timed interval.

Individual grab samples were collected from 390006 (002) for selected physical and chemical analyses.

The following formula was used to compute the kilograms per day of various wastewater constituents discharged: kg/day = flow (M^3/d) x conc. (mg/l) x 0.001.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical and chemical analyses are presented in Tables 1 and 2.

Allied Paper, Inc. - Kalamazoo

Table 1 Analyses of composite samples.

Outfall		390006 (002)
Survey Period	From	2-27-78 - 1440
	To	2-28-78 - 1440
Computed flow rate* (M^3/day)		15,000 8.96
Highest flow rate (M^3/day)		20,000 - 2-28-78 @ 1329
Lowest flow rate (M^3/day)		8,000 - 2-28-78 @ 0846

	mg/l	kg/day
5-day BOD	42	630 1388
COD	54	810 1785
TOC	21	320 705
Suspended solids	7	100 220
Dissolved solids	490	7,400
Settleable solids	< 7	--
Phenols	< 0.01	--

* Flow rates used in the computation of kg/day.
To obtain MGD multiply M^3/day by 0.000264
To obtain lbs/day multiply kg/day by 2.2046

Allied Paper, Inc. - Kalamazoo

Table 2 Analyses of grab samples.

Date	Time	Flow[1] M^3/day	Temp.[2] °C	pH[2] S.U.	Oil & Grease mg/l	BOD_5 mg/l	COD mg/l	TOC mg/l	Susp. solids mg/l	Settle. solids mg/l	Diss. solids mg/l	Phenol mg/l
390006 (002)												
2-27-78	2115	15,600	17	7.8	< 1	43	63	26	29	15	480	0.01
2-28-78	0830	11,500	19	7.3	< 1	37	76	25	4	< 4	480	< 0.01
2-28-78	1430	--	18	7.3	< 1	30	53	23	11	< 11	470	< 0.01

1 - Flow at time of grab sampling.
2 - Values determined in the field at time of sampling.

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations Daily Average	NPDES Permit Final Limitations Daily Maximum	February Monthly Operating Report Monthly Average	February Monthly Operating Report Monthly Maximum	Survey Results[1] 2-27-78	Survey Results[1] 2-28-78
390006 (002)						
Flow (M^3/day)	--	--	12,500	16,700	13,500	12,800
Settleable solids[2] (mg/l)	--	--	0.07	0.10	0.1	0.1
Oil & Grease (visual) (mg/l)	--	--	--	1.0	0	0
BOD_5 (kg/day)	230	350	226	345	319	274
Total susp. sol. (kg/day)	230	350	60	237	203	165
pH (S.U.)	not <6.5 nor >9.5		--	8.2	7.6	7.0
				6.7 min.		

Survey Results[1]: 15,000; < 7 (<4, <11, 15); -- (<1, <1, <1); 630, 100; (7.3, 7.3, 7.8)

1 - Survey results are for the composite sample. Grab sample ranges are shown in parantheses ( ).
2 - Company reports their settleable solids results as ml/l, the EPB lab as mg/l.
To obtain MGD multiply M^3/day by 0.000264
To obtain lbs/day multiply kg/day by 2.2046

MDNR 003987
MDNR00003987

Table 4 Comparison of the laboratory analytical results obtained by Allied Paper, Inc. and the Environmental Protection Bureau from the split composite sample.

Outfall	390006 (002)	
	Allied Paper	E.P.B.
Flow (M^3/day)	13,300	15,000
	mg/l	mg/l
5-day BOD	24.9	42
Suspended solids	9	7

Table 5 Comparison of the previous survey results with the results obtained in this survey at Allied Paper, Inc.

Outfall	390006 (002)	
Survey Date From	7-18-77	2-27-78
To	7-19-77	2-28-78
Flow Rate (M^3/day)	11,500	15,000
	mg/l	mg/l
5-day BOD	19	42
COD	22	54
TOC	12	21
Suspended solids	7	7
Phenols	< 0.01	< 0.01

Table 6 Sample Preservation

Parameter	Preservative
COD & TOC	10 drops H_2SO_4/250 ml (to pH <2).
Cyanide, Phenolics	Dechlorinate with ascorbic acid (if needed). 8 drops 10 N NaOH (to pH 12)/250 ml.
Oil & Grease	1 ml 1:1 H_2SO_4/250 ml (to pH <2).

All samples cooled to 4°C upon collection.

Survey by: Mike Beck, Sanitary Engineer
L.J. McDonald, Water Quality Investigator
Joseph Hey, Water-Quality Investigator

Contact with Management: U.G. Stoeffler, Certified Operator
Martin Smith

Physical & Chemical Analyses by: Environmental Protection Bureau Laboratory

Report by: Mike Beck
L.J. McDonald
Point Source Studies Section
Environmental Services Division
Environmental Protection Bureau
Michigan Department of Natural Resources

Distribution "A"
MM

MDNR 003988
MDNR00003988

Dat. Distributed _____

POINT SOURCE STUDIES
INSPECTION SHEET

RECEIVED

MAR 6 1978

DISTRICT 3
WATER QUALITY DIV.

Survey Date Feb 27-28, 1978
Survey By _____

Plant Name Allied Paper Inc.

Location Kalamazoo

Personnel Contacted U.G. Stoeffler and Marlin Smith

Guenther
EXHIBIT NO. 18-b
1-27-93
C. LYSTER

Items to consider for enforcement action:

① Follow-up on sample collection technique (refrigeration) and sample analysis technique (suspended solids) and item 6 below.

Comments from survey

① Last survey was discussed in detail especially differences in split sample BOD results and flow measurement. I told Stoeffler that the BOD differences were significant but that flow difference was not.

② Large particles of floc were observed in discharge from clarifier. Effluent was quite clean, however.

③ Springwater / sludge leachate was observed (appeared clean) but not sampled. The Bryant clarifier discharge to city was not sampled either.

④ Survey flow measurements will be based on a 48" weir, rather than 49" which was used last survey.

⑤ Company's chemist was not available for discussions during interview.

⑥ Bryant mill filter backwash will be connected to sewer in June as planned.

⑦ After talking to company chemist on telephone it seems that reason for last survey's BOD discrepancy was fact that split sample was not set on day delivered to lab. It was operating procedure during last survey to set BOD's four times per

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	Yes	No
Outfall No. 002- Monarch Mill Clarifier		
Flow Measurement Equipment and Technique Adequate	[X]	[]
Plant's Method Robert Shaw Capacitance Meter		
Sample Collection Equipment and Technique Adequate	[]	[X]
Plant's Method 24 hr composite - not refrigerated		
Remarks Sample is time proportional only and is deposited in a large drum which must be stirred prior to removing sample		
Oil Film or Sheen noticed at outfall during Survey	[]	[X]
Outfall No. _____		
Flow Measurement Equipment and Technique Adequate	[]	[]
Plant's Method _____		
Sample Collection Equipment and Technique Adequate	[]	[]
Plant's Method _____		
Remarks _____		
Oil Film or Sheen noticed at outfall during Survey	[]	[]
Outfall No. _____		
Flow Measurement Equipment and Technique Adequate	[]	[]
Plant's Method _____		
Sample Collection Equipment and Technique Adequate	[]	[]
Plant's Method _____		
Remarks _____		
Oil Film or Sheen noticed at outfall during Survey	[]	[]
Outfall No. _____		
Flow Measurement Equipment and Technique Adequate	[]	[]
Plant's Method _____		
Sample Collection Equipment and Technique Adequate	[]	[]
Plant's Method _____		
Remarks _____		
Oil Film or Sheen noticed at outfall during Survey	[]	[]

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	Yes	No
Laboratory Analysis accordance with permit procedure	[ ]	[X]

Remarks per Standard Methods, except suspended solids (not using glass fiber filter)

	Yes	some	No
Are Laboratory Analysis being done at the Plant	[X]	[ ]	[ ]

If not, what Laboratory is being used

NA

If using outside Laboratory, are the samples being preserved correctly	[ ]	[ ]

Remarks NA

Pollution Incident Prevention Plan Submitted/Approved	[✓]	[ ]
Certified Operator at Plant During Visit	[✓]	[ ]

Certified Operators Stoeffler, Martin Smith

Accidental Loss Prevention Appears Adequate	[✓]	[ ]

Remarks

Personnel Contacted Knowledgeable about

a) Persons to Call in Case of Spill	[✓]	[ ]
b) Pollution Emergency Alerting System (PEAS) 517-373-7660 - 24 hours a day	[✓]	[ ]

Remarks

Personnel Contacted Knowledgeable about NPDES Permit	[✓]	[ ]

Remarks

Looked at and Inspected Latest MOR at Plant	[✓]	[ ]
Was Latest MOR Correctly Prepared	[ ]	[✓]

If incorrectly prepared nature of major errors do not indicating proper type of sample collection under column "1"

Was General Maintenance of Treatment Facility Adequate	[✓]	[ ]

Remarks

Solid and Liquid Wastes Hauled from Plant	[ ]	[✓]

What

By Whom

Frequency/Amount

Where

Are Adequate Records of Waste Haulage Being Kept	[ ]	NA	[ ]

Completed by Date

KA0480084O

9001410

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER COMPANY
All Outfalls No. 390222
Kalamazoo County
Kalamazoo, Michigan
March 27-28, 1979

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, March 27, 1979.

The results of this survey were compared to the final limitations in the facility's National Pollutant Discharge Elimination System Permit, No. MI00779. Based on this comparison, the company exceeded their daily average permit limitations for BOD_5 loading at outfall 390006 (002), but met the daily maximum permit limitations (Table 3). ?

The results of this survey were also compared to the company's Monthly Operating Report (MOR) results for March, 1979. Flows reported by the company on the survey dates were approximately 19% lower than the reported monthly average flow. Suspended solids and BOD_5 loading rates reported by the company on the survey dates did not agree favorably with Environmental Protection Bureau results (Table 3). ?

A portion of the composite sample collected at outfall 390006 (002) was split with the company for analysis in their laboratory. The company's BOD_5 results were lower than Environmental Protection Bureau results (Table 4).

Results obtained in this survey were compared to the results of the previous survey conducted in February, 1978 (Table 5). Dissolved solids and BOD_5 concentrations are lower than previous survey results, while COD is higher. Flow during the present survey was approximately one-half the rate computed for the previous survey.

Plant Processes

Allied Paper Company operates two mills in Kalamazoo. The Monarch Mill uses two Fourdrinier machines to produce bible paper and specialty grades. The Bryant Mill produces bible paper and other specialty papers on five Fourdrinier machines. The Fourdrinier machines were all operating during the survey.

Under normal production, the mills produce 313 tons of product per day. Pulp utilized at the mills has previously been treated by the Kraft process at other locations.

The mills employ a total of 485 people. Bryant Mill operation was on a 24-hour per day, 6 day per week schedule during the survey, while the Monarch Mill operated 7 days per week. Production was considered normal during the survey.

Water, Wastewater & Treatment

Portage Creek supplies the process water used at both mills. That water is passed through sand filters prior to its use. Potable water for the mills is obtained from the City of Kalamazoo. Domestic wastes are discharged to the city's sanitary sewer system.

Schematics of the wastewater treatment system and plant configeration are shown in Figure 1 and 2. Wastewater received at the 100-foot circular Bryant clarifier originates from excess white water, filter backwash, and from the lime-soda ash softening process used for boiler feed water. Alum and a polymer are added to improve settling in the Bryant clarifier. The Bryant clarifier effluent is either discharged to the city sanitary sewer system or to the Monarch clarifier. The company maximizes the loading which can be placed on the Monarch clarifier without exceeding permit limitations for discharging to Portage Creek. Flow is automatically apportioned via a computerized system utilizing a total organic carbon analyzer.

The 90-foot circular Monarch clarifier receives Bryant clarifier effluent as well as excess white water, filter backwash, and zeolite waste from the boiler feed water system at the Monarch Mill. Alum and a coagulation agent are added to the Monarch clarifier to improve settling. Monarch clarifier effluent discharges to Portage Creek via outfall 390006 (002).

Sludge from both clarifiers is disposed of on plant property.

Survey Procedure

The flows and samples were obtained as follows:

Outfall	Flow Measurement	Sampling
390006 (002) Process	Flow was obtained using an existing 48-inch full channel weir and Stevens water level recorder.	A proportional automatic air-activated composite sampler + 2 grabs. Sample for phenols was grab composited.

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir or through a flume. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir or through the flume during the survey period is computed from the graph.

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Guenther
EXHIBIT NO. 19a
1-27-93
C. LYSTER

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An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir or through the flume.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical and chemical analyses are presented in Tables 1 & 2.

Allied Paper Company - Kalamazoo

Table 1 Analyses of composite samples.

Outfall	390006 (002) Process	
Survey Period From	3-27-79 - 1200	
To	3-28-79 - 1200	
Computed flow rate* (M^3/day)	7,660	
Highest flow rate (M^3/day)	13,400	
Lowest flow rate (M^3/day)	3,630	
	mg/l	kg/day
5-day BOD	34	260
COD	65	500
TOC	21	160
Suspended solids	7	50
Dissolved solids	460	3,520
Settleable solids	< 7	< 50
Phenols	< 0.01	--
Total chromium (Cr)	< 0.01	--
Total zinc (Zn)	0.01	0.08

* Flow rates used in the computation of kg/day.
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

Allied Paper Company - Kalamazoo

Table 2 Analyses of grab samples.

	Date	Time	Temp.[1] °C	pH[1] S.U.	Oil & Grease mg/l	TOC mg/l	COD mg/l	BOD mg/l	Susp. solids mg/l	Diss. solids mg/l	Settle. solids mg/l	Phenols mg/l	Total zinc mg/l	Total chromium mg/l
	390006 (002) Process													
1	3-27-79	2020	17.0	6.7	1.0	24	74	41	6	480	< 6	< 0.01	0.02	< 0.01
2	3-28-79	0745	19.5	7.1	1.0	21	67	44	5	450	< 5	0.018	0.03	< 0.01

1 - Values determined in the field at time of sampling.

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations: Daily Average	NPDES Permit Final Limitations: Daily Maximum	March Monthly Operating Report: Monthly Average	March Monthly Operating Report: Monthly Maximum	3-27-79	3-28-79	Survey Result
390006 (002) Process							
Flow (M^3/day)	--	--	9,035	--	7,267	7,358	7,660
Settleable solids (ml/l)	--	--	0.07	0.10	0.05	0.05	--
Oil & Grease (visual) (mg/l)	--	--	--	1	1	1	--
pH (S.U.)	not <6.5 nor >9.5		--	-- min. 6.5	7.1	7.2	(1.1) (6.7, 7
BOD_5 (kg/day)	230	350	216	321	154	181	260
Total susp. sol. (kg/day)	230	350	145	329	116	147	50

1 - Survey results are for the composite sample. Grab sample ranges are shown in parantheses ( ).
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

Table 4 Comparison of the laboratory analytical results obtained by Allied Paper Company and the Environmental Protection Bureau from the split composite samples.

Outfall	390006 (002) Process	
	E.P.B.	Allied Paper
Flow (M^3/day)	7,660	7,343
	mg/l	mg/l
5-day BOD	34	23.2
Suspended solids	7	4

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfall	390006 (002)	
Survey Date From	2-27-78 - 1440	3-27-79 - 1200
To	2-28-78 - 1440	3-28-79 - 1200
Flow Rate (M^3/day)	15,000	7,660
	mg/l	mg/l
5-day BOD	42	34
COD	54	65
TOC	21	21
Suspended solids	7	7
Dissolved solids	490	460
Settleable solids	< 7	< 7
Phenols	< 0.01	< 0.01

Table 6 Sample Preservation

Parameter	Preservative
COD & TOC	10 drops conc. H_2SO_4/250 ml (to pH <2).
Phenolics	Dechlorinate with ascorbic acid (if needed). 10 drops 10 N NaOH (to pH 12)/250 ml.
Total Metals	2 ml 1:1 HNO_3/250 ml (to pH <2).
Oil & Grease	10 drops conc. H_2SO_4/250 ml (to pH <2).

All samples cooled to 4°C and preserved upon collection and chain of custody maintained.

Survey by: John Schroeter, Sanitary Engineer
Joseph Hey, Water Quality Investigator
William Erickson, Water Quality Technician

Contact with Management: U.G. Stoeffler, Certified Operator

Physical & Chemical Analyses by: Environmental Protection Bureau Laboratory

Report by: John Schroeter
Joe Hey
Point Source Studies Section
Environmental Services Division
Environmental Protection Bureau
Michigan Department of Natural Resources

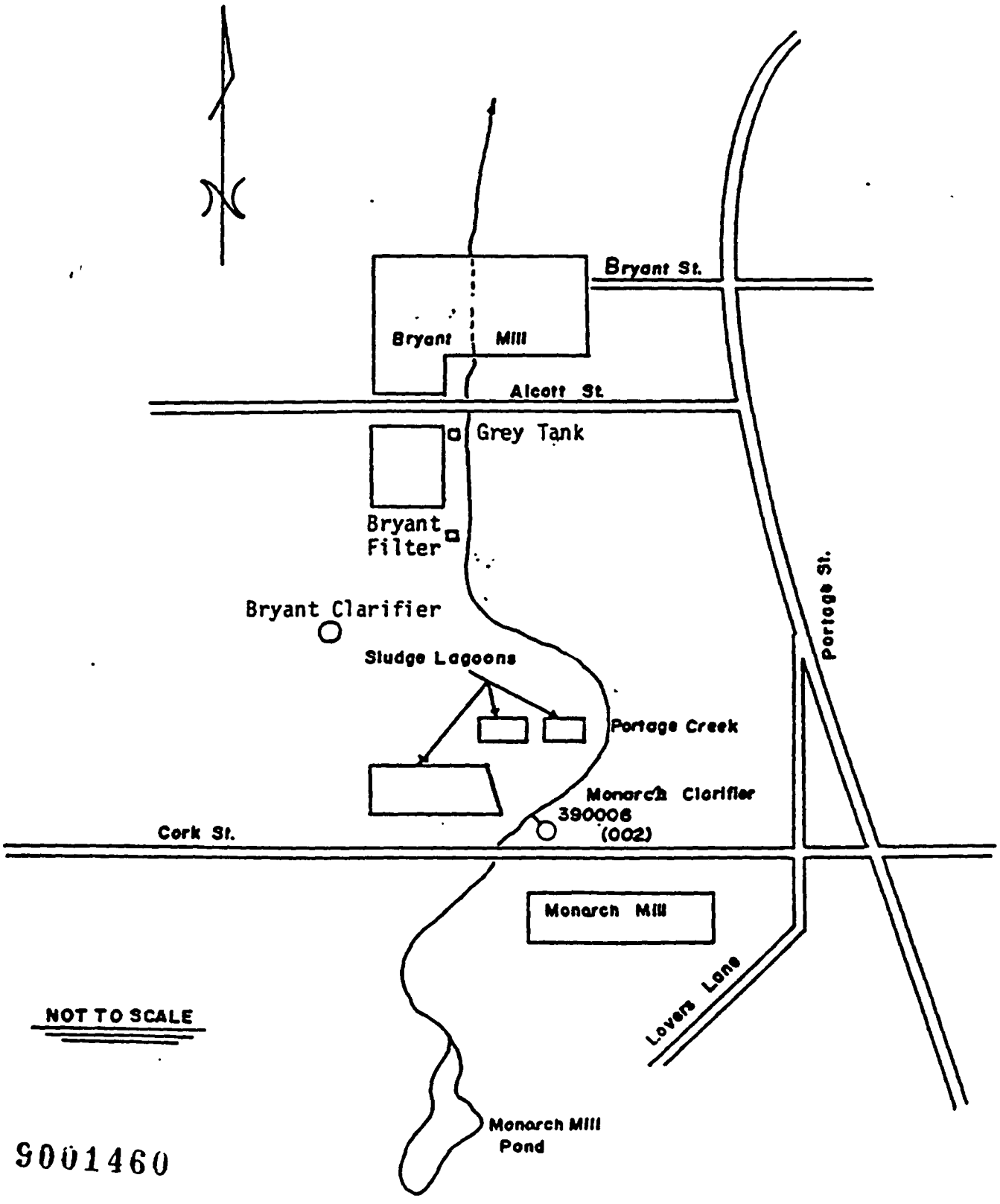
Distribution "A"
MM

KA04800843

9001459

FIGURE. 1

ALLIED PAPER MILLS
KALAMAZOO



NOT TO SCALE

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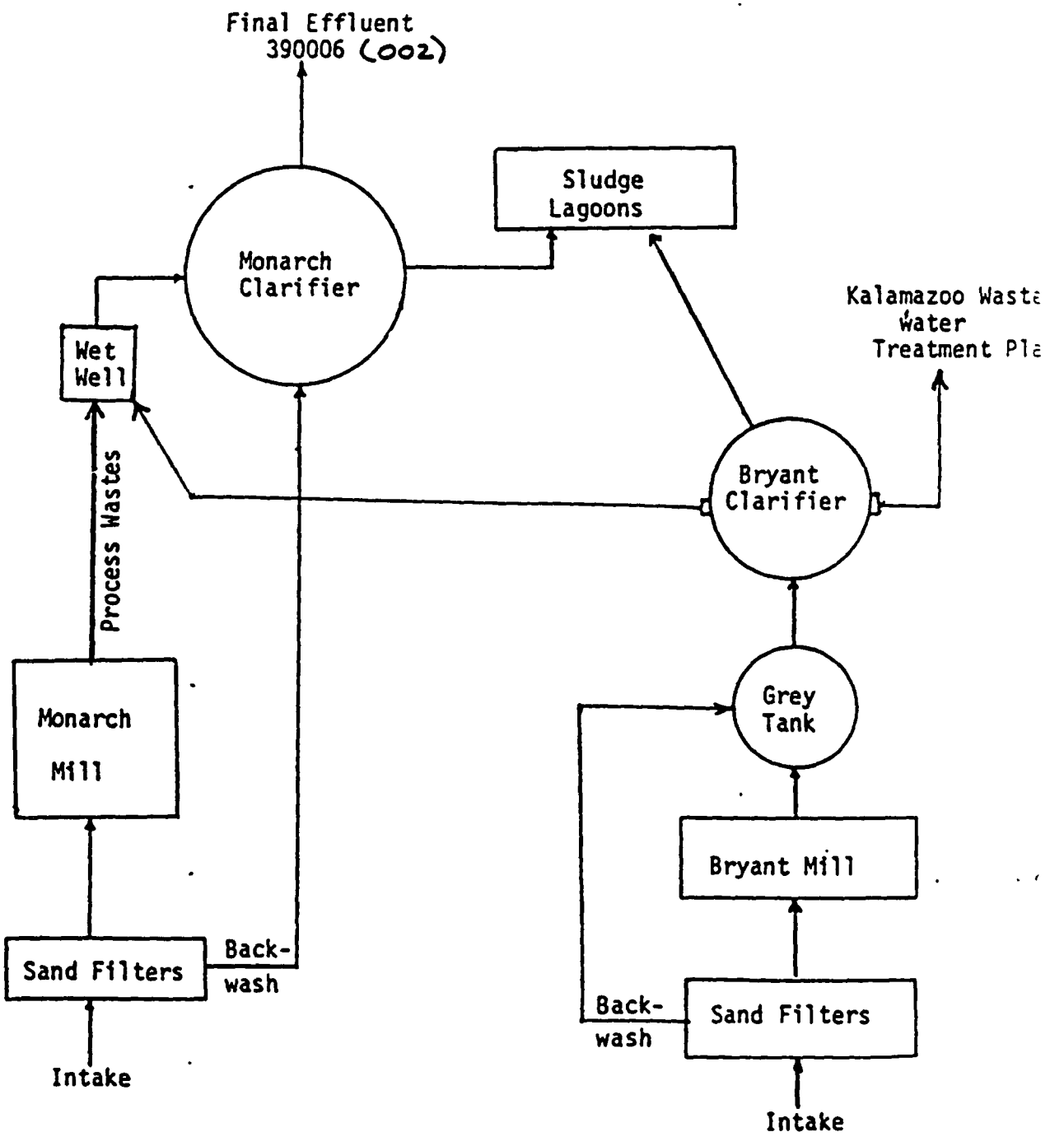
KA04800844

Figure 2 Allied Papel ncorporated, Kalamazoo Mills



9001461

KA04800845

Report of a Toxicity Evaluation Conducted on Wastewaters Discharged by
ALLIED PAPER COMPANY
Kalamazoo, Michigan
March 29-31, 1979

Summary

During March 29-31, 1979 a static toxicity evaluation was conducted on a sample of treated process wastewater discharged by Allied Paper Company, outfall 390006 (002), to Portage Creek. The macroinvertebrate Daphnia magna was used as the test species during the toxicity evaluation.

Effluent from outfall 390006 (002) was not toxic to D. magna on an acute (short term) basis. A 48-hour LC50 (effluent concentration lethal to 50 percent of the test organisms) could not be calculated due to the lack of daphnid mortality.

Methods & Procedures

On March 27-28, 1979 Environmental Protection Bureau personnel collected a 24-hour composite sample of treated process wastewater from outfall 390006 (002) at Allied Paper Company, Kalamazoo. The sample was transported to the Lansing laboratory for toxicity testing.

A 48-hour static toxicity test using Daphnia magna (<24 hours old) was conducted according to procedures outlined in the U.S.-EPA publication, Methods for Acute Toxicity Tests with Fish, Macroinvertebrates and Amphibians. The following effluent concentrations were prepared using dechlorinated, activated carbon filtered Lansing city water as the diluent: 100, 75, 50, 25, 10 and 5 percent effluent. Controls were provided using 100 percent dilution water. Duplicate test chambers (250 ml glass beakers) containing 200 mls of test solution were prepared for each concentration and control to provide suitable replication. Five daphnids were randomly assigned to each test chamber marking the start of the test (3-29-79 at 1210). Selected chemical and physical analyses were run on the 100 percent, 25 percent and control solutions at the beginning and end of the test. Table 1 presents the results of these analyses.

Results & Discussion

Wastewater discharged from outfall 390006 (002) during the survey period was not toxic to D. magna on an acute basis (Table 2). A 48-hour LC50 could not be calculated due to a lack of daphnid mortality.

Table 1 Routine water chemistry analyses run in the 100% effluent, 25% effluent and control test solutions at the beginning and end of the 48-hour exposure period.

Parameter	Outfall 390006 (002) 3-29-79 Control	25%	100%	3-31-79 Control	25%	100%
Dissolved oxygen (mg/l)	8.0	8.9	9.4	8.0	7.0	6.0
Percent saturation	101	102	108	92	80	69
pH (S.U.)	7.3	7.0	6.8	7.2	7.2	7.1
Temperature (°C)	22	22	22	22	22	22
Conductivity (umhos)	343	433	706	348	436	701

Table 2 Percent mortality in each test concentration after 48 hours exposure to Allied Paper Company process wastewater.

	48-hour percent mortality 390006 (002)
100	0
75	0
50	0
25	0
10	0
5	0
0	0

Effluent Samples Collected By: Joseph Hey, Water Quality Investigator
William Erickson, Water Quality Technician

Industrial Wastewater Survey Engineer: John Schroeter, Sanitary Engineer

Toxicity Evaluation By: Bonnie White, Aquatic Biologist

Report By: Bonnie White
Point Source Studies Section
Environmental Services Division
Environmental Protection Bureau
Michigan Department of Natural Resources

9001462

KA0480084 6

Date Distributed _____

POINT SOURCE STUDIES
INSPECTION SHEET

RECEIVED
APR 11 1979
DISTRICT 3
WATER QUALITY DIV.

Survey Date MARCH 26-27, 1979.
Survey By SCHROETER, HEY, ERICKSON
NPDES Permit No. MI0000774

Plant Name ALLIED PAPER, INC.

Location KALAMAZOO, MICH.

Receiving Waters PORTAGE CREEK

Personnel Contacted/Title U.G. STOEFFLER, CERTIFIED OPERATOR

Guenther
EXHIBIT NO. 19-b
1-27-73
C LYSTER

Items to consider for compliance/enforcement action:

Comments from survey:

① ROGER PRZYBYSZ FROM DISTRICT 3 ACCOMPANIED SURVEY STAFF

② COMPANY FEELS THEIR LOW BOD_5 RESULTS WERE CAUSED BY COPPER CONTAMINATION IN THEIR DISTILLED WATER. BOD_5's ARE SET DAILY. BOD_5's ARE NOT SEEDED BECAUSE COMPANY RESULTS ARE SAME W/ OR W/O SEEDING.

✓ ③ SPRINGWATER/SLUDGE LEACHATE WAS FLOWING & CLOUDY. A GRAB SAMPLE WAS COLLECTED.

④ THE BRYANT MILL FILTER BACKWASH TO PORTAGE CREEK HAS BEEN DISCONTINUED. BACKWASH NOW GOES TO THE GREY TANK, THEN TO THE BRYANT CLARIFIER.

S001463

⑤ TOC/BOD_5 RELATIONSHIP VARIES ENOUGH SO COMPANY MUST CHECK ON THE RELATIONSHIP FREQUENTLY. IT IS NOT A CONSTANT.

⑥ THE COMPANY'S GOAL SEEMS TO BE TO EVENTUALLY OBTAIN APPROVAL TO VARY THEIR DISCHARGE ACCORDING TO PORTAGE CREEK FLOW AS MEASURED BY THE USGS GAGE THEY HAD INSTALLED, RATHER THAN DROUGHT FLOW CONDITIONS.

KA04800847

	Yes	No	N/A
Outfall No. 002 Monarch Clarifier			
Flow Measurement Equipment and Technique Adequate Plant's Method Robert Shaw Capacitance Meter Last Calibrated –	[✓]	[]	[]
Sample Collection Equipment, Location, Bookkeeping, and Technique Adequate Plant's Method _____	[]	[]	[]
Remarks 24 Hour Composite is refrigerated, but still deposit sample in large drum from which sample is pumped out.			
Oil Film or Sheen noticed at outfall during Survey	[]	[✓]	[]
Outfall No. _____			
Flow Measurement Equipment and Technique Adequate Plant's Method _____ Last Calibrated _____	[]	[]	[]
Sample Collection Equipment, Location, Bookkeeping, and Technique Adequate Plant's Method _____	[]	[]	[]
Remarks _____			
Oil Film or Sheen noticed at outfall during Survey	[]	[]	[]
Outfall No. _____			
Flow Measurement Equipment and Technique Adequate Plant's Method _____ Last Calibrated _____	[]	[]	[]
Sample Collection Equipment, Location, Bookkeeping, and Technique Adequate Plant's Method _____	[]	[]	[]
Remarks _____			
Oil Film or Sheen noticed at outfall during Survey	[]	[]	[]

9001464

Outfall No. _____			
Flow Measurement Equipment and Technique Adequate Plant's Method _____ Last Calibrated _____	[]	[]	[]
Sample Collection Equipment, Location, Bookkeeping, and Technique Adequate Plant's Method _____	[]	[]	[]
Remarks _____			
Oil Film or Sheen noticed at outfall [illegible]			

KA04800848

LABORATORY

	Yes	No	N/A
Permittee laboratory procedures meet the requirements and intent of the permit	[✓]	[]	[]
Remarks Company now uses Glass Fiber Filter			
Are laboratory analyses done at plant	[✓]	[]	[]
Are instruments and equipment calibrated and maintained at regular intervals	[✓]	[]	[]
Remarks			
Are quality control procedures used	[]	[✓]	[]
Procedures used No PC, AC Only DNR Splits			
Commercial laboratory used	[]	[✓]	[]
Name			
If yes, are samples being preserved correctly	[]	[]	[✓]
Remarks			

OPERATION & MAINTENANCE

Does plant have certified operator Name(s) VG STOEFFLER	[✓]	[]	[]
Accidental Loss Prevention Appears adequate with alarm and backup power system Remarks Didn't check on this	[]	[]	[]
Personnel Contacted knowledgeable about			
a.) Persons to call in case of spill	[✓]	[]	[]
b.) Pollution Emergency Alerting System (PEAS) 517-373-7660 - 24 hours a day	[✓]	[]	[]
MOR inspected at plant and found to be correctly prepared	[]	[✓]	[]
If no, nature of errors "C", "Continuous"			
Was general maintenance of treatment facility adequate Remarks	[✓]	[]	[]
Solid and liquid wastes hauled from plant What Sludge from Sedimentation Tanks By Whom Company Frequency/Amount — Where Company Landfill on Company Grounds	[✓]	[]	[]

9001465

Completed by Jim Schneider 4-3-79

KA04800849

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER CORPORATION
All Outfalls No. 390222
NPDES Permit No. MI0000779
Kalamazoo County
Kalamazoo, Michigan
June 24-25, 1980

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, June 24-25, 1980.

The results of this survey are compared to the final limitations in the facilities' National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000799 in Table 3. Based on this comparison, the company exceeded the daily maximum loading limitation for BOD_5. The other parameters met the permit limitations.

The results of this survey are also compared to the company's Monthly Operating Report (MOR) results for June, 1980 in Table 3. The results are similar except for the lower BOD_5 loadings reported by the company. The company's BOD_5 loadings on June 24 and 25 were 40% and 54% of the survey results, respectively. This difference cannot be attributed to differences in flows as these were similar.

The composite sample collected at outfall 390006 (002) was split with the company for comparison of laboratory analyses. The results are shown in Table 4. The company reported a BOD_5 concentration 57% of the EPB laboratory's result and also reported a higher suspended solids concentration.

The results obtained in this survey are compared to the results of the previous survey conducted in March, 1979 in Table 5. The results are similar.

The sludge leachate (groundwater seepage) was sampled. The results are shown in Table 2.

Plant Processes

Allied Paper Corporation operates two mills in Kalamazoo. The Monarch Mill uses two Fourdrinier machines to produce bible paper and specialty grades. The Bryant Mill produces bible paper and other specialty papers on five Fourdrinier machines. The Fourdrinier machines were all operating during the survey.

Under normal production, the mills produce 285 tons of product per day. Pulp utilized at the mills has previously been treated by the Kraft process at other locations.

The mills employ a total of 485 people. Monarch Mill operation was on a 24-hour per day, 6 days per week schedule during the survey, while the Bryant Mill operated 7 days per week. Production was considered normal during the survey.

Water, Wastewater & Treatment

Portage Creek supplies the process water used at both mills. Water used at the Bryant Mill is chlorinated and passed through sand filters prior to its use. Water used at the Monarch Mill is passed through sand filters and then chlorinated prior to its use. Potable water for the mill is obtained from the City of Kalamazoo. Domestic wastes are discharged to the city's sanitary sewer system.

Schematics of the wastewater treatment system and plant configeration are shown in Figure 1 and 2. Wastewater received at the 100-foot circular Bryant clarifier originates from excess white water, filter backwash, and from the lime-soda ash softening process used for boiler feed water. Alum and a polymer are added to improve settling in the Bryant clarifier. The Bryant clarifier effluent is either discharged to the city sanitary sewer system or to the Monarch clarifier. The company maximizes the loading which can be placed on the Monarch clarifier without exceeding permit limitations for discharging to Portage Creek. Flow is automatically apportioned via a computerized system utilizing a total organic carbon analyzer.

The 90-foot circular Monarch clarifier receives Bryant clarifier effluent, as well as excess white water, filter backwash, and zeolite waste from the boiler feed water system at the Monarch Mill. Alum and a coagulation agent are added to the Monarch clarifier to improve settling. Monarch clarifier effluent discharges to Portage Creek via outfall 390006 (002).

Sludge from both clarifiers is disposed of on plant property.

Survey Procedure

The flows and samples were obtained as follows:

Outfall	Flow Measurement	Sampling
390004 (001) Bryant Mill	Company installed 46.5" rectangular weir. Staff installed water level recorder.	Scoop type composite, individual grabs.
390006 (002) Monarch Mill	Company installed 47.75" full channel weir. Staff installed water level recorder.	Scoop type composite, individual grabs.
Sludge Leachate	None	Individual grab.

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2.

Allied Paper Corporation - Kalamazoo

Table 1 Analyses of composite samples.

Outfalls		390004 (001)	390006 (002)
Survey Period	From	6-24-80 - 1520	6-24-80 - 1615
	To	6-25-80 - 1520	6-25-80 - 1615
Computed flow rate* (M^3/day)		10,500	5,910
Highest flow rate (M^3/day)		19,300 - 6-25-80 @ 1123	11,200 - 6-25-80 @ 1420
Lowest flow rate (M^3/day)		476 - 6-25-80 @ 0115	4,150 - 6-25-80 @ 1522

	mg/l	kg/day	mg/l	kg/day
Suspended solids	46	480	< 2	--
Dissolved solids	650	6,800	460	2,700
Settleable solids	4	40	< 2	--
COD	300	3,000	66	390
TOC	59	620	19	110
BOD_5	130	1,400	44	260
$CBOD_5$	120	1,300	37	220
$CBOD_{20}$	> 140	> 1,500	46	270
Nitrite & nitrate nitrogen-N				
nitrogen-N	5.2	55	1.0	5.9
Ammonia nitrogen-N	0.17	1.8	0.06	0.4
Kjeldahl nitrogen-N	4.0	42	0.92	5.4
Orthophosphates-P	0.08	0.8	< 0.01	--
Total phosphorus-P	0.13	1.4	0.02	0.1

* Flow rates used in the computation of kg/day.
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

Allied Paper Corporation - Kalamazoo

Table 2 Analyses of grab samples.

Date	Time	Flow[1] M^3/day	Temp.[2] °C	pH[2] S.U.	Residual[2] chlorine mg/l	O&G I.R. mg/l	O&G Grav. mg/l	Susp. solids mg/l	Total diss. solids mg/l	Settle. solids mg/l	COD mg/l	TOC mg/l	BOD_5 mg/l	Carb. BOD_5 mg/l
390004 (001)														
6-24-80	1530	10,000	31.0	7.3	U	2	6	30	550	< 2	260	50	140	120
6-24-80	2245	9,300	31.5	7.2	U	2	4	28	800	< 2	260	53	170	130
6-25-80	0820	9,600	32.5	--	U	2	< 2	42	690	< 2	280	52	> 170	130
390006 (002)														
6-24-80	1630	4,800	30.5	7.4	U	1	5	9	510	8	59	17	36	31
6-24-80	2310	5,200	30.5	7.5	U	1	< 2	10	520	5	62	18	32	30
6-25-80	0850	5,300	31.0	--	U	1	< 2	9	530	3	63	19	41	32
Sludge Leachate														
6-24-80	2255	--	15.5	7.2	--	< 1	< 2	23	480	16	20	--	1.6	2.0
6-25-80	0830	--	15.0	--	--	4	< 2	100	510	80	40	--	4.4	1.9

		Carb. BOD_{20} mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Kjeldahl nitrogen mg/l	Ortho-phosphates-P mg/l	Total phosphorus-P mg/l
390004 (001)							
6-24-80	1530	> 140	2.3	0.18	3.7	0.05	0.18
6-24-80	2245	> 140	8.0	0.09	3.7	0.05	0.11
6-25-80	0820	> 150	6.2	0.10	3.5	0.11	0.12
390006 (002)							
6-24-80	1630	55	0.62	0.02	1.0	0.01	0.03
6-24-80	2310	51	0.87	0.04	1.1	< 0.01	0.02
6-25-80	0850	54	1.2	0.06	0.95	< 0.01	0.02
Sludge Leachate							
6-24-80	2255	2.9	0.03	0.43	0.79	0.03	0.09
6-25-80	0830	3.0	0.03	0.42	1.2	0.04	0.24

1 - Flow at time of grab sampling.
2 - Values determined in the field at time of sampling.

Allied Paper Corporation - Kalamazoo

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations		June Monthly Operating Report				Survey Results[1]
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	6-24-80	6-25-80	
390006 (002)							
Flow (M^3/day)	--	--	5,299	6,533	5,348	6,533	5,910
Settleable solids (ml/l)	--	--	0.09	0.10	0.1	0.1	--
(mg/l)	--	--	--	--	--	--	< 2 (8, 5, 3)
Oil & Grease (visual 0 - 4)	No visible film		0	0	0	0	--
(mg/l)	--	--	--	--	--	--	(5, <2, [illegible])
BOD_5 (kg/day)	--	177	140	175	103	141	260
Total suspended solids (kg/day)	--	230	25	89.8	21	52.2	--
(mg/l)	--	--	--	--	--	--	< 2 (9, 10, 9)
pH (S.U.)	not <6.5 nor >9.5		min. 6.5	7.8	7.0	7.0	(7.4, 7.5)

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

NATURAL RESOURCES COMMISSION
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DEPARTMENT OF NATURAL RESOURCES

HOWARD A. TANNER Director

State Office Building
350 Ottawa N. W.
Grand Rapids, Michigan 49503
Phone: 456-6232

September 9, 1982

Mr. U.G. Stoeffler, Manager
Process Development
Allied Paper, Inc.
Kalamazoo, MI 49003

Dear Mr. Stoeffler:

Enclosed is a copy of a "Report of an Industrial Wastewater Survey" conducted at Allied Paper Company on March 1-2, 1982. The report includes the volume of wastewater discharged and results of the chemical analyses performed on the composite of the collected effluent. Grab samples were also obtained for certain determinations. In addition, a 48-hour static toxicity screening test was conducted on a portion of the composite sample at Outfall 390006 (002). The results of the tests are found in Appendix A.

The results of the survey indicate that Allied Paper's discharge to Portage Creek from the Monarch clarifier 390006 (002) met the daily maximum limitations contained in N.P.D.E.S. Permit No. MI0000779 at the time of the survey.

The composite sample collected at Outfall 390006 (002) showed a pentachlorophenol concentration of 60 ug/l (Table 1). This value is higher than the survey concentration found in the previous survey. As a result, it will be our recommendation that the current N.P.D.E.S. permit reissuance for the discharge to Portage Creek from the Monarch clarifier contain a special condition requiring short-term monitoring of this parameter to determine if a water quality based effluent limitation needs to be established.

The remainder of the report is self-explanatory. We would appreciate receiving any comments you may have on the survey report at your earliest convenience.

Very truly yours,

WATER QUALITY DIVISION

Roger Przybysz
Water Quality Specialist

RP/mam
CC: Galen Kilmer, Permit Section, Water Quality Division
Jim Forney, Office of Toxic Materials Control, Environmental Services Div.
John Bohunsky/WQD Files, Lansing
Scott Ross, Compliance Section, Water Quality Division
Jean Eldred, Kalamazoo Wastewater Treatment Plant

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER COMPANY
All Outfalls No. 390222
NPDES Permit No. MI0000799
Kalamazoo County
Kalamazoo, Michigan
March 1-2, 1982

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Monday, March 1, 1982.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000799 (Table 3).

The survey results are compared to the company's Monthly Operating Report (MOR) results for March, 1982 in Table 3.

A grab sample collected at outfall 390006 (002) was split with the company for comparison of laboratory results. The company reported a higher suspended solids concentration. The BOD_5 results compared well (Table 4).

The results obtained in this survey are compared to the results of the previous survey conducted in January, 1981 in Table 5.

Groundwater drainage from the company's landfill area was sampled. The results are presented in Table 2.

Survey Comments

The composite sample collected at outfall 390006 (002) showed a pentachlorophenol concentration of 60 ug/l (Table 1).

A 48-hour static toxicity screening test was conducted on a portion of the composite sample collected at outfall 390006 (002). The sample was found to be toxic to Daphnia magna on an acute (short term) basis (Appendix A).

Plant Processes

Allied Paper Corporation now operates one mill in Kalamazoo. This is known as the Bryant Mill. Another mill, known as the Monarch Mill, has been permanently shut down and is being demolished. The Bryant Mill produces bible paper and other specialty papers on five Fourdrinier machines.

Under normal production the mill produces approximately 220 tons of product per day. The mill uses bleached kraft pulp manufactured at other locations.

The mill employs 389 people and operates 24 hours per day, 7 days per week. Production was considered normal during the survey.

Water, Wastewater & Treatment

Portage Creek supplies the process water. Water used at the Bryant Mill is chlorinated and passed through sand filters prior to its use. Potable water for the mill is obtained from the City of Kalamazoo. Domestic wastes are discharged to the city's sanitary sewer system.

Schematics of the wastewater treatment system and plant configeration are shown in Figures 1 & 2. Wastewater received at the 100-foot circular Bryant clarifier originates from excess white water, filter backwash, and from the lime-soda ash softening process used for boiler feed water. A polymer is added to improve settling in the Bryant clarifier. Alum is available but wasn't used during the survey. A portion of the Bryant clarifier effluent is discharged to the city sanitary sewer system. The rest is discharged to the 90-foot circular Monarch clarifier. The company maximizes the loading which can be placed on the Monarch clarifier without exceeding permit limitations for discharging to Portage Creek. Flow is automatically apportioned via a computerized system utilizing a total organic carbon analyzer. Some of the Monarch clarifier effluent is recycled for process water. The remaining portion is discharged to Portage Creek via outfall 390006 (002).

Sludge from both clarifiers is disposed of on plant property.

Survey Procedure

The flows and samples were obtained as follows:

Sample Description	Flow Measurement	Sampling Methods & Location
390006 (002) (Monarch Mill)	Company installed 36-inch rectangular weir/staff installed water level recorder.	Automatic air activated composite sample, 4-aliquot grab composite sample and individual grab sample; collected at discharge from clarifier.
390004 (001) (Bryant Mill)	Company totalizer.	4-aliquot grab composite sample and individual grab sample; collected at discharge from clarifier.
Drainage from Landfill	--	Individual grab sample; collected at service road to Bryant clarifi

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

Extractable organic composite samples are collected by the grab composite method.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories loca in Lansing.

Samples were preserved according to Table 6. The results of the physical and chemical analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6.

Allied Paper Company - Kalamazoo

Table 1 Analyses of composite samples.

Outfalls	390006 (002)		390001 (001)	
Survey Period From	3-1-82 - 1435		3-1-82 - 1420	
To	3-2-82 - 1435		3-2-82 - 1420	
Computed flow rate[1] (M^3/day)	1,210		(5,710)	
	mg/l	kg/day	mg/l	kg/day
Suspended solids	20	20	28	160
Dissolved solids	740	900	720	4,100
Settleable solids	4	5	6	30
COD	220	270	220	1,300
TOC	75	91	74	420
BOD_5	140	170	130	740
$CBOD_5$	140	170	--	--
$CBOD_8$	130	160	--	--
$CBOD_{12}$	160	190	--	--
$CBOD_{15}$	150	180	--	--
$CBOD_{20}$	170	210	--	--
Nitrite & nitrate nitrogen-N	5.0	6.0	4.3	25
Ammonia nitrogen-N	0 96	1.2	0.90	5.1
Kjeldahl nitrogen-N	9.5	11	7.5	43
Total phosphorus-P	0.12	0.15	0.13	0.74
	ug/l		ug/l	
Phenol	5.2 NA	0.0063	4.6 NA	0.026
Phenols Scan				
Pentachlorophenol (PCP)	60	0.07	< 20	--
Others in scan	U	--	U	--

1 - Flow rates used in the computation of kg/day (obtained from company totalizer).
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

Allied Paper Company - Kalamazoo

Table 2 Analyses of grab samples.

Date	Time	Flow[1] M^3/day	Temp.[1] °C	pH[1] S.U.	Residual[1] Chlorine mg/l	D.O. mg/l	Susp. solids mg/l	Diss. solids mg/l	Settle. solids mg/l	COD mg/l	TOC mg/l	BOD_5 mg/l	$CBOD_5$ mg/l
390006 (002)													
3-1-82	1450	1140	22.5	6.7	U	8.2	20	840	4	240	110	170	170
3-2-82	0745	886	21.5	6.9	U	9.0	20	730	4	220	72	130	130
390004 (001)													
3-2-82	0725	--	23.5	7.0	U	--	16	720	NA	200	75	140	--
Drainage													
3-2-82	0735	--	3.0	7.6	--	--	< 4	530	NA	21	6.7	--	--

		$CBOD_8$ mg/l	$CBOD_{12}$ mg/l	$CBOD_{15}$ mg/l	$CBOD_{20}$ mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Kjeldahl nitrogen mg/l	Total phosphorus-P mg/l	O&G I.R. mg/l	O&G Grav. mg/l	Ph u
390006 (002)												
3-1-82	1450	150	180	170	190	7.2	0.64	10.	0.13	1	< 2	6.
3-2-82	0745	130	130	160	180	4.1	0.85	8.2	0.12	1	< 2	4.
390004 (001)												
3-2-82	0725	--	--	--	--	3.8	0.66	7.7	0.12	1	< 2	3.
Drainage												
3-2-82	0735	--	--	--	--	0.32	0.67	1.2	0.10	< 1	< 2	-

1 - Values determined in the field at time of sampling.

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Allied Paper Company - Kalamazoo

Table 3 Comparison of survey results with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations		March Monthly Operating Report				Survey Results[1]
	Daily Average	Daily Maximum	Monthly Average	Monthly Maximum	3-1-82	3-2-82	
390006 (002)							
Flow (M^3/day)	--	--	1,800	2,970	1,330	2,770	1,210 (1,450, 765)
Settleable solids (ml/l)	--	--	0.05	0.05	0.05	0.05	--
(mg/l)	--	--	--	--	--	--	4 (7, 4)
Oil & Grease (visual)	No visible film		0	0	0	0	--
(mg/l)	Quantitative analysis not required		--	--	--	--	-- (2, 2)
BOD_5 (kg/day)	230	350	226	349	195	335	170
Suspended solids (kg/day)	230	350	92.1	215	37	66.2	20
pH (S.U.)	not <6.5 nor >9.5		--	7.2 min. 6.5	6.5	6.8	-- (6.7, 6.9)

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

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SA 027594

Table 4 Comparison of the laboratory analytical results obtained by Allied Paper Company and the Environmental Protection Bureau from the split grab sample.

Outfall	390006 (002)	
	Allied Paper	E.P.B.
Flow (M^3/day)	1,320	1,210
	mg/l	mg/l
Suspended solids	36	20
BOD_5	138.3	130

Table 5 Comparison of the previous survey results with the results obtained in this survey at Allied Paper Company - Kalamazoo.

Outfalls	390006 (002)		390004 (001)	
Survey Date From	1-26-81	3-1-82	1-26-81	3-1-82
To	1-27-81	3-2-82	1-27-81	3-2-82
Flow Rate (M^3/day)	2,500	1,210	5,806	5,710
	mg/l	mg/l	mg/l	mg/l
Suspended solids	47	20	49	28
Dissolved solids	590	740	640	720
Settleable solids	9	4	< 2	6
COD	110	220	180	220
TOC	38	75	58	74
BOD_5	62	140	110	130
$CBOD_5$	56	140	--	--
Nitrite & nitrate nitrogen-N	0.08	5.0	0.83	4.3
Ammonia nitrogen-N	< 0.01	0.96	< 0.01	0.90
Kjeldahl nitrogen-N	4.0	9.5	4.2	7.5
Total phosphorus-P	0.33	0.12	0.50	0.13
	ug/l	ug/l	ug/l	ug/l
Phenol	8	5.2	7	4.6
Pentachlorophenol	0.58	60	--	--

Table 6 Sample Preservation

Parameter	Preservative
COD/TOC/Phenol/Nutrients (Chlorine Absent)	5 drops conc. H_2SO_4/250 ml (to pH 2).
D.O.	Fixed on site.
Oil & Grease	10 drops conc. H_2SO_4/250 ml (to pH 2).
Acid Extractables	Dechlorinated (if needed) with sodium thiosulfate (1 drop 0.141 N/mg/l Cl_2/250 ml). 40 drops H_2SO_4/1000 ml (to pH 2).

Samples preserved as required, cooled to 4°C with chain of custody maintained.

Lab Letter Codes

NA - Analytical method has not yet been approved by laboratory.
U - Indicates material was analyzed for but not detected.

Survey by: Peter Ostlund, Environmental Engineer
William Long, Water Quality Investigator
Richard Irvin, Water Quality Technician

Contact with Management: U.G. (Les) Stoeffler
John Roth, Certified Operator

Hydrocarbon Analyses by: Environmental Protection Bureau Laboratory

Physical, Chemical & Bacteriological Analyses by: Environmental Protection Bureau Laboratory

Report by: Peter Ostlund
William Long
Point Source Studies Section
Environmental Services Division
Environmental Protection Bureau
Michigan Dept. of Natural Resources

Distribution "A"
MM
5/17/82

FIGURE 1

ALLIED PAPER MILLS
KALAMAZOO

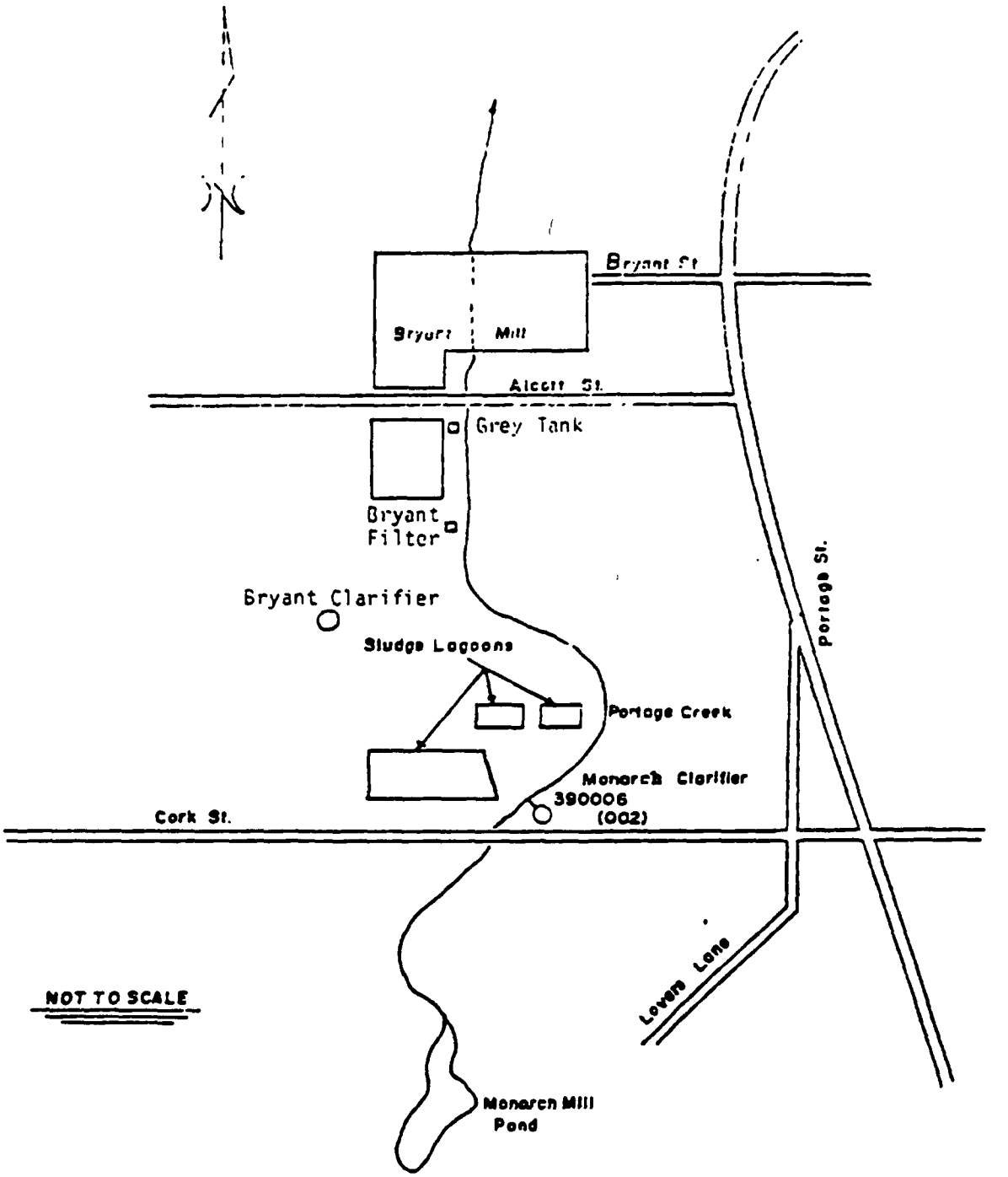

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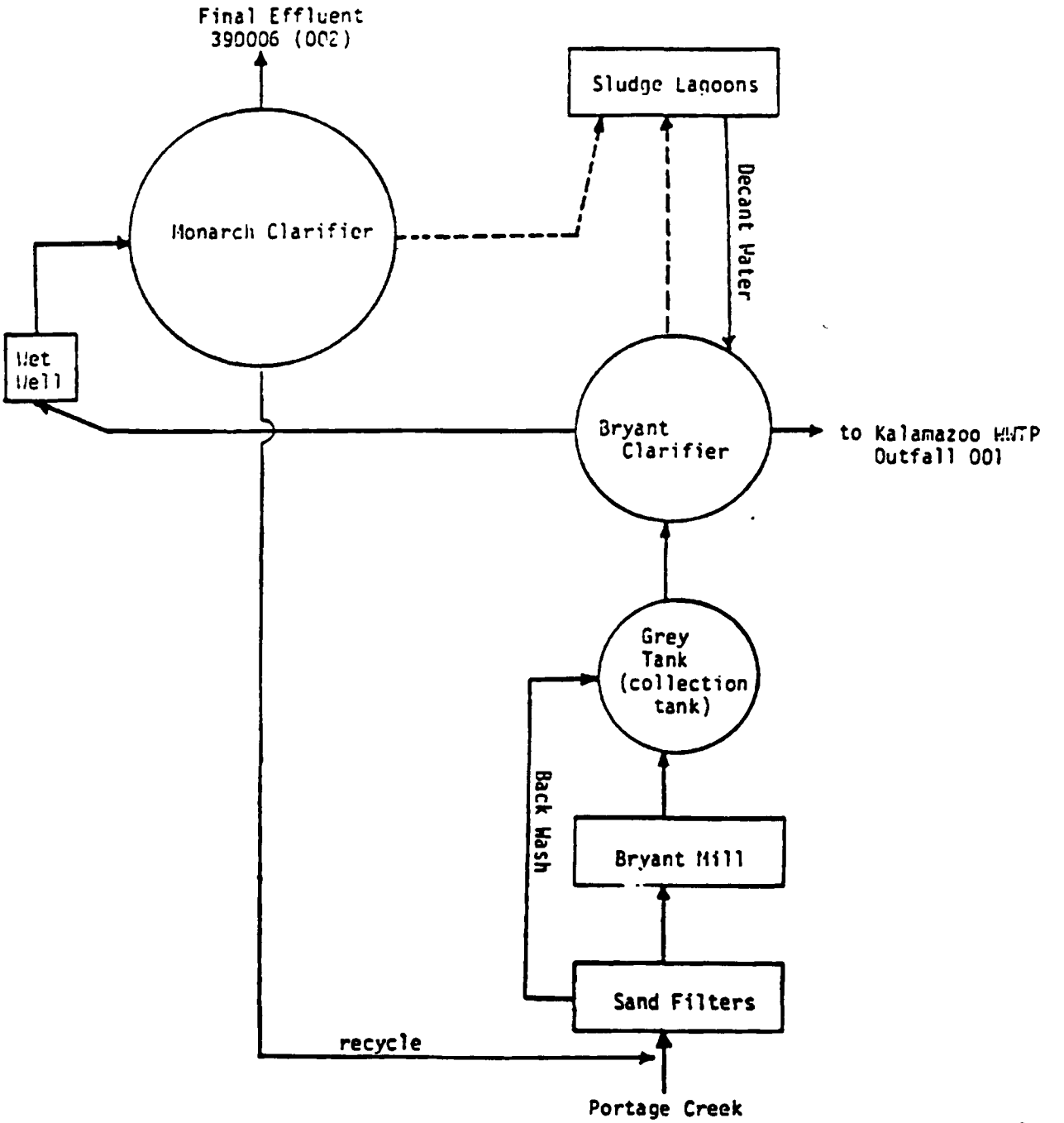
Figure 2 Allied Paper Company - Kalamazoo

Wastewater Treatment



TK 4/23/81

Appendix A

Mini Screening Test for Acute Effluent Toxicity

ALLIED PAPER COMPANY
Kalamazoo, Michigan
March 3-5, 1982

Unpreserved portions of the composite sample collected from outfall 390006 (002) was tested for acute toxicity using the macroinvertebrate *Daphnia magna*. Ten daphnids (<24 hours old) were exposed to 200 ml of undiluted effluent and control water (carbon filtered Lansing city water). The daphnids, contained in pairs of beakers, were observed at 48 hours to determine the percent immobilized (Table 1). Conditions present in test solutions at 0 and 48 hours are given in Table 2. Additional details are available upon request.

This mini screening test provides an indication of effluent toxicity at the point of discharge. The results identify possible violations of Rule 1032 (Water Quality Standards, 1973) and indicate where more extensive testing may be needed.

Table 1 Toxicity to *Daphnia magna*.

Outfall	% immobilized in 48 hours
390006 (002)	100

Table 2 Test conditions.

	Outfall 390006			
	0 hours		48 hours	
	Control	100%	Control	100%
Dissolved oxygen (mg/l)	8.5	6.3	8.4	1.8
Oxygen saturation (%)	96	70	95	20
pH (S.U.)	7.7	7.0	7.6	7.2
Temperature (°C)	20	20	20	20
Conductivity (umhos)	270	1000	270	950
Alkalinity (mg/l)	40	100	--	--
Hardness (mg/l)	84	250	--	--

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MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE MONITORING SECTION

Report of an
Industrial Wastewater Survey
Conducted at
ALLIED PAPER
All Outfalls No. 390022
NPDES Permit No. MI0000779
Kalamazoo County
Kalamazoo, Michigan
October 25-26, 1982

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Monday, October 25, 1982.

The results of this survey met the final limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI0000779. (Table 3)

The survey results were compared to the plant's Monthly Operating Report (MOR) results. The results compare well except for settleable solids. (Table 3)

One grab sample from outfall 390006 (002) was split for comparison of analytical results. These results also compare well. (Table 4)

The results from this survey are presented along with those of the previous survey conducted in March 1982 in Table 5.

Survey Comments

A small amount of groundwater seepage from the old Monarch Mill area was observed entering the Monarch clarifier inlet. This seepage was sampled and analyzed for organic chemicals. Only trace amounts of chlorinated hydrocarbons were detected. (Table 2)

A 96-hour flow-through bioassay was conducted encompassing the survey period. Results will be forthcoming in a separate report.

Plant Processes

The Allied Paper Corporation produces bible paper, light weight printing papers and other specialty papers at the Bryant Mill in Kalamazoo. The mill operates 5 fourdrinier paper machines and one off-machine coater. The normal production of the mill is approximately 220 tons of product per day and actual production figures are given in the appendix. The mill employs about 350 people and operates 24 hours per day, 7 days per week.

The mill uses bleached kraft pulps manufactured at other locations. Both softwood and hardwood pulps are used. Clay, titanium dioxide and calcium carbonate are used as fillers. Very small amounts of direct dyes are used for tinting some grades of paper. Rosin and alum are used for sizing. On some grades of paper small amounts of melamine formaldehyde is used to improve wet strength. No bleaching is done in the normal process of making paper.

On the coater polymeric synthetic latices and/or natural water soluble polymers are used as binders. Styrene-butadiene, vinyl acetate and acrylics are all used from time to time. Of the five paper machines three have flotation type save-alls and two have disc-type save-alls.

Water Supply, Wastewater & Treatment

Process water used at the Bryant Mill is obtained from the Portage Creek and is chlorinated and passed through sand filters prior to use. Potable water for the mill is obtained from the City of Kalamazoo. Domestic wastes are discharged to the city's sanitary sewer system. Boiler water is softened by a hot lime-soda process.

Process wastewaters from excess white water, coating machine water, filter backwash, softener backwash and boiler blowdown are discharged to the 100 ft. diameter Bryant clarifier. A polymer is added to improve settling. A portion of the Bryant clarifier effluent is discharged to the City of Kalamazoo sanitary sewer system via outfall 390004 (001). The remainder of the Bryant clarifier effluent is discharged to the 90 ft. diameter Monarch clarifier. Flow is automatically apportioned by a computerized system utilizing a total organic carbon analyzer. Some of the Monarch clarifier effluent may be recycled for process water, but this was not being done during this survey. The remaining Monarch clarifier effluent is discharged to Portage Creek via outfall 390006 (002).

Sludge from both clarifiers is pumped to drying lagoons on plant property adjacent to the clarifiers.

Survey Procedure

The flows and samples were obtained as follows:

Sampling Location	Flow Measurement	Sampling Methods
390004 (001)	Company totalizer	Automatic air activated sampler. 4 portion grab composite and individual grabs.
390006 (002)	Staff installed water level recorder on a company 36" rectangular weir.	Automatic air activated sampler. 5 portion grab composite and individual grabs.
Manhole near 002	None	Individual grab.

A water level recorder provides a continuous account of the liquid level or head above the crest of a weir. A head versus time graph is obtained for the duration of the survey period. The total volume of wastewater over the weir during the survey period is computed from the graph.

An automatic sampler composites samples at timed intervals. Samples may be proportional to the instantaneous flow over the weir.

Extractable organic and sulfide composite samples are collected by the grab composite method.

A grab composite consists of a series of individual grabs composited into one sample.

An individual grab is a single instantaneous sample.

Samples were analyzed by the Environmental Protection Bureau Laboratories located in Lansing.

Samples were preserved according to Table 6. The results of the physical, chemical and bacteriological analyses are presented in Tables 1 & 2. Letter codes for laboratory results are defined in Table 6.

Allied Paper Corporation - Kalamazoo

Table 1 Analyses of composite samples.

Outfalls		390004 (001)		390006 (002)	
Survey Period	From	10-25-82 @ 1527		10-25-82 @ 1255	
	To	10-26-82 @ 1527		10-26-82 @ 1255	
Computed flow rate[1] (M^3/day)		(6,990)		1,590	
		mg/l	kg/day	mg/l	kg/day
Suspended solids		34	240	25	40
Dissolved solids		580	4,100	600	1,000
Settleable solids		17	--	9	10
COD		140	980	190	300
TOC		53	370	59	94
Cyanide (Total)		< 0.005	--	0.011	0.017
Cyanide (Free)		FCN	--	FCN	--
Sulfide		< 0.02 PA	--	< 0.02 PA	--
BOD_5		84	590	100	200
Nitrite & nitrate nitrogen-N		1.3	9.1	0.61 DM	1.0
Ammonia nitrogen-N		0.12 DS	0.84	0.30 DM	0.46
Kjeldahl nitrogen-N		2.0	14	2.2	3.5
Total phosphorus-P		0.07	0.5	0.06	0.1
Chlorides		49	340	46	73
Alkalinity (as $CaCO_3$)		126	--	113	--
Hardness (as $CaCO_3$)		270	--	230	--
		ug/l		ug/l	
Phenol		4 NB	0.03	4 NB	0.006
Total cadmium (Cd)		< 20	--	< 20	--
Total chromium (Cr)		< 50	--	< 50	--
Total copper (Cu)		< 20	--	< 20	--
Total nickel (Ni)		< 50	--	< 50	--
Total lead (Pb)		< 50	--	< 50	--
Total zinc (Zn)		< 50	--	< 50	--
Total aluminum (Al)		2,800	20	< 1,000	--
Total titanium (Ti)		< 1,000	--	< 1,000	--
Chlorinated Hydrocarbons Scan					
1,2 Dichlorobenzene		1.20	0.0084	0.35	0.00056
B-Chloronapthalene		--	--	1.20	0.0019
Hexachlorobenzene		< 0.1	--	< 0.1	--
Other Chlorinated Hydrocarbons		U (.0.1)	--	U (<0.1)	--
Phenols Scan					
Pentachlorophenol		< 10	--	< 10	--
Other Phenols		U	--	U	--

1 - Flow rates used in the computation of kg/day (obtained from company totalizer).
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205

Table 2 Analyses of grab samples.

Date	Time	Temp.[1] °C	pH[1] S.U.	Residual[1] Chlorine mg/l	Susp. solids mg/l	Diss. solids mg/l	Settle. solids ml/l	Diss. oxygen mg/l	COD mg/l	TOC mg/l	Total cyanide mg/l	Free cyanide mg/l
390004 (001)												
10-25-82 2215		20.0	7.3	U	41	570	5	--	150	54	< 0.005	FCN
10-26-82 0745		21.0	7.4	U	19	580	7	--	130	51	< 0.005	FCN
390006 (002)												
10-25-82 2245		20.5	7.1	U	38	590	19	1.3	190	61	0.010	FCN
10-26-82 0830		18.0	7.3	U	24	580	< 4	1.7	150	56	0.008	FCN
Manhole at 002												
10-26-82 0845		16.0	7.7	U	--	--	--	--	--	--	--	--

	Sulfide mg/l	BOD5 mg/l	Nitrite & nitrate nitrogen mg/l	Ammonia nitrogen mg/l	Kjeldahl nitrogen mg/l	Total phosphorus-P mg/l	Chlorides mg/l	Hardness (as CaCO3) mg/l	Alkalinity (as CaCO3) mg/l
390004 (001)									
10-25-82 2215	< 0.02 PA	80	0.94 DM	0.09 DM	1.8	0.08	46	280	122
10-26-82 0745	< 0.02 PA	76	1.5	< 0.05 DS	1.8	0.05	51	280	125
390006 (002)									
10-25-82 2245	< 0.02 PA	110	0.50 DM	0.05 DM	2.1	0.06	45	280	113
10-26-82 0830	< 0.02 PA	100	0.54 DM	< 0.05 DM	2.0	0.05	46	280	115

	O&G I.R. mg/l	O&G Grav. mg/l	Phenol ug/l	Total cadmium ug/l	Total chromium ug/l	Total copper ug/l	Total nickel ug/l	Total lead ug/l	Total zinc ug/l	Total aluminum ug/l	Total titanium ug/l
390004 (001)											
10-25-82 2215	2	2	4 NB	< 20	< 50	< 20	< 50	< 50	< 50	1,200	< 1,000
10-26-82 0745	1	< 2	3 NB	< 20	< 50	< 20	< 50	< 50	< 50	< 1,000	< 1,000
390006 (002)											
10-25-82 2245	2	2	3 NB	< 20	< 50	< 20	< 50	< 50	< 50	< 1,000	< 1,000
10-26-82 0830	2	< 2	3 NB	< 20	< 50	< 20	< 50	< 50	< 50	< 1,000	< 1,000

1 - Values determined in the field at time of sampling.

Allied Paper Corporation - Kalamazoo

Table 2 (continued)

		Purgeable Halocarbon Scan[2]					Purgeable[2] Aromatic Hydrocarbon Scan	
Date	Time	Chloroform ug/l	1,1,1 Trichloroethane ug/l	Bromodichloromethane ug/l	Trichloroethene ug/l	Other Purgeable Halocarbons ug/l	ug/l	Aromatic Amines ug/l
390004 (001)								
10-25-82 2215		6.00 PS	1.10	1.20	--	U (<1.00)	U (<5.00)	< 100
10-26-82 0745		5.00 PS	1.30	1.10	--	U (<1.00)	U (<5.00)	< 100
390006 (002)								
10-25-82 2245		4.00 PS	--	--	--	U (<1.00)	U (<5.00)	< 100
10-26-82 0830		3.00 PS	--	--	--	U (<1.00)	U (<5.00)	< 100
Manhole at 002								
10-26-82 0845		2.00 PS	1.30	--	1.20	U (<1.00)	U (<5.00)	--

	Chlorinated hydrocarbon Scan			Phenols Scan		
	1,2 Dichlorobenzene ug/l	B-Chloronaphthalene ug/l	Other Chlorinated Hydrocarbons ug/l	Pentachlorophenol ug/l	Hexachlorobiphenol ug/l	Other Phenols ug/l
Manhole at 002						
10-26-82 0845	1.20	0.95	U (<0.11)	< 10	< 0.1	U

2 - The recommended maximum laboratory holding time was exceeded before analysis was completed. Because of possible sample changes, the actual level may have been higher than the reported value.

Table 3 Comparison of survey result with the facility's NPDES Permit and Monthly Operating Report.

Parameter (Unit)	NPDES Permit Final Limitations: Daily Average	NPDES Permit Final Limitations: Daily Maximum	October Monthly Operating Report: Monthly Average	October Monthly Operating Report: Monthly Maximum	October Monthly Operating Report: 10-25-82	October Monthly Operating Report: 10-26-82	Survey Results
390006 (002)							
Flow (M^3/day)	--	--	1,850	3,180	1,430	2,010	1,590
Settleable solids (mg/l)	--	--	0.05	0.05	0.05	0.05	9 (19, <4)
Oil & Grease (visual)	No visible film		0	0	0	0	--
(mg/l)	Quantitative analysis not required		--	--	--	--	(2, <2)
BOD_5 (kg/day)	230	350	207*	269*	160	177	200
Suspended solids (kg/day)	230	350	53*	115*	40	40	40
pH (S.U.)	not <6.5 nor >9.5		--	7.1 min. 6.5	6.9	7.0	(7.1, 7

1 - Survey results are for the composite sample. Grab sample ranges are shown in parentheses ( ).
To obtain MGD multiply M^3/day by 0.0002642
To obtain lbs/day multiply kg/day by 2.205
* - Results reported were determined using data from October 16-31 only, due to a seasonal limit change in effect from October 15 - May 15.

Table 4 Comparison of the laboratory analytical results obtained by Allied Paper - Kalamazoo and the Environmental Protection Bureau from the split grab sample.

Outfall		390006 (002)	
Sample Time & Date		10-26-82 @ 0830	
		Allied	E.P.B.
Flow[1] (M^3/day)		1,450	1,590
		mg/l	mg/l
BOD_5		103.3	100
Settleable solids		0.05	< 4
Suspended solids		30.0	24

1 - Flow reported corresponds to the 24-hour sampling period.

Table 5 Comparison of the previous survey results with the results obtained in this survey.

Outfalls		390004 (001)		390006 (002)	
Survey Date	From	3-1-82	10-25-82	3-1-82	10-25-82
	To	3-2-82	10-26-82	3-2-82	10-26-82
Flow Rate (M^3/day)		5,710	6,990	1,210	--
		mg/l	mg/l	mg/l	mg/l
Suspended solids		28	34	20	25
Dissolved solids		720	580	740	600
Settleable solids		--	--	4	9
COD		220	140	220	190
TOC		74	53	75	59
BOD_5		130	84	140	100
Nitrite & nitrate nitrogen-N		4.3	1.3	5.0	0.64
Ammonia nitrogen-N		0.90	0.12	0.96	0.30
Kjeldahl nitrogen-N		7.5	2.0	9.5	2.2
Total phosphorus-P		0.13	0.07	0.12	0.06

Table 6 Sample Preservation

Parameter	Preservative
COD/TOC/Phenol/Nutrients (Chlorine Absent)	5 drops conc. H_2SO_4/250 ml (to pH <2).
Cyanide	Dechlorinate if needed with sodium thiosulfate (1 drop 0.141 N/mg/l Cl_2/250 ml). 10 drops 10 N NaOH (to pH ≥12)/250 ml.
D.O.	Fixed on site.
Total Metals	2 ml 1:1 HNO_3/250 ml (to pH <2).
Oil & Grease	10 drops conc. H_2SO_4/250 ml (to pH <2).
Sulfides	10 drops 1M ZnAc/250 ml.
Base-neutral Extractables Purgeable Organics	Dechlorinated (if needed) with sodium thiosulfate (1 drop 0.141 N/mg/l Cl_2/250 ml).
Acid Extractables	Dechlorinated (if needed) with sodium thiosulfate (1 drop 0.141 N/mg/l Cl_2/250 ml). 40 drops H_2SO_4/1000 ml (to pH <2).

Samples preserved as required, cooled to 4°C with chain of custody maintained.

Lab Letter Codes

PS - Possible interference may have affected the accuracy of the lab result.
U - Indicates material was analyzed for but not detected.
FC - Free cyanide was not analyzed due to low level of total cyanide found. By definition, the free cyanide would be less than or equal to total cyanide.
PA - High absorbance of the sample reagent blank may have affected the precision of the reported result.
DS - Sample was diluted due to other high values on a multi-channel analytical system.
N3 - Analytical method has not been approved for routine use. Due to possible low recovery, the actual level may have been higher than the reported value.
DM - Sample was diluted to reduce possible matrix interference.

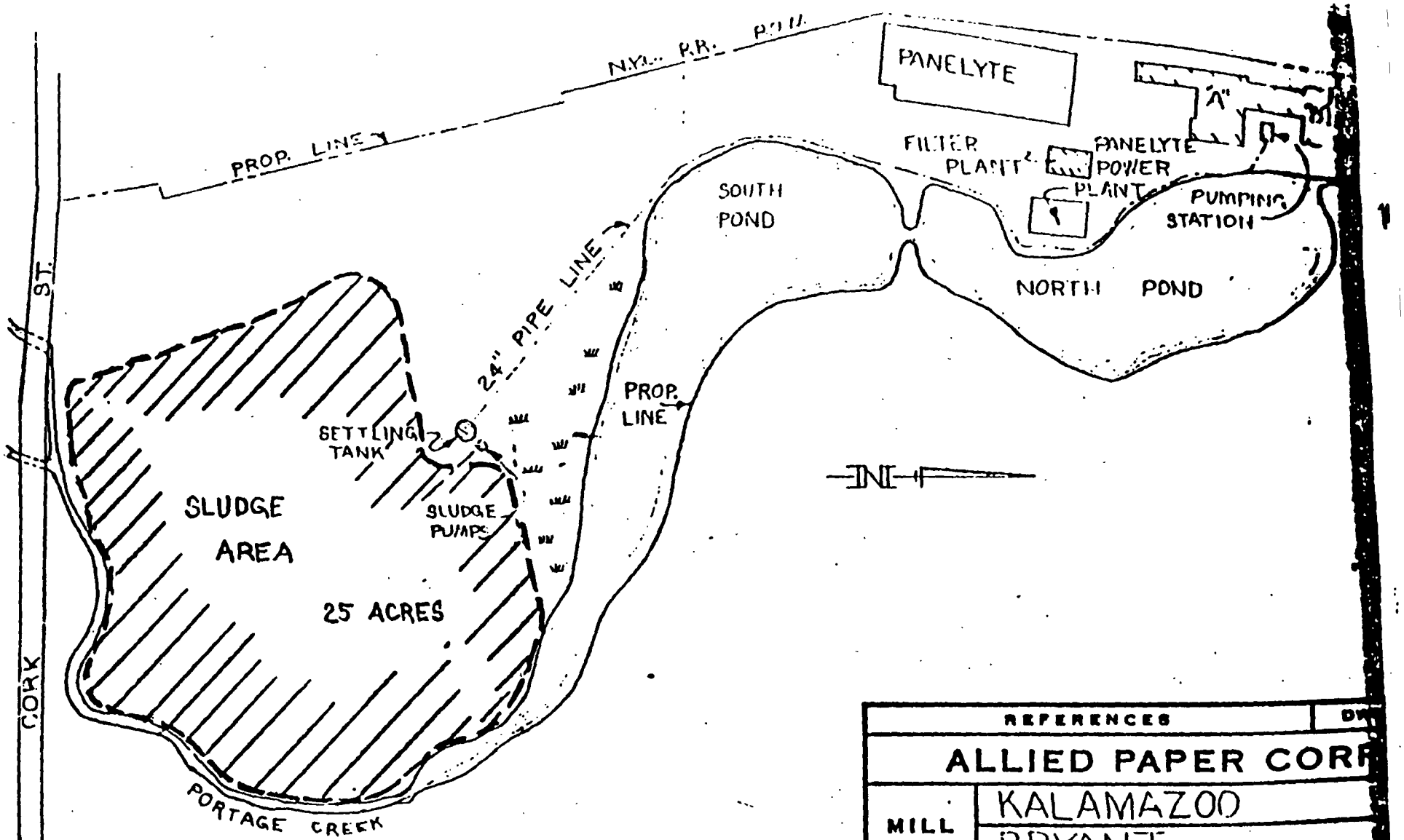
Survey by: Martin Rock, Environmental Engineer
Elizabeth Browne, Water Quality Technician
Edward Hamilton, Water Quality Technician

Contact with Management: Les Stoeffler

Laboratory Analyses by: Environmental Protection Bureau Laboratory

Report by: Martin Rock
Elizabeth Browne
Point Source Monitoring Section
Surface Water Quality Division
Environmental Protection Bureau
Michigan Department of Natural Resources

Distribution "A"
MM
12/22/82



REFERENCES	DW
ALLIED PAPER CORP	
MILL	KALAMAZOO
	BRYANT
TITLE BRYANT SLUDGE BEDS	

REVISIONS	

SCALE 1" = 400' Approx	MO.	DAY	YR.	DWG. NO
DRAWN R.A.P.	12	29	66	
TRACED				
CHECKED R.E.	2	27	66	F-9
CHECKED				
APPROVED				

DIETZGEN NO. 1986 AGEPROOF

FIGURE. I

ALLIED PAPER MILLS
KALAMAZOO

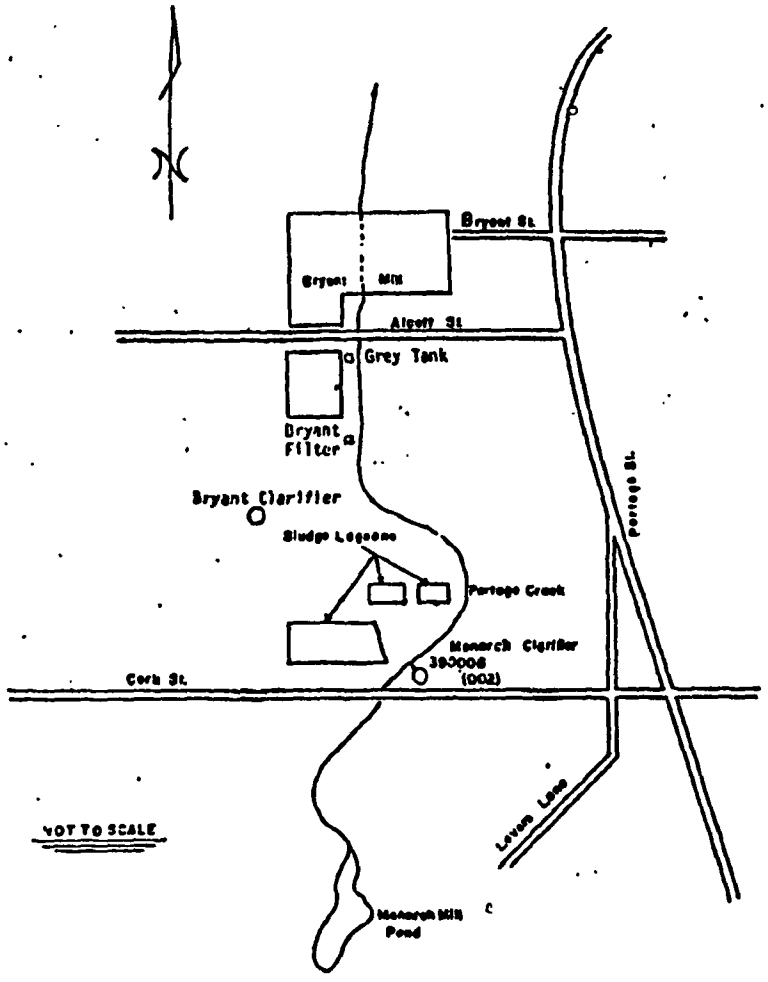
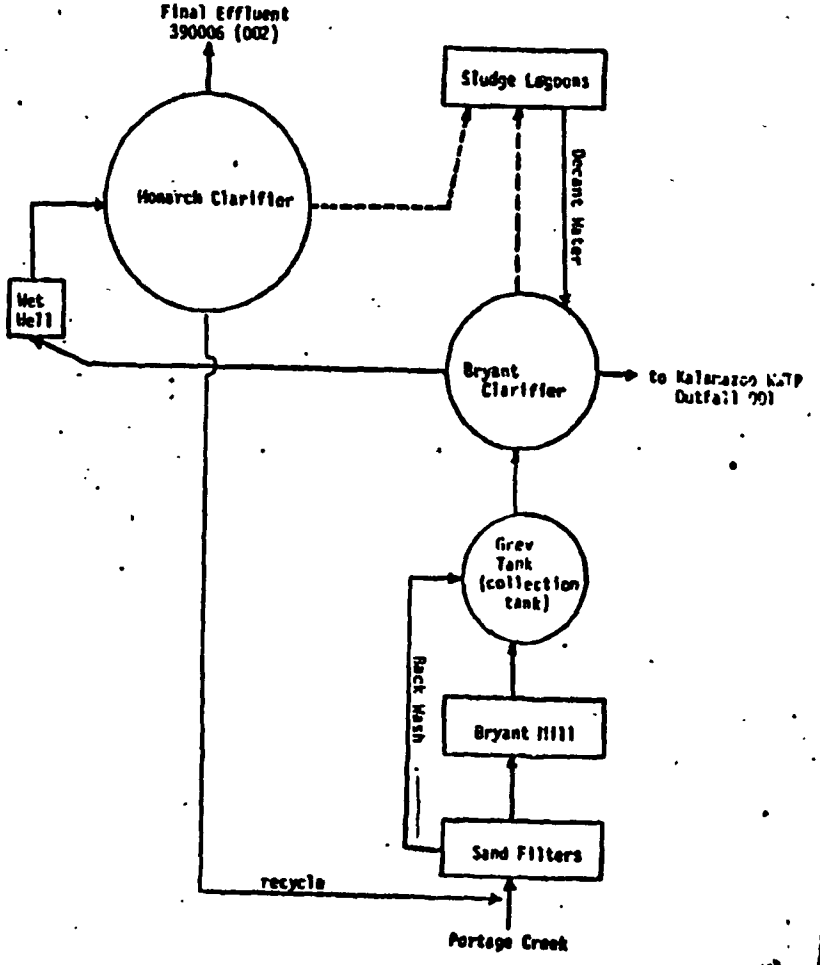


Figure 2 Allied Paper Company - Kalamazoo

Wastewater Treatment



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MICHIGAN DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION BUREAU
POINT SOURCE STUDIES SECTION

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MAR 18 1985
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Report of an
Industrial Wastewater Survey
Conducted at

ALLIED PAPER COMPANY
All Outfalls No. 390222
NPDES No. MI 0000779
Kalamazoo County
1608 Lake Street, Kalamazoo, MI
September 18 and 19, 1984

Survey Summary

Wastewater monitoring was performed during one twenty-four hour survey period starting Tuesday, September 18, 1984.

The results of this survey are compared to the numerical limitations in the facility's National Pollutant Discharge Elimination System (NPDES) Permit, No. MI 0000779. The survey loading for BOD was slightly greater than the daily maximum (Table 3).

The survey results are compared to the self-monitoring results reported in the company's Monthly Operating Report (Table 3).

A grab sample was split with the company for comparison of laboratory results. The comparison is presented in Table 4. The flow monitored during the survey period was about 20 M^3/day less than the company's monitored flow for the same period (Table 4).

The last survey performed at this facility was in October, 1982. The comparison of survey results is presented as Table 5.

Plant Process

The Allied Paper Corporation produces bible paper, light weight printing papers and other specialty papers at its Bryant Mill in Kalamazoo. The mill operates 5 fourdrinier paper machines and one off-machine coater. The normal production of the mill is approximately 220 tons of product per day. The mill employs about 390 people and operates 24 hours per day, 7 days per week.

The mill uses bleached kraft pulps manufactured at other locations. Both softwood and hardwood pulps are used. Clay, titanium dioxide and calcium carbonate are used as fillers. Very small amounts of direct dyes are used for tinting some grades of paper. Rosin and alum are used for sizing. On some grades of paper small amounts of melamine formaldehyde is used to produce wet strength. No bleaching is done in the normal process of making paper.

On the coater polymeric synthetic latices and/or natural water soluble polymers are used as binders. Styrene-butadiene, vinyl acetate and acrylics are all used from time to time. Of the five paper machines one has flotation type save-alls and four have disc-type save-alls. The company plans to convert the remaining flotation type save-all to a disc type save-all in the future.

Final product is shipped from the plant on rolls. No finishing of the paper is done at the plant.

The location of the plant is shown in Figure 1.

Water Supply & Wastewater Treatment

Process water used at the Bryant Mill is obtained from the Portage Creek and is chorinated and passed through sand filters prior to use. Potable water for the mill is obtained from the City of Kalamazoo. Domestic wastes are discharged to the city's sanitary sewer system. Boiler water is obtained from company owned wells and is softened by a hot lime-soda process prior to use.

Process wastewaters from excess white water, coating machine water, filter backwash, softener backwash and boiler blowdown are discharged to the 100 foot diameter Bryant clarifier. A copolymer is added to improve settling. A portion of the Bryant clarifier effluent is discharged to the City of Kalamazoo sanitary sewer system via outfall 390004 (001). The remainder of the Bryant clarifier effluent is discharged to the 90 foot diameter Monarch clarifier. Flow is automatically apportioned by a computerized system utilizing a total organic carbon analyzer. Some of the MOnarch clarifier effluent may be recycled for process water. Recycled water is treated with alum. The remaining Monarch clarifier effluent is discharged to Portage Creek via outfall 390006 (002).

Sludge from both clarifiers is sprayed onto drying lagoons on plant property adjacent to the clarifiers.

1 happened daily or was it a longer time period?
2 A It could be a matter of hours, it could be a matter
3 of days.
4 Q And that all depended on the quantity of the type of
5 paper that you had to produce?
6 A It would all depend on what the customer wanted.
7 MR. LENSER: Are we headed anywhere with
8 this?
9 MS. COLINVAUX: I'm exploring the types of
10 paper that were made and other aspects involved with
11 that. Yes, we are headed somewhere. Do you have an
12 objection?
13 MR. LENSER: Let's get there.
14 Q (By Ms. Colinvaux) In mill D, how many total tons of
15 paper could you manufacture a day?
16 A Like when?
17 Q Okay.
18 A In the '50s or in the --
19 Q Did you ever work in mill D in the '50s?
20 A I worked -- no, not in the '50s, I didn't.
21 Q Do you know the tonnage that mill D could make in the
22 '50s?
23 A Not in the '50s, no. I'm sorry.
24 **Q So during the period that you worked in mill D as a**
25 **tower foreman, how many tons of paper a day could**

1 mill D manufacture?
2 A It went anywhere from 150 ton to 250 ton. It all
3 depends on the years --
4 Q Okay.
5 A -- we are talking about.
6 Q Fair enough. In mill C, how many tons a day during
7 the time that you worked there as a union worker
8 would be the maximum that mill C could produce in a
9 day?
10 A Probably 50 to 75 ton.
11 Q Do you have a sense for what the average daily
12 production would have been during the times that you
13 were with the union?
14 A Not during that time, no.
15 Q When you were a tower foreman at mill D, do you have
16 a sense for what the average daily production of mill
17 D was in tons?
18 A No.
19 Q During the period that you were a mill
20 superintendent, do you have a sense what the average
21 daily production of mill C would have been in tons of
22 paper?
23 A Would you please repeat that? During the time --
24 Q That you were a mill superintendent at mill C, what
25 was the average daily tonnage of paper produced?

1 A 80 ton.
2 Q Okay. Do you know what the maximum that you could
3 produce at mill C was during the time you were mill
4 superintendent?
5 A 100 ton.
6 Q For mill D, during the time that you were a
7 superintendent, a mill superintendent, what was the
8 average daily tonnage of paper produced at mill D?
9 A I don't remember really.
10 Q Do you have an estimate?
11 A 150 ton.
12 Q Do you know what the maximum was that mill D could
13 produce during the time you were mill superintendent?
14 A I must have misunderstood because I said 150 ton as a
15 figure of -- ballpark figure.
16 Q So 150 tons was a maximum, not an average?
17 A On the average.
18 Q A maximum and an average?
19 A Yeah. Well --
20 Q Okay. At any time that you were at either mill C or
21 mill D, did either of those mills ever make carbon
22 paper?
23 A Nope.
24 Q Did they ever make any kind of paper that was
25 colored?

1 dynapulpers.
2 Q What does the legend say that it's supposed to be
3 about at the bottom?
4 A Allied Paper.
5 Q Doesn't have a date?
6 A Nope.
7 Q Doesn't have a description?
8 A Nope.
9 Q So --
10 A This could be the King Mill.
11 Q Then we won't talk about that one. You didn't ever
12 work at the King Mill, right?
13 A Yes, I did for awhile, they shut our mill down and I
14 went over there and was a foreman for awhile.
15 Q All right.
16 A But I certainly don't know their flow.
17 Q Well, when was that that you went over to King Mill?
18 A I couldn't tell you. Mill A was shut down for a
19 period of time and then it started back up.
20 Q Was that when you were a tower foreman?
21 A Yes.
22 Q So it was sometime within the last ten years that you
23 worked there, between '56 and '66. What kind of
24 period of time are we talking about that it was shut
25 down?

1 A Well, it was shut down six months or more.
2 Q Continuous period?
3 A Yes.
4 Q Can you give us -- can you narrow it down any in
5 terms of whether it was nearer to the beginning of
6 your time as a tower foreman or the end of your time
7 as a tower foreman?
8 A Near the end.
9 Q So sometime maybe between -- would it be correct to
10 say it was sometime between 1960 and 1966?
11 A Yes.
12 Q What was the reason that the mill was shut down then?
13 A As I remember, we couldn't get rid of this one
14 particular rubber latex that was on these Life
15 magazines or different magazine that had this little
16 advertisement or whatever it was stuck on them and we
17 couldn't take it out of there. You couldn't find it
18 in our paper. But as soon as it got on the paper
19 machines and the heat hit it, it left a little black
20 smear. If you have studied paper, you know what I'm
21 talking about, right?
22 Q So what was done to remediate that problem while you
23 were not operating Mill A, if you know?
24 A They just didn't use raw paper, they went to all
25 sulfite.

1 so on.
2 Q Did you, in fact, inspect the premises at the Bryant
3 mills?
4 A Yes.
5 Q At the time of your inspection, did the Bryant mills
6 have the clarifier in place?
7 A I think so, I don't know. The inspection didn't
8 involve that at all. It was the paper mills per se,
9 Mill C and Mill D, as I recall it, and probably the
10 coating mill, Mill E.
11 Q At the time that Allied purchased the Bryant mills, is
12 it correct that there were four mills or, I'm sorry,
13 five mills; A, B, C, D and E?
14 A There never was a Mill B. I couldn't quite figure
15 that out; A, C, D and E is what I remember.
16 Q Do you have any recollection of Mill B being a part of
17 the building which Mill A was located?
18 A It could have been but it was not there when we took
19 the mill over, you are right.
20 Q And so when you took over the mill, meaning when
21 Allied took over the Bryant mills, Mill A was the
22 de-inking mill with no papermaking machines?
23 A Correct.
24 Q Mill C had two papermaking machines, is that right?
25 A That's right.

1 A Yes.
2 Q For how long did you serve as the utility man?
3 A I believe it was six weeks. I may be wrong by a week
4 or so, you know, one way or the other.
5 Q What did you do after you were the utility man?
6 A Went over to the coating mill, Mill E.
7 Q What did you do there?
8 A Worked on the super calenders.
9 Q Can you tell us what a super calender is?
10 A It's a large machine that -- the paper runs through a
11 series of cotton rolls and steel rolls and it puts
12 the paper -- the glossy finish on paper.
13 Q What was your role in this process?
14 A At the beginning I was called a helper on the
15 calender.
16 Q How long did you serve as a helper?
17 A Oh, quite a few years.
18 Q Okay. What did you do after that?
19 A I moved up to operator.
20 Q And how long were you the operator?
21 A I'm guessing four years.
22 Q And what did you do after that?
23 A They shut that mill down. Then I went over on the
24 paper machines, Mill C.
25 Q Do you recall what year they shut the mill down?

1 A It had to have been approximately 11 years ago, maybe
2 even 12 now.
3 Q And you said you then went to Mill C?
4 A Yeah, excuse me, I was in Mill D for a short time
5 before that, maybe five, six weeks, eight weeks.
6 Q Do you know why they shut Mill E down?
7 A I had my own opinion.
8 Q What was your opinion?
9 A They had a bunch of idiots down there.
10 Q Why do you say that?
11 MS. LATORRE: Mr. Stetz --
12 A Okay.
13 MS. LATORRE: -- let's talk about if you
14 know why. Let's give more specific answers.
15 Q You thought -- you said you thought there were a
16 bunch of idiots down there. What did you mean by
17 that?
18 A That was my own personal problem with what went on
19 down there.
20 Q What was your personal problem?
21 A I loved that Mill E. They shut it down, it broke my
22 heart, I guess.
23 Q When they shut it down, did the company give a reason
24 for having shut it down?
25 A Yes.

1 MR. KELLEY: Do you want to go back to the
2 prior question?
3 Q He can maybe answer this question as it related to
4 the King Mill and then we will go back.
5 A Generally the unloading people and the unloading
6 supervisor had the first sorting.
7 Q Do you know the names of those particular people?
8 A No.
9 Q Going back, did you -- do you recall doing any
10 testing on particular types of wastepaper in running
11 them through the de-inking process? For instance,
12 magazines, do you recall having run a type of
13 magazine paper through the de-inking process to see
14 whether it was appropriate for de-inking or not?
15 A May have, may have. Don't remember. The test that
16 we did run -- a ground wood was another one that we
17 did not like in the process and we took a test on
18 incoming stock or the people in the dock unloading
19 area used fluoroglucinal solutions to test for ground
20 wood. That's one of the -- mainly because it was
21 unbleached fiber that -- ground wood has not gone
22 through the bleaching process and it would eat up
23 your chemicals very quickly.
24 Q At that time back when you were doing some testing
25 with regard to wastepaper, were you familiar with

1 A No.
2 Q Do you remember any of the inspectors at that time?
3 A The last one I worked with was Pete somebody, but he
4 passed away, but I can't remember his last name.
5 Q What instructions were you given in terms of what
6 paper products were acceptable to be used in the
7 de-inking process?
8 A It told you wet strength carbon paper, fluorescent
9 paper, latex, anything you figure that's got latex,
10 like envelopes, some of it had latex on, anything
11 with strings in them.
12 Q Those were the papers that were unacceptable?
13 A Yes.
14 Q The first one you mentioned was wet strength paper?
15 A Yes.
16 Q What is wet strength paper?
17 A It's one of probably not soluble in water, that
18 wouldn't beat up. It plugs the pumps up if it gets
19 through.
20 Q How did you recognize it when you saw it?
21 A Some you could smell it on. Others you got to wet
22 your thumb and index finger, and if you couldn't rub
23 through it you accepted it as wet strength and threw
24 it out. Like a dollar bill, you can't rub through
25 it.

1 Q You say you could smell it?
2 A Some.
3 Q Sometimes?
4 A Some.
5 Q What was the smell you were looking for?
6 A Anything out of the ordinary you figure was wet
7 strength wasn't supposed to be on there.
8 Q Well, was there paper that you weren't sure about
9 that had an odor but you weren't sure whether it was
10 acceptable or not?
11 A Yes.
12 Q What did you do in those cases?
13 A Throw it out. They said when in doubt, throw it out.
14 There was a sign that said that.
15 Q Now, the bales of paper that you were looking
16 through, being 1200 to 1500 pounds?
17 A Some of them.
18 Q What was the smallest weight or the lowest weight?
19 A You might get one 400 or 500 pounds.
20 Q I take it that you did not look through every piece
21 of paper?
22 A We tried our best. It would be impossible to get
23 every bad piece of paper out.
24 Q The method by which you looked through the paper was
25 flipping through the edges with your thumb or what

1 method did you use?
2 A Fanning it off the top.
3 Q Spreading it off?
4 A Start at the top and just layer by layer spread it
5 out.
6 Q The witness is indicating with the paper -- spreading
7 the paper horizontally on the belt, is that right,
8 sir?
9 A Yes.
10 Q At the time you started working at Mill A, were you
11 familiar with the paper called NCR paper?
12 A No.
13 Q Have you ever heard of no carbon required paper?
14 A Yes, I have heard of it.
15 Q Have you heard of National Cash Register paper?
16 A No.
17 Q When you say you have heard of no carbon required
18 paper, what have you heard about it?
19 A I have heard it was one-time carbon.
20 Q And have you heard anything about it in terms of its
21 desirability for de-inking?
22 A Well, all carbon paper was supposed to have been
23 thrown out.
24 Q Do you consider no carbon required paper to be carbon
25 paper?

1 A To tell you the truth, I wouldn't know this one-time
2 carbon unless someone showed me, then I could say
3 whether we throwed it out or not. I'm talking about
4 carbon paper, I'm talking about the ones you put in
5 the typewriter.
6 Q With the dark blue color?
7 A You can spot easy.
8 Q You are talking about dark blue or --
9 A If you tear something that has dark inside, you throw
10 that out, too.
11 Q If there were a paper that didn't have the dark color
12 associated with it, you were not trained in
13 recognizing any other kinds of --
14 A If it didn't look suspicious, let her go.
15 Q To the best of your recollection, sir, you did not
16 have specific training in identifying carbonless copy
17 paper while you were working at Mill A?
18 A No.
19 Q That's a correct statement that I just made?
20 A Wasn't really trained in recognizing any paper only
21 by the people I worked with.
22 Q That's what I'm talking about. My question is did
23 the people you worked with at Mill A train you in
24 recognizing no carbon required paper or carbonless
25 copy paper?

1 A I can't really answer that one because I don't know
2 what it looks like, so --
3 MR. KELLEY: He has already said if you
4 show him the paper maybe he could talk about it.
5 Q Well, let me ask it this way; you were not trained to
6 look for no carbon required paper by that name in any
7 event, is that correct?
8 A That name I have never heard it before.
9 Q Okay. Did you do any testing of the paper yourself
10 down at the conveyor belt?
11 A No.
12 Q Did you observe anyone else do testing at that
13 location?
14 A Yes.
15 Q Who was that?
16 A Ray Escamilla.
17 Q What was Mr. Escamilla's position?
18 A He was operating the scales.
19 Q What kind of testing did he do?
20 A If he was suspicious a bale had wet strength, he
21 would take a home blender, put a little caustic pill
22 in there and beat it up and see if it would de-fiber.
23 Q Now, what would occasion Mr. Escamilla being
24 suspicious of paper?
25 A Probably he could smell the wet strength, too.

1 Q Do you know who made that decision?
2 A No.
3 Q In your tenure at Allied Paper, did you have any
4 interaction with the companies that sold wastepaper
5 to Allied Paper?
6 A No.
7 Q Do you know if anyone in the R & D Department would
8 communicate with the vendors of the wastepaper?
9 A No.
10 Q Did the R & D Department ever test the incoming
11 paper?
12 A Yes.
13 Q Why would they do that?
14 A They were -- they would test primarily looking for
15 wet strength paper.
16 Q And wet strength paper is a problem because it
17 wouldn't break down, is that true?
18 A Yes.
19 Q How often would the R & D people do these tests?
20 A I don't know.
21 Q Do you know who in the department was responsible for
22 that?
23 A Les Stoeffler.
24 Q What would cause Les Stoeffler to do a test like
25 that, if you know?

1 Q. Is ash used as a filler in the paper process?
2 A. Yes. Ash determines the percent of the filler.
3 Q. Did you also work in terms of analysis of the paper
4 pulp?
5 A. Eventually we did some testing, but not chemical
6 testing analysis or anything like that.
7 Q. Which type of testing did you do on the paper pulp?
8 A. Just consistencies, brightness, things that identify
9 the quality of the pulp.
10 Q. Was this at the King Mill or at the Bryant Mill or at
11 the Monarch Mill?
12 A. Initially it was all the King Mill.
13 Q. And later on you did testing on the pulp from the
14 Bryant and Monarch as well?
15 A. Possibly. I don't recall all that kind of stuff.
16 Q. Was there a deinking portion of the King Mill? Was
17 there an area in the King Mill that did deinking?
18 A. Sure.
19 Q. And the pulp that you tested at the King Mill, was that
20 deinked pulp?
21 A. Primarily, yes.
22 Q. Were there other types of pulp generated at the King
23 Mill at that time?
24 A. No. It was purchased pulp, but not generated.
25 Q. So the only type of pulp that was generated at King was

1 Q At the time when you started at King Mill, can you
2 describe for us the process at the beginning of the
3 line? In other words, where the wastepaper came in,
4 what was done with it at that point back in 1954?
5 A It came in. It was put into a hydropulper. It
6 was -- with certain chemicals and broken down and
7 then it was washed. It was bleached and then washed
8 again and then ready for use.
9 Q Where the -- at the point where the paper came in,
10 did that come in by railroad car or truck, do you
11 recall?
12 A As I recall, mostly truck.
13 Q And at that time when you first began working at
14 Allied, was the wastepaper sorted by individuals,
15 removing staples, things like that?
16 A Not staples. It was sorted for large contaminates.
17 Q Such as?
18 A Boards, tires, batteries.
19 Q At that point when you -- let's say in the first year
20 that you were working at Allied at the King Mill,
21 were you aware that there were wastepapers which were
22 acceptable and those which were not acceptable for
23 the de-inking process?
24 A I don't understand the term acceptable.
25 Q Do you know at that point when you first started

1 working at King Mill whether the sorters were told
2 that there were some papers which will work for
3 de-inking and others that we want you to discard?
4 MR. KELLEY: I object. I don't think you
5 have established that he has the basis to know this
6 type of information.
7 MS. HELMS: Well, we are going to find out.
8 A No, I wasn't aware of any of that as to the type of
9 wastepaper that was available.
10 Q Did any of your responsibilities which concerned the
11 quality of de-inked pulp relate directly to the
12 quality of the wastepaper which was de-inked?
13 A No.
14 Q Did they at any time that you worked at Allied?
15 A No.
16 Q What were the activities that you took to determine
17 and control the quality of the de-inked pulp?
18 A Repeat that, please.
19 Q Let me rephrase it.
20 A All right.
21 Q What is it that you did as a -- as part of your job
22 of monitoring the de-inked pulp quality?
23 A The two things were the brightness of the pulp and
24 the dirt or the, you know, the specs in the pulp that
25 are objectionable.

1 Q And if you determined that the brightness of the pulp
2 was not satisfactory, what was it that you did at
3 that point?
4 A I informed the people responsible for the operation
5 at the plant.
6 Q And did you at that time have responsibilities for
7 determining what should be altered to achieve the
8 desired brightness of pulp?
9 A Absolutely not.
10 Q Now with regard -- I'm sorry.
11 A I was a rookie.
12 Q Okay. With regard to the specs in the pulp, were you
13 basically monitoring for the presence of the specs?
14 A A matter of degree, level of dirt, what we called
15 dirt, foreign contaminants, anything that's there, we
16 looked at it to see if it was high or low.
17 Q How did you make that analysis?
18 A I really don't recall exactly. There was a
19 procedure.
20 Q Was it done at the point in the process where --
21 before the pulp was made into the paper?
22 A No, no way to do that.
23 Q So it was after you had the paper product?
24 A It was after the paper was through the process, the
25 pulp -- paper was through the process and made into

1 pulp, at the end of the pulping process, when it is
2 ready to be used on the paper machine.
3 Q That's what I thought I was saying. Let me rephrase
4 my question.
5 Is it correct, sir, that you were unable to
6 test for the brightness of the ultimate pulp that was
7 created and for specs in the pulp at the point where
8 the incoming wastepaper was present?
9 A That's correct.
10 Q And can you tell us what process -- excuse me, let me
11 start again. Can you tell us at what point it was in
12 the process where you made the test for the specs in
13 the pulp?
14 A As I recall, two points, the point after it had been
15 pulped up and washed, after it had been washed and
16 then after it had been bleached.
17 Q At points where you made your test, the pulp was
18 still in a liquid or semi-liquid state, correct?
19 A Correct.
20 Q Was the testing for brightness of the pulp done at
21 the same point in the process?
22 A Yes, brightness primarily in the finished product.
23 Q Did you also check for brightness in the pulp before
24 it was a finished product?
25 A Well, the pulp before -- the finished product -- the

1 de-ink plant's finished --
2 Q Is pulp?
3 A Is pulp.
4 Q All right. So you did test the liquid or semi-liquid
5 pulp for brightness also?
6 A (Nodding head.)
7 Q Is that a yes?
8 A Yes.
9 Q Okay. Thank you.
10 Was part of your responsibility at that
11 time when you were just starting out at Allied also
12 to test the product or the finished product of the
13 paper making area?
14 A Yes, I did some.
15 Q And what were you testing for when you tested the
16 paper product from the paper making part?
17 A Brightness, opacity, strength, printing properties,
18 many properties.
19 Q Are these tests that were done in the laboratory?
20 A In the laboratory or the testing stations in the
21 mill.
22 Q At that time when you were first starting out as a
23 project engineer at Allied, did you have any
24 involvement with monitoring the waste waters which
25 were discharged from that paper mill?

1 of an orientation procedure do you believe?
2 A Yes, I believe so, something to get my feet wet
3 literally.
4 Q Okay, I'm tempted to ask you if your feet got wet but
5 I'll wait. Did you have any other projects with Mr.
6 Stoeffler before you moved on to the Bryant lab?
7 A Before I went to the Bryant Mill? No, I believe that
8 that was all that I -- I believe that that was all that
9 I had to do with him.
10 Q Your best estimate of how long you were working at King
11 before you transferred to Bryant would be what?
12 A A couple of months.
13 Q All right, so when you moved to Bryant do you know if
14 it was still 1959 or if it was --
15 A Oh yes, definitely, because I went to work at Allied in
16 early January of '59.
17 Q Okay, so you then moved on to Bryant and assumed what
18 role when you got there?
19 A Well, I was still a group leader working for a
20 different manager.
21 Q Did you have a group yet?
22 A Pardon me?
23 Q Did you have a group yet?
24 A Gee, did I have a group? No, I didn't have a group
25 initially.

1 Q Okay, I'm sorry, and you said you were working for --
2 did you say you were working for someone?
3 A I was working for Ray Hall. He was a guy that had
4 worked for Allied some period before that and came back
5 to them to head this coating development group.
6 Q Now was this the capacity in which you went to Bryant
7 to work in a quote unquote coating development work?
8 A Yes.
9 Q And was that at Mill E?
10 A No, the laboratory was in Mill C.
11 Q There was only one mill at Bryant Mill -- excuse me,
12 strike that. There was only one laboratory at Bryant
13 Mill?
14 A Yes, that is true, which was in the Mill C building but
15 it serviced all of Bryant.
16 Q Okay, other witnesses have said that there was the main
17 laboratory was there but yet some of the laboratory
18 type of things that went on frequently went on
19 throughout the mill.
20 A Well, they have testing labs in each of the mills.
21 Q Okay.
22 A But that is -- that's a quality control type of
23 function.
24 Q What you were doing?
25 A Actually, yeah, that is right. They were all quality

1 control labs, even the one at Monarch.
2 Q These were fairly small facilities?
3 A Relatively small rooms, yes.
4 Q And the purpose of which was -- well, they provide --
5 A To test paper as it was being made to make sure that it
6 met the specifications.
7 Q Fine. Was there a similar testing lab, do you know, in
8 Mill A, the de-ink mill?
9 A I don't remember any. I never spent much time in there
10 and I can't recall.
11 Q Okay.
12 A They must have some sort of little room they could do
13 some testing in. I can't remember it, though.
14 Q Each of these little testing labs were presumably
15 equipped with whatever was necessary to do these
16 quality control tests?
17 A Yes.
18 Q All right, and what, if you know, were the basic -- was
19 the basic equipment that was required in each of those
20 testing labs?
21 A Most of that was strength testing type machines like
22 tensile, tear, mullen, or bursts, fold, folding tests
23 to see how many times paper will fold under a certain
24 tension before it breaks. They had pH tests, testing
25 equipment to run pH tests on the paper, and Brighton

1 Optical Reflectance, Brighton Reflectance Tests.
2 Q Were there chemicals involved in that quality control
3 testing elements?
4 A There were some chemicals.
5 Q Do you have a knowledge of what the purpose or what
6 function those chemicals served in that testing
7 protocol?
8 A What protocols?
9 Q What protocols.
10 A Well, I'm trying to think of what chemicals might have
11 been involved besides color indicator tests to check
12 pH. That was one of the ways of testing it to use
13 certain dyes had different colors of different pH's.
14 Q Okay, that's fair enough. That would have been --
15 well, let me take a step back. Your involvement in
16 research, did that also take you into that quality
17 control testing realm at all?
18 A Yes, the test station, the test stations had equipment,
19 some equipment that we didn't have in the lab so if we
20 wanted to run those tests, we had to run to the lab or
21 the test station.
22 Q Would a situation be where you would be running tests
23 using the quality control testing lab equipment be
24 where you were experimenting with particular types of
25 new coatings or new grades of paper?

1 A Well, as I say, we might -- we would have had to go to
2 the labs to run some of the strength tests on equipment
3 that they had that we didn't have.
4 Q Okay.
5 A But other than that, the laboratory work would have
6 been done in our own main lab.
7 Q All right, did you in the main lab also possess some of
8 the equipment that was included in the testing labs?
9 A Yes.
10 Q Can you recall anything that was in the testing labs
11 that you don't have specifically? Was it just the
12 items for strength tests?
13 A Well, we had some strength tests in the lab, too, but
14 we just didn't have all of the tests. We didn't have
15 smoothness test which is not a strength test but that
16 was one of the things which I had to do at a test
17 station. Probably the main one that I personally did
18 was they had a different tensile testing equipment than
19 we did. So I did some of that in the test station lab.
20 I forgot the question.
21 Q So did I. Actually I think you have pretty much
22 answered it, whatever it was. In this research role
23 and I apologize but I forgot what the name of that -- I
24 think you said coating, coating group or new coating
25 group that you actually went to work for at Bryant?

1 A Okay. Let's just go through it roughly rather than
2 try to define it exactly and then you can go back and
3 ask me questions about it.
4 Q That would be great.
5 A The paper was bought through a broker and delivered
6 to our mill by truckers, of which we weighed it and
7 we ran it through our system. We had a percentage
8 and it varied. What we were after was the best
9 yield. Some paper just washes away, you know, there
10 is no fiber to it. And we were after the best fiber
11 we could get and paper that you didn't have to use
12 too much chemicals to de-ink with.
13 It went through our slush makers, two of
14 them were high pressure steam, hot -- returning hot
15 water from the brown Oliver, caustic -- a percent of
16 caustic and it was de-fibered and de-inked right
17 there.
18 It was pumped into a big storage tank and
19 as we ran the mill, we ran it -- pumped it back
20 through. It ran through the brown Oliver, where the
21 hot water was re-obtained and run back to the slush
22 maker. The paper went up through the vibrator
23 screens, the bird screens, the flat screens for
24 cleaning, went down the first set of brown slides,
25 went through a system called a Dirtex, the Dirtex --

1 it went down through the last two stages of brown
2 slides and they called them incline washers.
3 Water was added and it went through another
4 cleaning process, centrifugers. Then it went into a
5 storage tank where then it was pumped out through our
6 chlorine towers and chlorine gas was added.
7 When it came out, it went over a chlorine
8 Oliver. From the chlorine Oliver the paper was
9 washed to get rid of as much chlorine as it could.
10 It went into the bleach towers. The paper
11 was bleached, came out over a leach Oliver and more
12 water was added and it went through a cowling screen.
13 Then it went into one of our chests and
14 water was added to get the right consistency. I
15 think we shot for four percent consistency.
16 From there it was pumped across the street
17 into a big storage tank in Mill C.
18 Q What I'm going to ask the court reporter to do is
19 read back your answer so that we can make sure we
20 have all this down before we go on.
21 (Last answer read)
22 Q Mr. Akright, we are going to start at the beginning
23 of that and go through this in detail. You said that
24 the paper was bought through a broker?
25 A Yes.

1 Q Did you have any involvement with the actual purchase
2 of the paper?
3 A No. I could reject paper if I found bales that
4 weren't, you know, that we knew some types of paper
5 that we couldn't de-ink.
6 Q What were the types of paper that you couldn't
7 de-ink?
8 A I don't know. We run the samples of it. We had a
9 little blender and added caustic to it, you know, it
10 was something that you make malteds with, you know.
11 Q A blender?
12 A Yeah, a regular blender.
13 Q Well, when you were working for St. Regis, were you
14 instructed as to what kinds of samples you should
15 reject as opposed to having to determine that
16 yourself?
17 A We had an inspector when it was delivered and they
18 generally took care of it and if I caught anything,
19 when I was on my shift, then I was to set it aside
20 and they were to set it aside or reject or decide
21 whether they wanted to run it or not.
22 MS. LATORRE: Objection to these St. Regis
23 questions.
24 Q Mr. Akright, can you tell us in order the positions
25 that you had at Mill A when you worked for St. Regis?

1 A Okay. I was a screen man. I was a cooker man. I
2 was a head washer man. Then I was a tower foreman.
3 Q I didn't hear your last one.
4 A Then I was a tower foreman, the last one.
5 Q Can you tell us for approximately how many years you
6 were a screen man?
7 A I don't think it was a year.
8 Q And for how many years you were a cooker man?
9 A Probably a year, year-and-a-half.
10 Q Head washer man for how long?
11 A About two-and-a-half years.
12 Q And for how long were you the tower foreman for
13 St. Regis?
14 A About ten years.
15 Q At some point did St. Regis sell the Allied -- strike
16 that.
17 At some point did the Mill A at Bryant
18 change hands from St. Regis to Allied Paper?
19 A Yes.
20 Q And at that point you were the tower foreman at
21 Mill A?
22 A Yes.
23 Q And did you continue to be the tower foreman for
24 Allied?
25 A Yes.

1 Q Now, you testified earlier that you thought you were
2 employed with St. Regis as opposed to Allied for six
3 or seven years but the number of years you have
4 described for each of your positions adds up to more
5 than that. Is that because your tower foreman job
6 overlapped duties at Allied?
7 MS. LATORRE: Did you understand the
8 question?
9 A Say that again please.
10 Q Let me rephrase the question. I believe you
11 testified earlier that you thought you worked for
12 St. Regis as opposed to Allied for six or seven
13 years?
14 A Yes.
15 Q And the time that you spent in your first three
16 positions at St. Regis amounts to at least four
17 years, based on the description you just gave us?
18 A Um-hmm.
19 Q My question is then did the ten years that you acted
20 as tower foreman include both work for Allied and
21 St. Regis?
22 A Yes.
23 Q During the years that you worked for St. Regis, did
24 the operation of the de-inking mill, that you
25 described for us at length a few minutes ago, change

1 or did it remain the same?
2 A We were continually changing things to do a better
3 job.
4 Q The basic components of the de-inking process that
5 you described for us, were any of those changed
6 during the time you were with St. Regis?
7 A I don't believe that the chlorine -- I don't believe
8 we chlorinated paper when St. Regis owned it.
9 Q So that was one element that came about later after
10 you left St. Regis?
11 A Yes.
12 Q Other than that, is the description representative of
13 the general de-inking process during the years you
14 worked for St. Regis?
15 A Well, when St. Regis had it, we ran cookers, we ran
16 the cookers but they eliminated them and decided they
17 didn't need them.
18 MS. LATORRE: Again, objection to these
19 St. Regis questions.
20 Q When you say they eliminated them, do you mean that
21 Allied eliminated the cookers?
22 A I believe it was in that time.
23 Q Were there any other elements of the process that
24 changed during the years you worked for St. Regis?
25 A I can't think of any.

1 Q When you were working for St. Regis, was paper
2 brought both by rail car and truck?
3 A Yes.
4 Q I guess I didn't understand one of the words you used
5 in the next part of your description, I thought you
6 said "we waded".
7 A Weighed it.
8 Q And brought it through your system?
9 A Yes.
10 Q Now, did you, at that point, after you received the
11 paper and weighed it, is that when you checked the
12 paper to see whether it was acceptable for de-inking?
13 A That's when the inspector took care of it.
14 Q Who was the inspector during the years you worked for
15 St. Regis?
16 A Charles -- no, Harold Schiedel.
17 Q Can you spell his last name?
18 A No, S-h-i-d-e-l, maybe.
19 Q Did Mr. Schiedel continue to work at Mill A after
20 Allied took over?
21 A Yes.
22 Q Is Mr. Schiedel still living, do you know?
23 A I have no idea.
24 Q How was the inspection process accomplished at
25 Mill A?

1 A Okay. On the slush makers, there was an operator, a
2 mule driver, one inspector and one other worker, I
3 don't remember what he was called. If he had doubts
4 about anything, he would run the hand sample and then
5 he would bring it to the foreman's attention.
6 MS. HELMS: Would you read that last
7 answer, please?
8 (Record read)
9 Q Was the initial examination of the incoming paper
10 materials done by the group of people you just
11 described who worked on the slush maker?
12 A The inspector on the dock, Harold Schiedel, if he had
13 questions, he would talk to the superintendent.
14 Q Was there, at that time, a group of people called
15 sorters?
16 A That's the inspector.
17 Q That's the dock inspector --
18 A Well, belt inspector.
19 Q And does the belt inspector's -- strike that.
20 Did the belt inspector's duties come
21 before the slush maker's duties?
22 A Yes.
23 Q How many people worked on the belt doing sorting?
24 A Just two.
25 Q And that was the inspector and a helper?

1 A Yes.
2 Q Do you know the names of any of the helpers to the
3 inspector?
4 A Well, let's see, Bill, he is long since dead. I
5 can't remember his last name. You know, I can see
6 their faces but I don't remember their names.
7 Q What are the reasons that paper was rejected by the
8 sorters, the inspector and his assistant?
9 A Well, any material that we felt we couldn't de-ink.
10 Q What kind of material would that be?
11 A There were some inks on the market or like possibly
12 even paint samples, you know, on the paper,
13 fluorescents, wet strengths.
14 Q Were glossy magazines a problem for de-inking?
15 A Some of them were.
16 Q And the inspector and his assistant were trained to
17 know what the papers were that were problems for
18 de-inking?
19 A Well, they had to guess, you know. They had to run
20 samples if they weren't sure.
21 Q How did they run the samples?
22 A With this little blender.
23 Q What would they put into the blender?
24 A So much water to so many grams of paper with a
25 percent of caustic, we had some little caustic pills

1 we put in there. After it's blended for two minutes,
2 we put it through a little screen and wash it out and
3 then you could see if it had been de-inked or not.
4 And lots of times they would just give it to the
5 foreman and we had to make the decision to use it or
6 not.
7 Q And this particular process of checking the paper for
8 its ability to be de-inked is something that you had
9 involvement with when you were at the St. Regis?
10 A Yes.
11 Q Was that running of samples in the blender a daily
12 activity for the de-inking mill?
13 A Yes.
14 Q When the blender process had been completed and you
15 had it de-inked, to whatever extent de-inked residue
16 was left in the blender, what was done with the
17 residue?
18 A Just washed out and dumped down the sink.
19 Q And back in the years you were working for St. Regis,
20 where did that material go from the point where it
21 was dumped into the sink?
22 MS. LATORRE: If you know.
23 A I'm not sure until I become a foreman and become more
24 aware where this sewer water went. I'm not sure.
25 Q When you became a foreman and became aware of where

1 this sewer water went, where did you find that the
2 sewer water went?
3 A I believe a lot of it went right out to the creek.
4 This is as I remember it.
5 MS. LATORRE: Judy, are we talking now
6 about the samples? What specifically are you talking
7 about when you say "sewer water".
8 MS. HELMS: Well, the question was about
9 the material that was put into the sink and it went
10 where and the answer was that it went through the
11 sewer system.
12 MS. LATORRE: You are just talking about
13 the samples that were run after the sample of the
14 water and the caustic was put in the blender and
15 placed on the screen? That's what you are referring
16 to right now?
17 MS. HELMS: No, I think the question and
18 answer were more general than that and were about
19 where the sewer water went. I think that they were
20 quite clear, so --
21 MS. LATORRE: Were you answering with
22 respect to just sewer water generally?
23 A Yes, sewer water generally
24 Q During any of the years that you worked with
25 St. Regis, did you have any contact with the

1 companies or individuals who provided paper or with
2 the brokers who provided paper to St. Regis?
3 A Only when they came to the mill and we had something
4 that we didn't want to accept and they would come
5 over and argue with us.
6 Q Well, that's the area I'm referring to. When you had
7 the experience on a daily basis of checking out
8 different kinds of paper, you found that you had
9 problems regularly with the given type of paper
10 provided to you by a given broker, was that something
11 that St. Regis would then request that that
12 individual or broker discontinue providing to you?
13 A Yes, we wouldn't accept it.
14 Q And at some point during the time you worked for
15 St. Regis, were you personally involved in some of
16 those discussions?
17 A I don't believe I was in the first years, no.
18 Q When you became a foreman, did you tend to be more
19 involved?
20 A That would be later on, yes.
21 Q After material was tested and found to be acceptable
22 for the de-inking process at St. Regis, where did it
23 go from the point of inspection by the inspector and
24 his assistant?
25 A Went down a conveyor belt into the slush maker.

1 Q At that point, had the metal fasteners, such as
2 staples, paper clips, been removed from the paper
3 already?
4 A No.
5 Q What was done after the paper reached the slush maker
6 area?
7 A It was de-fibered and de-inked.
8 Q And what was de-fibering?
9 A There was a rotor, what you call an attritioning ring
10 in the slush maker.
11 MS. LATORRE: What was it called?
12 A Attritioning ring, I believe, and it did the
13 grinding.
14 Q And that process done at the rotor was done on paper
15 which had not had any metal parts removed from it?
16 A Oh, there was metal parts that went through it but it
17 got trapped all through the system and we cleaned
18 them out.
19 Q Was the de-fibering system where you would trap these
20 and remove them?
21 A That didn't stop all of them.
22 Q It removed some of them?
23 A Well, occasionally you had to stop and clean up and
24 dig them out.
25 Q What happened to the paper as a result of having been

1 through the de-fibering rotor? In what condition was
2 it then?
3 A I don't understand what you mean.
4 Q The result of the operation of the rotor on the paper
5 was that the paper was ground up?
6 A Yes.
7 Q Was anything done to the paper at that point, other
8 than grinding it up?
9 A Water was added, high pressure steam, it ran out 180
10 to 190 degrees, caustic was added, a percentage of
11 caustic, and after it went through one slush maker,
12 then it was pumped over continuously through the
13 second slush maker and the same process happened
14 except we didn't have to add anything because the
15 chemicals was there. Sometimes we added more steam.
16 Q Now the process that you just described, is that
17 before the de-inking process or is that the de-inking
18 process?
19 A That is the de-inking process.
20 Q The ground-up paper material to which you have added
21 the high pressure steam was contained at that point
22 in the processing in what kind of a vessel?
23 A Well, it's called a slush maker and if you wanted to
24 know how much it held --
25 Q Yes.

1 A Taller than this room and almost half as big around
2 as this room, probably 14 to 16 feet high and
3 probably they were smaller than a hydropulper, maybe
4 16 feet diameter.
5 Q What was the caustic that was added at the de-inking
6 process?
7 A It was a percentage. We stored it from tankers and
8 added water to it, seemed like it was like a 14
9 percent solution.
10 Q And by a caustic, you are referring to an acid?
11 A Is caustic an acid? I don't know if it was an acid
12 or an alkaline.
13 Q Do you know what material chemical was used for the
14 caustic?
15 A Caustic -- caustic was made in the Hooker Company and
16 it's made from water pumped down into the ground,
17 through salt fields that comes up through a small
18 cell, they called them cells, and it had a lot of
19 electricity in them. I believe hydrogen came off and
20 caustic went the other way. It was just very simple.
21 I could be wrong. I didn't work at that.
22 MS. LATORRE: Well, I just want to remind
23 you you are supposed to be talking about things that
24 you know about. If you know about that process,
25 that's fine, but just don't guess.

1 A Okay.
2 Q You said that the material then went over to slush
3 makers?
4 A Yes.
5 Q Can you tell us what a slush maker is?
6 A Well, that's the machine we just described back
7 there.
8 Q Which machine, the rotor?
9 A Yes.
10 Q The attritioning -- so the grinding operation was
11 done on the paper originally and then later, after
12 the caustic was added, the grinding operation was
13 done on the slush maker, is that correct?
14 A The first slush maker, the water and the steam and
15 the caustic and the material was continually added
16 and from there it went through the second slush
17 maker, where nothing was added. We had a control so
18 it didn't run empty and then it was continually
19 pumped out.
20 Q What was the purpose for having it run through the
21 second slush maker?
22 A Did a better job of de-fibering and we could run it
23 continuously.
24 Q So you are continuing to break down the product?
25 A Yes.

1 Q And the process from the time the paper reaches the
2 de-fibering rotor to the point where it's finished in
3 the second slush maker takes approximately how many
4 hours?
5 A Oh, it wasn't a matter of hours. It went through
6 pretty fast.
7 Q Less than an hour?
8 A Well, in eight hours' time, we could run 100 to 120
9 ton through it, as I remember it.
10 Q From the second slush maker, where did the material
11 go next?
12 A It went up to a big black tank. We called it the
13 black tank. It had a storage of, it seems like it
14 was 50 ton.
15 Q Was the equipment for the de-inking process at Mill A
16 all located on one floor of the mill?
17 A No.
18 Q What floor was the equipment on that did the belt for
19 the sorting and the rotor and the slush maker?
20 A That was on the main floor. There was a basement
21 underneath that section.
22 Q And then you said the material went up to a big black
23 tank?
24 A Yes.
25 Q Was that on the first floor also?

1 way to tell.
2 (Off-the-record discussion)
3 (Exhibit 4 marked)
4 Q The date on the Exhibit Number 3 for today's date
5 appears to be a 1969 date so we are going to move
6 onto the next blueprint, which we will ask the court
7 reporter to mark as Mr. Akright Deposition Exhibit
8 Number 4 for identification and Mr. Akright, what is
9 the date that you read on this blueprint?
10 A January 13, 1961.
11 Q All right.
12 MS. LATORRE: Just read the SA number at
13 the bottom.
14 A SA46154.
15 Q Mr. Akright, in 1961 you had already achieved the
16 position of tower foreman for Mill A, is that right?
17 A Yes.
18 Q And at that time Mill A of the Bryant Mill had been
19 acquired by Allied Paper?
20 A Yes.
21 Q And you were therefore the tower foreman for Allied
22 Paper when this blueprint was created, is that right?
23 A Yes.
24 Q Can you tell us whether the representations on this
25 blueprint, generally speaking, comport with your

1 general recollection of how the system of de-inking
2 worked at Mill A at that time and then we will go
3 through it in some detail if it seems to be generally
4 correct.
5 A I guess, although I don't see -- I guess it is pretty
6 close.
7 Q Well, let's go through it in a little detail then and
8 if you can confirm it better --
9 A If they drew it up back then, maybe my recollection
10 is wrong.
11 Q Why don't we start --
12 MS. LATORRE: Before we start and launch
13 into any painstaking detail, I just want to note that
14 Mr. Akright has already testified in great detail
15 about the operations and I know you want to go
16 through it with the blueprints. If we can go through
17 it as quickly as possible, not to waste his time. I
18 think we already have a lot of background.
19 MS. HELMS: I agree we have a lot of
20 background, it's SCM that did not favor us with the
21 blueprints until Mr. Akright testified, so it was
22 unfortunate for everyone that the sequence took place
23 that way.
24 Q Maybe we could begin at the beginning of the
25 blueprint flow table chart. Tell us what that

1 represents, Mr. Akright?
2 A These are the slush makers, it was de-fibered and ran
3 to number two chest, that was a tile tank.
4 Q Now, does the blueprint show two slush makers?
5 A Shows three. It had one set-up on batch.
6 Q Does that --
7 A To continuous.
8 Q Does the three slush maker make sense to you here
9 now?
10 A As I see the blueprints, that makes sense.
11 Q Where did it go from there?
12 A Went to number two chest, that was the old tile tank.
13 Q Is that the big black storage tank, 50 ton, that you
14 described earlier?
15 A No. See they completely eliminated that by now.
16 Q Okay, so what is the tile chest?
17 A Well, the tile tank, I don't know, 25 feet deep and
18 probably 30 feet in diameter that the hot paper stock
19 was pumped into it.
20 Q You had told us earlier that in earlier years there
21 was a big black storage tank that was located outside
22 the mill?
23 A Right.
24 Q Is it your testimony now that that was eliminated and
25 that the de-inked material passed directly from the

1 slush makers to the tile tank?
2 A Yes.
3 Q That's in 1961 that that was the case?
4 A Um-hmm.
5 Q Is that a yes?
6 A Yes.
7 Q From there, where does the blueprint show it going?
8 A Shows it going to the head box, the brown Oliver,
9 back to the -- see they were called rifflers, I may
10 have missed that the first time. From there it went
11 through the Johnson screens.
12 Q Okay, before we go on, Mr. Akright, you described for
13 us earlier in your deposition what the slush makers
14 did, what the tile tank did, and what the brown
15 Oliver did. Those descriptions would still be
16 accurate, wouldn't they?
17 A Yes.
18 Q But the riffler I don't think you did talk about, can
19 you tell us --
20 A I don't know as I remember, I couldn't remember what
21 it was called and all it did was trap pins and stuff
22 like the ends of magazines, these paper clips.
23 Q All right. And from the riffler, where did the
24 de-inked material go next?
25 A Went down through the Johnson screens.

1 Q Are those the vibrator screens?
2 A No, where the larger particles were taken out that
3 weren't defibered. It went into broke boxes and were
4 hauled away.
5 Q How many Johnson screens were there?
6 A Shows six, I guess there was six. I think there was
7 four.
8 Q How did --
9 A But that doesn't matter.
10 Q How did the Johnson screens operate?
11 A They vibrated and the thicker stuff just worked off
12 the end of them.
13 Q Were they placed horizontally with the liquid
14 material passing over the top or were they vertical,
15 diagonal?
16 A Horizontal.
17 Q What were the size of those screens?
18 A I'd say it was about, probably five feet by about
19 seven, each one of them.
20 Q All right. And from the Johnson screens, where did
21 the de-inked material go next?
22 A Okay. The accepted stock, now this is '61, right?
23 Let me think. Okay. This shows it went down the
24 number one and number two slide washers that I
25 explained.

1 Q Are those the brown slides?
2 A Yes.
3 Q Now, do you see anywhere between the Johnson screens
4 and the brown slide washers either bird screens or
5 flat screens? Is that on the blueprint?
6 A Yeah, it's here, and then it was pumped back up, up
7 to the vibrator screens.
8 Q Meaning the same vibrator screens it had passed
9 through before?
10 A No. These are the ones that you just asked me about,
11 the vibrator screens. These are the Johnson screens,
12 the slide washers, vibrator screens.
13 Q So you are saying the bird screens and the flat
14 screens are vibrator screens?
15 A The bird screens and flat screens are separate from
16 the vibrator screens.
17 Q Okay. All right, so --
18 A They have got them set over here at tailing screens.
19 Q And that's what you testified to earlier, too, it was
20 after the vibrator screens that you mentioned the
21 bird screens and the flat screens?
22 A Yeah.
23 Q So where did the de-inked material go after the
24 vibrator screens?
25 A The accepted -- okay, the accepted that went through

1 the vibrators and, you see, what ran over the rejects
2 from the vibrator screens ran to the tailing screens
3 and good stuff still was obtained and then the
4 rejects was thrown in the broke boxes.
5 Q How many tailing screens were there?
6 A There really was only one but they have set this up
7 so there was three, but that doesn't matter.
8 Q And from the tailing screens, where did the de-inked
9 material go next?
10 A Okay. It went to this small storage chest where it
11 was pumped through the Dirtex.
12 Q Now, can you --
13 A They call them power cleaners, I call them Dirtex.
14 Q Can you clarify for me where the brown slide washers
15 appeared? Was that before we went to the vibrator
16 screens with the de-inked material?
17 A Yeah, first and second stage did. And then it went
18 through the cleaning.
19 Q The screens?
20 A Yeah, see -- well, as I remember it, this was later
21 on. It went down through all the slides before it
22 come over here. But this they have shown that it
23 goes back.
24 Q Referring to the brown slides?
25 A Yes, see, because after it went through these, what

1 did I call them now?
2 Q Vibrator screens, tailing screens?
3 A Dirtex.
4 Q Dirtex, I'm sorry.
5 A After the Dirtex, it shows they went down the last
6 two stages of the brown slides, three and four.
7 Q Okay. So it went through brown slides one and two,
8 then the Dirtex, and then brown slides three and
9 four?
10 A That's what this shows.
11 Q Does that sound plausible to you?
12 A It could have went that way.
13 Q Okay. And from the brown slides three and four,
14 where did the de-inked material go next?
15 A Then it went to number four chest, number four chest.
16 After I look at this it's really got me confused.
17 MS. LATORRE: I just want to remind you, if
18 you don't know, let's not guess. You have already
19 told us a lot already. Somebody else will be able to
20 fill in the gaps.
21 A Let me say this, I don't think it's right, but
22 regardless the system, you know, had nothing to do
23 with what you are looking for.
24 Q What am I looking for?
25 A You are looking for where this went into the sewer,

1 right?
2 Q That's right.
3 A That's right.
4 Q So you are saying this really didn't matter?
5 A Regardless where it went first, it doesn't make that
6 much difference.
7 Q Let me ask you this question; you gave us detailed
8 testimony at your last deposition about your
9 recollection of how the system worked.
10 A Um-hmm.
11 Q And you have now had an opportunity to see a
12 blueprint which purports to be representative of how
13 the system worked for de-inking in 1961?
14 A Um-hmm.
15 Q Is there anything on this blueprint that refreshes
16 your recollection and helps you remember something
17 different from what you have already described for
18 us? I think the riffler was one thing you mentioned.
19 Was that something you didn't remember before and now
20 you did remember?
21 A I forgot what the name of it was. You will find I
22 did mention there was something in there but I
23 couldn't remember what it was called.
24 Q And if you would just take a look and see if there is
25 anything else that jogs your memory on something

1 maybe you didn't tell us about last time.
2 MS. LATORRE: For the record, I would like
3 to thank Mr. Akright for making our objections for
4 us, the objections we make repeatedly that this has
5 nothing to do with what's at issue in this case.
6 MS. HELMS: Well, I don't think he is
7 saying at all what you have been saying.
8 A Basically I think this is pretty near right.
9 Q All right. So there is nothing else that
10 specifically --
11 A No.
12 Q -- refreshes your memory?
13 A No.
14 Q All right. This is a blueprint marked 1961 and I
15 would like to have you just look for a couple of
16 minutes at the other blueprints for this process,
17 which may contain other information and they may not,
18 you have not compared one to the other, and if there
19 is anything on any of these that refreshes your
20 recollection about this process, just let us know.
21 Otherwise we will move on to the next issue.
22 Mr. Akright, before you look at them, have
23 you ever seen these blueprints before?
24 A No I have never seen a blueprint of the place.
25 Q All right. In your job as tower foreman, you didn't

1 have occasion to look at blueprints?
2 A No, that's why I was interested in the date.
3 Q Can you see from the legends on the blueprints, who
4 created them or what they were made for?
5 A The stock and water flow.
6 Q Do you know why someone wanted to know that, have
7 that memorialized in a blueprint?
8 A Well, whenever you build something or rebuild
9 something, somebody has to know where everything
10 goes.
11 Q Even though they got it wrong?
12 A Well, as I remember it. I'm saying I think it's
13 wrong, you know. Maybe they are right, but --
14 Q It's just not the way you remember some of the
15 features?
16 A Um-hmm, but you have to remember that's 30 years ago,
17 right, about 30 years ago?
18 Q Yes, it is.
19 MS. LATORRE: You never saw these
20 blueprints when you were on the job?
21 THE WITNESS: No.
22 MS. LATORRE: After you left the job?
23 THE WITNESS: No.
24 MS. LATORRE: This is the first time you
25 are seeing them today?

1 THE WITNESS: Yes.
2 Q (By Ms. Helms) Why don't you look at the document
3 marked 1964. Did you see --
4 MR. VASILOFF: I think it's 1961.
5 Q Here is another 1961 blueprint and see if there is
6 anything that you have forgotten about that you can
7 add to your description of the de-inked process.
8 A Unless I missed it, you know, I don't see the cowling
9 screens and I don't see the other set of Dirtex
10 that -- it was the centrifugers that we had. They
11 are not in here.
12 Q Those are both items you testified about earlier?
13 A Um-hmm, maybe I can't see them, maybe they are here
14 somewheres and I just haven't seen them.
15 Q But I guess I'm more interested in items that you did
16 not testify about that you perhaps see a reference to
17 and it refreshes your recollection of something.
18 A See how much more accurate this is than the other
19 one?
20 MS. LATORRE: Have you ever had any
21 training or experience in looking at blueprints of
22 this sort?
23 THE WITNESS: No.
24 Q Are you ready for the next one?
25 A Yes.

1 Q This is blueprint SA46151 dated May, 1964 and I'll
2 ask you the same question. Just take a look at it
3 and see if it refreshes your memory on the de-inking
4 operation at all.
5 A '64?
6 Q Yes.
7 A The other one was '61.
8 Q Well, we thought it was. That's how we read it.
9 A Seems '64 they show they were using a cooker where in
10 '61 was back further. Before that we used a regular
11 line of cookers and it doesn't even show that. And
12 this is a newer one?
13 MR. VASILOFF: Purports to be, sir.
14 A Yeah, well --
15 Q So maybe somebody missed something on the earlier
16 drawing that actually existed then?
17 A Yes.
18 MS. LATORRE: I just want to insert a
19 foundation objection with regard to Mr. Akright
20 trying to interpret these blueprints.
21 MS. HELMS: We are not asking Mr. Akright
22 to interpret the blueprints. We're asking him if
23 there is anything written on here that jogs his
24 personal memory of the de-inking.
25 MS. LATORRE: You are asking if anything

1 looks wrong to him, too.
2 MS. HELMS: Asked him that before. I'm not
3 asking him that anymore. You are too late.
4 Q Are you finished with this one, sir?
5 A Yes.
6 Q The next one is SA46150 and this is dated March,
7 1966. I would ask you the same question, if anything
8 on there jogs your memory that you had not testified
9 to earlier.
10 A Okay.
11 Q Anything on that one?
12 A No.
13 Q The next one is SA46158 and it's dated 1966, same
14 question for you, Mr. Akright, whether it jogs your
15 memory about any of the components of the de-inking
16 operation?
17 A I believe I left the mill -- is that '66, fifth
18 month, seven day, I left in the summer.
19 Q So that was right before you left?
20 A So -- yeah.
21 MS. LATORRE: This is dated, what's the
22 month of that?
23 THE WITNESS: Is this a five there?
24 MS. LATORRE: It's hard to tell, sometime
25 in 1966, but you think it was before you left?

1 THE WITNESS: Yeah.
2 A They eliminated the cowling screen, they cut that
3 right out then. And I don't think they even showed
4 it, oh, yeah, it showed it there, I missed it. All
5 right, okay.
6 Q Is there anything on there that refreshes you?
7 A No.
8 Q The next one is SA46152 and it's dated March, 1966?
9 A Okay.
10 Q Is there anything on that one that helps you remember
11 anything additional?
12 A No.
13 Q SA46138, this is dated August of 1966, although I
14 think this is a different representation. It says
15 "title, flow diagram for wet lap machine".
16 A Um-hmm.
17 Q That's one of the machines in the de-inking process?
18 A Okay. The wet lap was a way to take the water out of
19 the fiber and they put it on skids and I think they
20 were buying that somewhere and not running it through
21 our system, or shipping it over from another mill,
22 like the King Mill.
23 MS. LATORRE: Let's just testify to the
24 things you remember.
25 A Okay. I don't know.

1 Q Well, do you remember that apparatus, was it a
2 machine?
3 A Yes, I remember it.
4 Q Do you remember where that machine was located in the
5 system that you described?
6 A No, I don't remember.
7 Q What was the general purpose of that?
8 A This is eighth month, 24th day of '66, they could
9 have -- that was -- I was gone then.
10 MS. LATORRE: Objection.
11 Q But you said you remember the machine?
12 A They had one in there.
13 Q My question is based on your memory when you were
14 there, what was it's function?
15 A Just run some of our finished stock through it and
16 put it on skids.
17 Q You mean in containers on skids?
18 A Nope. It was just rolled up, partly wet, and laid in
19 sections like logs.
20 Q Oh. So your finished stock from Mill A, is that what
21 you are talking about, stock from Mill A?
22 A Yes.
23 Q Was of a consistency that it could be self contained?
24 A Well, no, after it run over the wet lap --
25 Q Oh, that was the function of the wet lap?

1 A Right, the water was taken out. Normally we pumped
2 it at about a four percent consistency over to that
3 number seven chest.
4 Q What did you do with the material that was prepared
5 through the wet lap machine as opposed to what you
6 did with the material that was in the more liquid
7 form that was pumped to the holding tanks?
8 A I don't know.
9 Q Do you understand the question?
10 A Yes.
11 Q I could rephrase it -- okay.
12 Do you know whether the destination of
13 that material you created with the wet lap machine
14 was Mill C and D?
15 A No, I don't know.
16 Q Can you tell us whether Allied Paper sold de-inked
17 stock to other paper companies?
18 MS. LATORRE: Objection.
19 Q To use as roll stock?
20 A I don't know.
21 Q Let me make sure we have gotten through all of these.
22 Here's another one.
23 I have one undated, SA46134 -- this is
24 dated April, 1958 and this is at a time when you were
25 with Mill A and you were with Allied Paper as the

1 tower foreman?
2 A Yes.
3 Q And my question is the same as I have been asking
4 you. Is there anything in that diagram, looks a
5 little simpler than the others, anything that helps
6 you remember something?
7 A Yeah, that's way back when the system was different
8 than this, you know. If you was to follow this
9 through, you would see where all these changes had
10 taken place in them years.
11 Q And the testimony that you gave us during the first
12 day of your deposition was about all of the
13 components of the de-inking system. I think you
14 pointed out where the chlorine Oliver was added and
15 the chlorine tower after Allied bought the system.
16 But other than that, you have described for us all
17 the components of the system when Allied was using
18 it?
19 A Yes.
20 Q And there is nothing on that document that refreshes
21 your memory as to any additional components?
22 A No.
23 Q Let me show you what I believe is the last blueprint
24 on this issue and ask the same question.
25 A See, this is so far wrong, we didn't have no

1 dynapulpers.
2 Q What does the legend say that it's supposed to be
3 about at the bottom?
4 A Allied Paper.
5 Q Doesn't have a date?
6 A Nope.
7 Q Doesn't have a description?
8 A Nope.
9 Q So --
10 A This could be the King Mill.
11 Q Then we won't talk about that one. You didn't ever
12 work at the King Mill, right?
13 A Yes, I did for awhile, they shut our mill down and I
14 went over there and was a foreman for awhile.
15 Q All right.
16 A But I certainly don't know their flow.
17 Q Well, when was that that you went over to King Mill?
18 A I couldn't tell you. Mill A was shut down for a
19 period of time and then it started back up.
20 Q Was that when you were a tower foreman?
21 A Yes.
22 Q So it was sometime within the last ten years that you
23 worked there, between '56 and '66. What kind of
24 period of time are we talking about that it was shut
25 down?

1 reference to the Bryant Division, it mentions an
2 overflow from the white water storage chest. Was
3 there an overflow from the white water storage chest
4 at the King Mill?
5 A I don't remember.
6 Q And just to get back for a moment, I'm not sure that
7 we covered all of this, but the chemicals that you
8 mentioned with regard to the paper making process,
9 rosin size, Alum, dyes, titanium, clay, starch,
10 de-foamers, were those the only chemicals used in the
11 paper making process?
12 A I'm sure there are others. Those are the ones I can
13 remember.
14 Q You mentioned that you would -- you did some projects
15 back then with regard to waste disposal or not many
16 but some?
17 A None to my knowledge. It doesn't come up that I can
18 remember.
19 Q You did mention that you would do some projects on
20 the de-inking machinery?
21 A Yes.
22 Q All right, sir, I would refer you to page SA 033558
23 on -- excuse me, I have the wrong page. SA 033556,
24 again in Bennett Exhibit Number 1, and that is a
25 diagram with regard to the Bryant Division, okay?

1 And I believe it purports to be a diagram of the
2 de-inking process at the Bryant Division. I would
3 just ask you to take a moment to familiarize yourself
4 with this diagram.
5 A Okay.
6 Q All right. The apparatus that's depicted on this
7 particular diagram, was the de-inking machinery at
8 the King Mill similar to what's depicted here?
9 A Yes.
10 Q Were there any significant differences to your
11 knowledge between what's depicted here and what was
12 at the King Mill?
13 A Nothing major.
14 Q Was there anything minor to your knowledge that you
15 can point out for me?
16 A This is one picture of the Bryant operation. There
17 were various changes to the equipment process and so
18 on, so I'm sure this is a picture of what it looked
19 like at one time.
20 Q I'm referring to the King Mill.
21 A The King Mill is pretty similar. Let me see. Let me
22 think now.
23 Q Take your time.
24 A As I remember, the King Mill chlorinated and bleached
25 first before they cleaned and the Bryant Mill cleaned

1 and screened before they bleached.
2 Q All right. So, if you could, point out for me on
3 this particular diagram where then the chlorination
4 process and bleaching process would have been at the
5 King Mill, where it would have fit in in the scheme
6 of things.
7 A Let's see, probably right after the -- you see -- I'm
8 not sure what that is.
9 MR. KELLEY: I think it's JNS.
10 Q Yeah, that is JNS.
11 A Jonsson screens.
12 Q Yes. You think it would have been after the Jonsson
13 screens?
14 A Yes, probably right in there.
15 Q Okay. All right, sir, I'd like to go through the
16 de-inking process with you. You were familiar with
17 the de-inking process at the King Mill, weren't you?
18 A Yes.
19 Q All right. Where it says dynapulper, is that where
20 the waste pick-up paper would be added?
21 A That's correct.
22 Q And what would be added to the wastepaper in addition
23 to water?
24 A Water and caustic.
25 Q And --

1 A Steam.
2 Q And steam. And then would it be allowed -- would it
3 be agitated within the dynapulper?
4 A Dynapulper or hydropulper is like a big Waring
5 blender.
6 Q Do you know what is depicted immediately or next in
7 line from the dynapulper that's got SLU there?
8 A That's a slusher.
9 Q Okay. Would both the waste pulp and all of the water
10 go from the dynapulper to the slusher?
11 A Is this the Bryant configuration, the King?
12 Q I'm referring to it as the King Mill.
13 A The King Mill did not have exactly this set-up. They
14 had hydropulpers that did the job in one operation,
15 if you will.
16 Q Okay. So instead of a dynapulper and slusher, there
17 was just a hydropulper at the King Mill?
18 A That's correct.
19 Q Would all of the waste stock and the water that was
20 included initially in the hydropulper go to the -- I
21 believe that's a brown stock Oliver listed on this
22 diagram.
23 A I would say so.
24 Q Okay. No water would be removed from the waste stock
25 as it moved from the hydropulper to the brown stock

1 Oliver?
2 A No.
3 Q Okay. And what was the purpose of the brown stock
4 Oliver?
5 A It would be to recover the caustic so it could be
6 re-used back in the pulper, and the hot water.
7 Q All right. Does that mean there was a Saveall
8 located on the Oliver or did the Oliver just remove
9 the water and caustic itself?
10 A Yes.
11 Q Okay.
12 MR. KELLEY: I'm sorry, that is an
13 either/or. You said yes.
14 A It does remove the water itself.
15 Q So that's the purpose of that piece of machinery?
16 A Yeah. It's another form of a Saveall.
17 Q Okay. And would all of the water and caustic removed
18 at the brown stock Oliver be re-used or would there
19 be again percentages lost at the sewers and
20 percentages actually reclaimed?
21 A Generally re-used.
22 Q Now would this water that was reclaimed at the brown
23 stock Oliver only be used in the hydropulper again?
24 A Yes.
25 Q It couldn't be used for any other purpose in either

1 the de-inking or paper making process?
2 A No.
3 Q Now as the wastepaper stock left the brown stock
4 Oliver, is it more in a wet pulp form or is it in a
5 liquid form?
6 A Liquid form.
7 Q I guess if the water and caustic is removed at the
8 brown stock Oliver how can it still be in liquid
9 form?
10 A Well, it's in your definition of liquid.
11 Q Okay. What do you mean it was in liquid form?
12 A It's in pulp form, if you will. It comes off the
13 Oliver in like mud, if you will.
14 Q And it would then move to the riff head box?
15 A The rifflers, I guess that is what that is. I'm not
16 sure the King Mill had that.
17 Q Okay. Do you believe that the waste pulp at that
18 point moved directly to the Jonsson screens as
19 opposed to the riffler head box at the King Mill?
20 A The riffler, its purpose was to settle out any metal
21 particles. I don't remember that the King Mill had
22 that.
23 Q But would -- if the King Mill didn't have that, would
24 the next step from the brown stock Oliver be to the
25 Jonsson screens?

1 A Yeah.
2 Q And what would take place or what would happen to the
3 wastepaper stock on the Jonsson screens?
4 A It had a lot -- let's see, the Jonsson screen is a --
5 it's a screen with holes in it and the stock slurry
6 is pumped over this screen. The fibers themselves go
7 through the holes, the contaminant would stay up on
8 top and would be vibrated off the end of it.
9 Q So the actual wastepaper fiber that you wanted to use
10 or make use of again in paper making would fall
11 through these Jonsson screens?
12 A That's correct.
13 Q What would happen to the contaminants as you've
14 described them that would be left on top of the
15 screens?
16 A They would vibrate off and be collected and sent
17 to -- in boxes to landfills.
18 Q So were these contaminants on the screen, were they
19 more or less in a dry pulp form at that point or --
20 A There were pieces of rubber band, cans, scotch tapes.
21 Q So when you refer to contaminants, you're not
22 referring to anything along the lines of any pulp or
23 stock?
24 A No.
25 Q Was water either added or removed from the stock, the

1 waste stock at the Jonsson screens?
2 A Added. It had to be at the proper consistency to
3 work right.
4 Q Then the wastepaper stock and the water that was
5 added, that would move -- or at the King Mill, would
6 this then be chlorinated?
7 A Yes, as I remember, it went to chlorination from
8 there.
9 Q And how was it chlorinated at that point? Was it put
10 into a large tank?
11 A It had what they call a chlorine mixer. It
12 interjected chlorine gas into the pulp slurry.
13 Q At the chlorination stage here, would water be added
14 or removed at this point?
15 A There's probably a consistency regulator ahead of
16 that. It had to again have the proper consistency.
17 Q So the stock would move from the chlorine mixer to
18 the consistency regulator?
19 A The regulator before the chlorine mixer.
20 Q Okay. And water would be added at that point?
21 A Yes.
22 Q Would water be removed at that point?
23 A No.
24 Q From the chlorine mixer, where would the wastepaper
25 stock and the water that was added at the consistency

1 regulator, where would that go?
2 A It would go to the chlorine Oliver, which again is a
3 Saveall, water Saveall, another form of.
4 Q And would -- I take it water would be removed at that
5 point?
6 A That's correct.
7 Q Would all of the water that was removed at the
8 chlorine Oliver be reclaimed or would a portion of
9 that go to the sewers?
10 A I don't remember. I would say partially reclaimed to
11 be used ahead of the chlorine mixer but the rest
12 would go to the sewer.
13 Q Do you have any idea as to approximately what
14 percentage would go to the sewer or what would be
15 reclaimed?
16 A No, I do not.
17 Q Would more be reclaimed than went to the sewer?
18 A Probably even.
19 Q And what was the consistency of the wastepaper stock
20 as it left the chlorine Oliver? Was it in mud form?
21 A Yes. It would be considered 8 to 12 percent.
22 Q 8 to 12 percent?
23 A Consistency.
24 Q And by consistency, you mean 8 to 12 percent stock
25 versus water or --

1 A Yes. It's -- a half a percent in consistency is very
2 thin like milk and three percent is a pretty good
3 slurry form. That's about what it would go into the
4 chlorine tower as and it would come off the thickener
5 at about 8 to 12 percent, which is pretty thick.
6 Q And by that you mean the chlorine Oliver?
7 A Yes.
8 Q And that would be 8 to 12 percent stock versus --
9 pardon me?
10 A 100 percent, 100 percent consistency is bone dry
11 pulp.
12 Q So it was 8 to 12 percent?
13 A Water.
14 Q And from the chlorine Oliver where would it then go
15 at the King Mill?
16 A The bleach tower.
17 Q And I take it at the bleach tower the wastepaper
18 stock would actually be bleached?
19 A That's correct.
20 Q And would water be added to the wastepaper stock at
21 the bleach tower?
22 A Yes. There would be some there.
23 Q In addition to obviously bleach, correct?
24 A Yes.
25 Q Would water be removed from the stock at the bleach

1 tower?
2 A No.
3 Q From the bleach tower the wastepaper stock would go
4 where?
5 A To the bleach Oliver, thickener.
6 Q And would water be removed?
7 A Yes.
8 Q And water that was removed at the bleach Oliver,
9 would that be re-used?
10 A Yes.
11 Q And at what point in the process would that be
12 re-used?
13 A Several places. That's good water and could be used
14 anyplace.
15 Q Again, did a portion of water that was removed at the
16 bleach Oliver reach the sewers?
17 A Not to my knowledge.
18 Q So to your knowledge, it would be one -- the water at
19 that point would be 100 percent reclaimed?
20 A Yeah.
21 Q And no water would be added at the bleach Oliver?
22 A There was a shower there up on top of it to help
23 clean it. Most Olivers or thickeners have shower
24 water.
25 Q Would that water be removed at the bleach Oliver as

1 well?
2 A Yes.
3 Q And then where would the wastepaper -- strike that
4 for a moment.
5 What would be the consistency of the stock
6 at that point?
7 A Again, 8 to 12 percent coming off the Oliver.
8 Q Okay. Now again where would it go?
9 A It would then go to cleaning and screening.
10 Q Was there a particular piece of machinery it would go
11 to first?
12 A I would say the vibrotor which you see up there in
13 the -- and then to the flat screens.
14 Q And what happened to the stock at the vibrotors?
15 A That was a cleaning process, screening process that
16 had slots. Again, the good fiber would go through
17 the slots, the contaminants would stay outside and be
18 rejected at the end of the --
19 Q And by contaminant, do you again mean things like
20 metal, rubber bands, thing like that?
21 A That's correct, scotch tapes.
22 Q Would water be added or showered over the stock at
23 that point?
24 A Yeah, there would be water added there.
25 Q Would any water be removed at the vibrotor?

1 A No.
2 Q And it would then move onto the flat screens?
3 A Yes, the rejects from the vibrotor would go over the
4 flat screens. The accepts from the vibrotor would go
5 to the system.
6 Q Pardon me?
7 A Go right to the system. The rejects from the flat
8 screen would have, besides -- I mean the vibrotor,
9 besides contaminants, would have some fiber in it
10 also. So the job of the flat screen was to take more
11 of the fiber out back to the system so coming off the
12 end of the flat screen all you had was contaminates.
13 Q And the stock that would fall through at the flat
14 screens, would that join the other stock that had
15 come through the vibrotor?
16 A Yes.
17 Q Was water added to the stock at the flat screens?
18 A Yeah.
19 Q And you said it would then -- would you like to take
20 a break?
21 A No, I'm okay.
22 Q You said that this stock would then go to the system?
23 A Yeah.
24 Q What do you mean by that exactly? Is there another
25 piece of machinery? What's the next piece of

1 machinery in line?
2 A I think the next piece they had centri cleaners.
3 Q And what happened to the stock in the centri cleaner?
4 A In the centri cleaners --
5 MR. KELLEY: You were afraid they were
6 going to ask that.
7 A No. Centri cleaner takes very diluted stock and
8 enters it into a cone-shaped device, hollow, it goes
9 in the top of the cone and swirls around to the
10 bottom. It is somewhat like a tornado. The heavy
11 particles collect to the outside of the cone and work
12 themselves down to the tip of the cone and are
13 rejected out of the bottom.
14 Q When you mean heavy particles --
15 A Heavy particles of contaminants, again sand and
16 glass. And the light particles would be on the
17 inside of the tornado, if you will, and will go out
18 the top. There's kind of a vacuum in there and they
19 go out the top so that fiber would go out the top,
20 the accepts, if you will. The rejects go out the
21 tip.
22 Q I take it water would also be removed from the stock
23 in the centri cleaners?
24 A A little, not much.
25 Q So water would go up and out with the stock?

1 A Yeah, the stuff that came out the bottom was fairly
2 thick.
3 Q Was any water added in the centri cleaners?
4 A Yes, it would be. There would be water added there.
5 It had to be very low consistency, very thin to work
6 properly.
7 Q Then again, moving on from the centri cleaner, where
8 would that water and stock have gone?
9 A It would then go to another thickener and I believe
10 these thickeners were called side hill washers.
11 Q And how did they work?
12 A Like a window screen on an incline. This stock would
13 go in a head box on the top, flow over this window
14 screen. The water would go through the weir and the
15 stock would thicken as it went down. It would be
16 thickened enough for the process at the bottom.
17 Q Okay. I take it then that at this particular point
18 in the slide hill washers water would be removed?
19 A That's correct.
20 Q Okay. And do you know where this water would go?
21 A Back to process, probably to a white water collection
22 point to be re-used.
23 Q Again, would all of the water removed at this point
24 be re-used or was there a percentage that would have
25 gone to the sewers?

1 A It would all go to the collection point for reuse.
2 Q And what would the consistency of the stock be as it
3 left the side hill washers?
4 A Again, similar to the thickeners on the Oliver in the
5 eight to ten percent. However, those weren't as
6 efficient as the Olivers so it was less than that.
7 Probably five or six percent moisture.
8 Q And from the side hill washers it would go where?
9 The stock I'm talking about.
10 A As I remember, it would then go to the stock chest to
11 be used on the paper machine.
12 Q So basically we're done with the de-inking process as
13 of that point?
14 A Basically, yes.
15 Q Now I think you had mentioned earlier that there were
16 projects that you worked on with regard to cleaning
17 machinery on the de-inking process?
18 A Right.
19 Q And could you explain that for me?
20 A Contamination or dirt was a continual problem for the
21 paper machines. If the stock was too dirty and it
22 got to the paper machine and ended up in the finished
23 product, it could be rejected for being too dirty, so
24 it was a continual battle. The continual battle was
25 to see that the equipment worked the best that it

1 could so we would run consistencies and hand sheets
2 to look at the dirt evaluation, dirt counts to see
3 how well they worked.
4 Q Did you make any alterations to the de-inking
5 machinery itself?
6 A Not during these tests, no.
7 Q So back when you were a process engineer, the
8 process, as you have described for me, pretty much
9 stayed the same?
10 A Pretty much. Pretty much, yes.
11 Q Now all of the water that we've talked about, there
12 were various or at least a couple of points in the
13 de-inking process where you said at least some water
14 would go to the sewers, is that correct?
15 A Uh-huh.
16 Q Was there a separate sewer in the basement for water
17 that came off of the de-inking process?
18 A I would say so.
19 Q Is that a yes to your knowledge?
20 A Yes.
21 MR. KELLEY: Could we go off the record a
22 second?
23 (Brief recess)
24 Q Now at the time you were a process engineer, were you
25 ever involved in any meetings with people from the

1 A I worked in broke beater Mill C.
2 Q During the approximately four years that you worked
3 at Mill A, did you have occasion to observe, in a
4 general way, the process of de-inking from the point
5 where the paper was brought in at the dock to the
6 point where the slush was -- the slush cleaning
7 process was completed and you had the pulp ready to
8 deliver to the other mills?
9 A Yes.
10 Q Can you tell us, sir, based on your observations
11 where the slush went after it left the brown tank
12 that you described earlier?
13 A It went over what they call a brown Oliver.
14 Q What was the purpose of the brown Oliver?
15 A Mostly it was get the pins out from magazines, metal
16 parts, not really heavy objects but paper clips and
17 like that.
18 Q At that point in the system, would you describe the
19 materials which was being processed as a slurry
20 still?
21 A Yes.
22 Q You wouldn't call it a pulp yet?
23 A Well, slurry and pulp.
24 Q Same thing?
25 A Basically the same thing.

1 Q Where did the pulp go from the brown Oliver?
2 A It went up to the Jonsson room, it was the Jonsson
3 screens.
4 Q And that's the point in the system where you worked
5 after you had completed your two years as a
6 feederman?
7 A Yes.
8 Q What happened at the Jonsson screens?
9 A It screened out heavy objects, such as wood, wire, if
10 it got that far, wet strength.
11 Q Now, how was it that you had wet strength at the
12 point where the Jonsson screens were located if the
13 sorters were removing wet strength paper as it came
14 into the operation?
15 A It was impossible to get every wet strength out of
16 the belt paper.
17 Q So that was just wet strength that made it through?
18 A Yes.
19 Q Through the sorters? And you said you had wood --
20 wood was one of the objects and wire was one of the
21 objects that you got out at the Jonsson screens. How
22 did those items make it past the sorting process?
23 A Difficult to get everything out of there.
24 Q And you also mentioned heavy objects as well as wood
25 and wire. What other heavy objects were there by the

1 time the pulp got to the Jonsson screens?
2 A Well, really there wasn't much heavy wire.
3 Q It was just wood and wire?
4 A I'm talking about heavy objects as comparing to wood,
5 as pulp. The pulp would go through and the heavier
6 object would stay on top. They wouldn't go through
7 the holes.
8 Q So when you said heavy objects, you were referring to
9 the wood and the wire in the wet strength?
10 A Yes.
11 Q What did you do personally, what was your job at the
12 Jonsson screens?
13 A Make sure they was cleaned out, kept in good running
14 order.
15 Q Can you describe the Jonsson screens for us?
16 A They are heavy metal plates with holes in them, about
17 as big around as a straw, that vibrates. What the
18 pulp comes through, the stock goes through the holes
19 and the heavier objects that wouldn't go through them
20 holes will go off the end of it and then get put in a
21 box.
22 Q How many Jonsson screens were there when you were
23 working there?
24 A Six.
25 Q And as part of your job, did you attempt to keep all

1 six of those screens clean?
2 A Yes.
3 Q What were the dimensions in terms of length, height
4 for those screens?
5 A Now, that's something I really couldn't tell you
6 exactly, I'd have to guess.
7 Q But were they generally large structures as opposed
8 to something the size of this tablet?
9 A I would say one plate was 15 inches wide, three foot
10 long.
11 Q And when you say one plate, do you mean one screen?
12 A Well, there was two plates and one screen.
13 Q Two plates for each screen?
14 A Yes.
15 Q How did you go about keeping the Jonsson screens
16 clean?
17 A We had a scraper, scrape out, keep the holes open.
18 Q During the two years that you were working as a
19 washerman, were you at the Jonsson screens the entire
20 time?
21 MR. KELLEY: He was a washerman's helper.
22 Q Strike that and let me start over.
23 During the two years that you were a
24 washerman's helper, were you stationed at the Jonsson
25 screens the entire time?

1 A Yes.
2 Q Was it your job eight hours a day to monitor those
3 screens and manually clean them with a scraper?
4 A Yes.
5 Q Did you use any solvents or other cleaning chemicals
6 to help you clean, keep those screen clean?
7 A No.
8 Q You just used a physical scraper?
9 A Yes.
10 Q Was there a stream of water coming into the process
11 at the point where the Jonsson screens were located,
12 which was added to the pulp to further --
13 A No.
14 Q Dilute it? No?
15 A (Witness shakes head)
16 Q Was there any waste material produced from the
17 Johnson screen cleaning process that you were
18 involved in?
19 A Yes.
20 Q Was that the wood and wire and wet strength?
21 A Yes.
22 Q Where did you dispose of that waste material?
23 A Box.
24 Q Was there any liquid waste material associated with
25 that process with the cleaning of the Jonsson

1 screens?
2 A No.
3 Q Where did the pulp go next after it left the Johnson
4 screen?
5 A Went on to what that call slide washers.
6 Q How many slide washers were there?
7 A Brown slides, one, two, three, four.
8 Q What was the purpose of the four slide washers?
9 A They would extract maybe chemicals and water and make
10 the paper brighter.
11 Q Where did the pulp go from there, sir?
12 A Now, I'm getting confused on this, it's been so long.
13 I'm not really sure.
14 Q I'm going to show you what has been previously
15 marked, but I'm going to mark it again since I don't
16 have it marked. It's SA033541 through 033561 and it
17 is an engineering report. I'm only going to direct
18 your attention to one of the pages and that is marked
19 page 15. It's called pulping flow diagram and I
20 would like to have that marked as your deposition
21 Exhibit 2.
22 (Exhibit 2 marked)
23 MR. KELLEY: As counsel said, testify based
24 on your memory.
25 Q Mr. Haney, I'm showing you what has been marked as

1 Q What would you do with all the paper that you were
2 rejecting?
3 A They would take it down the elevator to the dock and
4 they'd take it out to the dump, all that rubbish.
5 Q Did you ever reject an entire bale of paper?
6 MS. ANDERSON: Lack of foundation that he
7 was rejecting these things.
8 A No, I don't believe back then there in the early
9 stages like that. We'd throw out a lot of stuff into
10 a cart.
11 Q Do you know if they ever sent entire bales back to
12 the company that had sent them to Allied or to
13 St. Regis or to Bryant in the first place?
14 A Yeah, seems like once they -- somebody threw in a
15 bunch of the envelopes and the windows -- now they've
16 got this paper that looks like cellophane, but it's a
17 paper, you can see through it, but back then they
18 used to put cellophane or plastic and they'd have to
19 throw those out.
20 Q What would happen to the paper that you sent down the
21 chute into the beater? Can you explain to us how the
22 beater process worked?
23 A It would beat it up. Held add, oh, chemicals to it.
24 Q Do you know what that chemical was?
25 A Let's see, oh, it was a strong acid. It would break

1 down the newsprint in it and he had a steam gun. He
2 turned the steam on it. With that acid, that would
3 break down that ink in there.
4 Q When you were working as a helper before you went
5 away to Korea, did you yourself do any work with
6 regard to the beaters, in other words, outside of
7 putting paper into the chute?
8 A No, no.
9 Q You didn't help to maintain the beater?
10 A Because I was there -- I was laid off six months and
11 then I went back to Mill A.
12 Q Right.
13 A Then I worked there a couple months. Then I was
14 called into the Army.
15 Q Now outside of the responsibility that you had of
16 putting the paper into the chute, when you were a
17 helper did you have any other responsibilities?
18 A Oh, we had these hand carts and a hook. We'd have to
19 take the hand cart over there and take the hook on
20 the wire and pull the bale over onto the hand cart
21 and pull it up beside the beater. And I had a
22 helper, another helper to turn it over on the side so
23 we could then cut the wires. Then we'd start at the
24 top bale and gradually push it down in the beater.
25 Q Okay. Was that basically all that you did when you

1 were a helper?
2 A Yeah.
3 Q Did you have any clean-up type responsibilities?
4 A Yeah, I'd sweep up the floor and if there's any dirt
5 or dust, we would throw it into a cart and they would
6 take that to the dump.
7 Q All right. And you were laid off for a short period
8 of time and went into the service and then you came
9 back to Mill A, is that right?
10 A Yeah. I was laid off before I went to Mill A.
11 Q Okay.
12 A Then I went from Mill A into the Army.
13 Q All right. And you came back from the Army and did
14 you immediately start working as a cooker?
15 A Yeah, I think I started, yeah, yeah, working on the
16 cookers when I got back from the Army.
17 Q Can you tell us what your responsibilities were on
18 the cookers?
19 A Oh, we'd pump it from the tile tank into the cookers.
20 Q First of all, can you tell us where in the de-inking
21 process the cookers are located?
22 A The cookers were located in the basement, big cast
23 iron boilers. There was one, two -- seems like there
24 was -- how many was there? Five or six big cookers.
25 Q Why don't we do it this way? The wastepaper first

1 went into the beaters, is that correct?
2 A Yeah.
3 Q Where did it go after it went into the beaters?
4 A Then it would go into a tile tank.
5 Q What was that used --
6 A No, no, let's see, no. It went from the -- yeah,
7 after it went from the cooker -- after the cookers,
8 it went into the tile tank and the washers pumped it
9 out of the tile tank onto the washers, and it would
10 go through the screens and it would wash the ink out
11 and any foreign objects because they're giant
12 screens. Then it would push the rubbish on top of
13 the screens into a cart. Then from the washers it
14 would go on to the bleachers after that to be
15 bleached.
16 Q Can you tell me if there is a difference between a
17 beater and a cooker?
18 A Yeah, a cooker is just a big cast iron boiler where
19 you cook the paper. They did away with the cookers
20 when they moved the operation to the front where they
21 cooked the paper in the beater and they add the
22 chemicals and cooked paper there.
23 Q But when you first started working as a cooker, they
24 did not yet do that, is that correct?
25 A No, they did not yet do that.

1 Q Where was the material immediately before it came
2 into the cooker? Was it in the beater@
3 A Yeah, and then -- yeah, then they would -- then they
4 would pump it down to -- as I remember, theyfd pump
5 it down to the cookers, I think, yeah. Then we'd
6 have to cook it maybe an hour, hour-and-a-half --
7 Q Can you tell me what the --
8 A something like that.
9 Q what the cookers looked like?
10 A Oh, that's just like giant, giant boilers. They're
11 about, oh -- one of the boilers, it was round, about
12 the size, the length and size of this building --
13 this ceiling, a little bit higher.
14 Q Was it closed on top or open?
15 A It was closed. It had a pipe in it, a giant pipe in
16 and a giant pipe out.
17 Q What were your duties in regard to the cooker? What
18 did you have to do?
19 A I would cook it, as I remember, an hour or an hour
20 and ten minutes. Then I'd go around behind the
21 cooker and open a valve and dump it into -- it would
22 go up into the tile tank for the washers upstairs.
23 Then I'd -- then I would pump some more in the cooker
24 to cook some more.
25 Q In order to pump it into the cooker, would you have

1 to turn a valve or push a button, something like
2 that?
3 A Yeah, we had a sliding valve, some wheel valves -- I
4 think most of them were sliding valves -- had a big
5 handle in them.
6 Outside of those duties, did you have any other
7 duties when you were a cooker or when you worked on
8 the cookers?
9 A Oh, maybe once a week we had to -- we had the cookers
10 empty, we had to take the manhole out on the side and
11 crawl inside with a hose. And all those magazines
12 had little wires on them, you know, where they
13 stapled them together, wash those out and throw them
14 in a trash box so they could take them to the dump.
15 Q You said you had to use a hose on the inside of the
16 cooker for that?
17 A Yeah, then a scoop shovel to scoop it out into a
18 cart.
19 Q Where would the water go that you were hosing on the
20 inside of the cooker?
21 A Go in the sewer. The water -- well, the boiler was
22 empty anyway. All that was in the bottom was those
23 wires from the magazines and books so we'd wash them
24 out in a pile and take a scoop shovel and scoop them
25 into a dirt box.

1 Q Where would that be?
2 A The man that took the bales in would record it on his
3 log sheet.
4 Q Do you recall the title of the man that did that?
5 A No, sir.
6 Q But they would record that for every bale that came
7 into the plant?
8 A Yes, sir.
9 Q What would happen after it was weighed?
10 A It would put be put in a storage facility there in
11 the mill.
12 Q Where in the mill was that storage facility located?
13 A Well, there was three floors. It could be stored on
14 either floor.
15 Q So Mill A had three floors?
16 A Yes, sir.
17 Q What was the third floor used for?
18 A That's where the Shartel beater was at the very
19 beginning.
20 Q That was the beginning of the de-inking process?
21 A Yes, sir.
22 Q So the wastepaper would have to be transported up to
23 the third floor --
24 A Yes, sir.
25 Q Just so we can keep the record clear, try to wait

1 until I get the whole question out.
2 A Okay.
3 Q Otherwise it looks funny when we're done.
4 A Okay.
5 Q Thanks.
6 How would they transport the bales up to
7 the third floor?
8 A By hand truck.
9 Q Were there ramps or elevators?
10 A No, sir, elevators.
11 Q How many elevators did they have?
12 A In Mill A period or --
13 Q Yes, in Mill A.
14 A Two.
15 Q What were the Shartel beaters used for?
16 A For beating up the pulp.
17 Q How would they beat up the pulp? First, can you
18 explain what a Shartel beater looks like?
19 A Oh, boy. It's a great big monstrosity that was a
20 wheel that rotates and there'd be water in there and
21 chemicals and then as it went around and around, the
22 wheel would keep beating up the pulp.
23 Q Was the wheel contained in some type of tank?
24 A Yes, sir.
25 Q Do you know how large the tank was?

1 A No, I cannot remember now.
2 Q You said that they had added water and chemicals, is
3 that correct?
4 A Yes, sir.
5 Q What types of chemicals would they add?
6 A They added -- they added water and then they added a
7 chemical that was called cooking liquor.
8 Q Cooking liquor?
9 A Yes, sir.
10 Q Do you know what the technical name for that was?
11 A No, sir.
12 Q What type of container would the cooking liquor come
13 in?
14 A The cooking liquor was made in a tank downstairs and
15 pumped upstairs by pipes.
16 Q Do you know what ingredients were used to make this
17 cooking liquor?
18 A No, sir, I do not.
19 Q Did you ever observe them making it?
20 A No, sir.
21 Q What floor did they make the cooking liquor on?
22 A On the first floor.
23 Q Were there any other chemicals that were added in
24 addition to the cooking liquor?
25 A No, sir, not at the Shartel beater.

1 Q What would happen to the waste material after it was
2 processed in the Shartel beater?
3 MR. KELLEY: Again, you haven't established
4 that he has a foundation that he knew what happened,
5 that he had exposure to that process.
6 Q Did you see the Shartel beater in operation?
7 A Oh, yes.
8 Q What would happen to the material after it went
9 through that part of the operation?
10 A It would go -- in the basement they had five cookers.
11 Now it would go down to the basement to the cooker.
12 Q Let's take a step back. Before the material went
13 into the beaters, it was just wastepaper, correct?
14 A Yes, sir.
15 Q What did it look like in the beater before it was
16 transported down to the basement?
17 A Well, just like sheets of paper, magazines.
18 Q And then they would add the water and the chemicals?
19 A Yes, sir. Yes, sir.
20 Q And this material would be mixed up or ground up with
21 the chemicals?
22 A Right.
23 Q What would that material then look like?
24 A Looks like mush.
25 Q What color was it?

1 A It could be any color. It would depend mainly on the
2 magazines or whatever material you put in the beater.
3 Q Was anything else done to this material on the third
4 floor?
5 A No, no, sir.
6 Q And you said it would then be transported down to the
7 basement?
8 A To the cooker.
9 Q And how did it get down to the basement?
10 A By pumps.
11 Q How many pumps did they have for doing that?
12 A Just one.
13 Q And then it would enter the cookers in the basement?
14 A Yes, sir.
15 Q What did the cookers do?
16 A The stock would be put into number one cooker first
17 to do the measuring of it. Then there were two other
18 cookers, number two, three, four and five. After the
19 stock got cooked in number one cooker for about three
20 hours, it was put into number two, three, four and
21 five cooker and cooked about three and three-quarters
22 hours.
23 Q What was the purpose of cooking it?
24 A To cook out the ink.
25 Q You said they would measure it in cooker number one,

1 is that correct?
2 A Yes, sir.
3 Q Why did they have to measure it?
4 A Well, so you didn't run number two over.
5 Q Were all of the cookers the same size?
6 A Yes, sir. Yes, sir.
7 Q After the material was finished being processed in
8 cooker number one, then it would go to two, is that
9 correct?
10 A Either two or three.
11 Q Okay.
12 A Well, usually what they would do they would first put
13 it in number two. They'd get rid of number two.
14 They'd fill number two back up and then the next one
15 they'd dump it in would be number three and so forth.
16 Q So would a batch of this material go through each
17 cooker?
18 A No, it would go from number one cooker into number
19 two, number three, number four, number five.
20 Q Okay.
21 A Whichever one was empty, you dumped; you filled it
22 back up.
23 Q I see. Did this material change in appearance after
24 it went through the cookers?
25 A Yes.

1 Q What did it look like after it went through the
2 cookers?
3 A Well, it would look like brown mush, so to speak.
4 Q Did they add any chemicals during the cooking
5 process?
6 A No, sir.
7 Q Was the heat generated by steam?
8 A Yes, sir.
9 Q Where were the boilers located in Mill A to generate
10 the steam? Strike that. How did they generate the
11 steam?
12 A From the power plant.
13 Q And where was that located?
14 A That's there on Bryant Street.
15 Q Is that the same power plant that provided power to
16 the other mills?
17 A Yes, sir. Yes, sir.
18 Q What happened to the material after it came out of
19 the cookers?
20 A Okay. It went from the cookers. It went up to a
21 tank on the first floor that was called a tile tank.
22 It went into the tile tank.
23 Q And the tile tank -- what happened in the tile tank?
24 A It just sat there and agitated.
25 Q Did they add anything to it?

1 A No, sir.
2 Q Where would it go after the tile tank?
3 A Then it would go up to the rifflers.
4 Q And you said at the rifflers they would remove
5 foreign objects, is that correct?
6 A Yes, sir.
7 Q What type of foreign objects?
8 A Strings, rubberbands.
9 Q Anything else?
10 A No, sir.
11 Q How were these objects removed?
12 A Well, we used to be have to take the grates up and
13 clean them out and then put them back in.
14 Q What were the grates used for?
15 A They were -- they'd catch strings.
16 Q So the materials would go through the grate and pick
17 out the large objects?
18 A Yes, sir.
19 Q Where would the material go after the riffler?
20 A It went to the Jonsson screens.
21 Q What happened there?
22 A The Jonsson screens took out some of the heavier
23 objects that the rifflers didn't catch.
24 Q Why wouldn't the riffler catch those objects?
25 A Because the riffler in -- the grates in the rifflers

1 were about one inch square and certain objects could
2 go through it.
3 Q How would the Jonsson screen remove those objects?
4 A The stock would -- more water would be added to it at
5 the head box and would go through and divide it.
6 There was six vibrator screens. They would vibrate
7 and shake the stuff.
8 Q Where would the material go after flowing through the
9 Jonsson screens?
10 A Okay. Then it would go to the flat screens.
11 Q And what happened there?
12 A It was screened again, cleaned again.
13 Q Were they still removing foreign particles?
14 A Yes, sir.
15 Q Did the flat screens operate in a similar manner to
16 the riffler screens or the rifflers?
17 A The stock come out -- they were about 20 feet long
18 and as the water and stock would come out on the
19 screens, it would vibrate and the good stuff would go
20 through and the bad stuff would stay up.
21 Q And where would the material go after that?
22 MR. KELLEY: Objection, no foundation that
23 he knew.
24 Q What happened after the flat screens, Mr. Sheen?
25 A After the flat screens, it would go -- let's see, it

1 would go into a tank into the basement. Let's see,
2 that was number six. Go into number six tank in the
3 basement.
4 Q Let's take just a short step backwards. The
5 screening process that we were just talking about,
6 which floor did that occur on?
7 A That was on the main floor.
8 Q That would be the first floor?
9 A Yes, sir.
10 Q And then after going through the screening process,
11 you said it went to a tank in the basement?
12 A Yes, sir.
13 Q And that was tank number six?
14 A Yes, sir.
15 Q What happened in this tank?
16 A It just sat there until it was needed.
17 Q So was that the finished product?
18 A That was one stage of partially finished product.
19 Q Okay. Where would it go after tank number six?
20 A Then it would go into the bleach towers.
21 Q What happened in the bleach towers?
22 A The pulp would be bleached.
23 Q How would they go about the bleaching process?
24 MR. KELLEY: Objection, no foundation that
25 he knows.

1 A I'm not sure.
2 Q Did you ever see the bleach towers?
3 A Oh, yes.
4 Q Can you tell us what they looked like?
5 A They were like -- well, they went from the basement
6 clear up to the top of the top floor. There were
7 three sections. The stock would go into the top of
8 one and go down to the bottom of the other one and go
9 up to the top of the other one and go out the other
10 one.
11 Q And at some point in these bleach towers the bleach
12 would be added?
13 A Yes, sir, at the beginning, at the very beginning.
14 Q Did they have a tank filled with bleach?
15 A Yes, sir.
16 Q How big was that tank?
17 A I cannot remember.
18 Q And the bleach would travel through the tank into the
19 bleaching towers?
20 A Yes, sir.
21 Q Where would the material go after it was bleached?
22 MR. KELLEY: Objection, you haven't
23 established that he knows.
24 A I don't remember that.
25 Q How was the material transported through the

1 bleaching towers?
2 A By gravity.
3 Q But at some point it had to go back up again?
4 A It did. If you had one tank here and one tank here
5 and you filled this one, this one would seek its own
6 level.
7 Q I see. And what happened to the material at the very
8 end of the bleaching process?
9 A Then it would go to the bleach washers.
10 Q And what happened there?
11 A The bleach was washed out of the pulp.
12 Q How would they do that?
13 A The bleach washers were in two sections and they
14 would wash one section and then it would be dried and
15 then it would be picked up by the other section, more
16 water would be added and more bleach would be washed
17 out.
18 Q What would they do with the bleach that they were
19 taking out?
20 A It would go in the water.
21 Q And in which water?
22 A In the water that was recleaned from the washers.
23 Q And what would this water then be used for?
24 A That I can't remember what they did to it.
25 Q Was this considered waste water or was this water

1 that they used again?
2 A This is water you could reuse because it had chlorine
3 in it, bleach in it.
4 Q Did they have a process for removing the bleach from
5 the water?
6 A No, sir.
7 Q Do you know if there was a tank that contained this
8 water and bleach?
9 A No, sir.
10 Q You don't know if there was?
11 A No, I can't remember.
12 Q What happened to the stock after it left the bleach
13 washers?
14 MR. KELLEY: Objection. You haven't
15 established that he knows that.
16 A I know that.
17 Q What happened?
18 A The bleach went in the number eight tank.
19 Q And what floor was the number eight tank located on?
20 A That was on the main floor.
21 Q And what happens in the number eight tank?
22 A It just -- the stock went into there and then it was
23 just agitated to keep it stirred up.
24 Q Were they adding any chemicals at that point?
25 A No, sir.

1 Q After the number eight tank, where did it go?
2 A It went to a 50-foot storage tank outdoors.
3 Q And where was that located?
4 A That was on the north part of the building.
5 Q Did they have a name or a nickname for that tank?
6 Was it the silver tank or the gray tank?
7 A We just called it the bleach tank.
8 Q And the bleach tank contained the stock that had just
9 been de-inked?
10 A Yes, sir, bleached.
11 Q How would the material get from the main floor of the
12 mill into the bleach tank?
13 A By pumps.
14 Q Was it pumped directly from the number eight tank
15 into the bleach tank?
16 A No, the -- let me back up here a little bit. We took
17 the stock from the one tank in the mill. We pumped
18 it out in the storage tank outdoors. Now the stock
19 from the storage tank outdoors was brought into
20 number seven tank which was inside the mill.
21 Q So the stock went from the inside to the outside,
22 back inside?
23 A Yes, sir, back, yes, sir. Yes, sir.
24 Q Where did it go when it came back inside Mill A?
25 A It went into number seven chest.

1 Q What happened in number seven chest?
2 A The same thing, the stock was just agitated until it
3 was needed across the street in Mill C.
4 Q Was the number seven chest the final storage area
5 before the material was used --
6 A Yes, sir.
7 Q -- in Mill C or D?
8 A Yes, sir.
9 Q How would the material get from the number seven
10 chest to the mills?
11 A To Mill C?
12 Q Yes.
13 A By pump.
14 Q Would it also go to Mill D?
15 A Mill D would draw out of Mill C's tank.
16 Q I see. How many pumps did they have for transporting
17 this material to Mill C?
18 A Just one.
19 Q I assume they had pipes to get this from A to C?
20 A Yes, sir.
21 Q Were those above ground?
22 A Above ground.
23 Q How many pipes did they have for that?
24 A Just one.
25 Q Do you know or can you estimate for us the diameter

1 of the pipe that was used?
2 A No, sir, I cannot remember.
3 Q Now, Mr. Sheen, the tank on the third floor where the
4 material initially went -- strike that.
5 The first tank on the third floor, were
6 those called the cookers?
7 A The cookers were in the basement.
8 Q What was on the third floor again, the Shartel
9 beaters?
10 A Shartel beaters.
11 Q Were these beaters opened or closed on the top?
12 A They was open.
13 Q The process that you've just described for us, was it
14 basically the same throughout your --
15 A No, sir, there were quite a few changes that were
16 made.
17 Q Can you give us an idea of -- strike that.
18 The process that you just described for us,
19 during what years was this the process that was in
20 effect?
21 A That I could not remember.
22 Q What were the different types of changes that
23 occurred in the process?
24 A Well, they did away with the Shartel beater upstairs
25 and they put a beater downstairs on the main floor.

1 They installed a Brown Oliver.
2 Q Why did they do away with the Shartel beater?
3 A Well, I guess the other way was more efficient, I
4 believe.
5 Q In place of the Shartel beater what did they use?
6 A They used a beater downstairs.
7 Q How did this beater differ from the Shartel beater?
8 A Well, this beater had a long belt on it, bales were
9 put on the belt and the belts went -- you filled the
10 belt up full of bales and the bales went along and
11 dropped in the beater. Then you had paper sorters on
12 there that sorted the paper.
13 Q Do you know when they began using this process?
14 A No, sir, I cannot remember.
15 Q When they stopped using that Shartel beater --
16 A Yes, sir.
17 Q -- did they continue to do anything else on the third
18 floor?
19 A No, sir, it was all the same.
20 Q So they stopped using --
21 A Yes, sir.
22 Q -- the Shartel beater?
23 A Yes, sir.
24 Q What happened on the third floor after the Shartel
25 beater was no longer used?

1 A Well, they just boarded it up so nobody would fall
2 in, that was all. Tore it out eventually.
3 Q And there was nothing else going on --
4 A No, sir.
5 Q -- on the third floor?
6 A No, sir.
7 Q Were there any other changes?
8 A Let's see. Well, eventually they did eliminate the
9 flat screens and they got some screening machines
10 that come from Germany that was called Finks,
11 F-I-N-K-S.
12 Q How did the Finks differ from the flat screens?
13 A Well, it was a different process of cleaning. They
14 were -- they were round and they had a cylinder
15 inside that moved around inside.
16 Q Do you recall when they began using that device?
17 A No, sir.
18 Q Were there any other changes that you can recall?
19 A There was another one that they made up there in that
20 same area. They installed three, what they call
21 vibrotor screens.
22 Q Did these vibrator screens replace something else?
23 A They replaced the Finks.
24 MR. KELLEY: Excuse me, did you say
25 vibrator or vibrotor screens?

1 A Vibrotor screens.
2 Q Thanks.
3 And how did the vibrotor screens work?
4 A The stock -- the paper stock would go in one end of
5 the vibrotor and it would have the cylinder and it
6 would turn, and it would turn and shake at the same
7 time. That's how it cleaned the brown pulp.
8 Q Would the vibrotor screens also remove foreign
9 objects?
10 A Yes, sir.
11 Q Mr. Sheen, at what point in the long process that
12 you've just described for us was the ink actually
13 removed from the fiber?
14 A The ink was removed at the cookers. The cookers --
15 that was the process of the cooker to cook out the
16 ink.
17 Q So they would apply the heat in the cooker --
18 A Yes, sir.
19 Q -- and the inks would separate from the fiber?
20 A 190 degrees.
21 Q How would they get the ink out of the cookers?
22 A I don't quite --
23 Q I'll rephrase that. We said that the ink would
24 separate from the fiber, correct?
25 A Yes, sir.

1 Q What would happen to the ink after it came off the
2 fiber?
3 A It would just disappear.
4 Q How did it disappear?
5 A That I don't know for sure.
6 Q Are you saying it was cooked away or it was
7 transported somewhere else?
8 A It was cooked away because it never was transported
9 anyplace.
10 Q Did they have drains coming out of the cookers?
11 A No, sir.
12 Q So it is your understanding that after the material
13 entered the cooker the ink would simply disappear?
14 A Yes, sir.
15 MR. KELLEY: He said cooked away.
16 MR. VASILOFF: He said disappeared also as
17 I recall.
18 Q (By Mr. Cunningham) During the screening process
19 that we talked about with the rifflers and the
20 Jonsson screens and the flat screens and the vibrotor
21 screens, was there ever an occasion when ink would
22 drain out of those screens?
23 A No, sir.
24 Q So by the time it got to the screens it was simply
25 fiber?

1 A Yes, sir.
2 Q That's your understanding?
3 A Yes, sir.
4 Q You said earlier that the Shartel beater was opened
5 on top?
6 A Yes, sir.
7 Q Would the Shartel beater ever overflow?
8 A Oh, yes.
9 Q How often would that happen?
10 A That I can't remember.
11 Q Was it once a shift?
12 A No, not quite that bad.
13 Q Which shift did you work when you were at Mill A?
14 A Worked all three.
15 Q Would it be more than once a day?
16 A No, I'd say maybe once a week would be closer.
17 Q What would cause the Shartel beater to overflow?
18 A If a guy went to sleep or he wasn't watching what he
19 was doing.
20 Q Why would they overflow if he wasn't watching what he
21 was doing?
22 A Because they got too full.
23 Q Would the material simply overflow onto the floor?
24 A Yes, sir.
25 Q And that was on the third floor, the Shartel beater?

1 Q All sulfite?
2 A Yes.
3 Q What do you mean by sulfite?
4 A Sulfite is a high grade of paper right from wood
5 pulp, very best there is. It's very expensive.
6 Q But when you returned to Mill A, you resumed
7 de-inking?
8 A Yes.
9 Q Until you left?
10 A Yes.
11 Q And at that time, when you returned to Mill A, after
12 the period of shut down, did you continue de-inking
13 the same kinds of paper you had been de-inking
14 before?
15 A Well, we tried to eliminate that.
16 Q The Life magazine?
17 A Yes. I believe it was the Life magazine, maybe it
18 was Time.
19 Q But other than that one particular problem paper, you
20 resumed doing what you had been doing before?
21 A Yes.
22 Q Until the time the de-inking was ultimately shut down
23 permanently?
24 A Yes.
25 Q Now, during the months that you were at the King

1 Mill, what was your position there?
2 A I was a tower foreman.
3 Q And they had assigned you to the de-inking department
4 at King Mill?
5 A Yes.
6 Q Was there any elements of the system of de-inking at
7 the King Mill that was different from the system at
8 the Bryant Mill?
9 MS. LATORRE: Objection.
10 A Just the type of -- they had a hydropulper, I believe
11 it was called a hydropulper, maybe they called it a
12 dynopulper. They batched it, run in so many tons,
13 ground it in and pushed it out.
14 Q You were in charge of all of the operations at the
15 King Mill de-inking?
16 A Yes. There was a superintendent above me.
17 Q But you were in charge of all the de-inking
18 operations?
19 A Yes.
20 Q Did you have any responsibility for any other
21 operations at that time?
22 A No.
23 Q Now, with regard to the de-inking operations at that
24 time, were the guidelines for the paper that was
25 desirable for de-inking purpose be the same as they

1 had been when you were at Bryant Mill A?
2 A Yes.
3 Q And was the mechanism by which that raw paper got
4 into the de-inking process the same as you described
5 earlier for Mill A, meaning that the paper would come
6 in through a broker by truck, to the mill, and you
7 would have --
8 A Inspectors.
9 Q Inspectors. Two belt inspectors who would examine
10 the paper and remove questionable paper and test it
11 in the blender and all of the things you testified
12 about, it was all done the same?
13 A Yes.
14 Q I'm going to turn to another issue for a few minutes.
15 Perhaps we could roll up these blueprints and get
16 these out of the way, unless somebody else wants to
17 use them.
18
19 EXAMINATION
20 BY MR. VASILOFF:
21 Q Mr. Akright, let me introduce myself. My name is
22 Karl Vasiloff. I represent another insurance company
23 in this case, Employers Insurance of Wausau, and I
24 thank counsel for allowing me to jump in here quick
25 on the blueprints.

1 We are looking at blueprint SA46151 and the
2 date looks like 5-8-64. I just want to direct your
3 attention to the end of the process here, sir, this
4 tank or I should say this circle, it looks like it's
5 a circle.
6 A Chlorine washer and Oliver washer.
7 Q And there is an arrow pointing down. Do you know
8 what was flowing out the chlorine washer prompted by
9 that arrow?
10 A Chlorine water.
11 Q Do you know what the structure here at the end of the
12 arrow is?
13 A That was a drop box, oh probably half the size of
14 this room, so it wouldn't lose its suction and then
15 flowed over and went out.
16 Q Okay. This is just chlorine water?
17 A Yes.
18 Q That's flowing into this drop box?
19 A Yes.
20 Q And you say it went out. Do you know where it went
21 out to?
22 A I don't know where it went out to.
23 Q The blueprint we have here, at the end of this series
24 of arrows says "overflow to pond", does that term
25 mean anything to you, sir?

1 MS. LATORRE: Objection.
2 A Apparently that's where it went.
3 Q Do you have independent knowledge of that, sir?
4 A No.
5 Q Do you know who would?
6 MS. LATORRE: Objection, relevance.
7 A There was an engineer there from Sweden that I became
8 a good friend of. If I could think of his name -- I
9 don't know if he is in this country or not. I can't
10 think of his name.
11 MS. LATORRE: I'll help you out, it's
12 Per Hagard?
13 A He was an engineer but I didn't know him. I remember
14 the name but I don't remember the guy Per Hagard?
15 Q Do you know a Mr. Herbert?
16 A I remember the name.
17 Q He is not the person you are thinking of either?
18 A No. But they may have been engineers also and I
19 wouldn't have dealt with them at all. There were a
20 lot of people there.
21 Q Did you ever discuss with anybody overflows to the
22 pond, sir?
23 A No.
24 MR. VASILOFF: That's all I really had on
25 that.

1 department --
2 A Yes.
3 Q -- Of Allied Paper? When was that, sir?
4 A I think I said 1991 or '90.
5 Q And then Allied Paper closed and you worked for
6 Performance Paper for half a year, is that correct?
7 A Yes.
8 Q When you went back to engineering in the late 1980's
9 let's say, what was your job responsibility for
10 Allied Paper?
11 A Budgeting, working on new equipment, layout,
12 purchasing new equipment.
13 Q Okay. Mr. Hagard, I'd like to return to the time
14 when you were -- when you first came to Allied Paper
15 at Kalamazoo in August of 1958, and specifically your
16 involvement with the Denver process at that time. Do
17 you recall specifically what you did to help the
18 installation of that process at the King Mill?
19 A I would think it would be mostly layout of equipment.
20 I think most of the equipment was already purchased
21 and it was just to lay out in the system.
22 Q What type of equipment?
23 A Pumps, pipes.
24 Q Okay. Where were the pumps laid out at the King
25 Mill?

1 A Basement, most of them.
2 Q Do you know where in the basement of the King Mill
3 you laid these pumps out, sir?
4 A Are you familiar with the mill?
5 Q I am I would say very, very generally familiar with
6 the mill, and that may be stretching it.
7 A Say you go east on Lake Street.
8 Q Okay.
9 A Over the railroad tracks, the Denver process was
10 installed in the first building on your left-hand
11 side going east.
12 Q Okay. How many stories did that building have?
13 A That part had two stories, yes.
14 Q And was this building devoted entirely to de-inking?
15 A Yes. Yeah, that part of the mill was, yes.
16 Q And this is a separate building, separate from the
17 other buildings at the King Mill?
18 A No, the King Mill had a U shape like so, and the King
19 -- the Lake Street was here and that was the first
20 building, and there was an opening in the middle
21 where the railroad tracks came in.
22 Q Do you think you could draw that for me, that layout
23 you just described?
24 A I most certainly can.
25 Q Why don't we do that. Maybe it will help all of us

1 as we go along here. Sir, there's a couple pieces of
2 paper.
3 (Witness drew a diagram)
4 MS. ANDERSON: He'll ask you a question.
5 Q First, though, why don't we have you just in the
6 upper right-hand corner just initial this drawing for
7 us, please. Why don't we mark this as Hagard Exhibit
8 Number 1. Am I pronouncing your name right, sir?
9 A Yes.
10 MS. ANDERSON: Should we also have a date
11 put on this?
12 A You want me to date it?
13 MS. ANDERSON: Today's date might be nice
14 and also what this is depicting, at what time period.
15 Q I took it he was depicting as of 1958.
16 A Uh-huh.
17 Q When you came over to King Mill, if that's not
18 correct let me know.
19 A No, this is what it looked like when I came to Allied
20 in '58.
21 MS. ANDERSON: That's why I'm suggesting we
22 put 1958 on the exhibit. It may be helpful.
23 Q That's fine. Why don't you go ahead and do that,
24 sir, if it's accurate. If you could write in the
25 left-hand corner King Mill as it existed in 1958.

1 A (Indicating)
2 Q Why don't we go ahead and mark this as Hagard Exhibit
3 Number 1.
4 (Exhibit Number 1 marked)
5 Q Okay. Sir, I notice, also, in the lower left-hand
6 corner of what we've marked as Hagard Exhibit Number
7 1 there is two lines drawn?
8 A It's a little bit too far apart, the railroad.
9 Q Okay. Before we get started on the interior of the
10 building, was there any -- was there -- were there
11 any bodies of water in the King Mill -- near the King
12 Mill that would be depicted on this drawing?
13 A No.
14 Q Okay. Sir, you were saying that in the de-inking
15 building, which you've marked as D.I. building on
16 Hagard Exhibit Number 1, there were two stories, is
17 that correct, sir?
18 A When you asked me where the de-inking was, or the
19 Denver process, it was two stories. They were right
20 here. That part there had more than two stories
21 because the top was the waste water -- waste paper
22 supply to the pulpers.
23 Q Can you just draw a line for me where the boundary
24 was between the part of the de-inking building that
25 had two stories and the part that had the additional

1 third story to receive the waste paper?
2 A My guess would be just in the middle. That's the
3 best I can do (indicating).
4 Q Just your best estimate if you could draw it for me.
5 A (Indicating.)
6 Q And why don't you just mark with a third the portion
7 that had the third story.
8 A More than two stories?
9 Q Correct, that's fine.
10 A (Indicating.)
11 Q Now, you were going to explain to me where the pumps
12 that you laid out were placed in the de-inking room.
13 A This would be in the basement, this part, because the
14 Denver process was like this (indicating).
15 Q Why don't you mark that triangle DP if you would,
16 sir. Okay. Now, were the pumps directly underneath
17 the area that you've marked DP?
18 A They will be in the basement underneath there, yes.
19 Q Okay. What was the purpose of those pumps, sir?
20 A To pump the stock and water to the Denver process,
21 take it away.
22 Q I guess I'm confused. You said that the pumps would
23 pump the stock and water to the Denver process and
24 also take it away?
25 A Yes. Different pumps. In other words, some supply

1 and some takes it away.
2 Q Do you recall how many pumps in total there were that
3 you installed?
4 A No.
5 Q Was it more than five?
6 A I can't recall.
7 Q Okay. The pumps that took stock and water to the
8 Denver process, was this fresh water that was taken
9 to the Denver process?
10 A Both.
11 Q Fresh and --
12 A Fresh and waste water or --
13 Q White water?
14 A What they called white water.
15 Q Okay. Where did the fresh water come from that those
16 pumps used?
17 A I believe King Mill had wells.
18 Q Okay. Did this fresh water go through any treatment
19 before it was sent to the Denver process?
20 A Not at that time.
21 Q Okay. At some time in the future did it?
22 A Yes.
23 Q When was that, sir?
24 A Let's see, in the middle '70's.
25 Q Okay.

1 A No, wait a minute. Yes. The mill went down in '70,
2 yes, middle '70's.
3 Q Middle '70's or middle '60's?
4 A I'm sorry, middle '60's, yep. '70 there was no more
5 King Mill.
6 Q Okay. Do you know what the treatment consisted of?
7 A Yeah, it was a flotating, chemical flotating system.
8 Q Were chemicals added to the water?
9 A Uh-huh.
10 Q Do you know what chemicals were added to the water,
11 sir?
12 A No, sir.
13 Q Did you have any responsibility for that treatment?
14 A Nope.
15 Q Okay. With respect to the pumps that took the -- let
16 me ask you this question, some pumped stock and water
17 to the Denver process?
18 A Yeah.
19 Q And some pumps took it away you testified. What was
20 taken away from the Denver process?
21 A The finished product after it went through the Denver
22 process, it was cleaned and taken to process.
23 Q Okay.
24 A To the paper machine or the beater room.
25 Q So this is essentially finished de-inked stock that

1 was going to be made into paper, is that correct?
2 A Yes.
3 Q Okay. Sir, in the King Mill, and we're talking about
4 the time period from 1958 to 1961, did the de-inking
5 process generate any waste water?
6 A Yes.
7 Q Okay. Do you know what happened to that waste water?
8 A To my knowledge must have gone to the clarifier.
9 Q Do you know how it got to the clarifier?
10 A By pumping.
11 Q Is this the King clarifier we're talking about?
12 A Yes.
13 Q Okay. Did you have any responsibility for the pumps
14 that pumped the waste water to the King clarifier?
15 A No.
16 Q Were they in place when you got there?
17 A Yes.
18 Q Sir, have you ever seen the pumps that used to pump
19 that waste water?
20 A I cannot -- I imagine I would have, but I won't say I
21 have. Walking all over the mill like I did I might
22 have seen it, but I cannot recall.
23 Q Sir, do you understand what the term bypass means?
24 A Yes.
25 Q Are you aware of any bypasses of waste water from the

1 de-inking procedure at the King Mill?
2 MS. ANDERSON: Maybe you should clarify
3 what you mean by the term bypass.
4 Q You've testified, sir, that the waste water was
5 pumped to the clarifier?
6 A Uh-huh.
7 MS. ANDERSON: He testified I believe to
8 the best of his knowledge that's what happened.
9 There's a lack of foundation problem mere.
10 MR. VASILOFF: We'll find out.
11 BY MR. VASILOFF, CONTINUING:
12 Q What I'd like to know, sir, is are you aware of any
13 instances when waste water did not go to the
14 clarifier but was, in fact, bypassed to another
15 point?
16 A No.
17 Q Are you familiar with that pumping system? When I
18 say that pumping system I'm talking about the pumping
19 system that pumped waste to the clarifier?
20 A At the King Mill?
21 Q Yes.
22 A No.
23 Q Did you have any responsibility for its maintenance
24 when you were the superintendent of maintenance at
25 later years?

1 A At the Bryant Mill?
2 Q I'm referring to the King Mill. Did you have any
3 maintenance responsibility with respect to that
4 pumping system?
5 A No, sir.
6 Q Okay. Sir, between 1958 and 1961 at the King Mill do
7 you know what materials were being de-inked?
8 A You mean, the paper being used?
9 Q The particular type of paper, did you have any
10 knowledge of that, sir?
11 A No.
12 Q Okay. Sir, do you know whether any chemicals were
13 used in the de-inking process at the King Mill
14 between 1958 and 1961?
15 A No.
16 Q Okay. The pumps that you designed to take the
17 finished product away from the Denver process?
18 A Yes.
19 Q Were they designed with any bypasses built into the
20 system?
21 A No.
22 Q So there was no way for the finished stock to move
23 other than through the piping system that you
24 designed?
25 A Correct.

1 Q Okay. Was there ever any occasions when that piping
2 system malfunctioned, sir?
3 A Not to my knowledge.
4 Q Would you have been made aware of that malfunction?
5 A No.
6 Q Okay. Why do you say you would not have been made
7 aware of that?
8 A Because I was not involved in maintenance at the King
9 Mill.
10 Q Okay. Would the same -- well, let's skip that.
11 Sir, do you know what volume of water on a
12 given day would be taken into the Denver process
13 through the piping system and pumping system you
14 designed at the King Mill?
15 A No.
16 Q Do you know what capacity the piping system you
17 designed could handle?
18 A No.
19 Q Did you know at that time?
20 A At the time, yes.
21 Q You've simply forgotten over the years?
22 A Uh-huh.
23 Q Okay. Sir, you mentioned the King clarifier, was
24 that clarifier, to your knowledge, in place when you
25 arrived at Allied Paper in 1958?

1 A Yes.
2 Q Did you have any responsibility for the maintenance
3 of that clarifier?
4 A No.
5 Q Are you aware of any instances when the clarifier
6 malfunctioned?
7 A I don't know.
8 Q Okay. Sir, in 1961 you transferred to superintendent
9 of maintenance for a fairly brief period until 1962,
10 is that correct?
11 A Yes.
12 Q Were you superintendent of maintenance for all the
13 mills, sir?
14 A Just for the Bryant.
15 Q Just for the Bryant Mill. Sir, are you familiar with
16 the de-inking process at the Bryant Mill between 1961
17 and 1962?
18 A Yes.
19 Q Do you know what mill it was being done in?
20 A Mill A.
21 Q Okay. Do you think you could draw a similar diagram
22 of Mill A for me as you did for the King Mill in 1961
23 and 1962?
24 A Yeah.
25 MS. ANDERSON: Are you asking him to do it

1 or can he do it?
2 MR. VASILOFF: I want to find out if he
3 could.
4 BY MR. VASILOFF, CONTINUING:
5 Q Would you do it for me, sir?
6 A Yes.
7 Q Great.
8 MS. ANDERSON: Mr. Vasiloff, maybe you want
9 to specify what you want to see if that --
10 Q That's a good point. Obviously you're drawing two
11 dimensions only. I would just like to see, sir, the
12 general shape of Mill A, the location of the -- there
13 were no paper machines in Mill A, is that correct?
14 A When I was there, no, there was none.
15 Q Was there a pumphouse outside of Mill A?
16 A Yes.
17 Q Could you draw that in as well, sir?
18 A Yes.
19 Q Could you then also draw the relation of the Portage
20 Creek to Mill A and the pumphouse?
21 A Yeah.
22 Q Okay. Why don't you go ahead and do that for me.
23 (Witness drew a diagram)
24 Q And sir, this is as of -- I'm sorry, I'll let you
25 finish labeling those. This is as of 1961 and 1962,

1 is that correct?
2 A That was until 1970.
3 Q Okay. Again, sir, if you could just initial this.
4 A Okay. (Indicating.)
5 Q And why don't you just --
6 A There was no changes in Mill A from then.
7 Q From 1961 until 1970, that you're aware of?
8 A Yes.
9 MS. ANDERSON: Is it no changes until you
10 were aware that the mill ceased de-inking, is that
11 the end date?
12 THE WITNESS: When the mill went down in
13 1970 and was the end of de-inking at the Bryant Mill.
14 MS. ANDERSON: All right.
15 MR. VASILOFF: Okay. Why don't we mark
16 that as Hagard Exhibit Number 2 for identification.
17 (Exhibit Number 2 marked)
18 BY MR. VASILOFF, CONTINUING:
19 Q Before I ask you about Mill A, sir, maybe I can ask
20 you a couple of questions that might shorten this a
21 little bit. Did you have any job responsibilities
22 with respect to the Monarch Mill?
23 A I started -- I rebuild and work to start up the
24 Monarch Mill in 1959.
25 Q Okay. I'm going to backtrack a little bit just to

1 reference to the Bryant Division, it mentions an
2 overflow from the white water storage chest. Was
3 there an overflow from the white water storage chest
4 at the King Mill?
5 A I don't remember.
6 Q And just to get back for a moment, I'm not sure that
7 we covered all of this, but the chemicals that you
8 mentioned with regard to the paper making process,
9 rosin size, Alum, dyes, titanium, clay, starch,
10 de-foamers, were those the only chemicals used in the
11 paper making process?
12 A I'm sure there are others. Those are the ones I can
13 remember.
14 Q You mentioned that you would -- you did some projects
15 back then with regard to waste disposal or not many
16 but some?
17 A None to my knowledge. It doesn't come up that I can
18 remember.
19 Q You did mention that you would do some projects on
20 the de-inking machinery?
21 A Yes.
22 Q All right, sir, I would refer you to page SA 033558
23 on -- excuse me, I have the wrong page. SA 033556,
24 again in Bennett Exhibit Number 1, and that is a
25 diagram with regard to the Bryant Division, okay?

1 And I believe it purports to be a diagram of the
2 de-inking process at the Bryant Division. I would
3 just ask you to take a moment to familiarize yourself
4 with this diagram.
5 A Okay.
6 Q All right. The apparatus that's depicted on this
7 particular diagram, was the de-inking machinery at
8 the King Mill similar to what's depicted here?
9 A Yes.
10 Q Were there any significant differences to your
11 knowledge between what's depicted here and what was
12 at the King Mill?
13 A Nothing major.
14 Q Was there anything minor to your knowledge that you
15 can point out for me?
16 A This is one picture of the Bryant operation. There
17 were various changes to the equipment process and so
18 on, so I'm sure this is a picture of what it looked
19 like at one time.
20 Q I'm referring to the King Mill.
21 A The King Mill is pretty similar. Let me see. Let me
22 think now.
23 Q Take your time.
24 A As I remember, the King Mill chlorinated and bleached
25 first before they cleaned and the Bryant Mill cleaned

1 and screened before they bleached.
2 Q All right. So, if you could, point out for me on
3 this particular diagram where then the chlorination
4 process and bleaching process would have been at the
5 King Mill, where it would have fit in in the scheme
6 of things.
7 A Let's see, probably right after the -- you see -- I'm
8 not sure what that is.
9 MR. KELLEY: I think it's JNS.
10 Q Yeah, that is JNS.
11 A Jonsson screens.
12 Q Yes. You think it would have been after the Jonsson
13 screens?
14 A Yes, probably right in there.
15 Q Okay. All right, sir, I'd like to go through the
16 de-inking process with you. You were familiar with
17 the de-inking process at the King Mill, weren't you?
18 A Yes.
19 Q All right. Where it says dynapulper, is that where
20 the waste pick-up paper would be added?
21 A That's correct.
22 Q And what would be added to the wastepaper in addition
23 to water?
24 A Water and caustic.
25 Q And --

1 A Steam.
2 Q And steam. And then would it be allowed -- would it
3 be agitated within the dynapulper?
4 A Dynapulper or hydropulper is like a big Waring
5 blender.
6 Q Do you know what is depicted immediately or next in
7 line from the dynapulper that's got SLU there?
8 A That's a slusher.
9 Q Okay. Would both the waste pulp and all of the water
10 go from the dynapulper to the slusher?
11 A Is this the Bryant configuration, the King?
12 Q I'm referring to it as the King Mill.
13 A The King Mill did not have exactly this set-up. They
14 had hydropulpers that did the job in one operation,
15 if you will.
16 Q Okay. So instead of a dynapulper and slusher, there
17 was just a hydropulper at the King Mill?
18 A That's correct.
19 Q Would all of the waste stock and the water that was
20 included initially in the hydropulper go to the -- I
21 believe that's a brown stock Oliver listed on this
22 diagram.
23 A I would say so.
24 Q Okay. No water would be removed from the waste stock
25 as it moved from the hydropulper to the brown stock

1 Oliver?
2 A No.
3 Q Okay. And what was the purpose of the brown stock
4 Oliver?
5 A It would be to recover the caustic so it could be
6 re-used back in the pulper, and the hot water.
7 Q All right. Does that mean there was a Saveall
8 located on the Oliver or did the Oliver just remove
9 the water and caustic itself?
10 A Yes.
11 Q Okay.
12 MR. KELLEY: I'm sorry, that is an
13 either/or. You said yes.
14 A It does remove the water itself.
15 Q So that's the purpose of that piece of machinery?
16 A Yeah. It's another form of a Saveall.
17 Q Okay. And would all of the water and caustic removed
18 at the brown stock Oliver be re-used or would there
19 be again percentages lost at the sewers and
20 percentages actually reclaimed?
21 A Generally re-used.
22 Q Now would this water that was reclaimed at the brown
23 stock Oliver only be used in the hydropulper again?
24 A Yes.
25 Q It couldn't be used for any other purpose in either

1 the de-inking or paper making process?
2 A No.
3 Q Now as the wastepaper stock left the brown stock
4 Oliver, is it more in a wet pulp form or is it in a
5 liquid form?
6 A Liquid form.
7 Q I guess if the water and caustic is removed at the
8 brown stock Oliver how can it still be in liquid
9 form?
10 A Well, it's in your definition of liquid.
11 Q Okay. What do you mean it was in liquid form?
12 A It's in pulp form, if you will. It comes off the
13 Oliver in like mud, if you will.
14 Q And it would then move to the riff head box?
15 A The rifflers, I guess that is what that is. I'm not
16 sure the King Mill had that.
17 Q Okay. Do you believe that the waste pulp at that
18 point moved directly to the Jonsson screens as
19 opposed to the riffler head box at the King Mill?
20 A The riffler, its purpose was to settle out any metal
21 particles. I don't remember that the King Mill had
22 that.
23 Q But would -- if the King Mill didn't have that, would
24 the next step from the brown stock Oliver be to the
25 Jonsson screens?

1 A Yeah.
2 Q And what would take place or what would happen to the
3 wastepaper stock on the Jonsson screens?
4 A It had a lot -- let's see, the Jonsson screen is a --
5 it's a screen with holes in it and the stock slurry
6 is pumped over this screen. The fibers themselves go
7 through the holes, the contaminant would stay up on
8 top and would be vibrated off the end of it.
9 Q So the actual wastepaper fiber that you wanted to use
10 or make use of again in paper making would fall
11 through these Jonsson screens?
12 A That's correct.
13 Q What would happen to the contaminants as you've
14 described them that would be left on top of the
15 screens?
16 A They would vibrate off and be collected and sent
17 to -- in boxes to landfills.
18 Q So were these contaminants on the screen, were they
19 more or less in a dry pulp form at that point or --
20 A There were pieces of rubber band, cans, scotch tapes.
21 Q So when you refer to contaminants, you're not
22 referring to anything along the lines of any pulp or
23 stock?
24 A No.
25 Q Was water either added or removed from the stock, the

1 waste stock at the Jonsson screens?
2 A Added. It had to be at the proper consistency to
3 work right.
4 Q Then the wastepaper stock and the water that was
5 added, that would move -- or at the King Mill, would
6 this then be chlorinated?
7 A Yes, as I remember, it went to chlorination from
8 there.
9 Q And how was it chlorinated at that point? Was it put
10 into a large tank?
11 A It had what they call a chlorine mixer. It
12 interjected chlorine gas into the pulp slurry.
13 Q At the chlorination stage here, would water be added
14 or removed at this point?
15 A There's probably a consistency regulator ahead of
16 that. It had to again have the proper consistency.
17 Q So the stock would move from the chlorine mixer to
18 the consistency regulator?
19 A The regulator before the chlorine mixer.
20 Q Okay. And water would be added at that point?
21 A Yes.
22 Q Would water be removed at that point?
23 A No.
24 Q From the chlorine mixer, where would the wastepaper
25 stock and the water that was added at the consistency

1 regulator, where would that go?
2 A It would go to the chlorine Oliver, which again is a
3 Saveall, water Saveall, another form of.
4 Q And would -- I take it water would be removed at that
5 point?
6 A That's correct.
7 Q Would all of the water that was removed at the
8 chlorine Oliver be reclaimed or would a portion of
9 that go to the sewers?
10 A I don't remember. I would say partially reclaimed to
11 be used ahead of the chlorine mixer but the rest
12 would go to the sewer.
13 Q Do you have any idea as to approximately what
14 percentage would go to the sewer or what would be
15 reclaimed?
16 A No, I do not.
17 Q Would more be reclaimed than went to the sewer?
18 A Probably even.
19 Q And what was the consistency of the wastepaper stock
20 as it left the chlorine Oliver? Was it in mud form?
21 A Yes. It would be considered 8 to 12 percent.
22 Q 8 to 12 percent?
23 A. Consistency.
24 Q And by consistency, you mean 8 to 12 percent stock
25 versus water or --

1 A Yes. It's -- a half a percent in consistency is very
2 thin like milk and three percent is a pretty good
3 slurry form. That's about what it would go into the
4 chlorine tower as and it would come off the thickener
5 at about 8 to 12 percent, which is pretty thick.
6 Q And by that you mean the chlorine Oliver?
7 A Yes.
8 Q And that would be 8 to 12 percent stock versus --
9 pardon me?
10 A 100 percent, 100 percent consistency is bone dry
11 pulp.
12 Q So it was 8 to 12 percent?
13 A Water.
14 Q And from the chlorine Oliver where would it then go
15 at the King Mill?
16 A The bleach tower.
17 Q And I take it at the bleach tower the wastepaper
18 stock would actually be bleached?
19 A That's correct.
20 Q And would water be added to the wastepaper stock at
21 the bleach tower?
22 A Yes. There would be some there.
23 Q In addition to obviously bleach, correct?
24 A Yes.
25 Q Would water be removed from the stock at the bleach

1 tower?
2 A No.
3 Q From the bleach tower the wastepaper stock would go
4 where?
5 A To the bleach Oliver, thickener.
6 Q And would water be removed?
7 A Yes.
8 Q And water that was removed at the bleach Oliver,
9 would that be re-used?
10 A Yes.
11 Q And at what point in the process would that be
12 re-used?
13 A Several places. That's good water and could be used
14 anyplace.
15 Q Again, did a portion of water that was removed at the
16 bleach Oliver reach the sewers?
17 A Not to my knowledge.
18 Q So to your knowledge, it would be one -- the water at
19 that point would be 100 percent reclaimed?
20 A Yeah.
21 Q And no water would be added at the bleach Oliver?
22 A There was a shower there up on top of it to help
23 clean it. Most Olivers or thickeners have shower
24 water.
25 Q Would that water be removed at the bleach Oliver as

1 well?
2 A Yes.
3 Q And then where would the wastepaper -- strike that
4 for a moment.
5 What would be the consistency of the stock
6 at that point?
7 A Again, 8 to 12 percent coming off the Oliver.
8 Q Okay. Now again where would it go?
9 A It would then go to cleaning and screening.
10 Q Was there a particular piece of machinery it would go
11 to first?
12 A I would say the vibrotor which you see up there in
13 the -- and then to the flat screens.
14 Q And what happened to the stock at the vibrotors?
15 A That was a cleaning process, screening process that
16 had slots. Again, the good fiber would go through
17 the slots, the contaminants would stay outside and be
18 rejected at the end of the --
19 Q And by contaminant, do you again mean things like
20 metal, rubber bands, thing like that?
21 A That's correct, scotch tapes.
22 Q Would water be added or showered over the stock at
23 that point?
24 A Yeah, there would be water added there.
25 Q Would any water be removed at the vibrotor?

1 A No.
2 Q And it would then move onto the flat screens?
3 A Yes, the rejects from the vibrotor would go over the
4 flat screens. The accepts from the vibrotor would go
5 to the system.
6 Q Pardon me?
7 A Go right to the system. The rejects from the flat
8 screen would have, besides -- I mean the vibrotor,
9 besides contaminants, would have some fiber in it
10 also. So the job of the flat screen was to take more
11 of the fiber out back to the system so coming off the
12 end of the flat screen all you had was contaminates.
13 Q And the stock that would fall through at the flat
14 screens, would that join the other stock that had
15 come through the vibrotor?
16 A Yes.
17 Q Was water added to the stock at the flat screens?
18 A Yeah.
19 Q And you said it would then -- would you like to take
20 a break?
21 A No, I'm okay.
22 Q You said that this stock would then go to the system?
23 A Yeah.
24 Q What do you mean by that exactly? Is there another
25 piece of machinery? What's the next piece of

1 machinery in line?
2 A I think the next piece they had centri cleaners.
3 Q And what happened to the stock in the centri cleaner?
4 A In the centri cleaners --
5 MR. KELLEY: You were afraid they were
6 going to ask that.
7 A No. Centri cleaner takes very diluted stock and
8 enters it into a cone-shaped device, hollow, it goes
9 in the top of the cone and swirls around to the
10 bottom. It is somewhat like a tornado. The heavy
11 particles collect to the outside of the cone and work
12 themselves down to the tip of the cone and are
13 rejected out of the bottom.
14 Q When you mean heavy particles --
15 A Heavy particles of contaminants, again sand and
16 glass. And the light particles would be on the
17 inside of the tornado, if you will, and will go out
18 the top. There's kind of a vacuum in there and they
19 go out the top so that fiber would go out the top,
20 the accepts, if you will. The rejects go out the
21 tip.
22 Q I take it water would also be removed from the stock
23 in the centri cleaners?
24 A A little, not much.
25 Q So water would go up and out with the stock?

1 A Yeah, the stuff that came out the bottom was fairly
2 thick.
3 Q Was any water added in the centri cleaners?
4 A Yes, it would be. There would be water added there.
5 It had to be very low consistency, very thin to work
6 properly.
7 Q Then again, moving on from the centri cleaner, where
8 would that water and stock have gone?
9 A It would then go to another thickener and I believe
10 these thickeners were called side hill washers.
11 Q And how did they work?
12 A Like a window screen on an incline. This stock would
13 go in a head box on the top, flow over this window
14 screen. The water would go through the weir and the
15 stock would thicken as it went down. It would be
16 thickened enough for the process at the bottom.
17 Q Okay. I take it then that at this particular point
18 in the slide hill washers water would be removed?
19 A That's correct.
20 Q Okay. And do you know where this water would go?
21 A Back to process, probably to a white water collection
22 point to be re-used.
23 Q Again, would all of the water removed at this point
24 be re-used or was there a percentage that would have
25 gone to the sewers?

1 A It would all go to the collection point for reuse.
2 Q And what would the consistency of the stock be as it
3 left the side hill washers?
4 A Again, similar to the thickeners on the Oliver in the
5 eight to ten percent. However, those weren't as
6 efficient as the Olivers so it was less than that.
7 Probably five or six percent moisture.
8 Q And from the side hill washers it would go where?
9 The stock I'm talking about.
10 A As I remember, it would then go to the stock chest to
11 be used on the paper machine.
12 Q So basically we're done with the de-inking process as
13 of that point?
14 A Basically, yes.
15 Q Now I think you had mentioned earlier that there were
16 projects that you worked on with regard to cleaning
17 machinery on the de-inking process?
18 A Right.
19 Q And could you explain that for me?
20 A Contamination or dirt was a continual problem for the
21 paper machines. If the stock was too dirty and it
22 got to the paper machine and ended up in the finished
23 product, it could be rejected for being too dirty, so
24 it was a continual battle. The continual battle was
25 to see that the equipment worked the best that it

1 MR. PINDERSKI: I would like the entire
2 document to be designated as Cavey Exhibit Number 2.
3 MS. ANDERSON: Let me see what the rest of
4 this is.
5 (Exhibit Number 2 marked)
6 BY MR. PINDERSKI, CONTINUING:
7 Q Mr. Cavey, I would like you to take a couple of moments
8 to examine what is contained within the diagrams on this
9 particular page.
10 A This is the Bryant Mill, right.
11 Q Yes, it is, sir. What I would ask you is, these
12 diagrams that are depicted on page 033556, is that
13 similar to the apparatus that would have been used in
14 the de-inking operation at the King Mill?
15 A Somewhat, yeah, it would be, yeah.
16 Q Could you tell me what would be similar to the de-inking
17 operation at the King Mill or what was different about
18 the King Mill's de-inking operation than what's depicted
19 on this particular diagram?
20 A Well, in the King Mill in the de-inking operation these
21 are supposedly, I imagine, slide washers. I would call
22 them slide washers because they come on an angle and
23 that's what a slide washer does.
24 Q Those are the diagonal lines? Sir, why don't we begin
25 over at the left-hand corner, upper left corner where

1 the word dynapulper --
2 A Dynapulper, yeah.
3 Q Was there a dynapulper at the King Mill de-inking
4 operation?
5 A There were.
6 Q And is a dynapulper the same thing as hydropulper?
7 A Dynapulper is a smaller stage of a hydropulper.
8 Hydropulper is usually larger and --
9 Q Do they perform the same functions?
10 A They perform the same function.
11 Q Could you describe for me what that function would be?
12 A They chew up paper.
13 Q Would that be waste paper?
14 A That would be waste paper. It could be finished paper
15 out of the finishing room. Rejects, you know, like
16 something was wrong with the machine, they pulled it up,
17 they take it out, dump it in the dynapulper, and it
18 would go back in the system again.
19 Q Did the King Mill de-inking operation have a hydropulper
20 or dynapulper?
21 A They had a hydropulper. No, they did not have a
22 dynapulper. They had two hydropulpers and one small
23 hydropulper for the broke, what they called the broke
24 hydropulper in the roll room which would be right here
25 (indicating).

1 Q Would the broke hydropulper feed into the larger
2 hydropulper?
3 A It would feed into a tank and then it would go from that
4 tank wherever they called for it.
5 Q Okay. Now, if the King Mill had two hydropulpers --
6 A Two hydropulpers.
7 Q -- Would they then have two separate de-inking lines?
8 A Well, the hydropulper on the top floor was the original
9 hydropulper and they discontinued it and moved it down
10 to the main floor just off the maintenance shop by the
11 railroad track which goes up between the mill, which
12 would be right in this area here (indicating). Right in
13 here. Hydropulper sat right out in here, really in the
14 maintenance shop. They took part of -- They did away
15 with the railroad track and filled it in.
16 Q The hydropulper that sat near the maintenance shop was
17 in operation?
18 A That was in operation.
19 Q And did that then lead to the machinery, the other
20 machinery in the de-inking operation?
21 A I'm saying when they moved the hydropulper we were not
22 de-inking anymore.
23 Q Okay.
24 A It was just for pulp coming in off the freight cars and
25 pulp mill.

1 Q I would like to stick with --
2 A Everything de-inking was done upstairs.
3 Q Everything de-inking when de-inking was being done at
4 King Mill was done upstairs?
5 A Done upstairs and the hydropulper was upstairs and down
6 through there your screens and stuff.
7 Q When the de-inking operation was active at the King Mill
8 how many hydropulpers were there?
9 A There were just the one actually used for de-inking.
10 Q Okay. All right. Do you know, you say -- you said that
11 paper would go into the hydropulper. All right. Do you
12 have have an understanding as to what else would be put
13 into the hydropulper in addition to paper?
14 A In the de-inking hydropulper everything went in,
15 magazines, office paper, whatever come in the bales.
16 They would sort the bales out on a belt and it would go
17 into the hydropulper.
18 Q Okay. Now, did chemicals also go in the hydropulper?
19 A They had to put chemicals in the hydropulper to help
20 digest the paper up. Most of it was alum, not alum, I
21 can't think of the name of the chemical now. But
22 anyhow, they had to put chemicals in, naturally.
23 Q Now, would the general name of the chemical that would
24 be put into the hydropulper would that be a caustic?
25 A Caustic, that's what I was trying to think of.

1 Q Okay, and from the hydropulper -- well, first of all,
2 how long would it take to make a batch of material in
3 the hydropulper?
4 A I couldn't tell you honest time because they took
5 samples, when the sample got just so they wanted then
6 they dumped it. It went to a cooker chest and they
7 cooked it.
8 Q Do you know how large the hydropulper was?
9 A Gallon wise, no, but it was probably about 18, 20 foot
10 across.
11 Q Okay. Was it more than one story tall?
12 A Oh, yes. It went from the basement up to the top floor.
13 Q You have any idea as to the volume of material that the
14 hydropulper could hold?
15 A At one time I probably could tell you, I could never
16 tell you now. But it's good sized.
17 Q From the hydropulper you say the material went into a
18 chest?
19 A Into a chest, the cooker. What they called cookers.
20 Q What happened to the material when it was in the cooker
21 after it had left the hydropulper?
22 A Well, it's cooked, cooked up, then it's run through
23 pumps and screens and screened down. I mean, they
24 probably put chemicals in it again. I couldn't argue
25 with you because I didn't do that.

1 MS. ANDERSON: He hasn't asked you that.
2 Q If it then went to a chest, okay, do you have any idea
3 of what is designated as Brstk Olv on the diagram?
4 A What are we talking about here?
5 Q We're talking about that one right here (indicating).
6 A That's an Oliver.
7 Q Okay. Could you tell me what an Oliver is?
8 A An Oliver is an outfit that stock goes in. It has a big
9 roll screen, roller with a screen on it, and the stock
10 -- it's got a vaccuum and sucks the stock to the screen.
11 It takes it out of the water that it's running in and
12 the stock is naturally scraped off into a trough and
13 goes into the system somewhere else.
14 Q Would the chest you were referring to lead into one of
15 these Olivers on the de-inking operation?
16 A I believe it did.
17 Q All right. Okay, and from the Oliver would it then go
18 to a head box?
19 A It went to -- it had to go through a pump to a head box,
20 yeah.
21 Q And what would happen to it in the head box?
22 A It would go down to the head box into a pump and be
23 pumped into the system.
24 Q When you say pumped into the system, what would be the
25 very next step after it left the head box? Where would

1 the material then go?
2 A I believe it goes over to the slide washers to filter
3 out some more.
4 Q What happens to the pulp as it's in or on the slide
5 washers?
6 A The pulp goes into the bottom, into a tray in the bottom
7 of the slide washers and is pumped out into the system
8 somewhere else.
9 Q While it's in this tray at the bottom of the slide
10 washer is there liquid at the bottom that the material
11 would go into?
12 A No. It's just pulpy, dry stock.
13 Q It's dry stock?
14 A Yeah, it's the dry pulp or whatever it is, whatever
15 they're making up, goes down and goes in here and it
16 slides on a taper, the bottom is on a taper and
17 everything slides toward the pump.
18 Q Would the material on the slide washers travel up the
19 washers or down the washers?
20 A It would travel down. You had a head box up here.
21 Q All right. From the slide washers where would the
22 material then go?
23 A I think it went through at the King. I'm saying at the
24 King now.
25 Q That's fine.

1 A It went through -- we had a set, a bunch of screens or
2 -- I can't even think, centrifugal screens or something
3 they called them.
4 Q All right.
5 A That did some more screening, got all the junk out of
6 the stock so the stock was a certain thickness.
7 Q Was the stock still wet at that point?
8 A It's still wet at that time.
9 Q So these screens that the stock would go to after it was
10 on the slide washers that would take more liquid out of
11 it?
12 A Take more liquid out of it, yeah, it would.
13 Q Okay. Where would the material go following the time it
14 spent on these screens?
15 A Well, after it left the screen I imagine it went into
16 another tank, whatever tank they put it into so they
17 could draw it down into the plant. Screening was the
18 last process.
19 Q Screening was the last process of de-inking. Okay. Was
20 there a point at which during the de-inking process
21 where the material would be bleached?
22 A If it called for bleach, yeah, there would be bleach,
23 yeah.
24 Q Would that occur after the time it left the screens that
25 the material went to following the time it spent at the

1 slide washers?
2 A If it was going to be bleached it would be bleached
3 before it hit the slide washers.
4 Q It would be bleached before or after it got to the head
5 box?
6 A Before it got to the head box. It was up in here it
7 would have to be bleached, so.
8 Q So the material would be bleached before it got to the
9 head box if it was going to be bleached at all?
10 A That's right.
11 Q Okay. Did all of the material that was, in fact,
12 de-inked at the King Mill have to be bleached?
13 MS. ANDERSON: If you know.
14 A I don't know. I can't answer that.
15 Q Well, was material at the King Mill that was de-inked,
16 in fact, bleached?
17 A Like I say, I can only honestly say I can't give you an
18 answer to that. I presume it was but I don't know.
19 Q And you say that after it would leave these screens the
20 material would then go into a tank and would that
21 material then be ready for use in the papermaking
22 process?
23 A It would be.
24 Q Going back to the beginning of the process, the
25 hydropulpers themselves, when the material would be

1 loaded into the hydropulper and the caustic is added
2 would water also be added?
3 A It would.
4 Q The material went from the hydropulper to the chest
5 where it was cooked, would all of that water follow the
6 stock or would that water be drained off?
7 A It would follow the stock.
8 Q All right. So all of the material that would be in one
9 batch that would be made in the hydropulper would, in
10 fact, end up in this cooking chest?
11 A Cooking.
12 Q In the cooking chest if the material would then be going
13 onto the Oliver would any liquid be drained off of this
14 material at the time it was at the cooking chest?
15 A That was the job of the Olivers.
16 Q That would be the next step then?
17 A The next step, uh-huh.
18 Q The Olivers, could you explain to me again briefly how
19 they worked? You said that the material would be on
20 screens?
21 A The material was dumped into the Oliver chest. The
22 Oliver is just like a bathtub, use that impression. It
23 has a screen rotor inside of it. It has vacuum lines
24 inside of that and it sucks the stock out of the water
25 onto the screen and the screen rotates. It has a

1 scraper at the head box and the scraper scrapes the
2 stock off the heads.
3 Q As the material is coming up the screen this scraper
4 then takes it to the head box?
5 A To the head box.
6 Q All right. What happens to all of that liquid that the
7 material came in with to the Oliver?
8 A This I don't know. Let's see, where did it go. I
9 honestly couldn't tell you. I just presumed it --
10 Q Was there a particular pipe that led out of the Oliver
11 that would take the water away?
12 A Your vacuum pipes would suck water away. That's where
13 it went.
14 Q Do you know where the vacuum pipes led?
15 A The vacuum pump. You had vacuums, sucks the water out,
16 and it went somewhere, probably in the sewer. I
17 wouldn't know.
18 Q All right. Is it your understanding that that water
19 would have gone to the sewer?
20 MS. ANDERSON: I think he's speculating.
21 A I don't know for sure. I'm not going to say yes or no.
22 The vacuum out of the Oliver would suck the water out of
23 it and it went down into a pipe.
24 Q Now, when the material went to the head box, it would --
25 it would still be damp or wet, is that correct?

1 A Yeah, it would be reasonably wet, yeah.
2 Q And would any liquid be taken off or out of that
3 material as it was in the head box?
4 A No.
5 Q All right. And from the head box you testified that the
6 material would then go to the slide washers?
7 A I'm taking a wild guess at it.
8 Q I don't want you to take a wild guess.
9 A Well, all I'm saying is it's been a long time since I've
10 been there.
11 Q I understand. Your best recollection is it would go
12 from the head box to the slide washers?
13 A Yes.
14 Q When the material went to the slide washers would liquid
15 be taken out of it at that point?
16 A The object of the slide washer is to get it dry.
17 Q Okay, and would the water that was taken out of the
18 material also be taken out by means of a vacuum pump?
19 A Let's see, water went -- on a head box? I honestly
20 can't tell you where the water went.
21 Q To your knowledge was water taken out of the material
22 when it did go through the slide washers?
23 A Yeah.
24 Q Okay, and you don't know where that water would have
25 gone?

1 A No.
2 Q All right. When the material then went on to the
3 screens that you previously told me about, would water
4 again be taken out of that material?
5 A That's what the object of the screen was, make it dry
6 and clean.
7 Q All right. Do you know how this water would be removed
8 from that material?
9 A It had to be vacuumed. That's the only way you could
10 get it out.
11 Q And do you have an idea as to where that water would
12 have been vacuumed to?
13 A A lot of water was reused.
14 Q Okay. But you don't know?
15 A No.
16 Q Is it your testimony you just don't know where the water
17 went?
18 A I don't know honestly. I can't tell you honestly where
19 it went.
20 Q Okay. Was there a single pipe that would take the
21 liquid away from these screens when it was vacuumed out
22 or was there more than one pipe?
23 A I would probably say just one. I wouldn't know. I
24 honestly couldn't tell you truthfully.
25 Q All right. And to your knowledge after the material

1 left these screens it was ready to be used in the
2 papermaking process?
3 A It went into the storage tanks, yeah.
4 Q All right. Mr. Cavey, during the time that you spent as
5 the tour millwright during the night shift were there
6 instances where the machinery from the de-inking
7 operation would, in fact, break down?
8 A It would.
9 Q Okay. Were there times when the hydropulper would break
10 down?
11 A It would.
12 Q Okay. Could you tell me what problems would be
13 particular to a hydropulper when it would break down?
14 Why would it break down?
15 A It would lose a plate in the bottom. All hydropulpers
16 have a flinger plant in the bottom that flings the stock
17 around and it has cutting plates along with it, but the
18 flinger plate, it just don't move, stock don't move
19 around without the flinger plate.
20 Q All right. What would happen -- strike that. Were
21 there times when the hydropulper would be full of
22 material, caustic and water at the time one of these
23 plates would break?
24 A Everytime I ever worked on it they always managed to get
25 it down. Now how, I don't know. They called me in when

1 millwright the clarifier was there.
2 Q Okay. Where did the water in the sewer go before the
3 main sewer was installed?
4 MS. ANDERSON: He just testified the main
5 sewer was already there.
6 A I don't know. I can't tell you. I wasn't in that area.
7 I was out in the finish room working and I could care
8 less where the water went, you know, it don't involve
9 me.
10 Q But it's correct, you did work in the basement prior to
11 the time the main sewer was installed?
12 A No; no.
13 Q Okay. That's where I'm confused.
14 A I'm sorry, I never said that. The clarifier was working
15 when I went on maintenance. The clarifier was there so
16 the main sewer was out there working going to the
17 clarifier.
18 Q Okay. Thank you.
19 A I don't know how they did it before that.
20 Q Okay. Thank you. Back to the de-inking mill. You
21 indicated that samples would be taken before the pulp
22 was put into the cooker?
23 A That's right.
24 Q Who would take those?
25 A I imagine it would be the operator, the hydropulper

1 operator. They all had one operator and that was his
2 job, to dump it when it was ready.
3 Q How many employees worked in the de-inking process in
4 King when you were there?
5 A I would say about six men and probably six women in the
6 de-inking part of it, you know.
7 Q It's correct to say that the women were always working
8 on the sorting line?
9 A Always on the sorting line and they had nothing to do
10 with the rest.
11 Q You ever see the women take paper off the sorting line
12 and throw it on the side?
13 A Yes, I have.
14 Q Okay. What is your understanding as to what happened to
15 the paper that was rejected by the sorters?
16 A Baled it in a baler, shipped out.
17 Q Do you know where it went?
18 A Junkyard, I understood. Some of it I know went to the
19 junkyard right down below the King. Now, where it all
20 went I don't know, but it was baled up. They put
21 cardboard sides on it and baled it. Baled it right in
22 the same room. All they did was move it over.
23 Q Back when you were working in the King Mill was Les
24 Stoeffler the supervisor of the de-inking operations?
25 A I think he was second in command. I think Fitzpatrick

1 too busy at the dry end to pay any attention to the
2 wet end.
3 Q Were there times to your knowledge when there would
4 be overflows on the wet end of the paper machines?
5 A I don't know. I don't think so.
6 Q So you yourself never participated in a clean-up on
7 the wet end of the paper machine?
8 A Only on -- only on the -- like we changed the wire
9 and then it had to be cleaned up.
10 Q When you say changed the wire, does that mean the
11 wire would break or --
12 A No, not necessarily. It might get a little hole in
13 it or something that isn't worth patching, you know.
14 Then I don't know who decides it, but they decide
15 well, the wire is practically wore out, we will put a
16 new one on. You know what I mean by wire, don't you?
17 Q Yes. Would the paper machine be stopped to replace
18 the wire?
19 A I hope so.
20 Q You said after you worked in the machine room you
21 became a hydropulper operator, correct?
22 A To the best of my knowledge, yeah, that's the way it
23 is.
24 Q And were the hydropulpers located in the beater room
25 at the King Mill?

1 A Uh-huh. The one I started on was. It was just off
2 the beater room. I mean, it was all on the same.
3 Q Where was the beater room in the King Mill? Was it
4 on the first floor?
5 A We only had -- well, we had two floors, come to think
6 about it. Yeah, it was on the first floor.
7 Q Well, was there a basement in addition to a first
8 floor and second floor?
9 A Oh, yes.
10 Q How many hydropulpers were there at the King Mill?
11 A Well, at one time we had two of them, one was -- but
12 they were for different grades of paper. One was for
13 wastepaper and the other was -- I forget what they
14 was trying -- make pocketbook paper in the one
15 downstairs. So at one time there was two of them,
16 but that didn't last long.
17 Q Well, when they did have two of them, were both of
18 them used for wastepaper or did one of them --
19 A Yeah.
20 Q Okay. You say it didn't last long?
21 A Well, it was an experimental job. That was the one I
22 started on, by the way.
23 Q The experimental one?
24 A Yeah.
25 Q How long did you work on the experimental one?

1 A Like I say, it didn't last long. I'd say maybe a
2 year or less and they shut it down.
3 Q Do you know why it was considered experimental?
4 A Sure. It -- we used to get paper, you know, that
5 would have little spots of rubber in it and it would
6 pick on the machine and like that there. And they
7 started making pocketbook paper, you know, the pocket
8 magazines, those little magazines, you know, that
9 poor grade of paper. I guess that's what you call
10 them. And --
11 Q Well, did this hydropulper have some special ability
12 to remove the rubber?
13 A No, but they figured that they could -- they could
14 use it. See, by making this cheap grade of paper,
15 they figured that they could run it. Sometimes I
16 don't even know what I'm talking about. I forget
17 what kind of paper we did run down there.
18 Q Well, in the hydropulper, when you were working on
19 the hydropulper, were you in charge of putting
20 wastepaper in the hydropulper?
21 A Yeah. The fact is it was a one-man operation, the
22 experimental one.
23 Q How would the wastepaper get to you at the
24 hydropulper?
25 A They had Brooks' outfit that used to haul it in, I

1 think. I donft know. Somebody hauled it in.
2 Q Would wastepaper get to you in bales or would it be
3 sorted?
4 A It would be in bales. Well, bales and skids.
5 Q Was the wastepaper sorted before you put it into this
6 experimental hydropulper?
7 A We didn't sort it at all. Down there we didn't sort.
8 Q Do you know what types of paper you were putting into
9 that hydropulper?
10 A I'm just trying to think of that now. I can't
11 remember. Isn't that awful? I really can't.
12 Q Was it magazines? Was that part of it?
13 A No, I don't -- there was no magazines, but I just
14 can't remember what grade of paper we was running in
15 that.
16 Q Was there office paper?
17 A You're talking about ledger now?
18 Q Yes.
19 A I don't think so because ledger was our expensive
20 paper, you know. That cost more money. I really
21 don't know. I forgot.
22 Q But the paper that you were putting into this
23 particular hydropulper was not sorted at all?
24 A No.
25 Q How big was this hydropulper that you were working on

1 initially?
2 A I don't know how many gallons but I'd say roughly
3 about -- it would hold about ten tons of paper. What
4 am I talking about? Five tons.
5 Q And did you have to add chemicals or water to the
6 hydropulper as you added the wastepaper?
7 A We added something, but I can't remember what it was
8 at this time. On wet strength -- we'd use Alum for
9 wet strength, but I don't know about this particular
10 grade of paper. I can't remember what we did use.
11 Q And once the wastepaper was added to the hydropulper
12 and pulped, where would that stock then go to?
13 A It was pumped into a retaining tank.
14 Q Was this a retaining tank that was in the beater
15 room?
16 A No, it was between the beater room and the
17 hydropulper, I assume it was. I dont remember at
18 this time. Can I have a drink of water?
19 Q Absolutely.
20 This hydropulper that you worked on
21 initially, were there occasions where the stock that
22 you were making in that hydropulper from the
23 wastepaper was no good or unusable?
24 A Not the experimental because that was the reason for
24 using it because they figured they could.

1 Q So all of the stock that was made in this particular
2 hydropulper was usable?
3 A They used it, yes. I don't know what happened after
4 that.
5 Were there times when this particular hydropulper
6 would overflow?
7 A No.
8 Q And that's to your knowledge when you were working on
9 it?
10 A What's that?
11 Q To your knowledge it never overflowed, correct?
12 A Did I say we used it for two years?
13 Q I don't think you mentioned that.
14 A No, we didn't. It never --
15 Q When you were working on it, it never overflowed?
16 A No. I don't know what happened the other two shifts
17 but on mine it didn't.
18 Q When you were working on this particular hydropulper,
19 did you have clean-up responsibilities?
20 A No. Only happened on weekends when they shut it
21 down.
22 Q When you say only happened, meaning the clean-up only
23 happened on weekends?
24 A There was nothing in it. All they did was squirt the
25 bottom down, take the wire out. Sometimes a wire

1 would get in there from a bale.
2 Q You're referring to the clean-up of the hydropulper
3 itself?
4 A Yeah. Now this is this one hydropulper, now mind
5 you.
6 Q Yes. But when you were working on that particular
7 hydropulper, did you have any clean-up
8 responsibilities in the beater room or --
9 A No.
10 Q This hydropulper was located outside of the beater
11 room, correct?
12 A Outside of the beater room, yes.
13 Q During this time could you observe what was going on
14 in the beater room?
15 A I could if I walked down there, but I don't know what
16 the beater room has to do with that.
17 Q During this time that you were working on this
18 experimental hydropulper, did you have the
19 opportunity to observe the machinery in the beater
20 room?
21 A Well, I don't get what you mean, observe the
22 machinery.
23 Q Well, do you know what was located in the beater
24 room?
25 A What was located there?

1 Q Yes, what type of machinery. Were there other
2 hydropulpers located in there?
3 A All you've got is your, what you call it, with a
4 paddle in it, wooden -- what the heck would you call
5 them, beaters?
6 Q Okay.
7 A It's operating all the time.
8 Q Do you know how many beaters were located in the
9 beater room?
10 A Two or three, more or less. I don't know.
11 Q Were these open or closed?
12 A They were open.
13 Q Were there any other tanks located in the beater
14 room?
15 A No other tanks, no. There was a dynapulper but no
16 tanks.
17 Q Do you know what the dynapulper was used for?
18 A Yeah, when they got a roll that was no good in the
19 machinery, they'd take it to the dynapulper and put
20 it through the chopper and throw it in the dynapulper
21 and beat it up.
22 Q Did you ever observe any spills or overflows from the
23 beaters or the dynapulper in the beater room?
24 A No.
25 Q Now you said that you worked on this experimental

1 hydropulper for maybe two years.
2 A I don't think it lasted that long.
3 Q Did you then --
4 A I really don't believe it lasted over a year but this
5 is just a guess.
6 Q Did you then go to another hydropulper?
7 A The way it worked out was the guy upstairs that run
8 that hydropulper, he died so I automatically got his
9 job. It happened about the same time.
10 Q When you say upstairs, do you mean --
11 A The other hydropulper was upstairs.
12 Q When you were working on this experimental
13 hydropulper, who did you report to?
14 A Really I was more or less my own boss.
15 Q Well, did you have to fill out any type of report --
16 A No.
17 Q -- in connection with the wastepaper you were putting
18 into the hydropulper?
19 A Not downstairs, no.
20 Q Was anyone there working with you?
21 A No.
22 Q Do you know who the superintendent was at the time
23 you were on this experimental hydropulper?
24 A That would be the one in conversion upstairs but I
25 can't -- we had three of them upstairs. We had

1 Claude Mason and John Weessies and Mike Herring.
2 Q Herring?
3 A Herring, yeah.
4 Q But you didn't report to --
5 A No.
6 Q -- either of these individuals?
7 A (Shaking head.)
8 Q And the second hydropulper that you worked on
9 upstairs, was that located in a particular room?
10 A Yes, we had a hydropulper room and also the
11 wastepaper was stored there.
12 Q The wastepaper was stored in the same room as the
13 hydropulper?
14 A Yes. We had a conveyor belt they dumped it on and we
15 sorted on the conveyor belt.
16 Q When you went upstairs to the second hydropulper, did
17 your duties include at that time sorting the
18 wastepaper or did that come later?
19 A No, the lead man did that. Of course, everybody
20 helped, you know, if they seen anything was bad.
21 Q Do you know who the lead man was when you moved to
22 this second hydropulper?
23 A I don't remember what shifts they were on but we had
24 Dick Augg. He's the one that died. I'm going to
25 have to go back now because that's -- the guy

1 upstairs that run that hydropulper at the time I run
2 the one downstairs, he quit. I took his job running
3 the hydropulper upstairs and Dick Augg is the guy
4 that died, but he was the lead man. That's when I
5 took over the lead man's job and --
6 Q Do you know what the name of the gentleman was that
7 quit that you replaced?
8 A I did because he had back trouble and he collected.
9 Then he went over to the schools and had back trouble
10 again and collected again and I can't think of what
11 his name was.
12 Q When you moved up to working on that second
13 hydropulper, was that a one-man job as well?
14 A All I did was press buttons and run the paper in when
15 I think -- see, we work on a continuous pump all the
16 time. The paper just kept going in all the time.
17 You watched the hydropulper. You had to more or less
18 judge the consistency while you were pumping out and
19 when to push the button, put more paper on so it was
20 pumping out all the time.
21 Q Were there a number of sorters up there when you went
22 up to the hydropulper?
23 A They worked on the line sorting paper. I think there
24 was -- seems to me like we had four of them. I'm not
25 sure. One was a mule driver. Seems like there was

1 three others, but I can't say definitely.
2 Q Do you remember any of their names?
3 A Well, I remember -- on what shift? My shift?
4 Q Well, any shift?
5 A Well, yeah, there was Aaron Howe and --
6 MS. LATORRE: How do you spell that name?
7 A H-O-W-E. His son was David Howe, news commentator.
8 There was a kid by the name of Powers. Boy, it's
9 hard to remember these names. Red Curtis, Robert
10 Curtis. Give me time to think. Maybe after awhile I
11 can come back to it.
12 Q Okay, that's fine.
13 When you moved to the second hydropulper
14 upstairs, did you have to report directly to someone
15 at that point?
16 A We had a tower boss up there. He was there all the
17 time.
18 Q And do you know what his name was?
19 A Well, I named him once. I named John Weessies and
20 Claude Mason and Mike Herring. But later on we had
21 another tower boss. I don't know what happened to
22 the one. Jim Bonnette later on was the tower boss.
23 I don't know. He was on my shift.
24 Q Now did you have to fill out any types of reports in
25 connection with your job?

1 A No, all I did is make a ticket out, you know. They
2 had a tag on each one of the bales, how much it
3 weighed. I kept track of them and totaled the weight
4 up.
5 Q Now you said that you worked as this hydropulper
6 operator off and on, correct?
7 A No, I worked on that steady until I become lead man.
8 Q Okay. Do you know approximately how long you worked
9 on the hydropulper?
10 A I'm just guessing but it wasn't very long. I'd say
11 maybe three months. I told you the lead man died and
12 I took his place.
13 Q During this three-month period that you worked on the
14 hydropulper, was there any occasion where the
15 de-inking or -- excuse me, strike that -- where the
16 wastepaper that you were mixing up in this
17 hydropulper would go bad or have to be disposed of?
18 A It wouldn't go bad. It was bad. It wasn't -- we had
19 paper that should have been throwed out that got in
20 the hydropulper and it wasn't any good.
21 Q What would happen to the material that was put into
22 the hydropulper and then discovered that it was no
23 good?
24 A We tried to circulate it out and sometimes it worked
25 and sometimes it didn't. What I mean by circulating

1 it out, take it off the continuous pump and just let
2 it beat up maybe for a half hour, 45 minutes and then
3 if it still wasn't any good, then the tower boss made
4 the decision on what to do.
5 Q Well, what were the decisions that the tower boss
6 could make with regard to a bad batch of --
7 A Most of the time it was in the sewer.
8 Q How would the bad batch get to the sewer?
9 A Well, you open a valve, dump it in the sewer. It
10 goes in this pit upstairs -- it goes in the pit down
11 in the basement and from the pit it would overflow
12 into the sewer.
13 Q Was this hydropulper where this would have to be done
14 as large as the one that you described?
15 A Same thing.
16 Q So you think it held approximately five tons of
17 paper?
18 A Around there, yes, more or less. That's pretty
19 close, I'd say. Depends a lot on what consistency
20 you were running at the time.
21 Q Do you know what would cause one of these batches of
22 paper that had been pulped in this hydropulper to be
23 disposed of?
24 A Our biggest problem was with heat seal and it would
25 get little balls of rubber and that's something you

1 can't circulate out. And they couldn't run it on the
2 machines because the heat from the, you know, from
3 the dryer stacks would pick holes in the paper where
4 those rubber spots were. We also run into wet
5 strength and like that.
6 Was latex also a problem?
7 A That is rubber, latex.
8 Q Okay.
9 A That's what I call rubber. We run into laundry tags,
10 you know, and they just wouldn't -- there's nothing
11 you can do. When you run into them, you might as
12 well forget about them.
13 Q Do you know how often this hydropulper would have a
14 batch that would have to be sent to the sewers?
15 A Well, it's pretty hard to tell. Sometimes it was
16 close together. You know, you'd maybe have two
17 upsets in a row and then it wouldn't happen for a
18 long time, but, see, maybe four -- I'd say maybe
19 four, five times a year per shift. What the other
20 shifts do I don't know.
21 Q Okay. When you would have to dump a batch of this
22 material that was in the hydropulper that had gone
23 bad to the sewer, would you have to do any clean-up
24 of the sewers? Would it clog the sewers in any way?
25 A No, no problem there.

1 Q You said that after you were there for approximately
2 three months on this hydropulper you then became lead
3 man, correct?
4 A To the best of my knowledge.
5 Q Could you tell me what the responsibilities of the
6 lead man were?
7 A Sorting paper.
8 Q Would you actually sort paper yourself as lead man?
9 A Yes. I'd go through it and then I'd tell the guys
10 what to look for and what was to throw out. Most of
11 the time they knew though because they had worked
12 there longer.
13 Q When you became lead man, were you given specific
14 instructions as to the types of paper that you were
15 supposed to pick out before it was sent to the
16 hydropulper?
17 A Oh, yes.
18 Q Were these written down in some fashion?
19 A No.
20 Q Do you know who gave you those instructions as to
21 what paper would have to be sorted out?
22 A Tower boss.
23 Q Do you remember what types of paper were supposed to
24 be taken out before the wastepaper was sent to the
25 hydropulper?

1 A Like I say, heat seal and plastics, laundry tags and
2 that stuff that looks like braille. What do they
3 call it? It's got a name for it. It breaks up.
4 It's like a lead pencil. I mean, it's material like
5 a lead pencil. It didn't break up. It leaves little
6 black spots. I can't think of what they call it.
7 You find it on certain types of ledgers, you know,
8 but I can't think of the name.
9 Q Was carbon paper something --
10 A You got it there, yeah, carbon paper was another
11 thing.
12 Q Was -- strike that.
13 Are you familiar with the term carbonless
14 copy paper?
15 A Yeah.
16 Q Was carbonless copy paper a type of paper that was
17 supposed to be sorted out?
18 A Oh, yes.
19 Q Do you know why carbonless copy paper was supposed to
20 be sorted out?
21 A Because you couldn't de-ink it.
22 Q Do you know why you couldn't de-ink it?
23 A I don't know why. I don't even know what chemicals
24 they used, outside of caustic. Parchment was another
25 thing that wouldn't beat up.

1 Q Was carbonless copy paper easily identifiable? Could
2 you recognize that?
3 A You could recognize it, but try to find it. It would
4 be between sheets, you know.
5 MS. LATORRE: Mr. Sellon, are you talking
6 about carbon paper between sheets now?
7 A Yeah, are you talking about something else?
8 Q Carbonless copy paper.
9 A What is that? I thought it was the same thing.
10 Q The answers that you've just given me in connection
11 with the line of questioning that I've had, were you
12 referring to carbon paper?
13 A Yeah, I thought the carbon copy paper -- it's kind of
14 tissue paper and another copy and another copy.
15 Q Okay. Is the paper that you're referring to, would
16 that have a blue back or dark back to it?
17 A Some of it would have a blue back, yes. I mean I'm
18 off base, ain't I?
19 Q But you don't recall having been instructed with
20 regard to carbonless copy paper?
21 A Just carbon paper is all I know. I thought it was
22 all copy paper.
23 Q What about coated paper?
24 A Coated paper don't bother because we run magazines,
25 that's coated.

1 Q Were there instances where bales of paper, and I am
2 referring to the second hydropulper, would be placed
3 in the hydropulper unsorted?
4 A Not to my knowledge.
5 Q Do you have an understanding as to how much
6 wastepaper would be used a day or sent through this
7 hydropulper a day?
8 A I did at one time, but I wouldn't want to make a
9 guess now.
10 Q Okay. Would reports have to be filled out as to how
11 much wastepaper was used per day?
12 A Oh, yes. It seems to me -- I may be way off base,
13 but it seems like it was about a hundred thousand a
14 shift.
15 Q A hundred thousand pounds?
16 A Yeah, but I may be way off. I don't know where I got
17 that figure.
18 MS. LATORRE: Mr. Sellon, I just want to
19 tell you you're here to testify as to things you know
20 about. You shouldn't be speculating.
21 A That can be scratched if I am speculating.
22 MS. LATORRE: Pardon me?
23 A That can be scratched if I am speculating.
24 Q Sir, I don't want you to guess but to the extent you
25 remember something --

1 A Yeah.
2 Q -- and can offer your best estimate, that's certainly
3 permissible.
4 A I can't even give you an estimate. I could have
5 maybe ten years ago.
6 Q What happened to wastepaper that was rejected?
7 A The wastepaper is rejected, they send it back to the
8 wastepaper -- wherever they got it. In turn, they'd
9 just ship it back again. They was playing games with
10 us.
11 Q Would a report have to be filled out as to why the
12 wastepaper was rejected?
13 A This I wouldn't know.
14 Q So as lead man you yourself wouldn't fill out any
15 type of report?
16 A I had nothing to do with that, no.
17 Q Do you know who Allied's suppliers were of wastepaper
18 back when you were lead man?
19 A I think one of them was down the street there. What
20 was his name on Lake Street there? What was that
21 wastepaper outfit?
22 Q Was it Redmond Brothers?
23 A No, Weiss or Weissman. That's the only one I know.
24 Q At the time that you were lead man, did you have any
25 clean-up responsibilities?

1 A As a lead man?
2 Q Yes.
3 A Well, there was no clean up outside of sweeping the
4 floor.
5 Q Well, did you have authority over anybody outside of
6 the paper sorters themselves?
7 A No, I didn't.
8 Q And to your knowledge, at the time there was only
9 that single hydropulper, outside of the experimental
10 hydropulper, that wastepaper was pulped?
11 A That's the one I'd say.
12 Q In the King Mill?
13 A Yeah, the single one.
14 Q And how long were you lead man?
15 A Well, like she said, I'd be speculating to say that.
16 Until they decided to save some money and eliminate
17 the lead man.
18 Q Were you lead man for more than a year?
19 A Oh, yes, I was lead man for quite a few years.
20 Q You think you were lead man for more than three
21 years?
22 A Now again I am speculating. I'd say at least three
23 years I was lead man. Anything over that I don't
24 remember.
25 Q You say you were no longer lead man because they

1 eliminated the position?
2 A They eliminated the position.
3 Q Do you know why they eliminated the position? Was it
4 just cost cutting?
5 A They was operating, I guess, on their budget -- over
6 their budget as far as I know and -- well, let's just
7 forget about it because that's all speculation
8 anyway.
9 Q And after you were no longer lead man, did you then
10 go back to the hydropulper?
11 A Yes.
12 Q And you would have been pulping wastepaper again?
13 A That's right.
14 Q And after you had returned to the hydropulper from
15 the job of lead man, were there instances where the
16 wastepaper that was being pulped in the hydropulper
17 would go bad?
18 A Yes.
19 Q So again at this time there were instances where the
20 hydropulper had to be drained to the sewers?
21 A That's right.
22 Q And you personally drained the hydropulper on more
23 than one occasion?
24 A That was my job, yes.
25 Q And after you had returned to this hydropulper job

1 from the lead man job, can you estimate for me how
2 often this would happen again? Would it be the four
3 or five times a year that you testified to
4 previously?
5 A I can't give you an estimate on that because we
6 didn't operate it all that long before we started
7 using virgin fiber so I can't really give you an
8 estimate on that.
9 Q Does that mean that when you started using virgin
10 fiber there was no more de-inking being done at the
11 King Mill?
12 A That's right.
13 Q When you were no longer de-inking at the King Mill
14 and virgin pulp was being placed in the hydropulper,
15 were there ever instances where a batch of that pulp
16 would go bad?
17 A No.
18 Q When you went back to the hydropulper, were you again
19 reporting to Mr. Weessies, Mr. Mason or Mr. Herring?
20 A If they were the lead men -- or if they were the
21 tower bosses, yes.
22 Q Were you working with anybody else on the hydropulper
23 at that particular time?
24 A We had a mule driver and a helper. I think that's
25 all we had. I'm not sure but I think that was it.

1 Three on a shift down there.
2 Q Do you remember who the mule driver was?
3 A Pat Bland was my mule driver.
4 Q And the helper?
5 A Well, there was just two of us. I'm the helper and
6 the hydropulper operator both. I had to cut the
7 band.
8 Q So you were performing two jobs then?
9 A Yeah. Well, they considered them one job.
10 Q And you worked on the hydropulper up until when the
11 King Mill closed and --
12 A Yes.
13 Q During the time that you worked at the King Mill, did
14 you have opportunities to visit the basement of the
15 Mill?
16 A I don't quite get that line of questioning.
17 Q Well, I was just wondering whether you found yourself
18 in the basement of the mill at any time when you
19 worked at the King Mill?
20 A You mean on this one here particular job?
21 Q No, at any time.
22 A No, I had no business downstairs of any kind, outside
23 of the end of the shift I'd clean the hydropulper and
24 that was it.
25 Q When you would clean the hydropulper at the end of a

1 shift, you would find yourself in the basement?
2 A Yeah, you've got to open the trapdoor.
3 Q Okay.
4 A The door on the hydropulper that, you know, so --
5 Q Was the bottom -- this door on the hydropulper, was
6 that in the basement?
7 A Yeah. That's the way we got the bands and the pins
8 out, you know, because you'd always have a bunch of
9 that in the bottom of the hydropulper.
10 Q And then would you also wash the hydropulper out?
11 A Yeah, we'd squirt it out with a hose.
12 Q Well, were you familiar with the basement based on
13 the times that you would go down there to clean out
14 the hydropulper?
15 A Not really. I didn't go down there any more than I
16 had to. There was too many rats around there.
17 Q Were there sewers located in the basement?
18 A That's where the sewers were at, yes.
19 Q Was this a series of sewers that ran through the
20 basement?
21 A You got me. I'm not an expert on that.
22 Q Well, did you ever participate in cleaning out the
23 sewers at any time?
24 A No.
25 Q Do you have an understanding as to where those sewers

1 went or led to?
2 A I have no idea.
3 Q During the time that you worked at the King Mill, did
4 you participate in any weekend clean-ups when you
5 were working on the hydropulpers?
6 A Once in awhile we'd go in maybe for four hours just
7 to clean up the hydropulper. That's about it, that
8 and sweep up.
9 Q Were the hydropulpers all that you would be
10 responsible for cleaning up when you would actually
11 go in on a weekend?
12 A Was it what?
13 Q Well, when you would go in on a weekend for one of
14 those clean-ups, would the hydropulper be the only
15 thing that you would actually clean up or would you
16 participate and clean up anywhere else around the
17 mill?
18 A Well, no, just on our particular -- in our particular
19 department, it would be the floors and stuff like
20 that, you know, clean that up good and pick up stuff
21 along the railroad track, you know, inside the
22 building there. There wasn't an awful lot to do so
23 we only worked for about four hours.
24 Q Well, the clean-up that you would do around the
25 hydropulpers, would you be using a hose?

1 A Yeah, we'd squirt down around the hydropulper where
2 the stock kind of splattered.
3 Q Would that be washed down a drain?
4 A It would be washed down a drain, yeah.
5 Q At the King Mill were you familiar with where waste
6 water would go?
7 A No.
8 Q Were you familiar with any pumps that might have been
9 located in the basement of the King Mill?
10 A I knew where they was but I didn't know what they --
11 how they -- where, you know, where it went like that,
12 you know.
13 Q Where were the pumps that you were familiar with
14 located in the basement of King Mill?
15 A Well, one of them is underneath the hydropulper.
16 Q Did that pump service the hydropulper?
17 A That's the one that pumped it out of the hydropulper.
18 That's the only one that I'm familiar with.
19 Q Sir, are you familiar with the term clarifier?
20 A I know what clarify means but I don't know what the
21 clarifier is.
22 Q Were you aware of a clarifier located on the King
23 Mill property?
24 A No.
25 Q Sir, you said that you really weren't familiar with

1 the sewers in the basement outside of the fact that
2 there were sewers in the basement?
3 A You knew where the sewers was but what -- but being
4 familiar with then, seeing them and being familiar is
5 two different things really.
6 Q Then is it fair to say that you're not familiar with
7 any pumps that would have pumped waste water to the
8 clarifiers?
9 A I don't know what the clarifier is.
10 Q Okay. Why don't we take a break for a few minutes,
11 Mr. Sellon?
12 (Brief recess)
13 Q Mr. Sellon, you stated that you've lived at 644 East
14 Cork Street since 1949, is that correct?
15 A Yeah, I purchased it in '49. I really moved in in
16 '50.
17 Q Okay. I'd like to show you a map which is Universal
18 Portage Creek Deposition Exhibit Number 147 which I'd
19 like marked as Sellon Exhibit Number 1.
20 A What's the purpose of this? What do you want me to
21 do?
22 Q As soon as she has marked it, I'll let you know.
23 (Exhibit 1 marked)
24 Q If you could just take a moment to familiarize
25 yourself with what this is a map of.

1 A Yeah, I live in here.
2 Q Okay. Do you recognize what this map purports to
3 depict? Is it a map of the general area around where
4 you live?
5 A Yeah, I live 644 East Cork in between Lovers Lane --
6 where is Lovers Lane?
7 Q I believe Lovers Lane would be right here, sir.
8 A Yeah, there's Lovers Lane. I live between there and
9 Burdick.
10 Q Could you put an X, please, approximately where you
11 live on Cork Street?
12 A Where is Burdick there?
13 Q Burdick is there, Cork is here.
14 A That looks so far, you know, Lovers Lane. Okay, now
15 this is -- now where is Burdick in relation to Cork
16 here again?
17 Q I believe Burdick Street depicted by the map is right
18 here.
19 A All right. Then I've -- this is going west, right?
20 Q Yes. No, you're going east on Cork Street, that
21 direction.
22 A Yeah, that's right, east. Where is the Corkscrew at?
23 Q Pardon me?
24 A The beer take-out.
25 Q Well, I don't think I can offer you even a guess on

1 that.
2 A Where is the car wash at? Do you know where the car
3 wash is at?
4 Q No, I don't.
5 A I don't understand.
6 Q I just want you to approximate for me where you live
7 on Cork Street.
8 A I'd say right about in the middle.
9 Q Put an X --
10 A Wouldn't this be the middle?
11 MS. LATORRE: That looks to me to be the
12 middle.
13 Q Sir, put where you believe you live on Cork Street.
14 A Just up the hill.
15 Q You've put a red mark between Burdick and Lovers Lane
16 on Cork Street?
17 A Yeah.
18 Q All right, sir. From where you live on Cork Street,
19 can you see Portage Creek?
20 A Portage Creek?
21 Q Yes.
22 A No, because it's too much, too many trees and stuff.
23 Q Back when you moved into this house at 644 East Cork
24 Street, could you see Portage Creek?
25 A No.

1 Q Could you see any sludge pits?
2 A Yeah, across the road from me. It wasn't a pit. It
3 was where the pulp was run into. I don't know
4 whether you'd call it a pit or not. Does any of you
5 gentlemen know, you know, right along Cork Street
6 down in the valley? Nobody knows. I don't know
7 whether you'd say that is a pit or not or whether
8 it's just overgrown.
9 Q Could you see a pond where you live on 644 East Cork?
10 A I could see all the paper pulp down there, if that's
11 what you mean.
12 Q Okay. so looking north you could see a pond?
13 A Well, I'd have to really walk across the road because
14 of the trees to see the pond, but I could smell it.
15 Q Were there occasions during the time that you've
16 lived where you do now where you have since 1949 when
17 you would walk down to the Portage Creek?
18 A Yeah, I used to dig red worms. Not Portage Creek. I
19 used -- across the road I used to dig red worms. I
20 never went down to the creek. The kids went down
21 there swimming.
22 Q Now as to the area north of Cork Street where the
23 Monarch Mill --
24 A Yeah, I know where you mean.
25 Q -- is located, did you have the opportunity to

1 observe the creek at any time?
2 A The only time I went down to the creek is when I go
3 down to the dam there. They had a little dam back of
4 the mill there. I'd go down there and -- I don't
5 remember what I went down there for, but I was down
6 there a couple times.
7 Q When would you used to do this?
8 A This was before the water got to Monarch.
9 Q Did you have occasion to observe the water in the
10 creek after it had gotten to Monarch?
11 A Not after, no.
12 Q So from where you live you could not see Portage
13 Creek?
14 A No.
15 Q You did not go down to Portage Creek north of where
16 the Monarch Mill connected with Portage Creek?
17 A No.
18 Q You said that you could smell --
19 A I was taken in a deposition there earlier by that guy
20 there. Until, yeah, until I lost my sense of smell.
21 It don't stink now, but it did at the time when the
22 wind was in the right direction there, like from the
23 south, southwest. I could also smell Upjohn, too.
24 Q How did you know the smell -- strike that.
25 Where do you believe the smell was coming

1 from?
2 A It was coming from the pond.
3 Q Was that on Allied property to your knowledge?
4 A Sure, it was on Allied property.
5 MS. LATORRE: Objection to this line of
6 questioning.
7 Q And could you describe the smell for me, sir?
8 A Not really because it hadn't -- it was a putrid odor,
9 but I can't describe what it smelled like, if that's
10 what you mean. It just --
11 Q Was this odor something that was present regularly?
12 A In real hot humid weather you would notice it more.
13 You know, like the water, you know, the little water
14 on the pulp and there was a lot of humidity, then
15 you'd notice it.
16 Q Was this something that you noticed back in the
17 1950's?
18 A I don't remember when I noticed it. It seems like it
19 was something that was always there up until the last
20 few -- quite a few years now since it stunk.
21 Q Did you have opportunities prior or actually during
22 the time you were working at Allied Paper to observe
23 that pond that you just talked about?
24 A Well, like I say, I would go down there and dig red
25 worms.

1 Q Did this pond ever appear to be milky in color?
2 A Well, most of the time you could walk across it
3 really because it would be hard on top, crusty, but
4 there was soft spots, as you probably -- I don't know
5 how far down you'd go.
6 Q Did the creek run adjacent to this area that you're
7 talking about now?
8 A I think the creek runs east -- north and south, if
9 I'm not mistaken, and the pond is this side of the
10 creek or on the east side of the creek.
11 Q Well, when you would go down there and you said that
12 you could walk across --
13 A In dry weather, yes.
14 Q -- in dry weather, do you recall what the color of
15 the creek was?
16 A I didn't walk that far. Now you mentioned pond, I'm
17 talking about the sludge. I'm not talking about
18 going down to the pond, you know.
19 Q Okay. So you're talking about a sludge bed?
20 A Yeah, that's what I'm talking about. We called it --
21 I don't know what we did call it now.
22 Q But, to your recollection, an odor from the sludge
23 beds was a fairly regular or common occurrence?
24 A It is in the summertime. It was in the summertime.
25 Q And up until a few years ago, this was something that

1 happened throughout the time you lived at 644 East
2 Cork?
3 A Yeah, it kind of disappeared, I think -- I'm not
4 sure. This is speculation. I think when the
5 Monarch, when that went down, why, I didn't -- it
6 gradually dried up.
7 Q Did you ever have the opportunity to go further north
8 than the sludge beds at the Monarch Mill?
9 A Many, many years ago before we became a city, I used
10 to hunt back there, this is as far as it goes. I
11 don't remember anything outside of that.
12 Q When you said you used to hunt, would you used to
13 hunt --
14 A Pheasant and rabbits.
15 Q Would this be anywhere near the Bryant Mills?
16 A Yeah, in between the Bryant and us there.
17 Q Are you familiar with the Bryant Mill pond, sir?
18 A I thought that's what we -- oh, the Bryant Mill. I
19 thought that all run in together.
20 Q Well, you said you used to hunt up by the Bryant
21 Mill?
22 A No, not by the Bryant. I said in between there, you
23 know. Just on the other side of the sludge pit
24 there, there used to be some high reeds and stuff
25 like that.

1 Q When you would go up there to hunt, did you have
2 opportunities to observe the creek?
3 A Didn't get that far again. See, this is all before
4 it went to city anyway.
5 Q All right, sir, I'd like to show you what will be
6 marked Sellon Exhibit Number 2 which is a petition
7 dated September 11th, 1971. It has Bates Number
8 9000705 through 9000707. If you could, just take a
9 look at that for a moment, sir.
10 A Made in '71, huh? I guess I signed it but I don't
11 remember signing it.
12 Q All right. If you could just take a look at it, sir.
13 A You've got quite a list here.
14 (Exhibit 2 marked)
15 Q Sir, at the top of the first page, the petition
16 reads, "We the under signed are complaining about the
17 terrible smell given off by the Monarch Paper Mill on
18 Cork Street and are seeking action to eliminate it
19 through this petition." I'd also refer you to the
20 third page of the document, Number 9000707. Sir, do
21 you see your name on that particular page?
22 A 900? Yeah.
23 Q Okay. Is that your signature?
24 A Sure is.
25 MS. LATORRE: Before we go on, I'd just

1 continue my objection to this line of questioning.
2 Q Okay. Does your wife's name also appear on this
3 petition?
4 A Yes.
5 Q Is that her signature?
6 A Yes, it is.
7 Q And does the name of a Dennis Sellon also appear on
8 this?
9 A Yeah, that's his signature.
10 Q And is he your son?
11 A He is my son, one of them, yes.
12 Q Sir, do you remember signing this petition?
13 A No, I don't.
14 Q Sir, do you recall making any other complaints with
15 regard to the odor that was coming from the Monarch
16 Paper Mill?
17 A I recall making no complaints. Somebody was coming
18 around and petitioned.
19 Q Sir, I'd like you to take a look at the list, if you
20 could for me, please, and in doing so, I would like
21 to ask you the following question. Are there any
22 other persons on this list to your knowledge that
23 still live in the neighborhood?
24 A I'll tell you the truth, I don't even know my next--
25 door neighbor, but I don't have a next-door neighbor

1 anyway so --
2 Q Okay.
3 A I don't know anybody around there.
4 Q Okay.
5 A I don't recognize any of these names.
6 Q Do you recognize any of these names as being former
7 Allied Paper employees?
8 A Well, give me time there to look.
9 Q Sure, take as much time as you need.
10 A Half of them you can't even read their signature.
11 Q If you can't recognize them, you can't recognize
12 them, but to the extent you do and recognize them as
13 former Allied Paper employees, if you could please
14 let me know.
15 A I don't see any former Allied workers, at King Mill
16 anyway.
17 Q All right. Sir, during the time that you worked at
18 the King Mill, is it fair to say that you had no
19 involvement in the waste water treatment system?
20 A I had no involvement in it, no.
21 Q Is it also fair to say you had no involvement in
22 water testing?
23 A No involvement.
24 Q Is it also fair to say that you had no involvement in
25 safety, the implementation of safety procedures at

1 the mill?
2 A The safety committee was appointed, I think, once a
3 year. I was never on it.
4 Q Did you attend safety meetings?
5 A No.
6 Q The hydropulper or hydropulpers that you worked on,
7 water was added to the wastepaper as it was put into
8 the hydropulpers, is that correct?
9 A Yeah.
10 Q Was that water -- was any water removed from the
11 stock before it was sent on to the paper making
12 process or the de-inking process at the hydropulper?
13 A Not at the hydropulper, no.
14 Q Sir, did you have any involvement with any government
15 inspection at the King Mill?
16 A No.
17 Q Sir, when you were working at the King Mill, did you
18 ever have the opportunity to visit the de-inking
19 machinery itself?
20 A That's what I did was de-ink.
21 Q Well, you worked on the hydropulper, correct?
22 A I de-inked it, yeah.
23 Q Did you work on any of the other de-inking machinery?
24 A No.
25 Q Did you ever observe the other de-inking machinery?

1 A I don't know as they ever had any other de-inking
2 machinery.
3 Q So it's fair to say that you were not familiar with
4 any other machinery that would have been involved?
5 A It went to the slide washers and there it was washed
6 down. It was already de-inked and it was just washed
7 down.
8 Q Where was it de-inked? It wasn't de-inked in the
9 hydropulper?
10 A The purpose of the hydropulper is to beat it up and
11 de-ink it. Then it goes to the slide washer after
12 that. Naturally ink is in the paper yet, in the
13 stock.
14 Q You said the purpose of the hydropulper is to de-ink
15 the wastepaper?
16 A To beat it up and de-ink it.
17 Q Would the de-ink have to be removed from the stock?
18 A That's -- the washers does that.
19 Q That's the slide washers that did that?
20 A Yeah.
21 Q And did you yourself ever work on the slide washers?
22 A No.
23 Q Was there a certain amount of wastepaper pulp that
24 you were required to make a day as a hydropulper
25 operator?

1 A No, no. Of course, we had to keep up with the paper
2 machines, you know, we had --
3 Q There were no quotas per se there?
4 A There was no quota. We had two tanks. We had what
5 they call -- then I'm getting back to the virgin
6 fiber again so we will forget about that. We will go
7 to the de-inking stuff here. We pumped into a big
8 tank and we had to keep that tank up there, otherwise
9 they'd run out of paper stock, you know.
10 See, all of our stock went from the slide
11 washers -- I mean, when it went to the slide washers,
12 it went into a holding tank, more or less, and that
13 there holding tank, that was up to the guys in the
14 washer room to keep that tank at a certain level.
15 That wasn't up to me, but I had to supply the washer
16 room with enough stock so they could do this.
17 Understand?
18 Q Uh-huh. Was there more than one holding tank?
19 A Not when we was upstairs, no, there was just that
20 there one as far as I can remember. Now I could be
21 wrong on that.
22 Q Sir, during the approximately 17 or 18 years that you
23 worked at King Mill, were you familiar with the
24 grounds surrounding the King Mill?
25 A Not really. Just like I never went down to where

1 Q Was it more than ten years?
2 A I think so.
3 Q Okay, and after this position you were promoted to mill
4 superintendent, is that correct?
5 A Yes.
6 Q Do you recall what year you were promoted to that
7 position?
8 A No.
9 Q Okay. Mr. Burch, in the period when you were
10 maintenance superintendent did the condition of the
11 creek remain the same?
12 A Well, after we got the clarifier the creek was a lot
13 better.
14 Q Okay. After the clarifier was installed would the creek
15 still turn different colors?
16 A No. We didn't run colors then. Colors got to be a
17 thing of the past.
18 Q Do you recall when they stopped running colors?
19 A No.
20 Q Do you recall why they stopped running colors?
21 A Well, because the orders -- I mean, we didn't receive
22 them colored orders anymore.
23 Q I see. When you were the maintenance superintendent at
24 the Monarch Mill did they have a de-inking operation?
25 A Yes.

1 Q Were you in charge of maintaining this operation?
2 A Yes.
3 Q Did that operation change after the mill was modernized?
4 A Yes.
5 Q Okay. How did the de-inking operation operate after you
6 became the -- or after the mill was modernized?
7 A Well, we installed a lot of modern machinery.
8 Q Do you recall the names of any of that machinery?
9 A We used Olivers and we used -- we had a chlorination
10 system. Mainly the chlorination system is what --
11 Q Mr. Burch, I've seen the word Oliver quite a bit but I
12 have no idea what that means.
13 A It's a great big cylinder machine. The waters -- the
14 water and stock goes into it, and the water -- the water
15 goes through a big screen, and the water goes out the
16 center, and the stock comes around like that on the
17 cylinder, and there's seomthing there that takes the
18 stock off. In other words, it gets the stock, gets
19 water out of the stock.
20 Q Would this be done at the end of the de-inking process?
21 A Yes.
22 Q Okay, and where would the water go from the Oliver after
23 it was removed from the stock?
24 A We used a lot of it over again.
25 Q Would any of it go to the clarifier?

1 A Yes.
2 Q Would any of the paper stock end up going to the
3 clarifier?
4 A Yes.
5 Q Why was that?
6 A Because you'd have on washups and stuff like that, there
7 would be a certain amount of stock left in a chest or
8 something like that that you couldn't get out, and when
9 they'd wash the chest and drop it to the sewers, it
10 would go over to the clarifier.
11 Q Can you explain how they would go about doing this
12 washing process?
13 A That's a long, drawn out affair.
14 Q Okay. Would it involve hoses?
15 A Yes.
16 Q Would you hose down the machines?
17 A Yes.
18 Q Would it involve the dumping of stock onto the floors?
19 A A certain amount that was in the chests that you
20 couldn't pump out. You can't pump a chest right dry.
21 Q And then stock would be either hosed or pushed down into
22 the sewer?
23 A Yeah.
24 Q The sewer lead to the clarifier?
25 A Yes.

1 MS. LATORRE: Dan, we're talking about the
2 period he was, I guess, maintenance superintendent and
3 mill superintendent. He said he was in charge of
4 electrical and power plant and those kind of things.
5 It's not clear I think for the record whether he
6 actually worked on any of these machines and whether
7 he's just testifying from walking through every day
8 and/or whether he actually had hands-on experience on
9 these machines.
10 BY MR. CUNNINGHAM, CONTINUING:
11 Q Okay. Mr. Burch, these are machines that you actually
12 installed, correct?
13 A Yes.
14 Q And you know how they operate?
15 A Yes.
16 Q You've seen them operate?
17 A Yes.
18 Q Okay. You said earlier that an amount of stock from
19 the, I believe you called it a chest, would be dumped
20 out and then washed down the sewer?
21 A Yes.
22 Q Can you estimate how much stock that would involve?
23 A No.
24 Q Would this process have to be undertaken every time the
25 machine was cleaned?

1 A Yes.
2 Q And how often would the machines be cleaned?
3 A It varied.
4 Q Was it a daily process?
5 A No.
6 Q Weekly?
7 A Oh, yes.
8 Q At least once a week?
9 A More than that.
10 Q Mr. Burch, in the period that you were the maintenance
11 superintendent was stock ever dumped into the sewers for
12 any other reason aside from cleaning?
13 A I don't know.
14 Q For example, if a bad batch of de-inked pulp was
15 discovered, would that be dumped into the sewer?
16 A Yes.
17 Q Okay. How large were the vats or the tanks that the
18 de-inked stock was stored in?
19 A Well, some of them was 8 foot in diameter, 12, 15 foot
20 high, and some of them was 15 foot in diameter and maybe
21 30, 40 foot high.
22 Q Okay, and --
23 A Them was never dumped in the sewer.
24 Q What was dumped to the sewer?
25 A If anything was dumped to the sewer it would be a small

1 batch, I mean, maybe a batch from the hydropulper.
2 Q Mr. Burch, I heard once that on several occasions large
3 batches would be ruined because latex would be in them
4 and that couldn't be used in the manufacturing process.
5 Have you heard of that?
6 A I might have heard of it.
7 Q Was latex good or bad for the manufacturing process?
8 A Bad.
9 Q Okay. What would generally happen when latex was
10 discovered?
11 A I don't know. That wasn't my responsibility.
12 Q Okay. Do you know why latex is bad for the paper?
13 A No.
14 Q You said that occasionally small batches would be dumped
15 into the sewer?
16 A That I know of.
17 Q That was during the period that you were maintenance
18 superintendent?
19 A I seen it, yes.
20 Q Did that also occur in the years prior to that?
21 A I don't know.
22 Q Okay. Now, you said that you actually saw this dumping
23 going on. Do you recall why they were dumping it into
24 the sewer?
25 A Because it was dirty or something was wrong with it is

1 the only reason they'd dump it.
2 Q Okay. I'm curious as to how they got it to go down the
3 sewer. Would they push it in or hose it in?
4 A It's in liquid form. It ain't -- it's in liquid form.
5 It would just flow. It wasn't that heavy a stock. It
6 wasn't all stock. It was a lot of water when they
7 dumped it in the sewer. There might of been only 2,000
8 pounds of stock and goodness knows how many gallons of
9 water.
10 Q From the sewer it would go to the clarifier?
11 A It would go to the clarifier.
12 Q In the period when you were maintenance superintendent
13 was there ever an occasion when the clarifier broke
14 down?
15 A Yes.
16 Q Why would that happen?
17 A Because some kid would throw a big rock in there and
18 that arm would catch on the bottom and then we'd have a
19 hell of a time trying to get it fixed.
20 Q What would happen when, for example, a rock was thrown
21 in there?
22 A It would stop the agitator from turning.
23 Q Okay. What would happen to the contents of the
24 clarifier?
25 A They would just lay in there. It would still flow in

1 there, but the heavy stuff would get thick and it would
2 get thicker and thicker. Then we had to work like mad
3 to get it going again before it got so bad that -- just
4 a lot of work. You ought to been there and help do it.
5 Q What would you have to do to fix the clarifier?
6 A Well, God only knows. We done a lot of things.
7 Sometimes it broke the gear when that would happen, it
8 would break the teeth down. We'd have to put a new gear
9 on or something like that. Then we'd have to back it
10 up. Sometimes we'd have to do it by hand, back it up.
11 If we could back it up and get it free from whatever was
12 down in there the arm would gradually work that into the
13 pit, then you could get the arm agoing again. As soon
14 as you could get the arm going again you could get it
15 running again.
16 Q How often would these malfunctions occur?
17 A Not very often.
18 Q Can you estimate for me how many times?
19 A Maybe once a year.
20 Q And what would happen to the water that was supposed to
21 be going to the clarifier when these malfunctioned?
22 A Still went to the clarifier and it overflowed like I
23 told you. It overflowed all around the top.
24 Q It was supposed to overflow, correct?
25 A It's supposed to overflow. The only thing was, the

1 solids would keep building up in there and then we'd
2 have an awful time getting our pump going.
3 Q But when it malfunctioned and liquid would overflow --
4 A Yeah.
5 Q -- This liquid would also contain solids, correct?
6 A Right. A certain amount, yes.
7 Q And where would those solids go after they overflowed
8 the clarifier?
9 A In the creek.
10 Q Okay.
11 MS. LATORRE: Again, objection to relevance.
12 Q Mr. Burch, did they ever shut down the manufacturing
13 operation because of a problem with the clarifier?
14 A No.
15 Q When these malfunctions would occur, would the effluent
16 from the Monarch Mill ever go directly to the creek?
17 A Not that I know of.
18 Q Okay. On any occasion when you were the maintenance
19 superintendent did the water ever bypass directly to the
20 Portage Creek?
21 A Not that I know of.
22 Q Okay. Mr. Burch, earlier you said that chlorination was
23 a part of the de-inking process?
24 A Yes.
25 Q Why was that?

1 A Well, they found out that was the best way to de-ink
2 stock. They used chlorine gas to eat up the ground wood
3 and stuff.
4 Q Was chlorine mixed with the stock in a large tank?
5 A Yes.
6 Q I see. And this chlorine was always in the gas form?
7 A Yes.
8 Q Do you know how much chlorine they would use?
9 A No. We used a lot of it. A tank car wouldn't last very
10 long.
11 Q Okay. What would happen to this chlorine gas after it
12 was introduced in the de-inking process?
13 A By the time it reached the top of the tower it was just
14 -- you didn't notice it anymore.
15 MS. LATORRE: Objection, relevance.
16 Q Would the chlorine become a part of the stock or would
17 it dissipate altogether?
18 A Well, chlorine is just like you're putting in your
19 drinking water, it's the same thing.
20 Q I see. Mr. Burch, in the period when you were still the
21 maintenance superintendent did you ever have any
22 meetings concerning the pollution of the Portage Creek?
23 A Not -- I didn't. I attended meetings where it was
24 discussed.
25 Q And what would be discussed at those meetings?

1 A Well, it was discussed about the creek, that was all.
2 Q Did they indicate that the creek was polluted?
3 A That's what the discussion was about.
4 Q Okay, and what did -- strike that. Who else would
5 attend these meetings with you?
6 A This was -- this was long -- this was after '56.
7 Q Okay, and what position were you in at that time?
8 A I was maintenance superintendent then.
9 Q So, who would be there with you?
10 A Well, I've been in meetings where Jack Gilman was there,
11 and I can't remember who else.
12 Q Okay, and in those meetings would they discuss proposals
13 for cleaning up the creek?
14 A In them meetings -- in them meetings we didn't have much
15 of a problem.
16 Q Why was that?
17 A Because we didn't de-ink anymore at Monarch. We done no
18 de-inking.
19 Q When did you stop de-inking?
20 A Monarch went down in '56 and that's when it was stopped.
21 Q Did they continue to use the Monarch clarifier after the
22 de-inking operation stopped?
23 A Yes.
24 Q Okay. But that clarifier was simply used then for
25 the --

1 A Effluent from the paper machines was all. From that
2 time on the water from the clarifier, I'd say, was
3 perfect.
4 Q Okay.
5 (Discussion held off the record)
6 Q Mr. Burch, what year did the Monarch Mill in its
7 entirety shut down?
8 A '56.
9 Q Okay, and did the de-inking operation come to an end in
10 that year or did it occur before then?
11 A It came to an end in that year.
12 Q Okay. But after the Monarch Mill itself closed down,
13 the Monarch clarifier continued to be used?
14 A No; no.
15 Q Okay. So, after 1956 was the Monarch clarifier ever
16 used at all?
17 A Oh, yes, after we started up again.
18 Q Oh, I see. When after 1956 did the Monarch Mill reopen?
19 A '59.
20 Q I see. And why was the mill closed for that three-year
21 period?
22 A We didn't have the orders to run it.
23 Q Did they simply shut down the whole mill?
24 A Yes.
25 Q Did they have any employees there at all?

1 A Myself and they had one man.
2 Q Okay, and at that time were you still considered the
3 maintenance superintendent?
4 A Yeah, I guess I was. They didn't stop my pay.
5 Q All right. And in that period when the mill was closed
6 down what did you do in there?
7 A Just kept sure that -- made sure that the sprinkler
8 system and everything was all right.
9 Q Okay. Now, I take it in 1959 the mill reopened?
10 A Right.
11 Q They hired a whole nother group of employees?
12 A They called back all the old ones that wanted to come
13 back.
14 Q I see. Now, what was different with the Monarch Mill
15 operation after it reopened in 1959?
16 A Because all we used was just pure sulfite and we did
17 receive paper stock from the Bryant. They used a big
18 tank truck to haul paper stock from the Bryant, in
19 liquid form it was.
20 Q So the main difference in 1959 was that the de-inking
21 operation no longer existed?
22 A No longer existed.
23 Q Did they tear those machines out?
24 A Yeah. They took them to Bryant, part of them.
25 Q Now, after 1959 when the mill reopened, I assume they

1 started to use the clarifiers --
2 A Yes.
3 Q The clarifier again?
4 A We did.
5 Q Okay.
6 (Discussion held off the record)
7 Q Mr. Burch, earlier you indicated to me that they stopped
8 de-inking altogether in 1956, is that correct?
9 A Yes.
10 Q Do you recall when they first began de-inking?
11 MS. LATORRE: At Monarch.
12 A At Monarch? Well, they was de-inking way before we
13 rebuilt it. I mean, only the process wasn't very big or
14 -- at one time they used rags to make paper out of, so,
15 it was just cooking them.
16 Q But the de-inking operation was in existence before you
17 got there?
18 A Yes.
19 Q Okay. Now, it's my understanding that for this
20 de-inking process they would bring in waste paper?
21 A Yes.
22 Q Is that correct?
23 A That's correct.
24 Q Do you know what types of waste paper they would use at
25 any time during the Monarch Mill's operation?

1 A Mostly magazines.
2 Q Okay. Do you know where they got the magazines from?
3 A All the waste paper companies, different ones, Chicago,
4 Detroit.
5 Q Do you happen to know any of the names of the companies
6 offhand?
7 A No.
8 Q Aside from magazines, was there any other dominant type
9 of waste paper that they used?
10 A No.
11 Q Did they use Green Stamps?
12 A Stamps?
13 Q I heard somewhere they used S & H Green Stamps in the
14 de-inking process.
15 A Oh, you're talking back during the war when we used them
16 -- what was them stamps? Rationing stamps. We used to
17 get them in by the book loads. The FBI used to come
18 along with them.
19 Q Have you ever heard of carbonless copy paper?
20 A We made it.
21 Q Okay. Do you know if you used any carbonless copy paper
22 in the de-inking process?
23 A No.
24 Q Can you explain to me what carbonless copy paper is?
25 A We made a one-time carbon. Did you ever see a bill of

1 lading where there was a bunch of bills together and you
2 could write on it and it would copy on through four or
3 five pages? That's what we made. There was no ink on
4 it then. It was just -- we did put in an ink place, we
5 did put ink on it, but the paper that went back that we
6 used over again was just the plain paper.
7 Q Okay. Now, in the type of paper that you just described
8 for me, was there actually a sheet of carbon paper in
9 between?
10 A Yes; yes.
11 Q So, it wasn't as if we had many pieces of paper stacked
12 together without any carbon paper in the middle,
13 correct?
14 A The paper that we made, and also, we did make some paper
15 down in the coating where we put the ink on it, but the
16 paper we made was plain.
17 MS. LATORRE: I think what Dan is asking you,
18 he's trying to figure out whether Allied made copy paper
19 or carbonless copy paper?
20 THE WITNESS: We made -- the paper was just
21 plain. We shipped it out in rolls and there was no ink
22 or nothing on it.
23 MS. LATORRE: Did it have a carbon?
24 THE WITNESS: And also, we did have a division
25 down there where we put ink on it and we shipped that

1 out in rolls.
2 BY MR. CUNNINGHAM, CONTINUING:
3 Q Would that ink actually be attached to the piece of
4 paper? Would it be an entirely separate carbon?
5 A It would be on the paper. They run the paper through
6 that machine to put the ink on it.
7 Q What color was this ink?
8 A Black.
9 Q So one side of the paper would be white and the other
10 side would be black?
11 A Yes.
12 Q Okay.
13 A It wasn't white. Carbon paper ain't white. It's brown,
14 I guess you'd call it.
15 Q Mr. Burch, I also heard that there was another type of
16 paper that served the same purpose as a carbon paper but
17 there actually wasn't a carbon in there. In other
18 words --
19 A Wasn't made at Monarch.
20 Q Okay. But have you ever heard of this type of paper?
21 A Yes.
22 Q Okay. Do you know if this type of paper was used as
23 waste paper in the de-inking process?
24 A They couldn't use it.
25 Q Why not?

1 Q I understand.
2 A I would be hard pressed to know any specifics other
3 than the fact that the unit was to be sized and drawn
4 up and installed.
5 Q Okay, fair enough. Sir, when the Monarch clarifier
6 was installed in 1953 was the Monarch Mill de-inking
7 stock at that time?
8 A Yes.
9 Q Was it also making paper?
10 A Yes.
11 Q Was the paper that Monarch was making solely from
12 de-inked stock?
13 A Solely from de-inked stock?
14 Q Yes, sir.
15 A No.
16 Q They were using also virgin pulp as well?
17 A Yes.
18 Q Do you have any knowledge regarding the types of
19 stock that Monarch accepted to be de-inked?
20 A No.
21 Q Okay. Do you have any knowledge of how much stock
22 was de-inked in a given day at Monarch Mill?
23 A No.
24 Q Okay. Do you have any knowledge regarding how much
25 water was used to de-ink stock at Monarch in a given

1 day?
2 A No.
3 Q Do you know whether chlorine was used in the
4 de-inking process at Monarch Mill?
5 A Yes.
6 Q Do you have any knowledge regarding how much chlorine
7 would be used in a given month?
8 A No.
9 Q Did the de-inking process at Monarch result in
10 effluent?
11 MS. ANDERSON: I'm sorry, you want to
12 rephrase that? It's so vague.
13 Q Earlier you testified, sir, that the Monarch Mill
14 generated waste effluent?
15 A Yes.
16 Q And my question is, did the de-inking process within
17 the Monarch Mill generate part of that waste
18 effluent?
19 A Yes.
20 Q Okay. Why don't we see if I can find a diagram to
21 work off of at this point.
22 (Discussion held off the record)
23 Q Mr. Falvey, I'd like to show you what has been Bate's
24 numbered SA 47654 and ask you to take a look at this,
25 please. I'll ask you a few questions about it after

1 you've had a chance to take a look at that.
2 (Short pause)
3 Q Do you recognize that, sir?
4 A Yes; yes.
5 Q Now, what do you recognize that as?
6 A This is the Monarch Division, layout of the Monarch
7 Division on Cork Street.
8 Q This drawing was purportedly made in the 1970's. The
9 question I have for you is, is that what it
10 essentially looked like in 1953?
11 A That's correct.
12 MS. ANDERSON: I don't know if that would
13 be accurate because in 1974 hadn't the company ceased
14 de-inking? That's part of the problem is what is
15 accurate?
16 A This is just a building diagram.
17 Q We'll end up marking this as an exhibit. I'll ask
18 Mr. Falvey if he can make some markings on this for
19 me if he can. I just needed a general outline of the
20 building itself.
21 Sir, can you on this diagram show me where
22 the clarifier was installed, generally?
23 A Generally the clarifier would have to be over on the
24 north side of Cork Street, more in this area
25 (indicating).

1 A (Indicating)
2 Q Now, was there a particular mill operation -- strike
3 that. Maybe I can rephrase that a little better.
4 What mill operations effluent did this tile accept?
5 A From the de-inking plant and from the paper machines.
6 Q Okay. Why don't we mark this -- this tile maybe you
7 could just mark D.I. plant and P machines and draw an
8 arrow to that tile just so when I go back and look at
9 this I'll --
10 MS. ANDERSON: You may want to do this,
11 also, by date, Karl, because these are different --
12 MR. VASILOFF: That's not a bad idea.
13 BY MR. VASILOFF, CONTINUING:
14 Q Okay. Now, sir, this tile you had installed, also,
15 is that correct?
16 A That tile was already installed.
17 Q It was when you arrived --
18 A Yes.
19 Q -- At the plant?
20 A Yes.
21 Q And that was in 1951?
22 A One.
23 MS. ANDERSON: By that tile we're referring
24 to the one that's labeled de-ink plant and P.M.?
25 MR. VASILOFF: Correct.

1 BY MR. VASILOFF, CONTINUING:
2 Q Sir, when you had the tile or the culvert installed
3 from the collection box to the Portage Creek
4 diversion was that tile from the de-inking plant
5 paper machine still there?
6 A Well, yes.
7 Q It was?
8 A Yes.
9 Q And you had the tile from the collection box, from
10 the collection box to Portage Creek installed in
11 1953?
12 A In 1953, right.
13 Q Okay. Why don't you mark just 1953 with an arrow to
14 the tile you had installed. And again, that tile was
15 installed in connection with the installation of the
16 Monarch clarifier?
17 A Correct.
18 Q Okay. Do you know how long the tile that you've
19 marked de-inking plant and paper machine was in
20 existence after 1953?
21 A After 1953?
22 Q Yes.
23 A Until the mill closed down.
24 Q And that was when, sir?
25 A In 1970, '71, somewhere in there.

1 Q Did Monarch, if you know, perform de-inking until
2 1970 or 1971?
3 A I don't know the date they stopped.
4 Q Did they stop prior to the mill closing down?
5 A Yes.
6 Q They did? Do you know how long before the mill
7 closed down they stopped?
8 A I can't tell you that.
9 Q Sir, what was the purpose of the tile you've marked
10 1953 in the collection box in the Portage Creek
11 diversion?
12 A That was the emergency overflow pipe.
13 Q Okay. Did you ever observe any effluent going
14 through that pipe, sir?
15 A Yes.
16 Q Do you recall how often you observed that happening?
17 A No, I don't recall how often. I couldn't put a
18 finger on how often.
19 Q Was it -- I hate to characterize it. Let me ask you
20 this, sir, do you know what would cause effluent to
21 flow through what you marked as 1953?
22 A You had a mechanical breakdown on the clarifier.
23 Q Any other situations that would cause it?
24 A No; no.
25 Q Sir, who made the decision to install that pipe that

1 president of operations, would have any particular
2 knowledge of?
3 A Probably not. I mean, after all, the R & D
4 Department, you know, was constantly looking for new
5 products, better ways to make existing products, and
6 so on and they could buy things directly and I
7 probably wouldn't know about them.
8 Q Can you tell us prior to the clarifier being installed
9 at the King Mill what the route of the effluent was
10 from the de-inking operation and the papermaking
11 operation to the ultimate discharge at the Kalamazoo
12 River?
13 A I don't know if I follow your question exactly. It
14 just went by pipe.
15 Q Were the discharges from the de-inking operation
16 merged into the same pipe with the discharges from the
17 papermaking operation?
18 A I'm not sure of that.
19 Q Was the piping configuration at the King Mill part of
20 your responsibility as vice president?
21 A I'm sure that it was part of my responsibility. I
22 don't know that it ever figured into any decisions or
23 anything like that.
24 Q With regard to the Monarch Mill, prior to the
25 installation of the clarifier, do you know what the

1 routing was for the discharges from the de-inking
2 operation and the papermaking operation?
3 A No. Actually the Monarch was sitting practically
4 right on the creek. In fact, a branch flowed right
5 through the mill.
6 Q So they didn't need a very long pipe to get the
7 effluent to the creek?
8 A That's right.
9 Q Are you aware of any effort, prior to the installation
10 of the clarifier, to separate the discharges from the
11 de-ink effluent from Monarch -- from the papermaking
12 effluent at Monarch?
13 A I'm not aware of it.
14 Q And prior to the time the clarifiers were installed at
15 Monarch, was an effort made to measure the nature of
16 the quantity and the nature of the effluent discharges
17 into the Portage Creek?
18 A Not to my knowledge. It may have been, I don't know
19 about it.
20 Q Do you know whether there were any weirs in place at
21 the Monarch operation prior to the installation of the
22 clarifier?
23 A I don't know.
24 Q And with regard ---
25 A There were -- no, I won't speculate.

1 permit?
2 A That's correct.
3 Q And is it correct that this Order of Determination
4 also says that the Allied's Monarch Mill shall keep
5 out of the waters of the State of Michigan all freely
6 settleable solids and all wastes from de-inking
7 operations?
8 A Correct.
9 Q Is it also correct that at the Monarch Mill the
10 discharges included both effluent from the de-inking
11 operation and the papermaking operation?
12 A Correct.
13 Q And therefore the order, as it applied to the Monarch
14 Mill, would require you to keep all freely settleable
15 solids out of the waters?
16 A Correct.
17 Q And finally I would like you to look at Exhibit Number
18 3, which relates to the St. Regis Paper Company Final
19 Orders of Determination. Now, the Order of
20 Determination for the St. Regis Paper Company refers
21 to the Bryant Mills, which were purchased by Allied
22 Paper Company?
23 A Correct, not at this time but later.
24 Q So at the time that Allied did purchase the Bryant
25 Mills, you familiarized yourself with these Final

1 have an SA number, it has a number 9000003 and 9000004
2 and thatts the Order of Determination applicable to
3 the St. Regis. Thanks.
4 Q (By Ms. Helms) Before we move on, Mr. Gilman, with
5 regard to the reference in each of those orders of
6 Determination to the limitation of not more than ten
7 pounds of suspended solids per ton of product for
8 non-de-ink waste, would that have had application to
9 some waste streams at the Allied Mills?
10 A I don't think I understand the question.
11 Q Let me try to make it more clear.
12 A All right.
13 Q I believe that in the de-ink process there is, for
14 example, a device called a chlorine Oliver which was
15 used and which at certain periods of time, perhaps at
16 all periods of time, discharged directly to the
17 Portage Creek, for example, at the Monarch Mill. Now,
18 that discharge was obviously outside of the system of
19 the other de-ink waste and the waste from the
20 papermaking operations. I guess my first question
21 would be would the chlorine Oliver drop leg effluent
22 be considered de-ink waste by you?
23 A It was part of the de-inking process but all it
24 contained, if I can generalize, it was a certain
25 amount of dissolved chlorine, no solids.

1 Q None of the ink?
2 A No. You see that was a part of the bleaching process
3 and all the de-ink is all removed before it gets ---
4 Q Wouldn't that be an example of a waste stream which
5 would have had the limitation of the ten pound of
6 suspended solids per ton of product?
7 A It would have if there had been solids in it.
8 Q And you are saying there were no ---
9 A Virtually.
10 Q Or virtually ---
11 A As far as I know.
12 Q Were there any other waste streams along those lines
13 that were, as a part of the process, had been designed
14 to be directly discharged, other than through the
15 normal channels ---
16 A Not to my knowledge.
17 Q -- other than through the normal channels for effluent
18 discharge?
19 MR. HEINTZ: Try to let the examiner
20 finish before you give your answer so we don't have
21 overlapping answers.
22 Q Once Allied purchased the Bryant Mill, did that become
23 one of the areas of responsibility for you?
24 A Yes, ma'am.
25 Q So as vice president of operations, you were

1 whole operation down. Nor do I think that ever
2 occurred. I think I usually could make the decisions
3 on the spot.
4 Q And you would have known if that had occurred at the
5 King Mill, wouldn't you?
6 A I would think so, yes, ma'am.
7 Q And in fact that never did occur?
8 A That there were any bypasses?
9 Q No. That never occurred that the whole mill was shut
10 down because the clarifier was broken down?
11 A I'm not sure of that at all.
12 Q Oh, you don't know?
13 A No, I don't recall.
14 Q Wouldn't that be a rather unusual event to shut down
15 the entire plant?
16 A I would think so.
17 Q That's not something you would remember?
18 A I don't remember it, let's put it that way.
19 Q Okay. There is a good reason for that.
20 Let's turn to the Monarch Mill.
21 A No, I don't think I have a selective memory.
22 Q Mr. Gilman, were your responsibilities also such that
23 you were familiar with the route of the effluent from
24 the Monarch Mill to the Portage Creek about the
25 de-inking operation and the papermaking operation

1 again subsequent to the time the clarifiers were put
2 in, the clarifier was put in?
3 A Yes, ma'am.
4 Q And can you describe that route for us?
5 A The effluents that went into the basement of the mill
6 were picked up in sewers and pumped to the clarifier.
7 Q The Monarch Mill was a single building that housed
8 both de-inking and papermaking?
9 A Yes, ma'am. Let's say that it could have been when
10 they were built, you know, they were built as separate
11 buildings back in the 19th Century. But if you would
12 look at it from a distance, that's all one building.
13 Now they had different letters or numbers to designate
14 different parts of the building but essentially, yes,
15 they were one building.
16 Q Now you mentioned earlier that the Monarch Mill
17 actually sits on top of the Portage Creek or side by
18 side?
19 A No, I said a branch of it ran under the mill.
20 Q A branch of the creek ran under the mill?
21 A Yeah, probably at one time they used it for power
22 generation but not in my day.
23 Q At the Monarch Mill de-inking operation, did the
24 chlorine Oliver drop leg discharge into the Portage
25 Creek at that time?

1 A I donft know.
2 Q Do you recall where the pump station was located at
3 the Monarch Mill?
4 A Not exactly, no.
5 Q Somewhere between the mill and the clarifier?
6 A The mill was on one side of the street and the
7 clarifier was on the other and I can't tell you
8 exactly where the pumping station was. It could have
9 been within the mill itself, you know, as opposed to
10 the King and the Bryant.
11 Q Isn't the mill, the Monarch clarifier, still present
12 on Cork Street?
13 A I think it is.
14 Q Have you been by there lately?
15 A No.
16 Q If the pump station were in the immediate vicinity of
17 that clarifier ---
18 A I think it was more likely it was in the basement of
19 the mill somewhere, just a sump, you know.
20 Q Are you aware of the route for the overflow from the
21 Monarch Mill pump station?
22 A Not in detail but the overflow would get into the
23 creek.
24 Q Had to go to the creek, didnft it?
25 A Yeah.

1 Q And can you tell us what the -- any other in addition
2 to -- let me start over.
3 In addition to the overflow from the pump
4 station, were there other bypasses designed into the
5 Monarch Mill system to protect the equipment that you
6 can describe for us?
7 A I can't describe them.
8 Q Can you give us your best estimate as to how many
9 there were?
10 A I would guess one or two. The whole Monarch operation
11 was quite close coupled and it doesn't seem to me
12 there would have been need for very many of them.
13 Q And those one or two bypasses in the Monarch system
14 would have led directly to the Portage Creek?
15 A That's correct. As a matter of general information, I
16 mentioned that the reason for designing a bypass is to
17 prevent flooding. Flooding was a very real problem
18 occasionally at all of our mills because the creeks
19 would get very high, water would just flow by gravity
20 into the basement of our mills. And we had to sandbag
21 every electric motor and so on and so forth. So
22 obviously you had to have some bypasses.
23 Q But wouldn't the bypasses that were designed into the
24 Monarch Mill have also had a function when the creek
25 was low? They were two separate functions, aren't

1 they?
2 A Yeah, but the bypass could be the same.
3 Q Right, the same route, the same piece of pipe?
4 A Right.
5 Q Is it your belief, Mr. Gilman, that the bypasses which
6 prevented effluent from reaching the clarifier at the
7 Monarch Mill should have been used only in emergency
8 situations to protect against flood or damage to
9 equipment and then should have been remedied as
10 quickly as possible?
11 A Yes, ma'am.
12 Q And was it your understanding then when the clarifier
13 was installed into the present time that what was
14 discharged into the Portage Creek in the event of a
15 bypass was or included untreated waste which was very
16 high in BOD and/or suspended solids?
17 A It included untreated waste, period. I can't tell you
18 anything about the content.
19 Q Well, if that waste that it included was de-ink waste,
20 then it would be correct to say that that would be a
21 high load of BOD and suspended solids, is that right?
22 A There are times when the draw on the de-inking plant
23 by the paper machines was very, very low because of
24 the grades they were making.
25 Q So on some occasions it could have been less de-ink

1 waste and others more de-ink waste?
2 A Exactly.
3 Q But in any event isn't it correct that the de-ink
3 waste, whenever there was de-ink waste involved, would
4 have been a high load of BOD and suspended solids?
5 MR. HEINTZ: If I can just interject an
6 objection to speculation regarding the whole series of
7 questions.
8 Q Do you remember the question?
9 A Higher than the waste that came directly from the
10 paper machines, yes.
11 Q Well, the de-ink waste was the focus of one of the
12 charges in the Orders of Determination we talked
13 about, that was obviously a focus of concern for you,
14 was it not?
15 A Yes, ma'am.
16 Q And when these bypasses were utilized and the
17 discharge of the untreated waste was directly to the
18 Portage Creek, then the impact of the BOD and
19 suspended solids above your permitted allotment was
20 something that you knew to be a hazard to the aquatic
21 life in that area for that time period?
22 MR. HEINTZ: Objection, assumes a fact not
23 established.
25 Q Is that right?

1 MR. HEINTZ: And contrary to prior
2 testimony.
3 A I don't know that it would always be injurious to
4 aquatic life. I know that it might well cause it to
5 exceed the limitation which the state had put on us.
6 Q Well, I assume that you did not go down to the creek
7 when these discharges were made and look to see
8 whether fish were dying. But my question is you were
9 aware, were you not, of the fact that fish and aquatic
10 life require oxygen and that there was less available
11 to them when these discharges occurred?
12 A Yes.
13 Q Is that yes?
14 A I think the reason I phrased my answer the way I did
15 was that Portage Creek was never a game fishing
16 creek. In other words, you wouldn't be aware of the
17 aquatic life, let's put it that way. I don't remember
18 ever seeing anybody fishing in Portage Creek, before
19 or after the mills were shut down. But I'm not
20 denying it. I'm just saying it's hard for me to give
21 an answer to that question as far as aquatic life is
22 concerned.
23 Q Is it your testimony that you were not thinking about
24 focusing on whether the fish were being harmed or not
25 at the point that these bypasses were permitted?

1 A I think what I was focusing on was our limitation
2 imposed by the state, which of course was designed to
3 do what you are referring to.
4 Q And you knew that?
5 A Yes, ma'am.
6 Q Now, with regard to the Monarch Mill, would your
7 testimony be the same as you gave with regard to the
8 King Mill in terms of your plan in the event that the
9 clarifier itself had to be shut down for mechanical
10 reasons?
11 A Yes.
12 Q I would like to talk about the Bryant Mill then for a
13 few minutes. When Allied took over the Bryant Mill or
14 at some time shortly thereafter, I think you testified
15 that you became aware that there was, in fact, a
16 clarifier in place at Bryant?
17 A Right.
18 Q Is it correct, Mr. Gilman, that the Portage Creek also
19 ran under one of the buildings of the Bryant Division?
20 A I think so, but I think it was the coating mill. It
21 ran alongside both Mill C and Mill D but not under,
22 was my recollection, the coating mill being Mill E.
23 Q Right. I'll find a good diagram for you later that
24 will help on that.
25 In any event, the Portage Creek ran in

1 Q Does it say on there what date that was created?
2 A 1960.
3 Q And it was actually created by the Allied Paper
4 staff, is that correct?
5 A Yes.
6 Q Do you know who was responsible for creating that
7 document?
8 A No, I do not.
9 Q And why did you hang onto that document for so long?
10 A Just happened to be in my files.
11 Q All right. That's fine. Did you have any use for
12 that document as you were working at Allied Paper?
13 A No, I did not.
14 Q Mr. Falvey, the next document that I am going to show
15 you will be marked Exhibit Number 15 and the title on
16 this document is Speech by Ward Harrison. The date
17 is December 15th, 1960 and, first, I would simply ask
18 you to take a look at that generally.
19 Mr. Falvey, have you seen that document
20 before?
21 A Yes, I have.
22 Q And is that, in fact -- well, strike that.
23 According to the title, that is the text of
24 a speech given by Mr. Harrison. Did you attend that
25 speech?

1 A I did not.
2 Q Okay. How is it that you have obtained a copy of the
3 speech?
4 A Ward Harrison was the president of our company and he
5 distributed these to various departments.
6 Q And you have kept that in your file ever since, is
7 that correct?
8 A Yes, I have.
9 Q I have marked a page for you. On page six of the
10 document, there is a reference to chlorine mixers.
11 A Yes.
12 Q I was wondering if you could tell us what chlorine
13 mixers are?
14 A Chlorine mixer was a stage of our de-inking process.
15 And it mixed chlorine into the stock for bleaching
16 purposes.
17 Q Were those used at Mill A, to your knowledge?
18 A Yes, to my knowledge, they had one at each -- at both
19 the King and the Bryant Divisions.
20 Q All right. Do you know when those were installed?
21 A It would have been roughly in 1960.
22 Q Were you involved in installing those devices?
23 A At the King.
24 Q At the King?
25 A At the King.

1 Q Why were those installed?
2 A They were more efficient means of mixing chlorine
3 into stock.
4 Q Did they replace a previous mechanism or device?
5 A They were in addition to.
6 Q What were they in addition to?
7 A They were a means of agitating for mixing rather than
8 a gravity feed.
9 Q Can you generally tell us how the chlorine mixers
10 worked?
11 A They were installed at a stock line and the stock
12 flowed through the mixer and the chlorine was added
13 at that point.
14 Q All right. After the chlorine was added, was it
15 later removed from the stock within the chlorine
16 mixer?
17 A No.
18 Q Was that done later on down the line?
19 A Later on after the retention time within the tower.
20 Q So is it correct then that the chlorine was taken out
21 of the tower?
22 A No, the stock went in at the base of the tower. This
23 is where the mixer was located. It was an up-flow
24 tower. The stock discharged off the top of the tower
25 and went to a washer and the chlorination or the

1 chlorine was washed from the stock.
2 (Exhibit 15 marked)
3 Q I believe that's all I have for you on that document.
4 In his speech, Mr. Harrison indicates that
5 the addition of the chlorine mixers affected a change
6 in working conditions. Can you explain that for us?
7 MS. ANDERSON: If you are aware of the
8 change.
9 A An improvement in working conditions has been
10 affected. Only we had better distributions of
11 chlorine, that's all.
12 Q Prior to the implementation of the chlorine mixers,
13 was there a problem associated with chlorine gas in
14 Mill A, to your knowledge?
15 A Mill A I cannot vouch for but King, yes.
16 Q Can you explain that problem to us?
17 A The chlorine would not be properly mixed with the
18 stock under gravity conditions. It would tend to at
19 times be retained by the stock and expel out the top
20 of the tower.
21 Q And once the chlorine came out of the top of the
22 tower?
23 A Then it was rather hazardous, yes.
24 Q I see. Mr. Falvey, now I'm going to show you a
25 number of documents that you also produced to us and

1 I'm just going to ask you a few basic questions about
2 each group of documents.
3 MR. CUNNINGHAM: Why don't we mark the
4 first set of documents as Exhibit Number 16?
5 (Exhibit 16 marked)
6 Q The title on the first page of this group is Flat Box
7 Data Sheet -- Allied Paper Corporation. And I would
8 ask you to take a look at that, please.
9 Have you ever seen Exhibit Number 16
10 before?
11 A Yes, I have.
12 Q Can you explain for us generally what it is that
13 we're looking at in Exhibit Number 16?
14 A Flat boxes were a name for suction boxes that were on
15 the wet end of a paper machine on the -- that the
16 stock flowed over the top of. These vacuum boxes
17 pulled water out of the stock on the wire forming a
18 sheet and these charts were -- this chart was the
19 number of boxes -- they had wet boxes, dry boxes.
20 All this referred to -- they were all stationed on
21 the wire, but in the middle they had what they called
22 a dandy roll which ran on top of the stock and the
23 boxes ahead of the dandy roll were the wet boxes and
24 the boxes beyond it were the dry boxes.
25 Q I see.

1 A And they had drilling patterns and each one would
2 have so many square inches of open area. On the end
3 of the box you had a pipe that ran to a vacuum pump
4 that created a vacuum or pulled on that stock to pull
5 the water through.
6 Q All right. Do you know who prepared Exhibit Number
7 16?
8 A Ron Rousch, '67, '68.
9 Q Were you involved at all in the preparation of that
10 document?
11 A I would have been, yes. Ron worked for me.
12 Q I see.
13 A He drew up these, yes.
14 Q How did Mr. Rousch go about accumulating the data
15 which is in Exhibit Number 16, if you know?
16 A Physical measurement in the field and data from the
17 people that furnished the tops.
18 Q And then after doing this physical measurement, he
19 would have compiled documents such as those?
20 A Yes.
21 Q And how is it that you still have that document?
22 A Again, it was in my files when I left. I just picked
23 it up.
24 Q Okay. That's fine.
25 A My wife asked me the same question.

1 Q Mr. Falvey, now I'm going to show you what will be
2 marked Exhibit Number 17. For the record, these
3 documents are titled Paper Machine Data and I would
4 ask you to take a quick glance at those.
5 (Exhibit 17 marked)
6 Q Have you seen those documents before?
7 A Yes, I have.
8 Q Can you explain for us generally what those documents
9 are?
10 A These are copies -- these were copies that we kept in
11 our files for general reference to the equipment on
12 the paper machines and the nomenclature of the
13 machines themselves. This concerns primarily the
14 Bryant. I do have some in here where we -- that were
15 Bryant and Monarch, and it's the associated equipment
16 with the paper machines.
17 Q Who was responsible, if you know, for generating
18 those documents?
19 A It would be many of -- most of the information was
20 kept in engineering files so this was continually
21 updated by the engineering staff.
22 Q I see. Were you involved at all in actually filling
23 out these forms?
24 A Not originally, no. I would be -- I would be
25 involved in updating, yes.

1 Q And why would they need to compile this information?
2 A For our -- for the engineering general reference.
3 Q Is it something that was done in the normal course of
4 business at Allied?
5 A Yes.
6 Q Again, why is it that you still have those today?
7 A They were in my files.
8 Q They were in your files at Allied when you left the
9 company?
10 A Yes.
11 Q Then you took those files with you or you made
12 copies?
13 A All I did was empty my drawer out, put it in a box
14 and take it home.
15 Q I see.
16 A They were all copies. They were not originals at
17 all, no.
18 Q And, Mr. Falvey, now I am going to show you the next
19 exhibit which is Exhibit Number 18 and I would ask
20 you to take a look at that, please.
21 (Exhibit 18 marked)
22 Q Can you tell us what that document is?
23 A Yes, this was capacities of various chests and towers
24 at the King Division.
25 Q Is that another document that you took home with you

1 A No, because the hydropulper -- well, we had broke
2 pulpers that the finishing room put things in and then
3 that was dispersed to other areas of the mill, other
4 tanks, holding tanks.
5 Q What is a broke pulper exactly?
6 A Normally it was a smaller pulper than the big ones for
7 the paper machine because it took less quantity of
8 broke.
9 Q What is broke?
10 A Wastepaper off the paper, the process, shavings, when
11 you tear down a roll to get rid of dirt, imperfections
12 that went into the broke pulper.
13 Q Where did this broke go once it had been pulped in the
14 finishing room?
15 A Probably to holding chests that we used later on in the
16 process again.
17 Q So within the broke pulper -- was the broke liquefied --
18 A Yeah.
19 Q -- in some way?
20 A Yeah. You add water to it and break it up again so it's
21 fibers once more.
22 Q Would you add anything else outside of water?
23 A No.
24 Q What type of training did you undergo to work in the
25 finishing room?

1 Q And you started out as a broke beater?
2 MR. KELLEY: I'm going to have to object to
3 all lines of questions about Mill D because it's
4 after Mill A shut down and there was no PCB involved,
5 no de-inking so it's entirely beyond the scope of
6 this litigation.
7 Q You said you were a broke beater at Mill D?
8 A Yes, sir.
9 Q What does a broke beater do?
10 A Make broke.
11 Q What is broke?
12 A Broke is used paper.
13 Q How was this used paper generated?
14 A You mean how was broke made?
15 Q Yes.
16 A Broke is made on the paper machine, if the machine
17 had a break and it hayed out.
18 Q What do you mean when you said it hayed out?
19 A Well, when they had a separation of fibers and it
20 went round and round and round on the dryer.
21 Q Would the paper go out onto the floor?
22 A Yes, sir.
23 Q And then you would place that in the broke beater or
24 someone would?
25 A Someone would place it in a shoot and it would come

1 down to the broke beater where I would put it into a
2 broke beater and beat it up.
3 Q How would you beat it up?
4 A In a beater.
5 Q Would you have to add water?
6 A Yes, sir.
7 Q And chemicals?
8 A No chemicals, just water.
9 Q Just plain water. Would you apply heat to this
10 material?
11 A No, sir.
12 Q What would happen to the material in the broke
13 beater?
14 A As it got beat up fine enough, it would be pumped
15 into a broke tank.
16 Q And what happened in the broke tank?
17 A Then as the machine needed broke, it would be drawed
18 out of the broke tank so many marks, so many feet per
19 order, depending on the order.
20 Q What is the difference between the stock contained in
21 the broke tank and virgin stock?
22 A Virgin stock is paper that's made out of trees.
23 Q Is the fiber contained in the broke beater, wasn't
24 that originally virgin stock?
25 A Yes, it was, but when it went through the Jordans, it

1 broke the fibers down so, therefore, it wasn't virgin
2 stock anymore.
3 Q Does that mean it wasn't as good as virgin stock?
4 A Yes, sir.
5 Q But they would use this in the manufacturing process?
6 A Yes, sir.
7 Q What would determine how much broke stock they
8 needed?
9 A Now that I don't know because that was the beater
10 engineer's job.
11 Q Is there a difference between broke stock and
12 de-inked stock?
13 A Yes, sir.
14 Q What's the difference?
15 A The difference is D-I stock is stock that's been made
16 out of used paper. Now the broke is stock that's
17 been made out of the recycled sulfide so to speak.
18 Q Is the only difference that the broke stock never had
19 ink on it or is there another difference?
20 A Well, it didn't have ink on it. What it is it's used
21 stock that come off of the paper machine, waste fiber
22 so to speak.
23 Q When you worked at the broke beater, where in Mill D
24 was that located?
25 A The broke beater was located right next to the creek.

1 That would be on the west side of the building.
2 Q Didn't the creek run right next to the building?
3 A The creek run underneath the building.
4 Q Why did they build the mill right on top of the
5 creek?
6 MR. KELLEY: Objection. No foundation that
7 he was there has been established.
8 A I don't know. I wasn't there.
9 Q But it was always like that when you were there?
10 A Yes, sir.
11 Q Did the broke beater ever overflow?
12 A Yes, sir.
13 Q What would cause that to happen?
14 A Then again, it got too full.
15 Q Would that be because of the negligence of --
16 A Yes, sir.
17 Q -- of the operator?
18 A Yes, sir.
19 MR. KELLEY: Objection. That's your
20 characterization, not the witness'.
21 Q Where would the material go?
22 A On the floor.
23 Q And which floor did you say this was on?
24 A This was in the basement.
25 Q The beater was actually in the basement, too?

2 down -- I mean King down.
3 Q Was this after you worked in the testing station?
4 A I'd say maybe it was in between. I worked in the
5 testing station twice.
6 Q Could you tell me what your duties were as a fifth
7 hand?
8 A Yes, I had to pull the rolls out, take care of them,
9 get on the forklift and take care of the rolls. And
10 the paper came out, like take a trim on it, had to
11 put that in the broke box and if we had to slab any
12 off, like if this is the paper, it wasn't any good,
13 you had to put that in the broke box, things like
14 that, various other small duties.
15 Q Did you work on the wet end of the paper machine at
16 all when you were a fifth hand?
17 A No.
18 Q Did you have any clean-up responsibilities on the wet
19 end as a fifth hand?
20 A No.
21 Q As a fifth hand, did you observe -- did you have the
22 opportunity to observe the wet end of the paper
23 machine?
24 A Well, most of the time I was too busy to observe
25 anything because they had what we called haying out,
26 you know. You get a lot of broke there and you're

1 too busy at the dry end to pay any attention to the
2 wet end.
3 Q Were there times to your knowledge when there would
4 be overflows on the wet end of the paper machines?
5 A I don't know. I don't think so.
6 Q So you yourself never participated in a clean-up on
7 the wet end of the paper machine?
8 A Only on -- only on the -- like we changed the wire
9 and then it had to be cleaned up.
10 Q When you say changed the wire, does that mean the
11 wire would break or --
12 A No, not necessarily. It might get a little hole in
13 it or something that isn't worth patching, you know.
14 Then I don't know who decides it, but they decide
15 well, the wire is practically wore out, we will put a
16 new one on. You know what I mean by wire, don't you?
17 Q Yes. Would the paper machine be stopped to replace
18 the wire?
19 A I hope so.
20 Q You said after you worked in the machine room you
21 became a hydropulper operator, correct?
22 A To the best of my knowledge, yeah, that's the way it
23 is.
24 Q And were the hydropulpers located in the beater room
25 at the King Mill?

1 significance for this purpose here.
2 Q Okay, and in which mills were these production jobs?
3 A I worked at Mill C, I worked in Mill D, and I worked in
4 Mill E.
5 Q Did you actually work on the paper machines?
6 A Never.
7 Q What did you do?
8 A I worked as a waste paper converter you might say. We
9 put it in broke beaters and beat it up to be recycled.
10 Q Okay, and which mill did you say this was in?
11 A I did that in Mill D, also.
12 Q Okay. Is that the process that is called de-inking?
13 A No.
14 Q No? Did the process that you just described for me
15 involve the use of waste paper?
16 A Definitely.
17 Q Okay, and did you break that waste paper down into
18 recycled pulp?
19 A Correct.
20 Q That recycled pulp was then used in the manufacturing
21 process?
22 A Correct.
23 Q Okay. Do you recall what types of waste paper were used
24 in this process?
25 A Only production wastes.

1 Q I see. We're not talking about magazines?
2 A Oh, no.
3 Q Okay. Now, in this early period before you went into
4 the service do you recall who your supervisors were?
5 A No.
6 Q Okay. Do you recall any of the fellow employees that
7 you worked with?
8 A I recall a lot of them.
9 Q Can you give me a few names?
10 A Well, I had a close friend, his name was Dick Kenny. He
11 worked in Mill D, also.
12 Q Okay. At that time did you have people working for you?
13 A No.
14 Q Mr. Rohrer, when you returned from the service what
15 position did you take at Allied Paper?
16 A I took a paper testing position at Mill C.
17 Q And were the job requirements for this job similar to
18 the paper testing job that you just told us about?
19 A In Mill D, yes.
20 Q How long were you a paper tester at Mill C?
21 A Until, I can't remember exactly but I think it was 1965
22 or '66, somewhere right in there, they promoted me into
23 research and development.
24 Q Okay, and before they promoted you, do you recall the
25 names of any of your supervisors at that time?

1 A They would shut down when all the tanks across the
2 street were full. They would shut down because they
3 didn't have no room for stock, shut down and clean
4 it, like picking up paper on the railroad tracks.
5 Q You are talking about no more room for stock that you
6 created in Mill A from being wastepaper?
7 A Yes.
8 Q How many times was Mill A shut down during the four
9 years you were there because of the waste discharge
10 being too much?
11 A I have never seen it shut down for that reason.
12 Q Okay, all right.
13 What other facts did you have after your
14 job as a washerman helper was eliminated by the
15 purchase of the equipment that you mentioned?
16 A I went over to Mill C on the broke beater.
17 Q You said you had some tasks, including the one day
18 that you were asked to look at the pump station while
19 you were still at Mill A and I'm asking what other
20 tasks.
21 A Sweeping floors, picking up paper on the railroad
22 tracks.
23 Q What did you do at Mill C on the broke beater for the
24 six-month period that you said you were back?
25 A They would get broke off the paper machines, go in --

1 the broke beater and waste from the finishing room
2 they bring down in boxes and I would throw that in
3 the broke beater.
4 Q How did the broke beater operate?
5 A It was a cylinder that defibered the paper and made
6 it into pulp.
7 Q When you say that de-fibered the paper, are you
8 referring to virgin stock?
9 A No, paper that's been on the machines, it's already
10 been processed.
11 Q Did you have any other responsibilities at Mill C
12 after you went there from Mill A?
13 A No.
14 Q Were you also a mule driver at Mill C?
15 A Mill D.
16 Q Did you go to Mill C and then Mill D and remain at
17 Mill D for the next 24 years?
18 A Yes; yes, ma'am.
19 Q While you were at Mill C, did you have an opportunity
20 to observe the process that was being done there, the
21 papermaking process?
22 A Yes.
23 Q What was the nature of the process being performed at
24 Mill C at that time?
25 A We would do our -- heat up virgin pulp, and put it in

1 Q Third floor was the Jonsson room?
2 A Yes.
3 Q First floor was the basement or was that ground
4 level?
5 A Basement was the first floor.
6 Q Basement was the first floor and floor two would be
7 ground level?
8 A Yes.
9 Q In Mill C, you worked on the broke beater, is that
10 correct?
11 A Yes, broke beater.
12 Q Was the broke beater like a hydropulper?
13 A No.
14 Q It was used to de-fiber paper?
15 A Yes.
16 Q Was this paper that had been manufactured in the
17 mills?
18 A Yes.
19 Q But was for some reason --
20 A Waste.
21 Q It was not good enough to be used?
22 A Yes.
23 Q And so it was put back into a broke beater?
24 A Yes.
25 Q And then remanufactured as paper?

1 A Yes, used over as broke.
2 Q Are you aware that they manufactured wet strength
3 paper at any of the mills at the Bryant Division?
4 A I can't remember wet strength.
5 Q You can't remember it having been manufactured at the
6 mill?
7 A No.
8 Q So is it fair to say you don't remember whether wet
9 strength paper was ever introduced to the broke
10 beaters?
11 A No. If they didn't make it they couldn't get in
12 there.
13 Q In describing the slide washers earlier on --
14 A Yes.
15 Q -- at Mill A, I believe --
16 A Mill A.
17 Q -- you said that these slide washers extracted
18 chemicals in the water and would make the paper
19 brighter?
20 A Yes.
21 Q Do you know how it made the paper brighter?
22 A This is a hard process to explain, really.
23 Q Okay. Was there any chemical introduced at the point
24 of the slide washers?
25 A There is chemicals introduced at the slusher.

1 through their de-inking process very likely. Now, in
2 addition to recycling old paper, some of the mills
3 were using what is called virgin fiber which would be
4 new pulp produced from wood that they purchased
5 perhaps from some mill in Canada or some mill
6 elsewhere in the United States. They would blend
7 that in with a de-inking pulp to make the paper. In
8 addition, there may have been a possibility that some
9 of the old paper they were taking in was of such good
10 quality, for example, office waste that might be of
11 high grade white paper that didn't have a great deal
12 of ink in it, it was possible they would just pulp
13 that and use that, too.
14 Q It didn't need to be de-inked? Would it be more cost
15 effective not to de-ink?
16 A If it didn't have to de-inked, certainly, yeah.
17 MR. COHEN: You talking specifically virgin
18 fibers as opposed to unde-inked waste paper fibers?
19 THE WITNESS: Yes, making the de-inked --
20 MR. COHEN: In other words, the virgin
21 fibers would never even see the inside of a de-inking
22 mill?
23 THE WITNESS: No, these are fibers. Virgin
24 fiber is fiber. General acceptance of the term is
25 that it is fiber that is produced from wood and this

1 Q All right. And were there any other persons other
2 than Mr. Stoeffler and Mr. Sweet that you had
3 reported, to the best of your recollection?
4 A That would be the two that I actually reported to.
5 Q Okay. What year did you leave the employment of
6 Allied Paper?
7 A '78, I believe.
8 Q All right. And you said 1974 you took -- you gained
9 the position of superintendent of Mill C?
10 A Yeah, I believe so. Somewhere in that vicinity.
11 Q And Mill C's operation involved what?
12 A They had two paper machines there.
13 Q So a straight papermaking?
14 A Yeah.
15 Q There was no other type of pulp operation?
16 A No.
17 Q All right. Did -- was the paper manufactured in Mill
18 C in 1974 manufactured solely from virgin fibers?
19 MR. KELLEY: Excuse me, could you read that
20 question back?
21 (The Reporter read back the pending
22 question.)
23 A No.
24 BY MR. COHEN:
25 Q All right. So other than virgin fibers, what other

1 type of fibers would have been used?
2 A I believe they would call it post consumer waste.
3 Q Post consumer you said?
4 A Yes. In other words, it going to maybe -- try to give
5 you an example. We made, quote, fine paper, which is
6 different from newsprint which is different from
7 tissue. And sometimes because of the -- we would --
8 when they make envelopes for argument sake, the
9 clippings, that would be waste paper, and we take
10 their clippings and repulp it.
11 Q This would not have been paper, though, that was
12 inked?
13 A Not normally, no.
14 Q What was the source of that -- strike that.
15 Was that paper pulped in Kalamazoo?
16 A It would be repulped in the mill, yes.
17 Q All right. And do you recall which mill that was
18 repulped in?
19 A Probably Mill C.
20 Q All right. So there was your, for lack of a better
21 phrase, run-of-the-mill hydrapulper in Mill C?
22 A Yeah.
23 Q And this waste paper was introduced to those
24 hydrapulpers --
25 A Mm-hmm.

1 Q -- stock was created and you used that to make paper?
2 A Yeah.
3 Q You say not -- normally that paper would not be inked;
4 is that correct?
5 A No, normally it would not be.
6 Q Because this was -- well, I just want to understand
7 what the source of that waste paper would have been.
8 You say it's called post consumer waste paper?
9 A Well, that's another -- because our envelope stock was
10 sent to you, you made envelopes out of it --
11 Q An so when I trimmed it --
12 A -- and the waste paper we took it back or you sold it
13 back to us.
14 Q So the seller of that waste stock would have been
15 companies that Allied was selling finished product to?
16 A Not necessarily.
17 Q All right.
18 A Because you would have what they call waste paper
19 manufacturers or sellers, and they may go to a bunch
20 of small printing shops and take this paper back and
21 then sell it to various mills.
22 Q Were there waste papers sellers in Kalamazoo?
23 A I don't know.
24 Q Do you recall the names of any of the companies?
25 MR. KELLEY: He said he doesn't know if

1 there were, so --
2 MR. COHEN: Well, that wouldn't mean he
3 doesn't -- just because he doesn't know the location,
4 doesn't necessarily mean he doesn't know the company.
5 A Normally they were out of Chicago, and they dealt with
6 our purchasing department.
7 BY MR. COHEN:
8 Q Okay. But as mill superintendent -- Mill C
9 superintendent, you didn't have to involve yourself in
10 that?
11 A No.
12 Q All right. I'll bring you back to -- you said
13 normally this would not be inked paper. In other
14 words, it was Allied's expectation that this waste
15 paper was not used in the sense that it had already
16 been printed on.
17 A It would be what we call plain paper.
18 Q Now, was there any sorting process performed at Mill C
19 to insure that the paper that was going into those
20 pulpers was, in fact, what you described as post
21 consumer waste paper?
22 A At times we did inspect this, yes.
23 Q At times you did? Was there -- okay.
24 A They'd come in bales. You'd have to break the bales
25 down sometimes as you put it in the pulper, so you'd

1 chemicals being spilled during the years you were at
2 the Monarch Mill?
3 A Yes.
4 Q I believe you testified when Mr. Cohen was asking you
5 questions that wet-strength paper was a type of paper
6 that was excluded from salvage loads. What were the
7 salvage loads you were referring to?
8 A We would buy -- the company would buy scrap paper
9 from a salvage company.
10 Q Do you know that salvage company was?
11 A Redmond Brothers.
12 Q Redmond?
13 A Yes.
14 Q Do you know where they're located?
15 A Factory Street they were. I think they've gone out
16 of business.
17 Q In Kalamazoo?
18 A Yeah.
19 Q Do you know what years the company bought scrap paper
20 from Redmond Brothers?
21 A Probably the last five, six years they run.
22 Q So we're talking about the 1980's?
23 A Late '80's, yes.
24 Q Do you know what the paper was used for?
25 A It was used to mix -- general use. You know, it's

1 broke, recycled paper that they reused.
2 Q Was it paper that required de-inking?
3 A No; no.
4 Q So, when the salvage paper came into the mill what
5 was done with it?
6 A It was just put in the hydropulper and recycled or
7 repulped.
8 Q And this was something that you had responsibility
9 for?
10 A I have, yes.
11 Q Were there other kinds of paper that would be
12 excluded from this salvage paper?
13 A Not much, no.
14 Q Any other types you can think of offhand?
15 A I don't understand the question.
16 Q Well, I believe perhaps I misheard. I believe you
17 had said that when this salvage paper came in you
18 would take out the wet-strength paper?
19 A We did not sort it. We didn't have time. You
20 couldn't tell it anyway, unless you used a chemical
21 to test it. But you would know it when you dropped
22 one if you had wet strength, you knew it.
23 Q So, you didn't sort through the paper and take out
24 particular types of paper before you used it?
25 A No.

1 Q Were there ever any other types of paper that would
2 come in this scrap paper that could be a problem in
3 the hydropulper?
4 A No.
5 Q Do you know whether Allied Paper used salvage paper
6 before 1980 in this process, in the hydropulper?
7 A Yes, I think they've always used a certain amount.
8 Q And this is paper again that would not go through the
9 de-inking process, but would be put directly into the
10 hydropulper in the beater rooms of the mills?
11 A Yes.
12 Q And you believe that this is a practice that Allied
13 Paper always followed?
14 A Yes.
15 Q Is this a practice that was always followed during
16 the years that you worked in the beating room?
17 A Yes.
18 Q Do you have personal knowledge that it was used
19 before the years that you were in the beating room?
20 A I think before I went to the beater room and Mill A
21 was still running everything went through Mill A.
22 They would sort it out if there was anything in
23 there, they could throw it on a belt and sort it.
24 Q Do you know whether or not during the years that Mill
25 A was running some salvage paper that did not require

1 de-inking would be used, would be introduced directly
2 into the hydropulpers in the beating room without
3 having gone through the de-inking process?
4 MR. KELLEY: Can you read back the
5 question, please?
6 (Court reporter read back the question)
7 A No.
8 Q You don't know?
9 A I could explain it.
10 Q Please do.
11 A They had -- like I said, they had pulpers over there
12 that if they seen quality paper that didn't have to
13 be sorted or de-inked, they would pulp it over there
14 and pump it over to those tanks we got between Mill C
15 and Mill D, everything.
16 Q I believe you stated that there was a basement
17 utility man in Mill D who would take out material
18 that could not be run through the clarifier, do you
19 know the names of any of the people who held that
20 position?
21 A The man that done it for years and years died just
22 before the mill went down.
23 Q What was his name?
24 A Richard Montz.
25 Q The one time that you recall seeing the Portage Creek

1 you were on?
2 A The same.
3 Q You said before that you might work with as many as
4 100 bales in the course of a day when you were a
5 feederman?
6 A Yes.
7 Q And that would be the same whether you were on day
8 shift, night shift or any other shift?
9 A Yes.
10 Q Did you ever receive bales that were entirely the
11 same kind of paper?
12 A Yes.
13 Q What kind of paper would be in those bales?
14 A Magazines.
15 Q Any other types of bales that would be all one sort
16 of paper?
17 A Yes, them tab cards, IBM tab cards.
18 Q Could you describe those for me?
19 A Type of two by four with a bunch of holes punched in
20 them.
21 Q Did you ever receive bales that were all carbon
22 paper?
23 A No.
24 Q Did you ever receive bales that were all one type of
25 paper and that type of paper was entirely a kind of

1 paper that you didn't de-ink?
2 A No, I never seen one.
3 Q Did you ever have occasion to see the bales being
4 unloaded from the rail cars or the rail trucks?
5 A Yes.
6 Q Did you ever, on one of those occasions, see someone
7 from Allied Paper refuse to accept one or more of the
8 bales?
9 A Yes.
10 Q Do you know what type of paper was in those bales?
11 A Well, it could be wet strength, it could be carbon
12 paper, it could be rubber with envelopes, on
13 envelopes.
14 Q You said it could be?
15 A Yes.
16 Q Do you know that or are you guessing?
17 A No. I know that they have rejected them type of
18 bales.
19 Q Who would make the decision to reject a bale?
20 A It would be Ray Escamilla.
21 Q Was there ever anyone else who would make that
22 decision?
23 A The boss.
24 Q And that was Floyd?
25 A Well, Roy Dietz, he worked straight days. If it

1 started to use the clarifiers --
2 A Yes.
3 Q The clarifier again?
4 A We did.
5 Q Okay.
6 (Discussion held off the record)
7 Q Mr. Burch, earlier you indicated to me that they stopped
8 de-inking altogether in 1956, is that correct?
9 A Yes.
10 Q Do you recall when they first began de-inking?
11 MS. LATORRE: At Monarch.
12 A At Monarch? Well, they was de-inking way before we
13 rebuilt it. I mean, only the process wasn't very big or
14 -- at one time they used rags to make paper out of, so,
15 it was just cooking them.
16 Q But the de-inking operation was in existence before you
17 got there?
18 A Yes.
19 Q Okay. Now, it's my understanding that for this
20 de-inking process they would bring in waste paper?
21 A Yes.
22 Q Is that correct?
23 A That's correct.
24 Q Do you know what types of waste paper they would use at
25 any time during the Monarch Mill's operation?

1 A Mostly magazines.
2 Q Okay. Do you know where they got the magazines from?
3 A All the waste paper companies, different ones, Chicago,
4 Detroit.
5 Q Do you happen to know any of the names of the companies
6 offhand?
7 A No.
8 Q Aside from magazines, was there any other dominant type
9 of waste paper that they used?
10 A No.
11 Q Did they use Green Stamps?
12 A Stamps?
13 Q I heard somewhere they used S & H Green Stamps in the
14 de-inking process.
15 A Oh, you're talking back during the war when we used them
16 -- what was them stamps? Rationing stamps. We used to
17 get them in by the book loads. The FBI used to come
18 along with them.
19 Q Have you ever heard of carbonless copy paper?
20 A We made it.
21 Q Okay. Do you know if you used any carbonless copy paper
22 in the de-inking process?
23 A No.
24 Q Can you explain to me what carbonless copy paper is?
25 A We made a one-time carbon. Did you ever see a bill of

1 Do you know how much the tank cars held?
2 A No, I don't.
3 MS. LATORRE: Objection, relevance.
4 Q Do you know how often those tank cars came to Allied?
5 A No, I don't.
6 Q Again, you also testified that bleach was added to
7 the pulp after the chlorine was introduced at the
8 King Mill. Do you know what the bleach consisted of?
9 MS. LATORRE: Same objection.
10 Q You can answer, sir.
11 A I do if I can think of it.
12 Q Do you want to take a minute?
13 A Yeah. Well, it's chlorine and lime. What do you
14 call it? Hypochlorite.
15 Q Okay. Thank you. You testified in your first day
16 that when you came to Mill D after your leave of
17 absence you were in charge of three paper machines
18 and the coater in Mill D. Do you recall that, sir?
19 A Yes.
20 Q And you testified that one of the things used in the
21 coater was pigment, do you recall that?
22 A Yes.
23 Q Do you know what the pigment consisted of, sir?
24 A Titanium, other pigments that I can't say right -- I
25 haven't got them right at the end of my tongue.

1 mill employment?
2 MR. KELLEY: Allied you mean or ever?
3 Q Ever.
4 A Yes, I had at one time. I had -- I could say I had
5 responsibility.
6 Q Which company was that with?
7 A Gilbert Paper Company.
8 Q But that was not with regard to a de-inking
9 operation?
10 A No.
11 Q The bleaching process that is done also in pulp
12 manufacturing, that's not related to de-inking?
13 A Yes.
14 Q And would the brightness of that pulp also be at
15 issue?
16 A Brightness is always an issue in paper making, right.
17 Q What specifically would you do in order to increase
18 the brightness if you determined it was not bright
19 enough?
20 A Well, I -- add more bleaching agent is the first
21 thing, and it is a complex process and I'm not
22 qualified to give you all the reasons because I don't
23 know them all.
24 Q Do you recall what bleaching agents you would have
25 used?

1 A Basic agent was sodium hypochlorite.
2 Q Any others?
3 A The bleaching process consists of chlorination,
4 caustic extraction and hypochloric bleaching.
5 Q Do you know if the same chemicals and the same
6 processes were used in the de-inking operation at
7 Allied as -- strike that. That was non-de-inking.
8 A That was an Allied de-inking bleach process I just
9 gave you.
10 Q That you just gave me.
11 A I thought that's what you asked.
12 Q Thank you.
13 At any point were you responsible -- well,
14 let me ask you this. When you talk about influent
15 versus effluent in some of the memos we looked at
16 earlier, when you're talking about the influent,
17 that's entering the clarifier, is that correct?
18 A The influent that's entering the clarifier, yes.
19 Q From the mill operation?
20 A Yes.
21 Q Were you ever in a position -- did you ever have
22 occasion to test the water that was entering the mill
23 itself?
24 A For what purposes?
25 Q Any purpose.

1 A That's correct.
2 Q Okay.
3 A It's a screen, window screen type of an arrangement
4 and the fibers stay on top, the water goes down
5 through, and the vacuum from filling that pipe up
6 pulls the water through.
7 Q Does the presence of chlorine being introduced to the
8 stock itself, does that have a chemical affect of
9 thickening the slurry?
10 A No. No.
11 Q Okay.
12 A It's the dewatering that was the thickening.
13 Q Now, in your experience at the Bryant Mill do you
14 recall any instances where employees may have been
15 introduced to chlorine, chlorinated --
16 A Chlorine gas, yes.
17 Q And presumably there were safety measures to prevent
18 that from happening?
19 A Yes.
20 Q Did the plant treat the chlorine as being a toxic
21 substance or toxin in working with it?
22 A Sure.
23 Q Okay. The only use of chlorine then in the de-inking
24 process was in the form of a gas? Was there ever
25 just a liquified form of chlorine being introduced?

1 A Okay. There were, as I remember, two stages of
2 brightening the pulp if you will, that was chlorine
3 gas and then chlorine bleach, and the chlorine was
4 used to make bleach.
5 Q Would that be used in the bleaching tower?
6 A Yes, that was the bleach tower.
7 Q So was chlorine principally the bleach used in the
8 bleaching tower?
9 A It's sodium hypochlorite.
10 Q Was there any other chlorine compound that was used
11 other than sodium hypochlorite to your recollection?
12 A May have been some calcium chloride, but sodium
13 hypochlorite is the same as the bleach you have in
14 your home, same stuff, just a little different
15 concentration. But chlorine gas was used to make
16 that, reacting chlorine with sodium hydroxide I
17 believe it is.
18 Q Okay. So I understand your testimony, it was your
19 thought at the time that introducing the chlorinated
20 water waste stream into the pond could potentially
21 have a positive effect on the condition of the pond
22 because chlorine has a purifying effect, correct?
23 A That's correct. Again, that was my opinion.
24 Q Okay. Have you ever heard of the phrase
25 prechlorination?

1 continue to operate?
2 A No, no, it went down.
3 Q Do you know whether any wet strength paper was used
4 on that experimental hydropulper?
5 A Well, we did run wet strength, but I don't remember
6 which hydropulper it was on.
7 Q What types of wet strength did you run?
8 A We broke up wet strength. We didn't run. You know
9 what I mean?
10 Q No, I don't.
11 A Well, like if they run wet strength on the paper
12 machine and they want to use it over, we put it in
13 the hydropulper and it has to beat, I'd say, roughly
14 three to five hours with Alum in there to break it
15 up.
16 Q And this wet strength that you're talking about was
17 wet strength that had been produced in the King Mill
18 itself?
19 A Well, not necessarily. There was a spell there where
20 we got some wet strength in. We didn't run too much
21 in, not too long a period that we beat it up.
22 Q This was wet strength that you received as
23 wastepaper?
24 A It was wastepaper, yeah.
25 Q What did that wet strength look like?

1 A Well, it was -- it looked like ledger is what it
2 looked like. I don't remember whether it was coated
3 or not. You know what wet strength is, don't you?
4 It's like a matte paper and it runs it -- through the
5 ordinary process by itself it won't beat up and as
6 far as what it looked like, it's clear white paper,
7 most of it, but there's no de-inking that I can
8 remember to it. It's just breaking it up is the main
9 thing.
10 Q Do you remember what period of time you ran this wet
11 strength?
12 A I have no idea.
13 Q Was it something that you did the entire time that
14 you worked as a hydropulper operator?
15 A It was put on -- it was put on overtime mostly
16 because, like I say, if you take that time to run a
17 batch of it out, you couldn't keep up with the paper
18 machines.
19 Q But during all the years that you worked as a
20 hydropulper operator, whether for the experimental
21 hydropulper or for the nonexperimental hydropulper,
22 did you at various times run wastepaper that was wet
23 strength paper?
24 A I can't remember when we run it, but we did run it
25 off and on but I can't remember. I really can't.

1 correct?
2 A Yes.
3 Q At times was -- and wet-strength paper was something
4 that was manufactured on the paper machines?
5 A Yes.
6 Q And so, a substance called wet strength was added to
7 the paper machines in order to make wet-strength
8 paper?
9 A Yes.
10 Q At times was wet-strength paper made in a manner
11 which was not suitable for sale such that it would
12 have to -- that it would be treated as waste paper?
13 A Wet strength for years would be sold out, job bought
14 out, or in the last few years they recycled that.
15 They found a chemical to cook it and we used most of
16 it.
17 Q But Allied Paper was manufacturing something which
18 they called wet-strength paper?
19 A Yes.
20 Q About what period of time, to your recollection, were
21 they manufacturing that?
22 A In the -- I'd say right around '80 to '86 they quit
23 it, they lost the order.
24 Q Because of this -- how is wet strength received, did
25 it come in barrels?

1 A That's a good description.
2 Q Now, you had an entire department devoted to de-inking
3 at both the King Mill and Monarch Mill during those
4 years, is that correct, sir?
5 A Correct.
6 Q Can you give us an estimate of the number of pounds or
7 tons of de-inked pulp that you created and from what
8 number of pounds or tonnage of wastepaper it was made
9 on a daily basis or any other?
10 A I can't give you tons, I can give you some percentages
11 because you really asked two questions there and this
12 only refers to the second part. As I recall, my
13 earliest recollection is that for every ton of
14 wastepaper purchased, we were able to make say three
15 quarters of a ton or no, 70 percent, seven-tenths of a
16 ton of usable bleached pulp. And that percentage
17 trended downward consistently over the years. That is
18 the retention figure apparently got down to 40 percent
19 and below.
20 Q And what became of the 30 percent of every ton that
21 did not make its way to usable pulp?
22 A That went into the streams.
23 Q Now, back in 1953 when you took over as vice president
24 at Allied, the streams that you refer to for the
25 de-inking waste would have led directly into either

1 Q If you would turn then to table two?
2 A Right.
3 Q Which apparently concerns de-inking at the Bryant
4 Mill.
5 A That's what I take it to be.
6 Q Can you tell me what the reference means to de-inking
7 tons in and tons out?
8 A I noticed that and it puzzles me because what we
9 called our retention, that is the tons of bleached
10 de-inked stock per ton of baled wastepaper we brought
11 in. I don't recall it ever being higher than 70
12 percent, and this says it was 80. And I don't know if
13 this is germane to the discussion but that puzzles me.
14 Q So if that's what they are talking about that seems a
15 tad high?
16 A It seems high. I wish we had had it that high. I
17 don't recall it ever being that good.
18 Q If you would direct --
19 A Wait a minute, okay.
20 Q Direct your attention to table three and on the column
21 on the left to the heading called ph?
22 A Column on the left?
23 Q Yes, second one from the bottom.
24 A Okay.
25 Q It seems to state that the ph from the chlorine

1 case, it's the Hartford Accident Indemnity Insurance
2 Company.
3 Part of the difficulty I've had over the
4 course of your depositions, I guess, is I really
5 don't have a concept of how big an operation the
6 de-inking process was at Allied while it was ongoing
7 and I was wondering if you could help me with that in
8 terms of the magnitude, say in 1970, how much paper
9 was de-inked at Allied in terms of tons per year or
10 per day or tons per hour?
11 A First of all, in 1970, you'd have to refresh my
12 memory, somebody, as to just exactly how many of our
13 mills were de-inking at that time.
14 Q I believe it was just the one mill.
15 A Is that the Bryant?
16 Q Yes, sir.
17 A That was the last one. Again, this is just off the
18 top of my head. 50, 60, 70 tons a day of finished
19 product.
20 Q How much did that represent in terms of paper brought
21 into the mill to be de-inked?
22 A All right, unfortunately at that time we probably
23 weren't getting much better than 50 percent
24 retention, which is one of the reasons that we were
25 getting out of the de-ink business.

1 Q So the incoming paper was perhaps somewhere between
2 100 or 120 tons a day?
3 A Something like that.
4 Q Now going back in time to when you had the two mills
5 de-inking, can you give me a relative scale of the
6 amount?
7 A Again, you might double that. Although the retention
8 was -- the farther back you go, the better the
9 retention was.
10 Q One other question. You mentioned the second or
11 third day about bringing in bales of paper that were
12 then broken open to be gone through by the folks
13 looking for the rubber boots and that sort of thing.
14 How big were these bales of paper?
15 A They'd weigh 1500 pounds perhaps.
16 Q Okay. And so in the course of a hundred tons of
17 paper in, you might have -- I can't do the math that
18 quickly in my head.
19 A Something more than that.
20 Q Well, almost. About one and a third of those bales
21 per ton about? Is that close enough?
22 A Well, no, I said if a bale weighed 1500 pounds, it
23 would be three quarters of a ton.
24 Q Right. So one and a third bales would be 2,000
25 pounds?

1 A Okay, something like that.
2 Q Something like that, all right. And it would be
3 what, about a cubic yard or so in size?
4 A Oh, no, much bigger than that.
5 Q Much bigger than that, okay.
6 A Yeah, let's see, I told you almost exactly. They're
7 about this wide, that thick and five feet high,
8 wired together to keep them from -- once you cut the
9 wires, they would spill right out onto the --
10 Q So when you say about that wide, we are looking at
11 about four feet wide perhaps?
12 A Yeah, a little less than that maybe.
13 Q About 18 inches, two feet wide, something along those
14 lines?
15 A Deep I called it, yeah.
16 Q About five feet high?
17 A Uh-huh, four or five feet. There's no -- they were
18 not very uniform. They were all baled, you see,
19 someplace and some people put more pressure on the
20 baler than other people. It was not like buying pulp
21 where it would come in every single bale would be 400
22 pounds, you know, and you could bet your bottom
23 dollar on it.
24 Q Again, in sort of an order of magnitude, can you give
25 me a figure for the largest amount of de-inked paper

1 correct, as far as management was concerned?
2 A No, I think they didn't want any -- the DNR I think
3 started to make decisions, or they were already made,
4 that all discharge to the creek had to be stopped,
5 and I think that was the management's decision to do
6 that.
7 Q Did you participate in that decision at all, sir?
8 A Not in the decision, no.
9 Q You participate in the installation of the pipe to
10 the city storm sewer?
11 A No, that was done by outsiders.
12 Q Independent contractors?
13 A Yes.
14 Q Okay. Did you have any involvement in designing --
15 A Nope.
16 Q -- That pipe system?
17 A No, it was done by a consulting engineer.
18 Q Were you consulted about that at all?
19 A Nope.
20 Q Sir, farther down the page there's a sentence that
21 begins, "Prior to installation of the clarifier at
22 Bryant." Are you with me?
23 A Yes.
24 Q Okay. "The Mill A de-inking mill waste water
25 discharge went into Portage Creek immediately north

1 of Alcott Street dam." Now, you've already discussed
2 that a little bit in your prior testimony?
3 A Uh-huh.
4 Q The question I have for you is, do you know where the
5 waste water from Mills C, D and E went prior to the
6 installation of the clarifier?
7 A I do not know.
8 Q Okay. The next sentence says after the installation
9 of the clarifier this discharge point was used only
10 for emergency bypass purposes, and you've discussed
11 this a little bit, too. My question for you is, is
12 this the only bypass point that you're aware of?
13 A Yes.
14 MS. ANDERSON: For --
15 Q Okay, and when I say -- let me ask this question,
16 Mills C and D, the waste waters met with the Mill A
17 waste waters at the pumphouse outside of Mill A,
18 correct?
19 A Yes.
20 Q And you've described for us a bypass or overflow
21 point in that pumphouse?
22 A Yes.
23 Q And that's also described in this interrogatory
24 answer right here?
25 A Yes.

1 Q Did the waste water from Mill C and D join the waste
2 water at Mill A at that pumphouse?
3 A Yes.
4 Q Do you know when that pumphouse outside of Mill A was
5 installed?
6 A No.
7 Q Do you have any knowledge about what happened to the
8 waste water prior to the installation of that
9 pumphouse?
10 MS. ANDERSON: Lack of foundation.
11 A No.
12 Q Okay. We've been talking about bypasses, were there
13 any bypasses at the Mill A pumphouse, sir?
14 A Yes.
15 Q And what was that?
16 A It was a tank in ground where the water came from
17 Mill A into the tank.
18 Q Okay.
19 A And into the pumphouse, and then was a bypass at that
20 point.
21 Q Was it in the tank?
22 A Yes.
23 Q Okay. How did the bypass function?
24 A If the pumps for any reason kicked out or stopped
25 pumping, the water will get high enough and go into

1 the bypass.
2 Q So if the pumps kicked out the water would rise in
3 the tank and it would reach the level of the
4 opening --
5 A Yes.
6 Q -- Of the bypass? Where did that bypass lead to?
7 A To the creek.
8 Q Where did it meet the creek?
9 A At the Bryant dam.
10 Q Can you just draw an X approximately where it met the
11 creek?
12 A (Indicating.)
13 MS. ANDERSON: I'll note for the record
14 we're assuming a fact not in evidence at the moment
15 that there were, in fact, any things that went to the
16 creek.
17 Q I think that's inaccurate, all I've asked him is if
18 there was a bypass and where the bypass led and he
19 seems to know that, but I will ask him whether you're
20 aware of any instances, sir, where materials actually
21 went through a bypass to the creek?
22 A Yes.
23 Q What would cause those instances?
24 A The pumps will -- might kick out or too much water
25 being introduced to the pump.

1 Q Let's take that one at a time. Let me ask you if you
2 know what would cause too much water to be introduced
3 to the pump?
4 A If they had to drop some tanks someplace in the mill
5 they would go to the waste water.
6 Q Would that create a surge --
7 A Yes.
8 Q -- In the system, is that a fair way to characterize
9 it?
10 A Yes.
11 Q I understand there was a very large hydropulper in
12 Mill A, are you aware of that, sir?
13 A No, there was not a large hydropulper in Mill A.
14 Q Okay. But there was a -- let me ask you this, are
15 you familiar with the machine that accepted the stock
16 to be de-inked and first beat it up?
17 A Yes.
18 Q Okay. What was that called?
19 A That was a called a Morden slusher.
20 Q Morgan?
21 A M-o-r-d-e-n.
22 Q How big was that machine?
23 A Oh, six, eight, maybe ten feet in diameter.
24 Q Any idea how many gallons it would hold at any one
25 time?

1 A I can't gallons, but I know pounds. I think it was
2 2,000 pound, 3,000 pound slusher.
3 Q That would be water and stock?
4 A Water and stock.
5 Q Raw stock?
6 A At a certain percent consistency.
7 Q Would those -- would that tank ever be dropped?
8 A Nope.
9 Q Okay. What tanks were you referring to that would be
10 dropped?
11 A The slide washer could be or the collection tank for
12 the waste water.
13 Q Okay. Do you know whether the bypass you've
14 described at Mill A at the pumphouse -- let me strike
15 that question. When a bypass occurred --
16 MS. ANDERSON: Karl, can I interject here?
17 You're using bypass in two different ways, one is as
18 a thing and one is as a verb. I'm not sure if you
19 want to talk about overflows versus a bypass
20 mechanism, but I think the record is getting very
21 muddled on that point.
22 Q I guess I'll take my chances as long as the witness
23 understands the question, and if you don't understand
24 the question please let me know, Mr. Hagard.
25 A Okay.

1 Q When a bypass occurred at the Mill A pumphouse --
2 A Yes.
3 Q Okay. You understand what I'm talking about? When
4 the water reached that level and entered that hole --
5 A Yes.
6 Q -- That you've described, that pipe, do you have any
7 idea how often that would happen?
8 A No.
9 Q Was there any system for bringing that occurrence to
10 people's attention?
11 A Absolutely.
12 Q What was that system, sir?
13 A Alarm.
14 Q What type of an alarm was --
15 A A probe that set below what you call the bypass,
16 maybe eight, six, eight inches below and an alarm
17 with a red light and a horn would go off at the
18 stations in Mill A and inform the people that there
19 was close to an overflow, or a bypass as you call it.
20 Q Okay. An overflow bypass?
21 A Yeah.
22 Q What stations in Mill A would be informed via the
23 alarm, do you know?
24 A I know one where the operator was for the slushers.
25 There could have been one in the superintendent's

1 A Well, we called it a couch pit. It had an open top,
2 so it was not a closed tank. It was an open tank.
3 Q Was it --
4 A Small.
5 Q Was it situated above the floor of the basement?
6 A Above the floor of the basement, yes, sir.
7 Q Were there any other tanks in the basement?
8 A Yeah, there were size mixing tanks, I think that would
9 be it from memory.
10 Q Would they clean out the size mixing tank the same way
11 as the other tanks that we've talked about?
12 A Yes, sir.
13 Q And that material would end up going to the creek?
14 A Yes, sir.
15 Q Now, in your position as a draftsman I take it that
16 you also had occasion to go into Mill D as well?
17 A Yes, sir.
18 Q How many paper machines did they have in Mill D?
19 A Three.
20 Q Did they also have a hydropulper in Mill D?
21 A Yes, sir.
22 Q Did they have a beater room in Mill D?
23 A Yes, sir.
24 Q Did Mill D receive its water from the water treatment
25 plant the same way that Mill C did?

1 A From the storage tank through another pipe, yes.
2 Q Once again, where was that storage tank located?
3 A Just west of the engineering office which was at the
4 west end of Mill C building complex.
5 Q So fresh water from that tank would be transported to
6 Mill D, correct?
7 A By gravity, yes.
8 Q Did Mill D also have tanks in the basement?
9 A Yes, sir.
10 Q How many tanks approximately did they have?
11 A That would be awful hard to guess on that one.
12 Q Let's do it this way, was the basement in Mill D
13 similar to the basement in Mill C insofar as the tanks
14 were concerned?
15 A Yes.
16 Q Did they have approximately the same number of tanks
17 in Mill D as they did in Mill C?
18 A I would say that it would be -- they would be
19 comparable because both -- both systems were
20 comparable.
21 Q So the tanks in Mill D operated in the same fashion as
22 the tanks in Mill C, correct?
23 A In the same sequence.
24 Q Would waste water from Mill D also go into the creek?
25 A At the period prior to the installation of the

1 clarifiers, yes.
2 Q How many pipes did they have leading from Mill D to
3 the Portage Creek?
4 A Prior to the installation of the clarifiers there were
5 no pipes that went into the creek.
6 Q How did they --
7 A They overflowed the -- the sewers overflowed directly
8 into the creek.
9 Q Can you tell us what these sewers looked like?
10 A Just an open trough about 18 inches wide and about a
11 foot deep.
12 Q And waste water would flow through these troughs
13 directly into Portage Creek?
14 A Yes, sir.
15 Q Would the contents of this waste water be similar to
16 the waste water that we talked about in regard to Mill
17 C?
18 A Yes, sir.
19 Q At what point along Portage Creek did this open trough
20 meet the Portage Creek?
21 A There was one outlet in the machine room that went to
22 the creek, and there were two outlets in the beater
23 room that led directly to Portage Creek.
24 Q Were each of these outlets the open trenches or the
25 open troughs that we talked about?

1 A Yes, sir.
2 Q So there were actually three different troughs going
3 to Portage Creek?
4 A (Nodding head up and down)
5 Q Is that yes?
6 A Yes.
7 Q Were each of these of similar size?
8 A Yes, basically.
9 Q Was the flow of waste water through these troughs
10 constant?
11 A To my knowledge, yes.
12 Q What color was the material that would flow through
13 these troughs?
14 A Milky color.
15 Q Did the color of the material coming from the machine
16 outlets differ from the color of the material from the
17 beater room outlets?
18 A Only if we were making colored paper.
19 Q So if you were making colored paper the color of that
20 paper would be reflected in the outlet which led from
21 the machine room, is that correct?
22 A Yes.
23 Q Did they make colored paper in both Mills c and D?
24 A Yes. Yes, on occasions.
25 Q What were different colors that they would make?

1 A Oh, I couldn't tell you.
2 Q Did they make numerous different colors?
3 MS. ANDERSON: You might want to establish a
4 foundation on this.
5 A I don't know.
6 Q Have you seen different colors of paper manufactured?
7 A Yes. I seen yellow paper like you're writing on.
8 I've seen white paper. I've seen a blue shade of
9 white, but it had a blue shade to it. It's been so
10 many years.
11 Q When they would make yellow paper, for example --
12 A Yes.
13 Q -- Would the waste water going into the creek appear
14 to be yellow?
15 A Yes.
16 Q Would this waste water have the effect of turning the
17 creek yellow?
18 A It would change the color of the creek, but I don't
19 ever recall it being enough to completely change the
20 creek to a yellow color.
21 Q Was the creek ever blue?
22 A Not to my knowledge. It would have streaks in it or
23 something, but to see it all blue, no, I never did see
24 it all blue.
25 Q Earlier we talked about certain occasions in Mill C

1 sent back to be retreated, reused, and the paper went
2 on through the machine and was then dried and made
3 into one continuous roll and that was the end of it.
4 Q Can you tell us what fines are?
5 A Fines. That is the clay -- well, it's clay. It's an
6 earthen product. This is ground up like finer than
7 flour, I mean, it's a dust. Now, that is pretty hard
8 to keep in the paper entirely because you have to have
9 the clay on top and bottom and all the way through it.
10 But when it goes through the wire there's no way of
11 stopping all of that clay from going through, other
12 than the fact that you have the fiber mat there to
13 stop it. So you do lose some of your clay. That's
14 what I term fines.
15 Q Earlier you indicated that the fines and the water
16 which came out during this process would be recycled
17 through the system. Did this occur during 1948
18 through 1955?
19 A Yes, sir.
20 Q As far as you know they always recycled the water that
21 came out of the paper when it was placed on the wires?
22 A Well, not to the extent that we did in later years,
23 but yes, because we always tried to recover as much of
24 what we lost off the machine as we could and reuse it
25 in the system.

1 Q So, you would --
2 A That's just economics.
3 Q So you would recyle this material in order to recover
4 the fibers which were in the water, is that correct?
5 A Yes.
6 Q Aside from this water that was recycled, there was
7 also waste water that would be generated during this
8 manufacturing process, is that correct?
9 MS. ANDERSON: It's a leading question. I
10 mean, it would be helpful if you rephrase these so he
11 can just answer directly.
12 A Specific --
13 Q Was there waste water generated as well?
14 A After the fourdrinier, no. The only water then was
15 evaporated off through the dryers, went out through
16 the roof.
17 Q When was the fourdrinier installed?
18 A Fourdrinier?
19 Q Yeah.
20 A Oh, Lord.
21 Q Have there always been fourdrinier machines in the
22 Bryant Mill?
23 A Yes, sir.
24 Q Earlier you indicated that between 1948 and 1955 they
25 had pipes which led directly to the Portage Creek, is

1 that correct?
2 MS. ANDERSON: I think he actually testified
3 it's a period there, which could be as early as '53 up
4 to '55.
5 Q Until they installed the clarifiers did they have
6 pipes that led to Portage Creek?
7 A Yes, sir.
8 Q And what would flow through those pipes?
9 A Waste water.
10 Q And where would that waste water come from?
11 A The mills.
12 Q I assume then that Mill C had a pipe or pipes that led
13 to Portage Creek during this period?
14 A Yes, sir.
15 Q You just said that this was waste water, can you be
16 more specific about what was contained in that water?
17 A No. All I can tell you is that it had some stock in
18 it, had some clay in it. It was the waste. It
19 created a problem in the creek by coloring it,
20 discoloring it, whatever you want to call it.
21 Q At what point on the machine did this water come from?
22 A Most of this water came from the wet end or the
23 fourdrinier on the machine.
24 Q Before they put the clarifiers in did they have a
25 collection tank or any type of tank for this waste

1 My question is was the flow through that pipe
2 constant.
3 MS. ANDERSON: Lack of foundation. You
4 haven't proved that he was available to see that.
5 BY MR. CUNNINGHAM, CONTINUING:
6 Q Did you ever see the pipe which led from the Bryant
7 clarifier to the creek?
8 A Did I ever see it?
9 Q Yeah.
10 A Oh, sure.
11 Q Did you ever see water traveling through that pipe?
12 A Oh, yeah.
13 Q In the times that you saw the water traveling through
14 that pipe would the flow of the water be constant?
15 A I would say that it was fairly constant, yes.
16 Q What color was the water that was being disposed of in
17 the Portage Creek?
18 A I would say that it was just about the color of the
19 water that was in Portage Creek before we picked it up
20 and put it into the waste treatment or to the filter
21 plant.
22 Q And what color would that be, if it had a color?
23 A Clear. No color.
24 Q As a draftsman were you responsible for doing drawings
25 which dealt specifically with the clarifier or with

1 the pipe that led from the clarifier to the creek?
2 A Yes, sir.
3 Q Can you tell us the nature of these drawings?
4 A This is --
5 Q Can you tell me why you did those drawings?
6 A Sure, because we had to have a direction for the
7 people that were installing the clarifier and the
8 piping where to come from, where to go to.
9 Q So your drawings were instructions for the people that
10 were installing this equipment?
11 A Yes, sir.
12 Q Now, I would like to talk about how the waste water
13 got from the individual mills up to the clarifier. So
14 why don't we start with Mill C.
15 A Mill C?
16 Q Yes. Earlier we talked about the fact that before the
17 clarifier was installed the waste water went directly
18 to the creek. Now, how did that change after the
19 clarifier was installed?
20 A A pumping station was installed at the north end, or
21 the south end of Mill D underground. The top was
22 open, had three pumps -- two pumps, two pumps, the
23 water came by gravity down the sewer pipe.
24 Q From Mill C?
25 A From Mill C. A weir was installed and it was diverted

1 around and into that pumping station. The waste water
2 from Mill D was pumped up to that same pumping
3 station, so the waste water from Mill C and the waste
4 water from Mill D ended up in the one pumping station.
5 From there it was pumped through pipelines over to
6 Mill A where we had another pumping station,
7 collection system. This was underground. The top
8 being open. We had three pumps in there. The two
9 sewers from Mill A were weired off and dumped into
10 that pumping station. The water from there was pumped
11 through a 20-inch pipeline up to the clarifier which
12 was about a half a mile south of the collection point.
13 Q Now, the water that came from Mill C flowed by
14 gravity, correct?
15 A Yes, sir.
16 Q And the water that came from Mill D, was that pumped
17 or was that gravity, also?
18 A Most of it was pumped.
19 Q So did they have a separate pump within Mill D?
20 A Yes, sir.
21 Q How many such pumps did they have?
22 A Memory, three.
23 Q How would the waste water in Mill D be collected
24 before it went through this pump?
25 A We dug a sump in one of the sewers and enlarged it,

1 made a drop pit, suction pipes in there for the pump
2 on the east side of the creek where the creek went
3 through underneath the mill. The water on the other
4 side was brought across and put into that same sump
5 and then from there it was pumped up through a
6 pipeline up to the clarifier, or to the collection
7 point, which was at the south end of Mill D.
8 Q So all of the waste water that was generated in Mill D
9 would end up in this sump, is that correct?
10 A Yes, sir.
11 Q Is a sump -- or can you define what a sump is for me?
12 A Well, this is a term that we use. It's just a big pit
13 that you let everything run into and then you pump out
14 of it.
15 Q Was that pit lined with anything?
16 A Concrete.
17 Q And from that sump the water would travel to the pump
18 at Mill D and then to the pumping station that was
19 utilized by both Mills C and D, is that correct?
20 A The pump at that point sat on the floor and the
21 suction lines went down into the pit. The sump picked
22 the water up out of there and then pumped it up to the
23 pumping station at the end of the mill, yes.
24 Q Now, was there a similar collection system for the
25 water generated in Mill C?

1 A No.
2 Q What happened to the water in Mill C after it came off
3 the machines. Strike that.
4 A We went through that before.
5 Q I'll rephrase that. What happened to the waste water
6 that previously went into the creek from Mill C?
7 A It was diverted and went into the pumping station with
8 the water from Mill D, but that waste water went in
9 strictly by gravity.
10 Q Was that an open trench or was that a pipe?
11 A That was an underground pipe.
12 Q With regard to Mill C, what happened to the sewer that
13 was previously used to send water directly to the
14 creek?
15 A It was closed off with a weir at one end, at the end
16 down at the creek.
17 Q Can you tell me what a weir is?
18 A It's just a buildup so the water would turn and go the
19 other way rather than go on out into the creek. But
20 there was a place where it could overflow in the
21 beginning, but then we finally plugged it.
22 Q When did you plug it?
23 A Oh, I couldn't tell you that. I really don't know at
24 what date it was plugged.
25 Q Was it before the clarifiers were hooked up to the

1 city sewer system?
2 A No. Before they were hooked up to the city sewer
3 system. I think Mill C's was, yes.
4 Q How would this water overflow this weir? Would it
5 simply flow over the top or was there a valve it would
6 flow through?
7 A No, over the top.
8 Q And when it overflowed the weir would it go directly
9 to the creek?
10 A Yep. Had about three or four feet to go and it was
11 into the creek.
12 Q Did it have to flow down the banks of the creek, or
13 did it drop directly into the creek?
14 A It went directly into the creek. The bottom of the
15 pipe was below the creek level.
16 Q How often would the weir at Mill C overflow?
17 MS. ANDERSON: Lack of foundation.
18 A I have no idea.
19 Q Now, you said it would overflow during the initial
20 years after the clarifier was installed, is that
21 correct?
22 A I assume it did.
23 Q Did you ever actually see it overflow?
24 A No, sir.
25 Q Did you hear that it had overflowed?

1 A Yes, sir.
2 Q Did they --
3 MS. ANDERSON: You want hearsay?
4 Q Did they keep records of this overflow?
5 A Not to my knowledge.
6 Q So the water from Mill C and Mill D would collect in a
7 pumping station, is that correct?
8 A Yes, sir.
9 Q And you said that they had two pumps at that station,
10 is that correct?
11 A Yes, sir.
12 Q Were there occasions when these pumps would overflow?
13 A The pumps?
14 Q Correct.
15 A Pumps don't overflow.
16 Q At this pumping station was there also a collection
17 tank?
18 A Yeah, that's what it was, it was just a big tank.
19 Q It was a tank that also had two pumps, is that
20 correct?
21 A Had pumps with the suction pipes that went down,
22 picked the water up out of the tank, pumped it out.
23 Q Would that tank ever overflow?
24 A Yes, sir.
25 Q Was that tank open on top?

1 A Yes, sir.
2 Q And the water would simply --
3 A Well, now, the tank itself?
4 Q What is it that would overflow?
5 A The tank, the water tank. But the pumps were setting
6 up above and in a building, so you could look down and
7 see the water, so technically if you want -- I don't
8 know how you're terming closed and open, the tank is
9 opened at the top, but the water never got that high.
10 Q When this tank would overflow --
11 A Yes, sir.
12 Q -- How would the water get out of the tank?
13 A We had on the pipeline coming up, the pipeline coming
14 down from Mill C, they had a T in the line, one side
15 led into the collection tank, the other one was turned
16 up and had a height to it and was open on top, so if
17 we got more water than the system could handle it
18 would overflow.
19 MS. ANDERSON: Did you ever see it overflow
20 yourself?
21 THE WITNESS: Yes, Ma'am.
22 BY MR. CUNNINGHAM, CONTINUING:
23 Q How often would that happen?
24 A I have no way of knowing. I didn't write them down.
25 Q But someone did keep track of this, is that correct?

1 A No.
2 Q They didn't keep any records of overflows at that
3 particular station?
4 A At the time we're talking about, no.
5 Q Did they ever keep such records?
6 A I would say no, I don't think there was a record kept,
7 except what the state kept.
8 Q Now, when this tank would, in fact, overflow where
9 would the water go?
10 A Into the creek.
11 Q And how far is this tank from the creek?
12 A About five feet.
13 Q Was there a separate five foot long pipe which led to
14 the creek?
15 A No.
16 Q How did the water get from the tank into the creek?
17 A It wouldn't go from the tank to the creek.
18 Q Where would the water go after it overflowed from the
19 tank?
20 A I told you, when it come down the pipeline from Mill
21 C, there was a T installed in the line, if you know
22 what a T is, that's a branch.
23 Q Can you explain what a T is?
24 A It's a branch, has two inlets or one line straight
25 through and one out to the side, that's a T. Looks

1 like a letter T.
2 Q I see.
3 A When this end was plugged off it came out the side,
4 went into the clarifier or the collection tank. There
5 was another T with a side up and had a height to it so
6 that if water got above a certain point in the
7 collection tank which was in danger of drowning out
8 the system, it would overflow to the creek rather than
9 drown out the system.
10 Q How large was this pipe that led to the creek?
11 A Memory, 14 inch I think. But that's -- you're asking
12 me to remember an awful lot of pipe sizes.
13 MR. COHEN: I bet you weren't even part of
14 the union.
15 THE WITNESS: No, sir, never have been.
16 BY MR. CUNNINGHAM, CONTINUING:
17 Q Was that the only place where water could overflow
18 into the creek prior to reaching this particular
19 pumping station?
20 A I think so. Yes.
21 Q And just to be clear, that overflow would happen
22 before the water got into the tank, correct?
23 A Yes.
24 Q Now, after the water was in the tank you said it was
25 pumped to another pumping station near Mill A, is that

1 correct?
2 A Yes, sir.
3 Q And you had two pumps for this purpose?
4 A Two pumps to pump from that station over to Mill A,
5 yes.
6 Q Does that then mean that you also had two pipes
7 leading to Mill A?
8 A One.
9 Q One pipe. So you had two pumps leading into one pipe
10 which led to Mill A, correct?
11 A Yes, sir.
12 Q Now, before this pipe reached Mill A was there any
13 place where water could overflow into the creek?
14 A No, sir.
15 Q So this was a direct line directly to the pumping
16 station?
17 A Yes, sir.
18 Q Can you describe the pumping station at Mill A for us?
19 A Same thing we had -- approximately the same thing we
20 had at Mill D, except it was a little bit bigger and
21 we had three pumps in it instead of two.
22 Q The tank itself was a little bit bigger?
23 A Yes, sir.
24 Q Would waste water in that tank ever overflow?
25 A Yeah. At that time, that period of time, yes, there

1 was an overflow.
2 Q Why would that happen?
3 A It had more volume than we could handle, something
4 would happen to a pump, a pump would get plugged.
5 Q And would that water simply overflow the top of the
6 tank?
7 A No.
8 Q How would that water get out of the tank?
9 A Overflow the weir.
10 Q And where would that weir lead to?
11 A Portage Creek.
12 Q And how often would that happen?
13 A I have no way of knowing.
14 Q Was it a common occurrence?
15 MS. ANDERSON: Lack of foundation.
16 A What's your frame of reference, common?
17 Q Did you ever see it happen?
18 A Did I ever see it happen? Yes, sir.
19 Q Would it happen approximately once a week?
20 A I'd have to speculate.
21 MS. ANDERSON: We don't want you to do that.
22 Q When the water would overflow the weir was there a
23 separate pipe which led directly to Portage Creek?
24 A Yes.
25 Q And how long of a distance did that water have to

1 travel before it got to Portage Creek?
2 A Approximately 40 feet.
3 Q Was that also a 14-inch pipe?
4 A No.
5 Q How large was that one?
6 A That was a 30-inch sewer pipe. The original sewer
7 pipe.
8 Q Is that the sewer pipe that was previously used to
9 discharge waste water directly from Mill A into the
10 creek?
11 A Yes, sir.
12 Q What did the water that was accumulated in this tank
13 look like?
14 A It looked just like any waste water from the de-inking
15 operation.
16 Q Now, the contents of this tank would include waste
17 water from Mills C, D and A, is that correct?
18 A Yes, sir.
19 Q Yes. Did this tank receive water from any other
20 mills, or any other buildings?
21 A Mill E.
22 Q And how did the waste water get from Mill E to this
23 collection tank?
24 A Went into the collection tank at Mill D and then was
25 pumped over with the other.

1 Q So the waste water from Mill E went to the collection
2 tank in Mill D, is that correct, and then it went to
3 the pumping station?
4 A No, it went to the pumping station.
5 Q Okay. So it went from E --
6 A To the pumping station.
7 Q -- To the pumping station that was used also by Mills
8 C and D, is that correct?
9 A Yes, sir.
10 Q Then it went to the Mill A pumping station?
11 A Yep.
12 Q With regard to the overflows that occurred at the Mill
13 A pumping station, did they keep any records of those
14 overflows?
15 A You'd have to check with the lab. To my knowledge, I
16 don't think they did.
17 Q But you don't know?
18 A I don't know.
19 Q After this water was collected at the Mill A pumping
20 station where would it go next?
21 A At the Mill A pumping station, from there it went
22 directly to the hundred foot clarifier.
23 Q And how did it get from the Mill A pumping station to
24 the clarifier?
25 A They had three pumps that pumps into one common 20

1 inch pipeline that went from the pumping station all
2 the way up to the clarifier, above ground.
3 Q Was there any place along the way where water could be
4 discharged away from this 20-inch line?
5 A During operation, no, sir.
6 Q So it was a direct uninterrupted line from the pumping
7 station at Mill A to the clarifier?
8 A Yes, sir.
9 Q Once the water was introduced to the clarifier would
10 they ever add any chemicals to the water?
11 A At the clarifier?
12 Q Yes.
13 A No.
14 Q Before the water reached the clarifier was it ever
15 treated in any way?
16 MS. ANDERSON: Lack of foundation.
17 A Not to my knowledge.
18 Q Okay. To your knowledge did they ever add chemicals
19 to the waste water in the Mill A pumping station?
20 MS. ANDERSON: Again, lacks foundation.
21 A (Nodding head)
22 Q Is that I don't know or a no?
23 A I don't know.
24 Q What about the tank that was used by -- strike that.
25 What about the pumping station that was used by Mills

1 C, D and E?
2 A No. There was nothing added there.
3 MS. ANDERSON: Again, that lacks foundation.
4 Q At any of the points which we have discussed at which
5 water would overflow into the creek was there an alarm
6 system set up to notify the proper people?
7 A Yes, sir.
8 Q Can you tell me where one of those alarm systems was
9 located?
10 A Mill A it was located in the pumping station. It was
11 set by probes, these were electric probes, and they
12 were set to sound an alarm before the water got high
13 enough to overflow the weir. So the alarm would go
14 off before it actually overflowed to the creek.
15 Q And when that alarm went off would the system shut
16 down or would it continue --
17 A No.
18 Q -- In process?
19 A The system continued, but someone had to -- someone
20 from the maintenance department had to determine what
21 was wrong and get it corrected.
22 Q Would anyone else hear these alarms?
23 A I assume anybody walking through the building where
24 the alarm was would hear it.
25 Q Now, I assume that at the pumping station itself the

1 A Yes, sir.
2 Q When you created this document in March of 1970 was
3 it accurate at that time?
4 A Yes. To the best of my knowledge it was.
5 Q All right. Why did you create this document?
6 A There were discussions concerning changes,
7 modifications to improve the waste treatment system,
8 the capacity that we could handle, and to eliminate
9 any overflows.
10 Q Did any of your supervisors specifically assign you
11 to prepare this document?
12 A Mr. Vickery.
13 Q In the second paragraph it says, "The only exception
14 is the excess chlorine seal box water which goes to
15 the steel tank at Mill A and then to the Monarch
16 clarifier." Do you see that sentence?
17 A Uh-huh?
18 A No, okay. Steel tank and then to the Monarch
19 clarifier, right. I missed Monarch clarifier.
20 Q Actually, we can skip that sentence.
21 What was the purpose of sending that
22 chlorine water to the Monarch clarifier?
23 A There was no way to get rid of it if we didn't. You
24 can't dump that water inside the mill. It has
25 chlorine in it, free chlorine. You'd gas everybody

1 out. And there was no way of sending it directly to
2 the pond because the pond was higher than the seal
3 box.
4 Q And you said it goes to the steel tank. My question
5 is, is the steel tank the same thing as the gray
6 tank?
7 A Yes, sir.
8 Q In the third paragraph you refer to oil that goes out
9 with the clear water system, do you see that?
10 A Yes, sir.
11 Q Where did this oil come from?
12 A We at times would have a leak off of a bearing or
13 someone would spill oil when they were filling a tank
14 or something and that went on the floor. It would
15 end up in the sewer. The sewers were in Mill C near
16 the wet end, or the dry end of the paper machines,
17 they were separated. All the water from the dry end
18 of the machine back toward the wet end all went to
19 the sewers in the beater room and out, down to the
20 interceptor. At the other end they went over and
21 hooked into the storm sewer which went to Portage
22 Creek.
23 Q Okay.
24 A Which took care of roof water, drain waters off the
25 roof and so on.

1 Q Now, the latter sewer that you just mentioned, is
2 that the same thing as the clear water system?
3 A Well, that was a part of the clear water system.
4 Q Okay. So in this sentence when you're talking about
5 the oil, did the oil end up in the sewer that
6 received the rain water?
7 A Uh-huh.
8 Q And where did that sewer lead to?
9 A Portage Creek.
10 Q Okay. So the oil would end up in the creek?
11 A It could.
12 Q In the next sentence in the third paragraph you
13 indicate that, "If we overload the gravity line it
14 would result in flooding in the beater room
15 basement."
16 A Yep.
17 Q How would the beater room basement get flooded?
18 Where would the water come from?
19 A All the waste water that was generated in the beater
20 room off the paper machines and so on would end up in
21 that beater room. If you couldn't get it out of
22 there, eventually you're going to flood it.
23 Q And what happened when you flooded -- strike that.
24 Did the beater room ever actually flood?
25 A Not to my knowledge.

1 Q Okay. All right. Let's move down to the next
2 paragraph and you reference the 50 ton D.I. storage
3 chest. First of all, can you tell me where that's
4 located or was located?
5 A I think it's building number three on the property
6 map drawing.
7 Q Is that 50 ton storage chest actually within a
8 building then?
9 A Yes, sir.
10 Q All right. Could the stock that was in that chest
11 end up in the sewers?
12 A The stock that was in that chest end up in the
13 sewers?
14 Q Right.
15 A Possible.
16 Q Okay. I'm curious as to why you refer to that 50 ton
17 chest in your summary of the waste water system at
18 the Bryant Division?
19 A Well, they were asking me at what points do we have
20 to look out that we can have pollution. This was a
21 point where we could possibly and conceivably have
22 solids going to the creek that were not treated. It
23 was possible.
24 Q Did you, in fact, ever see that occur?
25 A No, sir.

1 Q How was it possible that it would occur?
2 A Well, if you had a rupture in the tank or if a
3 pipeline broke or anything, that water or that stock
4 could come out of that tank onto the basement floor.
5 It has to go someplace. Those basement floors all
6 had drains. They went into that storm sewer that
7 went to the creek which was put in there long before
8 I ever went to work at the mill, put in there when
9 the mill was built. And it could go -- it could
10 conceivably get in there and go to the creek
11 directly, yes.
12 Q Outside of receiving rain water, did the storm sewer
13 have any other purpose?
14 A No.
15 Q In the next paragraph down you indicate that
16 everything at Mill E flows directly to Portage Creek?
17 A Yes, sir.
18 Q Now, when you say everything, what were you referring
19 to?
20 A All the sewers that were in the basement did end up
21 in Portage Creek.
22 Q What types of material -- strike that. Did the
23 sewers actually contain any material, the sewers in
24 the basement of Mill E?
25 A During normal operations very, very little.

1 Q And what was it that was in the sewer?
2 A The sewers came into play mainly on cleanup and that
3 would be fresh water used to wash down the machines
4 and flush out tanks.
5 Q And all that material would end up going directly to
6 Portage Creek?
7 A Yes, sir.
8 Q In the next paragraph you begin speaking about Mill D
9 and you indicate that the clear, and then I can't
10 interpret a word there, is it fresh?
11 A Clear fresh.
12 Q All right. The clear fresh water is collected and
13 goes directly to the creek?
14 A Yep.
15 Q Why were they sending fresh water directly to the
16 creek?
17 A It was water -- it was used for heat exchangers,
18 cooling water on bearings, that contained nothing.
19 Q Was there a separate sewer system for the collection
20 of this clear, fresh water?
21 A Yes, sir.
22 Q And was that also located in the basement of the
23 mill?
24 A Yes, sir.
25 Q And did that -- strike that. How did the clear,

1 Q So Mill E was comprised of two separate buildings, is
2 that correct?
3 A Mill E.
4 Q Correct?
5 A No, there was one, two, three, four, five buildings in
6 that complex. All joined together.
7 Q Did they perform the same operation in each building
8 or were the buildings used for distinct purposes?
9 A Distinct purposes.
10 Q Can you tell us what the individual buildings were
11 used for?
12 A Building 5-E contained when I first went to work
13 there, contained I think five coating machines.
14 Building -- I can't remember the building numbers. I
15 think this was building three contained, I think it
16 was nine super calenders, two cutters. Building six I
17 think this was -- I think it was building six,
18 contained two rewinders. In that same building were
19 three trimmers. And then the building next to it, was
20 I think building seven, contained two trimmers. And
21 one building contained the equipment to make the clay
22 coating that was applied to the paper.
23 Q Did you have occasion to work in each of these
24 buildings when you were working as a draftsman?
25 A Yes, sir.

1 Q Can you give us some idea of what the different types
2 of projects were that you worked on?
3 A Mainly it was changes in piping systems or relocation
4 or changes, installing new equipment or removing
5 equipment, in the different buildings.
6 Q Did any of the Mill E operations require the use of
7 water?
8 A Yes, sir.
9 Q Which of the operations required water?
10 A To make up the clay coating.
11 Q Is that the only operation that required water?
12 A Basically, yes.
13 Q And there was a separate building for this purpose, is
14 that correct?
15 A It was all part of the complex, yes.
16 Q How would they go about making this clay coating?
17 A Well, we had a tank in the basement, we put so much
18 water in it and then they put so many pounds of dry
19 clay, and it was mixed, and after it was mixed it was
20 pumped over to a tank, from the tank it was pumped up
21 to the coating machines, and applied to the sheet.
22 Q Do you recall how large the tanks in the basement
23 were?
24 A No.
25 Q Were they also above the floor of the basement?

1 A Yes, sir.
2 Q Do you recall what these tanks were constructed of?
3 A All the tanks in Mill E were metal.
4 Q Did you ever see these tanks overflow?
5 A Did I personally see them overflow? No, sir.
6 Q Yes.
7 A I never saw them overflow.
8 Q Do you know if they ever did overflow?
9 A I would have to assume and I'm not going to assume.
10 Q Okay. Did any of the Mill E operations require the
11 discharge of any type of liquid into Portage Creek?
12 A Yes, sir.
13 Q Which operation would that be?
14 A Cleanup.
15 Q How many pipes discharged into Portage Creek from Mill
16 E, if there were pipes?
17 A If there was pipes there would be one from inside the
18 mill, and a storm sewer came off -- water came off the
19 roofs and went into a storm sewer, went around the
20 outside and then to the creek. So it's two places.
21 Q Did that storm sewer acquire any water from inside the
22 building or was that simply rain water?
23 A To my knowledge it was simply rain water or ground
24 water drains.
25 Q Which of the operations in Mill E required the use of

1 water for cleanup?
2 A Cleaning up the equipment where the clay was mixed
3 with the water.
4 Q Would they have to hose out those tanks?
5 A Yes, sir.
6 Q And that's the water that would end up going to the
7 creek?
8 A Yes, sir.
9 Q Did any of the other operations require the use of
10 water in cleaning up the machines?
11 A To clean up the machines, yes.
12 Q Would they hose the machines down?
13 A Clean up the coating heads, yes.
14 Q And that water would also end up going to the creek
15 during this period?
16 A Yes, sir.
17 Q Was there a constant flow of water from Mill E into
18 Portage Creek?
19 A No, sir.
20 Q When would the water flow?
21 A To my knowledge only during cleanup. That was a
22 unique operation.
23 Q Do you know how often they would undertake this
24 cleanup process in Mill E?
25 A No, sir.

1 A Yes, they are.
2 Q And we're talking, you know what a football field
3 looks like?
4 A Yes.
5 Q They're certainly larger than that?
6 A Yeah, you're talking acres.
7 Q We talked about seeps outside of the Monarch sludge
8 beds before?
9 A. Yes.
10 Q You said you didn't see any.
11 MS. ANDERSON: Lack of seeps out there.
12 Q Lack of seeps. We discussed it. Do you recall any
13 seeps with respect to the banks of the Portage Creek
14 where they ran by where the Portage Creek ran by the
15 Bryant sludge beds?
16 A No, sir.
17 Q You've never seen any?
18 A No.
19 Q Okay. Mr. Hagard, do you know whether there were
20 ever chemicals added to the Bryant clarifier?
21 A Yes.
22 Q What was added?
23 A I think it was.
24 MS. ANDERSON: If you know, testify.
25 A It was chemical added, yes.

1 Q Do you know what chemical it was?
2 A I do not know. I know the reason.
3 Q What was the reason, that was my next question?
4 A To control pH.
5 Q Was it to lower the pH or to raise the pH?
6 A That I don't know.
7 Q Okay. But just to control the pH?
8 A Yes.
9 Q Do you know why it was important to control the pH?
10 A It's important in the production of paper. The
11 chemicals that are being added at the paper machines
12 react if you have a high or a low pH.
13 Q How would the pH of the water and material at the
14 clarifier affect the production of paper?
15 A Because --
16 MS. ANDERSON: Lack of foundation.
17 Q Do you know the answer to that question, sir?
18 A I can answer.
19 Q I'll backtrack a little. You I believe testified
20 that it was important to control the pH for the
21 production of paper, is that correct?
22 A Yes.
23 Q At the Bryant clarifier, is that correct?
24 A Yes.
25 MS. ANDERSON: Also object to that on lack

1 of foundation grounds.
2 Q I guess my question is, if you know, why controlling
3 the pH was important for the production of paper with
4 respect to the material in the Bryant clarifier?
5 A Yes.
6 Q And why is that?
7 A Because the water that came from there was reused in
8 the process.
9 Q Okay. I believe you testified earlier that the water
10 from the Bryant clarifier that went to the Monarch
11 clarifier?
12 A Yes.
13 Q And at some point it went to the city sewer, city
14 treatment, is that correct?
15 A Yes.
16 Q But prior to that it went to the Portage Creek, is
17 that correct?
18 A Yes.
19 Q Now, did that water that went to the Portage Creek
20 come back into the papermaking system?
21 A The water going to Portage Creek was prior to the
22 water going to the city.
23 Q Right.
24 A Okay.
25 Q Correct. Prior in time?

1 A Prior in time.
2 Q Correct.
3 A Then later on the water from the clarifier at Bryant,
4 part of it was sent to the Monarch clarifier for
5 extra clarification.
6 Q Okay.
7 A And taken over to the pump station and back to the
8 filter plant and back to the mills and process water.
9 Q I see. This was a pump station outside of the
10 Monarch clarifier?
11 A That's the one we talked about right here
12 (indicating).
13 Q Okay. And this is the same pump station that was
14 also taking water directly from Portage Creek?
15 A Yes.
16 Q It was taking water from the Monarch clarifier as
17 well as Portage Creek, sending it to the filter
18 plant, and then to Bryant Mill for reuse?
19 A Yes.
20 Q I understand. Okay. Thank you.
21 A You're welcome.
22 Q Mr. Hagard, referring to what we've marked as Exhibit
23 Number 2, you have marked on here something called
24 Bryant Pond?
25 A Yes.

1 Q Was there ever a time -- I'm sorry, in front of
2 Bryant Pond is Alcott Street, is that correct, sir --
3 A Yes.
4 Q -- On this drawing? Is there a dam at that point?
5 A Yes.
6 Q At any point after 1968 was this pond lowered?
7 A Yes.
8 Q Do you know when that was?
9 A It was after 1971, but I cannot tell you exactly the
10 date.
11 Q Did you have any responsibility for that process?
12 A Just the revamping of the dam.
13 Q After the pond was lowered?
14 A Prior to the dam was lowered some changes was made
15 with the dam to do the work.
16 Q What changes were made?
17 A The work on the dam itself as it goes up and down, it
18 was revamped by engineering, and then its an opening
19 beside that, that was also changed to lower the
20 water. Before it was way up and then when it was
21 done it was Portage Creek going through the pond.
22 Q But you did this work before it was just Portage
23 Creek going through the pond, is that correct?
24 A Yes.
25 Q Okay. Can you explain in a little more detail what

1 exactly it was that you did before the pond was
2 lowered to the dam, the revamping process?
3 A Not in detail I can't. I know it was changed so that
4 the level could be lowered and, in other words, maybe
5 some of the boards was taken out of the dam.
6 Q Okay.
7 A You know, lower it down. I cannot in detail tell
8 you, no.
9 Q Do you know why the Bryant Pond was lowered?
10 A No, I do not.
11 Q Did you participate in that decision at all, sir?
12 A No.
13 Q Was that the only time that the dam was raised to
14 lower the Bryant Pond that you're aware of?
15 A Yes. For that purpose of lowering the pond, yes.
16 Q Okay. Was the dam raised for other purposes?
17 A Assuming we had trouble downstream, the city might
18 ask us to dam up the pond if they had downtown work
19 to do. You know, Portage Creek goes through downtown
20 Kalamazoo.
21 Q They would want you to stop the flow of water so they
22 could do the work?
23 A Stop the flow for them to work, or we had to work on
24 our pipes.
25 Q But those would be the only other reasons you can

1 (Exhibit Number 8 marked)
2 Q I just have one short question about this document,
3 Mr. Falvey. First of all, is that your name at the
4 bottom of this document?
5 A Yes.
6 Q And again, do you recall specifically receiving this
7 particular document?
8 A No.
9 Q The second sentence of the first paragraph says,
10 "While Allied does not concur with your rating of "I"
11 (inadequate) and the calculation of our 1977
12 surveillance fee." Then it goes on to talk about a
13 dollar amount. But my question is do you know what
14 surveillance fee is?
15 A The surveillance fee, to my knowledge, was a fee that
16 was paid to the state for their monitoring of the
17 Portage Creek.
18 Q Okay.
19 A That would have been my only knowledge of it.
20 Q Actually, I have another question for you. I just
21 realized I misspoke. The second paragraph says, "As
22 I stated to you, the discharge of the sand filter
23 backwash water from the Bryant Mill will be picked up
24 and sent to our Bryant clarifier as per the plans
25 submitted in our letter of November 30th, 1977 to

1 Karl Zollner." Do you see that, sir?
2 A Yes.
3 Q Do you know what -- let me ask if you know what sand
4 filter backwash water is?
5 A Yes.
6 Q What that's, sir?
7 A Our influent water from Portage Creek went through a
8 series of sand filters.
9 Q Okay.
10 A Over at the filter plant and periodically you would
11 backwash that sand to get rid of the debris and
12 increase the flow through the sand again. So it
13 would be the mud and silt and so forth.
14 Q And this is just -- the plan here is simply to send
15 that backwash water to the clarifier?
16 A Back to the clarifier instead of discharging directly
17 to the stream.
18 Q Was that done?
19 A Yes.
20 Q Do you know when the sand filter system was
21 installed?
22 A The original one?
23 Q If you know.
24 A The original one was installed back in the '40's I
25 think.

1 Q How about the sand filter backwash, the sand filter
2 system they're talking about in this letter?
3 A That would have been in the '70's that we picked up
4 the backwash water and sent it up to the clarifier.
5 Q Was there a time in the '70's when this backwash
6 water was just discharged directly to the creek?
7 A Yes. I'm sure it was.
8 Q Prior to this letter?
9 A Prior to the letter.
10 Q Okay. The next document I'd like to show you, sir,
11 is SA 018719 to 018720. Letter dated January --
12 sorry, it's a memo, Allied Paper SCM, January 23rd,
13 1980.
14 (Exhibit Number 9 marked)
15 (Short pause)
16 Q You all set, sir?
17 A Yes.
18 Q Sir, I want to direct your attention to the second
19 paragraph. I believe it's the third sentence where
20 it states, "This condition was first noted a year
21 after Bryant Pond was lowered in 1976 by raising the
22 pent-stock gate."
23 Do you remember the lowering of the Bryant
24 pond in 1976?
25 A Not specifically in 1976, but the --

1 Q Do you recall it being lowered in the mid '70's?
2 A Yes.
3 Q I should have asked you first, Mr. Falvey, if you see
4 your name on this document?
5 A I do.
6 Q Again, I'll ask you if you remember receiving this
7 particular document?
8 A Yes.
9 Q You do?
10 A Yes.
11 Q Why do you remember receiving this document?
12 Anything particular trigger your memory?
13 A Because this was quite a project on that bridge.
14 Q Oh, I see. Okay.
15 A That I was involved in.
16 Q At this time you were -- your job position was what,
17 sir, I know you've told me before?
18 A I was assistant to Al Vickery at that time.
19 Q Did you have any responsibilities in connection with
20 lowering the Bryant Pond in 19 -- in or around mid
21 '70's?
22 A Not at this time, no. I knew that -- I knew the pond
23 was lowered.
24 MS. ANDERSON: Let's just wait. He'll ask
25 you a question.

1 A Yes.
2 Q Okay. Did you discuss that with anybody, sir?
3 A No.
4 Q Do you have any idea why the pond was lowered?
5 MS. ANDERSON: Calls for speculation,
6 objection.
7 Q Go ahead and answer the question, if you have any
8 idea.
9 A Normally -- let me say this, we talked about the pipe
10 in the creek.
11 Q Right.
12 A Okay.
13 Q Before we were talking about the Mills C and D
14 effluent.
15 A For pipe repairs, so forth, we would -- they would
16 lower the pond and then shut the gate raising the
17 pond level and that would give them approximately six
18 to eight hours to work on that pipe.
19 Q So they had easier access to it?
20 A Yes; yes.
21 Q Now, this pipe was the effluent discharge pipe?
22 A Yes.
23 Q Do you recall when -- do you recall instances when
24 that pipe was worked on in the creek?
25 A No, I don't recall. I wouldn't be able to pinpoint

1 that.
2 Q Okay. Do you recall any breaks in that pipe at any
3 times?
4 A No, I wouldn't -- I wouldn't be able to specify
5 times, no.
6 Q Do you recall it ever happening?
7 A Yes; yes.
8 Q What would happen when that occurred, when the pipe
9 would break?
10 A It would be the same as an emergency overflow type of
11 a situation.
12 Q Effluent being discharged to the creek?
13 A Sure.
14 Q Do you know whether the mill shut down when that
15 occurred?
16 A No.
17 Q They did not shut down?
18 A No.
19 Q Was it tough to work with a pipe that was -- that had
20 effluent going through it trying to repair it? Did
21 it make the job more difficult?
22 MS. ANDERSON: Assuming a fact not
23 testified to.
24 A Let's back up.
25 Q Sure.

1 MS. ANDERSON: Let's let him --
2 A The mill would be shut down. It would have to be
3 shut down.
4 MS. ANDERSON: Okay.
5 A Because you just brought the question up. You can't
6 work on the pipe with the effluent going through it.
7 The mill would have to be shut down, yes.
8 MR. VASILOFF: So it's okay if he answers
9 that, Wendy?
10 MS. ANDERSON: I just like him to answer
11 questions, Karl.
12 MR. VASILOFF: You can't pick and choose
13 when you cut your witness off. Why don't we mark the
14 next document. It's 037861.
15 (Exhibit Number 10 marked)
16 BY MR. VASILOFF, CONTINUING:
17 Q It's a memo from Al Vickery to Tom Flanagan dated
18 July 26, 1982.
19 (Short pause)
20 Q You all set, sir?
21 A Yes.
22 Q Does your name appear on this document?
23 A Yes.
24 Q Do you remember receiving this particular document?
25 A Not specifically, no.

1 Q At this time, this is July 26, 1982, had you become
2 manager of -- director of engineering yet?
3 A No.
4 Q Were you still Al Vickery's assistant?
5 A Yes.
6 Q Do you think that's why you would have received this
7 document?
8 A Yes.
9 Q Do you recall this particular transformer that's
10 being discussed in this document?
11 A Yes.
12 Q And it was located where, sir?
13 A It was down in the basement of Mill D.
14 Q Okay. It says "Subject: Number 7 PM Westinghouse
15 750 KVA 100 percent PCB transformer basement."
16 Do you know what is meant by 100 percent
17 PCB?
18 A The oil within the transformer.
19 Q Is all PCB oil?
20 A Yeah.
21 Q Okay. Do you know if any action was taken with
22 respect to this transformer?
23 A Yes.
24 Q And what was that, sir?
25 A It was removed, replaced.

1 Q Okay. When did that happen, if you recall?
2 A Probably '83.
3 Q Does this document refresh your recollection as to
4 whether there were any spills of transformer oil at
5 any time?
6 A There was not.
7 Q Okay.
8 A To my knowledge.
9 Q Did you have any responsibility for maintaining the
10 transformers?
11 A No.
12 Q Sir, the next document I'd like to show you is dated
13 March 2nd, 1983. It's to the distribution list from
14 Al Vickery, A. E. Vickery. The SA number is 037854.
15 (Exhibit Number 11 marked)
16 (Short pause)
17 Q Sir, in the second paragraph of this document -- let
18 me back up. I take it that's your name on the
19 distribution list, sir?
20 A Yes, it is.
21 Q Are you still Mr. Vickery's assistant at this time?
22 A Yes, I am.
23 Q Do you believe that's the reason you received this
24 document?
25 A Yes.

1 Q Okay. In the second paragraph, third sentence, "Jim
2 Waldron should move the 75 KVA transformer, the 50
3 KVAR capacitor, barrel of rags and five gallons of
4 lab PCB from Mill C PCB storage area to the west side
5 to be near the 750 KVA transformer."
6 What is the 75 KVA transformer? Where was
7 that located, if you know?
8 A I don't know.
9 Q Okay.
10 A I don't know. This was not my area really.
11 Q Do you know what the 50 KVAR capacitor was?
12 A No.
13 Q All right. Do you know what the five gallons of lab
14 PCB referred to in that sentence is?
15 A No, I do not.
16 Q Are you familiar with the Mill C PCB storage area?
17 A No, I'm not.
18 Q Fair enough. At the top it references 36 barrels of
19 PCB contaminated mineral oil. Do you see that, sir?
20 A Yes.
21 Q Do you have any idea where that mineral oil came
22 from?
23 A No, I do not know.
24 Q Okay. Sir, do you remember attending water meetings
25 at Allied Paper?

1 A Primarily the mill meetings you mean?
2 Q I believe they were called water meetings, does that
3 ring a bell with you?
4 A Occasionally I would say, not continuously.
5 Q Maybe I can just refresh your recollection a little
6 bit. Why don't we mark as the next exhibit a series
7 of documents and I believe they're consecutive, run
8 from SA 030066 through 033007. I'm sorry, strike
9 that. 030091.
10 (Exhibit Number 12 marked)
11 Q Take a minute to flip through those, sir, if you
12 would.
13 (Short pause)
14 A I know what these are. Okay.
15 Q Do they refresh your recollection about water
16 meetings, sir?
17 A Yes.
18 MS. ANDERSON: Just wait for him to ask you
19 a question.
20 A Yes.
21 Q Do you recall why these water meetings were
22 instituted?
23 A They were in conjunction with production meetings.
24 Q And production meetings dealt with?
25 A Was a daily meeting.

1 Q Production meetings were daily meetings?
2 A Oh, yes.
3 Q Were the water meetings also daily?
4 A Not daily, not necessarily daily, but they would be
5 held in conjunction because the people were collected
6 at this time.
7 Q Was there a different focus at the water meetings
8 from the production meetings?
9 A Yes.
10 Q What was the focus of water meetings?
11 A They would be conducted by someone from the R and D
12 department.
13 Q For what purpose?
14 A To discuss the various projects and recommendations
15 concerning the water within the mill, within the
16 operation.
17 Q Was there a general effort to utilize as little fresh
18 water as possible, is that the purpose?
19 A Absolutely; absolutely.
20 Q In these various memos regarding these water meetings
21 there seems to be topics that were discussed listed,
22 is that correct, sir?
23 A Yes.
24 Q This may be an impossible question to answer, but do
25 you know whether all the topics that were discussed

1 at water meetings were actually listed on the memos?
2 MS. ANDERSON: I agree, that's impossible.
3 A If all the topics discussed were on these memos?
4 Q Correct.
5 A I would say most of them have to be.
6 Q Do you recall discussing PCB's at these water
7 meetings, sir?
8 A No.
9 Q Or the PCB problem?
10 A No.
11 Q Okay.
12 A No, I do not. Not as such, no.
13 Q I'd like to direct your attention to the memo for May
14 9th, 1984 or May 11th, 1984. I guess the meeting was
15 held on May 9th and the date of the memo is May 11th.
16 It's SA 030073.
17 A May the 9th. All right.
18 Q Do you see the document, sir?
19 A Yes.
20 Q Okay. Sir, does your name appear on this document?
21 A For a copy, yes.
22 Q Under nine, issue nine for want of a better term
23 says, "Cooling water pickup pipe from the powerhouse
24 to Mill D is in progress - completion date not set
25 yet."

1 Are you familiar with that pickup pipe,
2 sir?
3 A Yes.
4 Q Do you know what the cooling water -- let me strike
5 that. Was that contact cooling water?
6 A I don't recall what cooling water that was. I know
7 we put the pipe in from the power plant, but I can't
8 recall where the cooling water originated.
9 Q Do you recall what was in the power plant?
10 A Softening equipment, condenser cooling water would
11 have been the only things.
12 Q What is condenser cooling water?
13 A On the turbines and so forth. On the big turbines
14 you have a condenser in there that you're running
15 cooling water through.
16 Q Where did the -- where was this cooling water piped
17 to once this project was completed?
18 MS. ANDERSON: Objection, lack of
19 foundation.
20 A The cooling water went to the creek.
21 Q Do you know --
22 A Went through Mill D into the creek.
23 Q Through Mill D?
24 A To the creek, yeah. The power plant was adjacent to
25 Mill D.

1 Q Okay.
2 A We put the pipe across the driveway through Mill D.
3 Q At what point at Mill D would the cooling water reach
4 the creek?
5 A Yes; yes.
6 Q The creek ran through Mill D, is that --
7 A Adjacent to Mill D.
8 Q Adjacent to Mill D?
9 A On the west side of Mill D.
10 Q Was there simply a pipe?
11 A Yeah.
12 Q That led into the creek?
13 A Uh-huh.
14 MS. ANDERSON: I'll continue that objection
15 on foundation grounds.
16 Q Did you ever see that pipe, sir --
17 A Yes.
18 Q -- That led to Mill D? Did you participate in its
19 installation?
20 A Yes.
21 Q Okay.
22 MS. ANDERSON: Thank you, Karl.
23 Q Sir, the next document I'd like to show you is SA
24 037845. It's a memo dated February 24th, 1984 to
25 distribution from Al Vickery.

1 (Discussion held off the record)
2 (Exhibit Number 13 marked)
3 (Short pause)
4 BY MR. VASILOFF, CONTINUING:
5 Q Have you had a chance to look at that, Mr. Falvey?
6 A Yes.
7 Q Does your name appear on this, sir?
8 A Yes.
9 Q At this time are you still Mr. Vickery's assistant?
10 A No.
11 Q Okay. You're now?
12 A Manager of engineering.
13 Q Manager of engineering. Is this the type of document
14 you would receive as manager of engineering?
15 A Yes.
16 Q Again, do you recall receiving this specific
17 document?
18 A Not specifically, but I obviously did.
19 Q I just want to ask you about the first sentence where
20 it mentions 17 drums of PCB materials. Do you have
21 any knowledge regarding what those materials were?
22 A No, I do not.
23 Q Okay, and it also references PCB disposal storage
24 area, "That will clear our PCB storage disposal area
25 of all materials accumulated since October, 1983."

1 Does the storage area ring any bells with you, sir,
2 what that refers to?
3 A No. Just a collection point.
4 Q Do you have any idea if there was an accumulation of
5 PCB materials prior to October of 1983?
6 A No.
7 Q And the second -- third paragraph, I'm sorry, the
8 last sentence, "The other manifest will go with the
9 six drums of low level PCB mineral oil to American
10 Road, El Dorado, Arkansas." Do you know what mineral
11 oil that was referring to, sir?
12 A No.
13 Q Do you know whose handwriting that is underneath
14 where it says shipped 3/28/84 then there's, it looks
15 like, a couple of initials?
16 A No, I don't recognize it.
17 Q That's Mr. Vickery's signature above that?
18 A Al, yes.
19 Q That you recognize?
20 A That I recognize, yeah.
21 Q Do you have any idea whose initials those are below?
22 A No, I don't. I don't.
23 Q Okay. I think that's it for the documents, but I do
24 -- I wanted to backtrack to something that we talked
25 about. Just give me one minute here.

1 Okay. This is the document that was dated
2 May 25th, 1959. And I don't have the exhibit number
3 but it should be in that stack. The second or third
4 one that we marked.
5 MS. ANDERSON: Should be Falvey Exhibit 4.
6 A May 25th?
7 Q 1959.
8 A Yes.
9 Q Okay. On Page 3, sir, you gave us some testimony
10 about the chlorine Oliver drop-leg water at the King
11 Mill?
12 A Yes.
13 Q Okay. Do you know whether the Bryant Mill was using
14 chlorine in 1959 to de-ink waste?
15 A Yes, they would have been because they were
16 de-inking.
17 Q Do you know whether the chlorine drop-leg water was
18 also diverted at the Bryant Mill?
19 A That I don't know.
20 Q How about for the Monarch Mill, sir, do you have any
21 knowledge about whether that was done?
22 A The Monarch, yes.
23 Q It was diverted?
24 A Yes.
25 Q Did you participate in that diversion, sir?

1 A Yes.
2 Q When did that happen?
3 A It would have been at the same -- around 1959.
4 Q Where was it diverted to?
5 A Portage Creek.
6 Q And how long did that situation continue?
7 A That would have been until they quit de-inking.
8 Q Okay. Very good. I think that's all I have on these
9 documents. Why don't we go off the record for a
10 second.
11 (Discussion held off the record)
12 (Recess taken from 12:00 to 1:10)
13 BY MR. VASILOFF, CONTINUING:
14 Q Mr. Falvey, I have some blueprints now I'd like to
15 have you take a look at for me and ask you a few
16 questions about those.
17 I'd like to show you what's been marked as
18 SA 46131 and it purports to be a property layout of
19 the King Mill and it's not dated. Do you recognize
20 this document, sir?
21 A Yes.
22 Q Does that look like the King Mill as of say 1955?
23 A Yes.
24 Q Okay. Is there anything about this document that
25 would help you place a date on when it may have been

1 drawn?
2 A Yeah, it would have been later than '55.
3 Q Okay.
4 A Yeah, much later because my concern is this is all
5 filled in here and that was not -- this used to be an
6 empty or used to be the railroad siding, both sides,
7 and this was filled in with a concrete floor and that
8 wasn't done until, had to be in the '60's.
9 Q Is that the area that says new slush maker building?
10 A Yes; yeah. That new slush maker building was put in
11 there -- had to be put in in the late '60's.
12 Q What was the slush maker used for?
13 A The slush maker was a piece of pulping equipment.
14 Q For de-inking or virgin stock?
15 A No, for virgin stock.
16 Q Now, was that railroad siding, was there still a
17 place for railroad cars to come in?
18 A Yes; yes, the railroad cars would come in here and
19 this was a loading ramp out of the shipping area.
20 Q As of the time they installed this new slush maker
21 building, were they still de-inking at the King Mill,
22 do you know?
23 A I would say no. That date is -- I can't pinpoint a
24 date, but I would say no, they were not de-inking at
25 that time.

1 A Yes.
2 Q Do you recall on how many occasions that happened?
3 A Once.
4 Q That's what prompted this report, do you know?
5 A No.
6 Q You don't know?
7 A No, I don't know. I don't know.
8 MS. ANDERSON: As of 1959 --
9 THE WITNESS: No.
10 MS. ANDERSON: -- Were you aware of any
11 situation where that had happened?
12 THE WITNESS: No.
13 BY MR. VASILOFF, CONTINUING:
14 Q Sir, the next number two says, "Proceed with plan to
15 change the tile bypassing the clarifier, which will
16 increase head differential between the wet well level
17 and the clarifier effluent tile."
18 Are you familiar with that plan to change
19 the tile bypassing the clarifier?
20 A I believe this was when we installed the swing valve
21 in the bypass tile for Jim Galloway's recommendation.
22 Q Who's Jim Galloway?
23 A He was the production manager at that time.
24 Q For Allied?
25 A Yes. For King Mill.

1 Q For King Mill? What is the swing valve?
2 A Well, in this case it was nothing but a gate valve
3 with an automatic opener on it.
4 Q What function did the gate valve perform?
5 A It was in the emergency overflow.
6 Q And what was the purpose of having the gate valve and
7 the emergency overflow?
8 A To increase our differential and our head, give us a
9 little more lead time in the collection of waters if
10 we had a malfunction.
11 Q So the installation of the gate valve would give you
12 more time in the event of a malfunction?
13 A Yes.
14 Q Before bypass would occur?
15 A Yes.
16 Q Okay. I understand.
17 A Yes, before bypass would occur.
18 Q You're talking to a real layman here, Mr. Falvey.
19 A I'm sorry.
20 Q That's okay. If my questions seem simple it's
21 because they're.
22 On Page 3, sir, the very top of the page,
23 number four. I guess this is another one of the
24 suggestions. "Consider diverting the chlorine Oliver
25 drop-leg water at King from the present sewer and

1 piping it directly to the river." I assume they're
2 talking about the Kalamazoo River?
3 A Yes.
4 Q And was that done?
5 A Yes.
6 Q When was that done?
7 A Would be probably around 1960.
8 Q Did you participate in that, sir?
9 A Only from the standpoint of obtaining the piping and
10 so forth.
11 Q Is this chlorine -- okay, let me ask you this, the
12 chlorine drop-leg water, where did that come from?
13 A The chlorine washer.
14 Q Is this the chlorine washer used in the de-inking
15 process, sir?
16 A Yes.
17 Q And it contained chlorine in it?
18 A Yes.
19 Q Okay. Do you know what percentage of chlorine this
20 water contained?
21 A No.
22 Q How long was this water diverted directly to the
23 river?
24 A Until the de-inking process shut down.
25 Q Do you know why the suggestion was made -- let me

1 strike that. Do you know the reason behind doing
2 this?
3 A To reduce the gallonage flow to the clarifier.
4 Q The simple reduction in the volume of effluent?
5 A To allow you more retention time within your
6 clarifier, surely, for your waste waters.
7 Q Do you know who made the final decision to go ahead
8 and divert the chlorine Oliver drop-leg water?
9 A I think it would have been a combined decision
10 between Levy and Johnston.
11 Q Who is Mr. Levy?
12 A He was head of the R and D department.
13 Q He worked -- Mr. Stoeffler worked for him?
14 A Yes.
15 Q Okay, and Mr. Johnston, that's Herb Johnston?
16 A Herb Johnston.
17 Q That was your boss at this time?
18 A That was my boss, yeah.
19 Q Under suggestion number five it says, "Segregate
20 paper machine sewer waters with low BOD (lower than
21 BOD content of present effluent from clarifier)
22 and low solids, remove solids on a slide washer or in
23 a Sveen Pedersen and either reuse this water or send
24 it directly to the river."
25 The question I have is do you know whether

1 A Those are under vacuum also, the presses have vacuum
2 devices that would pull the water out. And it would
3 either end up in the Saveall or in the sewer.
4 Q Do you have an understanding as to approximately what
5 the percentage would be as to what went to the sewer
6 and what went to the Saveall?
7 A I would say a very small portion, ten percent maybe
8 would go to the sewer.
9 Q And would water further be removed from the stock at
10 the dryers, the paper --
11 A Yes.
12 Q And would this water also be reclaimed at some
13 percentage?
14 A This would go off as moisture, vapor into the air.
15 Q So there was no real water to be either reclaimed or
16 sent to the sewer at that point?
17 A Not at that point.
18 Q The water that was removed from the stock at the
19 couch, would that be a large volume of water or would
20 that be a very small amount of water?
21 A Small amount.
22 Q And is it fair to say that the majority of the water
23 that was removed from the paper making process would
24 be at the weir?
25 A Yes.

1 Q Now the water that would actually -- strike that.
2 When you were working at the King Mill as a
3 process engineer, were you familiar with any sewers
4 that were located in the basement of the King Mill?
5 A Yes.
6 Q And is it fair to say that once water actually got to
7 the sewer it would not be reclaimed?
8 A It went to the clarifier. It would be reclaimed,
9 portions of it.
10 Q Portions of the water that went to the sewers would
11 be reclaimed?
12 A Yes.
13 Q In what fashion?
14 A If I remember properly, the function of the clarifier
15 was to -- again, I'm going on my present knowledge of
16 clarifiers because I was not involved in that one --
17 is the water goes to the clarifier. It has fiber and
18 clay and titanium in it and the idea is to get the
19 cleanest water possible back to the process so the
20 clarifier settles out those particles and then
21 recycles the clarified water, if you will, back to
22 the machine for use in the process.
23 Q Are you saying that you don't know exactly how the
24 King Mill clarifier worked?
25 A I would say that's true, yes. That's generally the

1 way clarifiers work and I would imagine that's the
2 way that one worked. I did not have much to do with
3 that clarifier.
4 Q How were the sewers laid out in the basement of the
5 King Mill? Were there separate sewers for particular
6 machinery?
7 A Yes.
8 Q Were there a number of main sewers in the basement of
9 the King Mill?
10 A Yes.
11 Q Did they have names?
12 A Not to my knowledge.
13 Q Not to your knowledge. So to your knowledge, the
14 sewers in the King Mill wouldn't have had titles like
15 east sewer or west sewer?
16 A They may have.
17 Q That's just something you may not remember?
18 A I don't remember.
19 Q You said that you would work on projects to make the
20 process better. Were those limited to working on the
21 Savealls that we've discussed?
22 A No.
23 Q What other specific projects would you have worked
24 on?
25 A As I said, new products, trials, new chemicals. We

1 did a calendering study and we did evaluation of
2 cleaning equipment in the de-inking plants, to name a
3 few.
4 Q Okay. Now when you would be working on these
5 projects with regard to the paper making process,
6 would you actually be making physical changes to the
7 machinery itself?
8 A No.
9 Q It would be more or less the formula for making
10 paper?
11 A For instance, consistency regulators. They dilute
12 the paper stock so that you can make paper out of it.
13 They need to dilute them precisely so that you can
14 get the best formation possible. We would run tests
15 on the consistency regulator to see that it was doing
16 its job properly and then calibrate it. That's an
17 example.
18 Q Do you recall specifically what chemicals would be
19 used in the paper manufacturing process?
20 A Yes.
21 Q Could you name those for me, please?
22 A Rosin size, Alum, dyes, titanium, clay, starch,
23 de-foamers.
24 Q What would the de-foamer be used for?
25 A The paper making process is a lot of water, a lot of

1 happened daily or was it a longer time period?
2 A It could be a matter of hours, it could be a matter
3 of days.
4 Q And that all depended on the quantity of the type of
5 paper that you had to produce?
6 A It would all depend on what the customer wanted.
7 MR. LENSER: Are we headed anywhere with
8 this?
9 MS. COLINVAUX: I'm exploring the types of
10 paper that were made and other aspects involved with
11 that. Yes, we are headed somewhere. Do you have an
12 objection?
13 MR. LENSER: Let's get there.
14 Q (By Ms. Colinvaux) In mill D, how many total tons of
15 paper could you manufacture a day?
16 A Like when?
17 Q Okay.
18 A In the '50s or in the --
19 Q Did you ever work in mill D in the '50s?
20 A I worked -- no, not in the '50s, I didn't.
21 Q Do you know the tonnage that mill D could make in the
22 '50s?
23 A Not in the '50s, no. I'm sorry.
24 Q So during the period that you worked in mill D as a
25 tower foreman, how many tons of paper a day could

1 mill D manufacture?
2 A It went anywhere from 150 ton to 250 ton. It all
3 depends on the years --
4 Q Okay.
5 A -- we are talking about.
6 Q Fair enough. In mill C, how many tons a day during
7 the time that you worked there as a union worker
8 would be the maximum that mill C could produce in a
9 day?
10 A Probably 50 to 75 ton.
11 Q Do you have a sense for what the average daily
12 production would have been during the times that you
13 were with the union?
14 A Not during that time, no.
15 Q When you were a tower foreman at mill D, do you have
16 a sense for what the average daily production of mill
17 D was in tons?
18 A No.
19 Q During the period that you were a mill
20 superintendent, do you have a sense what the average
21 daily production of mill C would have been in tons of
22 paper?
23 A Would you please repeat that? During the time --
24 Q That you were a mill superintendent at mill C, what
25 was the average daily tonnage of paper produced?

1 A 80 ton.
2 Q Okay. Do you know what the maximum that you could
3 produce at mill C was during the time you were mill
4 superintendent?
5 A 100 ton.
6 Q For mill D, during the time that you were a
7 superintendent, a mill superintendent, what was the
8 average daily tonnage of paper produced at mill D?
9 A I don't remember really.
10 Q Do you have an estimate?
11 A 150 ton.
12 Q Do you know what the maximum was that mill D could
13 produce during the time you were mill superintendent?
14 A I must have misunderstood because I said 150 ton as a
15 figure of -- ballpark figure.
16 Q So 150 tons was a maximum, not an average?
17 A On the average.
18 Q A maximum and an average?
19 A Yeah. Well --
20 Q Okay. At any time that you were at either mill C or
21 mill D, did either of those mills ever make carbon
22 paper?
23 A Nope.
24 Q Did they ever make any kind of paper that was
25 colored?

1 A Yes.
2 Q Did both mills C and D make colored papers at times?
3 A Yes.
4 Q Did they make them throughout the periods that you
5 worked with mill C and with mill D?
6 A Yes.
7 Q What colors did they make?
8 A All colors. Red, blue, green, pinks, yellows.
9 Q Did you ever make any kind of food packaging
10 materials at either mill C or mill D?
11 A Not to my knowledge. Maybe trials of some; maybe, I
12 said.
13 Q During the time you were with mill C or mill D, are
14 you aware that either mill ever made wrapping paper
15 for Wrigley Gum?
16 A Yes.
17 Q Which mills made that?
18 A Mill C.
19 Q Did mill D ever make Wrigley Gum wrappers?
20 A Not to my knowledge.
21 Q Do you know what years mill C made Wrigley Gum
22 wrappers?
23 A Have to be in the '60s.
24 Q Do you know if that began before the '60s or are you
25 saying that it -- it only -- mill C only began to

1 manufacture gum wrappers in the '60s?
2 A I'm saying that I'm probably aware of the manufacture
2 of that type of paper in the '60s.
3 Q What was that paper made out of? What kinds of stock
4 was used?
5 A It was -- it was mostly de-inking stock.
6 Q Mostly -- do you know what percent de-inking stock it
7 was?
8 A Probably 75 percent, I would guess.
9 Q Did there come a time when, to your knowledge, mill C
10 stopped making Wrigley Gum wrappers?
11 A It was two, three orders that we lost about the same
12 time.
13 Q Okay. When was that, if you recall?
14 A In the early '70s.
15 Q Do you recall what the other orders were that you
16 lost at that time?
17 A It was cigarette paper.
18 Q Would that have been for the Camel Company?
19 A Yes.
20 Q Was there any other order that was lost at that time
21 that you recall?
22 A Probably a lot of orders that was lost, but thems the
23 big ones.
24 Q At the time those orders were lost, did you have any

1 understanding as to why they were lost?
2 A At the time, no, I didn't understand why, probably
3 cost.
4 Q What job position were you in at the time those
5 orders were lost?
6 A It would have been either when I was mill C
7 superintendent or tower foreman.
8 Q As mill C superintendent, what were your job
9 responsibilities?
10 A The overall operation of the paper machine.
11 Q Did that include informing your inferiors -- your
12 subordinates what types of paper were to be made?
13 A They already knew what types of paper was to be made.
14 Q Did it include any responsibility for the types of
15 paper that were manufactured at the mill?
16 A I was responsible for the production of the orders.
17 Q Okay. How did you learn that the Wrigley Gum wrapper
18 and the Camel cigarette paper accounts had been lost?
19 A Through our production manager.
20 Q And who was that at the time?
21 A It would have been Ken Sweet.
22 Q What did he tell you about it at the time?
23 MR. LENSER: Hearsay.
24 A I don't recall of him -- of any reason why, except
25 that we all figured it was because maybe we weren't

1 putting out proper quality or the cost wasn't there.
2 Q (By Ms. Colinvaux) Did you ever learn of any other
3 reason why those accounts had been lost?
4 A Nope.
5 Q To this day, are you aware of any other reason why
6 those accounts were lost?
7 A Nope. It's a pretty competitive market.
8 Q Were your job responsibilities as mill D
9 superintendent the same as those when you were a mill
10 C superintendent?
11 A Yes.
12 Q Who did you answer to as a mill C superintendent, who
13 was your superior?
14 A Ken Sweet.
15 Q Was the same true for when you were a mill D
16 superintendent?
17 A Yes.
18 Q Was that true during the entire period you were a
19 superintendent at either mill C or D?
20 A Yes.
21 Q When you became assistant to Ken Sweet as production
22 manager, what did that job entail?
23 A Still overseeing the production on the paper
24 machines.
25 Q How was it different from your job as mill

1 Q Was all of this explained to you at the time that you
2 made the visit --
3 A Oh, no.
4 Q -- to your customer?
5 A I was familiar with the fundamental concept of
6 encapsulation prior to that time.
7 Q When is the first time you became familiar with that
8 concept?
9 A Probably in the late '60s when our technical
10 department was seeking new products to manufacture.
11 The concept of encapsulation was being used not only
12 for carbonless papers but for encapsulating odors in
13 perfumes and in various other products and we
14 considered it and rejected it as something we could
15 not do.
16 Q Why couldn't you do it?
17 A It was beyond our capabilities. We considered
18 hundreds of products in the process of looking for
19 new product developments.
20 Q But one of those products was carbonless copy paper?
21 A As a passing item.
22 Q Who within the company was involved with the project
23 to make the carbonless copy paper?
24 A There was no project.
25 Q Why don't you explain to us your understanding of how

1 far Allied got towards making the carbonless copy
2 paper?
3 A The inclusion of carbonless copy paper on a list of
4 perhaps 150 products which were reviewed by a
5 committee and rejected.
6 Q To your knowledge, was laboratory work done with
7 regard to carbonless copy paper?
8 A I have no knowledge of that.
9 MR. COHEN: You mean you don't know one way
10 or the other whether that was determined?
11 A I am sure that there was not any.
12 Q If there was an attempt within the laboratories and
13 later in one of the mills to manufacture this paper,
14 is that something that you would have been informed
15 of?
16 A Yes.
17 Q Why would they inform you of that?
18 A Because the initiative to produce a new product is
19 not limited to the manufacturing department. It also
20 involved the sales department. The sales, vice
21 president of sales reported to me and, therefore,
22 there had to be a coordination between those two
23 functions. The mill could not on its own initiative
24 produce a new product or even consider developing a
25 new product without the concurrence of the sales

1 department.
2 Q Could the -- strike that.
3 I understand that there was at least one
4 laboratory at Allied Paper, is that correct?
5 A Yes.
6 Q How many laboratories were there, if you know?
7 A When?
8 Q Let's say in 1970.
9 A I believe one.
10 Q Where was that located?
11 A Somewhere in the Bryant Mill.
12 Q Did that laboratory fall within the jurisdiction of
13 any certain department in the company?
14 A Yes.
15 Q And which department was that?
16 A R & D director.
17 Q Could R & D undertake new projects or investigate new
18 projects without letting you know?
19 A You'd have to ask them.
20 Q So if they explained to us the initiative to
21 manufacture carbonless copy paper, they would be the
22 ones who would know about that, is that right?
23 A I'm sorry, I don't understand the question.
24 Q Okay. We've had testimony about the initiative at
25 Allied Paper to manufacture carbonless copy paper and

1

2 BY MS. ANDERSON:

3 Q I just wanted to follow up on a few points,
4 Mr. Klimczak, that were raised in the past two days
5 of deposition.
6 First off, let's turn back to what I think
7 we ended up marking as Klimczak Exhibit Number 29.
8 Can you explain for me why it is that you directed
9 those charts to be made?
10 A In order to satisfy myself that the instructions and
11 the policy of the organization was to achieve and
12 exceed all of the requirements set by the state on
13 our oxygen demand and suspended solids. In 1966 we
14 indicated a number here of 14,000 and it's being
15 exceeded and the same was true in several of the
16 others, and it was my means of saying to myself that
17 the intent was being carried out.
18 Q You just mentioned the corporate philosophy. You had
19 indicated to Mr. Cohen that there was no written
20 corporate policy on environmental concern. Was there
21 a corporate philosophy that you verbally announced?
22 A I am sure that all of the managers understood very
23 clearly, based on our frequent conversations and
24 period meetings, what our intentions were, not only
25 with regard to the environment but to the principles

1 on which we wanted to run the business which, as I
2 previously indicated, were to be legal, to be ethical
3 and to maintain a satisfactory return on the assets
4 of the business. And clearly the concept of legal
5 requires meeting the requirements of the state
6 agencies. The question of being ethical, to
7 recognize the desirability of doing better than that.
8 That's where we set our standards on the environment.
9 Q I also wanted to go back to a point that was raised
10 both in your previous day of deposition and earlier
11 today with respect to possible attempts to
12 manufacture carbonless copy paper, specifically --
13 well, it starts on page, I believe, 78 and goes
14 through --
15 A 78?
16 Q 81, right. Mr. Klimczak, do you distinguish between
17 manufacturing carbonless copy paper and experimenting
18 on that?
19 A I think I've answered that question previously. The
20 question was was there an attempt within the
21 laboratories and later in one of the mills -- in one
22 of the mills to manufacture this paper. My answer
23 was that is something you would have been informed of
24 and I'd say yes. Now the emphasis is on the word
25 manufacture. I indicated that we manufactured only

1 to customer orders. Did not manufacture to
2 inventory. Therefore, anything that may have run
3 across a paper machine or in a trial anywhere which
4 was not to be sold to a customer was not considered
5 manufacturing but trial. We never sold, produced any
6 encapsulated paper for sale to customers to the best
7 of my knowledge.
8 Q Thank you.
9 I'd also like to turn to page 66 of your
10 first day of deposition. I believe Mr. Cunningham
11 asked you what the reasons were that the de-inking
12 mill at Bryant was closed, and starting on line four
13 you enumerated a number of conditions and I'd like to
14 amplify on them, if I may -- excuse me, you said a
15 combination of conditions prompted the closing and
16 I'd like you to amplify on what the factors were that
17 led to the closing of the de-inking mill at Bryant.
18 A Well, it was a study that was initiated to see
19 whether or not -- whether it was economically sound
20 to continue to produce the product and while the
21 company had had a history of being in that business
22 more so than other parts of the industry, there had
23 been significant changes in the raw materials
24 involved in the recycling process, whereas in early
25 days it was largely printing waste than white paper,

1 A I would assume most of the data was brought over.
2 Q Do you know a particular location in Bryant that would
3 have been brought to?
4 A No, I really don't know where it would have been
5 brought to.
6 Q Did you have an opportunity to use the library after
7 it would have been moved from King to Bryant?
8 A I can't recall, but I must have.
9 Q Who generally supervised the work of the technical
10 department?
11 A Pardon?
12 Q Who generally supervised the work of the technical
13 department?
14 A Technical department being Stoeffler's group?
15 Q Or the part you were in.
16 A I would probably organize my own work what I had to
17 do, work with Ken Sweet or maybe this Bill Johnson I
18 mentioned previously.
19 Q Did Mr. Stoeffler supervise you in your job function?
20 A I reported to him, but he didn't -- it wasn't a very
21 hands-on approach type.
22 Q Was Mr. Stoeffler at all involved in product testing
23 at Allied Paper?
24 A I guess I don't like the term product testing, but
25 yes, I assume on special tests he would have been

1 involved.
2 Q By special tests, what's your understanding of that?
3 A Well, anything that the paper tester doesn't do on a
4 routine basis.
5 Q Such as you talked about earlier, ash content?
6 A No, they do that on a routine basis.
7 Q Could you give me an example of one of the tests?
8 A Well, basically the distribution of filler in a sheet
9 of paper. That's something that the testing lab was
10 not qualified to do.
11 Q Such as clay distribution?
12 A Yes.
13 Q Okay. You mentioned earlier that Allied had attempted
14 to manufacture a particular type of paper, carbonless
15 copy paper?
16 A I think they ran some trials on that.
17 Q Were you involved in that at all?
18 A Probably, yes.
19 Q Okay. Do you have any specific recollection of
20 working on that project?
21 A Not really.
22 Q Would you have been involved with the scientific end
23 or the --
24 A It would be -- R & D would come up with the
25 formulation to use. Our end would try to make it run

1 on the paper machine.
2 Q So you would actually be working on the machine end
3 attempting to --
4 A Basically, yes.
5 MR. PINDERSKI: One quick question, sir. Do
6 you know generally when that occurred?
7 THE WITNESS: No, I don't know when.
8 BY MR. DeLESKY:
9 Q Would it have been before you worked as Mill C
10 superviser?
11 A Somewhere is that ballpark, yes. Close to it.
12 Q I think you testified you went to Mill C around
13 nineteen --
14 A Seventy-six or four, something.
15 Q Okay. Was there a particular method for assigning
16 projects in the technical department?
17 A I don't believe so.
18 Q So as the projects came in, the particular technician
19 would handle the project?
20 A Basically, yes. There wasn't that many of us.
21 Q Would you assign projects out to any individual based
22 on their background and knowledge?
23 A Maybe at times, yes.
24 Q Okay. How many people worked under you?
25 A Two maybe.

1 A Well, our grade structure was very diverse and so it
2 involved all kinds of things. It's hard to say
3 specifically.
4 Q Were you ever involved in the attempt to manufacture
5 carbonless copy paper?
6 A Yes, in the laboratory with Bob Thiessen.
7 Q Do you recall at what point in your career you did
8 that?
9 A Well, it was when I was at the Bryant lab.
10 Q So it was after the Master's?
11 A Uh-huh, that's right.
12 Q So that would have been in the mid to late 1970's?
13 A That's right.
14 Q Okay.
15 A Probably late by then.
16 Q All right. When you said you worked with Bob
17 Thiessen?
18 A That's right.
19 Q Can you tell me what his title was or his role in the
20 department?
21 A It was probably product development manager.
22 Q Okay. Was he under Les Stoeffler at that time?
23 A No. They -- he was out on the tree someplace.
24 Q What is it that you did in regard to the carbonless
25 copy paper?

1 A Bob would come up with ideas as to how these
2 chemicals could be mixed and how you could make the
3 capsules strong enough so they didn't break before
4 you wanted them to, and I did a lot of that mixing
5 and then distributing that onto paper and testing the
6 paper.
7 Q Did Allied ever actually manufacture carbonless copy
8 paper?
9 A Not successfully, no.
10 Q Why is that?
11 A Never could keep the capsules from breaking.
12 Q So it never got out of the laboratory, is that true?
13 A There were trials on the machine, but it never got
14 anyplace.
15 Q Where would those trials have been done, in which
16 mill?
17 A In Mill C.
18 Q Was there a particular machine that they did trials
19 on?
20 A Number six machine.
21 Q You said that you were involved in the mixing of the
22 chemicals that had to do with the capsules?
23 A That's right.
24 Q When you were doing that did you encounter PCB's?
25 A I have no idea.

1 Q Okay. Do you recall the names of any of the
2 chemicals that you used for that process?
3 A No, I don't right now.
4 Q Can you tell us what the capsules were used for?
5 A Do you want to know how the system works you mean?
6 Q Why don't you just generally tell us how the system
7 worked.
8 A The system is that this dye is encapsulated so that
9 you can't see it and then when you put pressure on it
10 you break the capsules and it becomes apparent, and
11 there's a chemical process that takes place at that
12 point that makes the mark.
13 Q Okay. With regard to the attempt to make this paper,
14 did you ever have to refer to any textbooks or
15 written material?
16 A I can't remember that I did. Bob was doing most of
17 that kind of work.
18 Q All right. What about making reference to patents
19 that had been achieved by other companies with regard
20 to carbonless copy paper?
21 A No.
22 Q Did you ever have to contact other companies that had
23 actually manufactured the paper?
24 A No.
25 Q Do you know what company it was that had the patent

1 action?
2 MS. LATORRE: I just want to remind you
3 just testify to things you know about. Let's not
4 speculate or guess.
5 A Yes.
6 Q First did they have to do an investigation?
7 A I don't know. Probably.
8 Q Outside of the conversations that you had with
9 Mr. Levy with regard to the project, did you actually
10 participate in any aspect of the initiative?
11 A No.
12 Q For how long did they continue to pursue this
13 initiative?
14 A Roughly through that time period and then it was
15 dropped.
16 Q Do you know why it was dropped?
17 A There was general lack of success in the laboratory
18 to produce the components which were required to make
19 it work.
20 Q Do you know why they couldn't succeed in doing that?
21 A No.
22 Q Do you know how they went about attempting to do
23 that?
24 MS. LATORRE: Do you understand the
25 question, attempting -- do you know any of the

1 specific methods that they undertook to manufacture
2 the paper?
3 A Only from the description of Bob Levy, which related
4 to the way it was -- the way it was described in the
5 patent literature that was available at the time,
6 teaching of the patent literature.
7 Q In order to develop a new product in general, would
8 people such as you generally refer to patent
9 literature?
10 A Oh, yes.
11 Q Did you actually observe any of the patent literature
12 with regard to carbonless copy paper?
13 A I think I probably read some of the patent or
14 patents.
15 Q Do the patents indicate whether PCBs are used as an
16 ingredient in carbonless copy paper?
17 A I believe they probably name PCBs as one of the
18 possible carrier components.
19 Q Can you explain to us what carrier components were
20 used for -- in carbonless copy paper?
21 A Well, it would be whatever oily substance was used to
22 transfer from the back side of one piece of paper,
23 with pressure, to the front side of the next piece of
24 paper.
25 Q And would PCBs have been used in that oily substance

1 that you referred to?
2 A As one possibility, yes.
3 Q Do you know if, during this initiative, they had any
4 contact with the NCR or National Cash Register
5 Company?
6 A No.
7 Q Is that a no, they didn't or no, you don't know?
8 A I don't know.
9 Q Did you yourself ever have any contact with that
10 company?
11 A No.
12 Q What about with the Appleton Paper Company, did you
13 ever --
14 A No.
15 Q You never encountered that company with regard to
16 carbonless copy paper?
17 A Oh, yes.
18 Q Did the Appleton Paper Company manufacture carbonless
19 copy paper?
20 A I believe so.
21 Q Do you know if they held the patent on that product?
22 A No, I don't know.
23 Q Do you know who held the patent?
24 A I thought it was NCR.
25 Q How is it that you came to encounter the Appleton

1 Paper Company with regard to carbonless copy paper?
2 A They wanted to buy base paper from us for their use.
3 Q Do you recall specifically what year that might have
4 happened?
5 A Mid-seventies.
6 Q Do you think it was after the initiative that we have
7 been talking about, the initiative at Allied to
8 manufacture carbonless copy paper?
9 A I would say it was later, yes.
10 Q And you said that they wanted to buy base paper from
11 you?
12 A From us, yes.
13 Q Did they contact you?
14 A Yes.
15 Q Personally?
16 A Yes.
17 Q I'm sorry, I didn't hear you.
18 A Yes.
19 Q Did they say what they needed the base paper for?
20 A To use to make carbonless copy paper.
21 Q Are you familiar with how carbonless copy paper is
22 manufactured?
23 A Only through the reading of the patents and what
24 Bob Levy told me.
25 Q In general terms can you describe for us how they go

1 about manufacturing that paper?
2 A Yes, as it was done at that time.
3 Q That's exactly what we want.
4 A The -- my recollection is that a leucodye is
5 dissolved in whatever carrier oil is used and that
6 then is emulsified in water and then those emulsified
7 droplets are coated or encapsulated with generally a
8 gelatin coating or encapsulation shell. They are
9 then separated and mixed with a binder and applied to
10 the reverse side of a sheet that is to become a
11 carbonless copy -- the sheet that's going to be above
12 the sheet that will make the image.
13 Q And the paper that Appleton wanted to buy from you
14 was the paper that would have been used as the sheet,
15 is that correct?
16 A Yes.
17 Q How would they apply that substance that you
18 described to the sheet?
19 A By coating.
20 Q And did Appleton, in fact, actually purchase paper
21 from Allied?
22 A I don't believe so.
23 Q Do you know why they did not?
24 A We were -- my recollection is that we were never able
25 to complete the business transaction in terms of

1 quantities and deliveries that they were interested
2 in receiving.
3 Q With regard to that potential customer business, did
4 you write any letters?
5 A I'm sure I did.
6 Q Did you receive any letters from Appleton Paper?
7 A Yes, I'm sure I must have.
8 Q Would you have to work in conjunction with the sales
9 department in order to do that, in other words to
10 deal with Appleton Paper?
11 A Depending on the situation, yes.
12 Q Did they contact you or did you contact them?
13 A I believe I have already answered that. My
14 recollection is that they contacted us.
15 Q And you said earlier that eventually the initiative
16 was discontinued. My question is did this initiative
17 even get beyond the laboratory stage?
18 A No, not to my recollection.
19 Q Within the laboratory where they were pursuing this
20 initiative, did they have the capability to
21 manufacture samples of carbonless copy paper?
22 A Yes.
23 Q What types of equipment would they use to make that
24 paper in a laboratory?
25 A They wouldn't make the paper in the laboratory.

1 Q Would they make samples of the paper?
2 A They would coat the paper.
3 Q Okay. When they were pursuing this initiative, were
4 they attempting to manufacture simply the coating
5 material that you described for us or were they
6 also --
7 A Primarily it never got beyond that stage because it
8 wasn't ever successful.
9 Q Would they have to utilize any special equipment in
10 order to attempt to make that coating material?
11 A I don't know what you mean by special equipment.
12 Q In order to pursue the initiative of manufacturing
13 carbonless copy paper, did the R & D Department have
14 to go out and purchase any equipment?
15 A I have no recollection that we did.
16 Q Did they have to go out and purchase any chemicals or
17 raw materials that they otherwise would not have had?
18 MS. LATORRE: Where are we going with this?
19 Q You can answer.
20 A I assume so.
21 Q Did you have anything to do with the acquisition of
22 such materials?
23 A No. In many cases they wouldn't have been purchased
24 in the sense of paying money for them. They would
25 have been sample quantities.

1 Q I see. With regard to this initiative to manufacture
2 carbonless copy paper, did the R & D Department
3 utilize PCBs?
4 A I believe so.
5 Q Do you recall the specific type of PCB that they were
6 experimenting with?
7 A No.
8 Q Do you recall the manufacturer of the PCB?
9 A I believe it was Monsanto.
10 Q Why is it that you believe that they used PCBs during
11 this initiative?
12 A Because I recall being shown at one point a product
13 bulletin from Monsanto, but PCBs were not the only
14 materials that were used experimentally.
15 Q But it was one of the materials?
16 A It was one of five, for example.
17 Q Do you recall the names of the other four that they
18 would have experimented with?
19 A No.
20 Q How much PCB did they acquire in order to do these
21 experiments?
22 A I don't know. I would estimate a gallon.
23 Q Who would have been responsible for acquiring the
24 PCBs?
25 A Either Bob Levy or the people who were doing the

1 project work.
2 Q Can you tell me what PCBs look like?
3 A No.
4 Q Have you ever seen PCBs?
5 A I probably have. I think it looks like motor oil.
6 Q Do you know if it has a distinctive odor to it?
7 A No, I don't know.
8 Q At the time that they were experimenting with the
9 PCBs, do you know if they had any safety procedures
10 or standards that had to be followed with regard to
11 that specific chemical?
12 A I don't know.
13 Q At that time did you know that PCBs were dangerous?
14 A No.
15 Q At that time did anyone at Allied know that PCBs were
16 dangerous?
17 A Not that I'm aware of.
18 Q When did you first become aware that PCBs were a
19 health hazard?
20 A I became aware gradually that there was concern about
21 PCBs in the environment in the period of probably
22 1975 through 1980.
23 Q How is it that you came to be aware of that?
24 A There are no specific events that -- that's why I
25 phrased it the way I did, that it was a gradual

1 awareness. The only piece of that that I can
2 remember is that PCBs were found in fish at levels
3 which caused some alarm and that was part of the
4 growing awareness.
5 Q Do you think you came to be aware of this because of
6 things that you may have learned at work at Allied
7 Paper or would this have been something that you
8 learned via newspapers?
9 A I think it was external, yes, through outside media.
10 Q Did you ever receive any internal correspondence
11 during that period concerning the hazard related to
12 PCBs?
13 MS. LATORRE: Are we talking about '75 to
14 '80 now?
15 MR. CUNNINGHAM: Yes.
16 A Not that I recall.
17 Q Did you ever prepare any correspondence yourself
18 pertaining to the potential hazard of PCB?
19 A Not that I recall.
20 And I would like to further comment that
21 I'm not sure at what level the fact or whether a fact
22 has been established that they are hazardous.
23 Q All right.
24 MR. VASILOFF: You mean to this day, sir?
25 THE WITNESS: To this day, yes. I don't

1 know for a fact that they are. I know they are
2 generally regarded that way.
3 Q Outside of the use of PCBs in carbonless copy paper,
4 do you know if PCBs were used in any other types of
5 paper, and for this question, let's stick to the
6 period when you were the assistant to the vice
7 president of research and development.
8 A No.
9 Q Were PCBs used in printers' inks?
10 A I don't know.
11 Q Do you know if PCBs were used in any types of inks?
12 A I don't know.
13 Q Later on when you became the vice president, did you
14 learn of any other uses of PCBs?
15 A No.
16 Q At any time in your career have you learned of any
17 other uses of PCBs in paper products or inks?
18 A No.
19 Q Do you know if the gentleman responsible for pursuing
20 the carbonless copy paper initiative generated any
21 documents with regard to that initiative?
22 A I don't know.
23 MS. LATORRE: We have been going for an
24 hour now. Do you want to take a break or keep going?
25 THE WITNESS: I'm okay.

1 Q Can you tell us which lab would have used the PCBs
2 with regard to this investigation?
3 A I believe the work was done at the Bryant lab, but
4 there may have been substantial work also done at the
5 King lab.
6 Q Does that mean that both labs had PCBs to use in this
7 initiative?
8 A I don't know.
9 Q Mr. Harrison, do you have any patents in your name
10 with regard to paper products?
11 A No.
12 Q With regard to any other products, do you have any
13 other patents?
14 A I believe so. I can't say -- I'm laughing because I
15 can't say that with great certainty. I believe I'm a
16 co-inventor on a patent which, in my estimation, is
17 insignificant.
18 Q Can you just tell me what the product is?
19 A It has to do with folding and gluing of corrugated
20 boxes.
21 Q Outside of that patent that you received, did you
22 ever apply for any other patents?
23 A No.
24 Q When you were working at Allied Paper, did you ever
25 participate in generating the literature that's

1 necessary to apply for a patent? Do you understand?
2 I'll rephrase that.
3 MS. LATORRE: Where are we going with this?
4 MR. CUNNINGHAM: I'm just trying to figure
5 out the patent issue
6 Q Let's do it this way; when you were working at Allied
7 Paper as the assistant to the vice president of
8 R & D, did Allied Paper ever receive any patents?
9 A Yes. I'm sure that Bob Levy received patents in
10 various areas and now I can recall one, but at that
11 time he would have been -- I expect he would have
12 been the only one.
13 Q What type of product was that?
14 A It had to do with reprographics of imaging,
15 electronic imaging, copying processes.
16 Q Later on in your tenure at Allied Paper, did Allied
17 or its employees receive any other patents?
18 A Yes.
19 Q Could you tell us what those were?
20 A No. But I can tell you generally that they -- that
21 for the most part they were in connection with
22 coating processes and I didn't consider them
23 valuable.
24 Q Did any of the coating processes utilize PCBs?
25 A No.

1 Q When Allied was pursuing the initiative to make
2 carbonless copy paper, do you know if Allied had to
3 enter into licensing agreements with the patent
4 holder for that product?
5 A No.
6 Q No --
7 A I don't know if that was done or if any initiatives
8 were made to license.
9 Q In general, when Allied was attempting to develop a
10 new product, would that fact be kept confidential?
11 MS. LATORRE: Objection.
12 A Within the organization, yes.
13 Q Can you tell us how far the initiative actually got?
14 In other words, did they actually come up with a
15 sample of carbonless copy paper?
16 A No.
17 Q They didn't even get that far?
18 A I don't believe so.
19 Q And it was because of the trouble in manufacturing
20 the coating material?
21 A Yes, in making the capsules.
22 Q When you began working in the R & D Department, was
23 there a company policy with regard to the disposal of
24 the chemicals or the raw materials that you were
25 experimenting with?

1 A Not that I'm aware of.
2 Q Do you recall how chemicals were disposed of in the
3 R & D Department?
4 A No.
5 Q Was there a specific drum into which everything would
6 be poured?
7 A No.
8 MS. LATORRE: Not that you are aware of or
9 no --
10 A Not that I'm aware of. It would depend on what it
11 was as to how it was handled.
12 Q If something was considered to be dangerous, how
13 would they dispose of that?
14 A It would depend on whether it could be burned or
15 whatever.
16 Q Did Allied have an incinerator or some method for
17 burning chemicals?
18 A Not that would burn -- anything that wouldn't burn on
19 its own, no.
20 Q Can PCBs burn on their own?
21 A I don't know.
22 MR. CUNNINGHAM: Lisa, why don't we take a
23 very short break.
24 MS. LATORRE: Sounds good.
25 (Brief recess)

1 Q Did the waste water from Mill C and D join the waste
2 water at Mill A at that pumphouse?
3 A Yes.
4 Q Do you know when that pumphouse outside of Mill A was
5 installed?
6 A No.
7 Q Do you have any knowledge about what happened to the
8 waste water prior to the installation of that
9 pumphouse?
10 MS. ANDERSON: Lack of foundation.
11 A No.
12 Q Okay. We've been talking about bypasses, were there
13 any bypasses at the Mill A pumphouse, sir?
14 A Yes.
15 Q And what was that?
16 A It was a tank in ground where the water came from
17 Mill A into the tank.
18 Q Okay.
19 A And into the pumphouse, and then was a bypass at that
20 point.
21 Q Was it in the tank?
22 A Yes.
23 Q Okay. How did the bypass function?
24 A If the pumps for any reason kicked out or stopped
25 pumping, the water will get high enough and go into

1 the bypass.
2 Q So if the pumps kicked out the water would rise in
3 the tank and it would reach the level of the
4 opening --
5 A Yes.
6 Q -- Of the bypass? Where did that bypass lead to?
7 A To the creek.
8 Q Where did it meet the creek?
9 A At the Bryant dam.
10 Q Can you just draw an X approximately where it met the
11 creek?
12 A (Indicating.)
13 MS. ANDERSON: I'll note for the record
14 we're assuming a fact not in evidence at the moment
15 that there were, in fact, any things that went to the
16 creek.
17 Q I think that's inaccurate, all I've asked him is if
18 there was a bypass and where the bypass led and he
19 seems to know that, but I will ask him whether you're
20 aware of any instances, sir, where materials actually
21 went through a bypass to the creek?
22 A Yes.
23 Q What would cause those instances?
24 A The pumps will -- might kick out or too much water
25 being introduced to the pump.

1 Q Let's take that one at a time. Let me ask you if you
2 know what would cause too much water to be introduced
3 to the pump?
4 A If they had to drop some tanks someplace in the mill
5 they would go to the waste water.
6 Q Would that create a surge --
7 A Yes.
8 Q -- In the system, is that a fair way to characterize
9 it?
10 A Yes.
11 Q I understand there was a very large hydropulper in
12 Mill A, are you aware of that, sir?
13 A No, there was not a large hydropulper in Mill A.
14 Q Okay. But there was a -- let me ask you this, are
15 you familiar with the machine that accepted the stock
16 to be de-inked and first beat it up?
17 A Yes.
18 Q Okay. What was that called?
19 A That was a called a Morden slusher.
20 Q Morgan?
21 A M-o-r-d-e-n.
22 Q How big was that machine?
23 A Oh, six, eight, maybe ten feet in diameter.
24 Q Any idea how many gallons it would hold at any one
25 time?

1 A I can't gallons, but I know pounds. I think it was
2 2,000 pound, 3,000 pound slusher.
3 Q That would be water and stock?
4 A Water and stock.
5 Q Raw stock?
6 A At a certain percent consistency.
7 Q Would those -- would that tank ever be dropped?
8 A Nope.
9 Q Okay. What tanks were you referring to that would be
10 dropped?
11 A The slide washer could be or the collection tank for
12 the waste water.
13 Q Okay. Do you know whether the bypass you've
14 described at Mill A at the pumphouse -- let me strike
15 that question. When a bypass occurred --
16 MS. ANDERSON: Karl, can I interject here?
17 You're using bypass in two different ways, one is as
18 a thing and one is as a verb. I'm not sure if you
19 want to talk about overflows versus a bypass
20 mechanism, but I think the record is getting very
21 muddled on that point.
22 Q I guess I'll take my chances as long as the witness
23 understands the question, and if you don't understand
24 the question please let me know, Mr. Hagard.
25 A Okay.

1 sketch of where Mill D was, and where you say the
2 bypass was located outside of the pumphouse.
3 A Yes.
4 Q Can you do that for me?
5 A Yes.
6 Q Great.
7 MS. ANDERSON: Just do what he's asked you
8 to draw.
9 (Witness drew a diagram)
10 THE WITNESS: Now, that's the pumphouse
11 right there.
12 MS. ANDERSON: Why don't you label that and
13 he'll ask you a few questions about all that.
14 MR. VASILOFF: Thank you.
15 MS. ANDERSON: Okay.
16 THE WITNESS: I know he's going to want
17 that one that was in the bed.
18 MS. ANDERSON: Let's let him ask for it.
19 We're getting ahead of him.
20 BY MR. VASILOFF, CONTINUING:
21 Q I'd appreciate the help, Mr. Hagard.
22 MS. ANDERSON: I know there's an order to
23 these things.
24 Q On behalf of the Wausau we really appreciate your
25 help here. But I will ask a couple questions.

1 A I think he wants to know where the waste comes from
2 Mill D.
3 MS. ANDERSON: I think he's going to walk
4 you through it right now.
5 Q This is the Portage Creek you've outlined here?
6 A Yes.
7 Q Why don't we label that just so we're clear.
8 A (Indicating.)
9 Q And would the Bryant Mill Pond be right here?
10 A No, now we're going to have to get north and south
11 again. This is north (indicating).
12 Q Okay.
13 A This is Bryant Street, okay (indicating).
14 MS. ANDERSON: Okay. What's the question?
15 Q The question I had was where the bypass was located?
16 A Right there (indicating).
17 Q In the creek?
18 A In the creek, right.
19 Q Okay. What did the bypass look like?
20 A It was a T with the top of the T cut off and when the
21 water got too high in this pumphouse it would come
22 out that top of that T.
23 Q You're talking about the pumphouse?
24 A This pumphouse. The pumphouse where the waste water
25 from Mill D --

1 Q Went to?
2 A -- Come in.
3 Q Would the waste water from Mill C also come to this
4 pumphouse?
5 A Yes, right here. Come down Bryant Street and went
6 into the pumphouse.
7 Q Can you put Mill C on this drawing for me?
8 A That's a complicated thing, but it's a big one, but
9 can we just make a box up here?
10 Q Sure.
11 A This is Mill C. And it went by gravity out in the
12 street and down Bryant Street and into the pumphouse.
13 Q You say it went by gravity. This is the pipe you've
14 drawn right here?
15 A Yep.
16 Q Was this gravity fed?
17 A Yes.
18 Q. Is that correct?
19 A Yes.
20 Q Okay. Can you put Mill C right in this little box
21 for me?
22 A (Indicating.)
23 Q Can you just initial that for me again, Mr. Hagard?
24 A Yep.
25 MR. VASILOFF: Can you mark this as our

1 next exhibit, please?
2 (Exhibit Number 12 marked)
3 BY MR. VASILOFF, CONTINUING:
4 Q Okay. Did you ever observe water bypassing in this T
5 pipe?
6 A Yes.
7 Q Do you recall specific instances of seeing that
8 happen?
9 A Yes.
10 Q Do you recall how many instances you saw it happen?
11 A Not very often.
12 Q Okay. Do you know what would cause it to happen?
13 A Yes, a surge of water.
14 Q Do you know what caused those surges of water?
15 A From either Mill C or Mill D.
16 Q Do you know what part of the operations of Mill C and
17 D would cause a surge of water?
18 A That they had to discharge some of the water holding
19 tanks or they had to shut the machines down --
20 Q Okay.
21 A -- For some reason.
22 Q Now, was this bypass still in existence when you left
23 Bryant?
24 A No.
25 Q Do you know when it no longer existed?

1 A Yep. 19 -- 1990 I believe it was taken out.
2 Q Okay. Who took it out?
3 A Maintenance.
4 Q Did you do that personally?
5 A No.
6 Q Did you direct it to be done?
7 A No.
8 MS. ANDERSON: Were you in maintenance at
9 that point?
10 A No.
11 Q You're back in engineering at this point, sir?
12 A Yes.
13 Q Do you know who in maintenance took it out?
14 A Yes.
15 Q Who was that?
16 A Jim Broker.
17 Q Do you know who told Mr. Broker to take it out?
18 A I don't know.
19 Q Okay. Who would have been Mr. Broker's boss at that
20 time?
21 A Dick Eaton.
22 Q Okay. Is Mr. Eaton still alive, do you know?
23 A Yes.
24 Q Where does he live, if you know?
25 A Down in South Carolina I believe.

1 Q Okay. I believe those are all the questions I have,
2 Mr. Herbert. Thank you.
3 MR. CUNNINGHAM: I think I just have a
4 couple more.
5 FURTHER EXAMINATION
6 BY MR. CUNNINGHAM:
7 Q Mr. Herbert, are you aware of the fact that at some
8 point they discovered PCB's in the Bryant Mill Pond
9 and in the Portage Creek?
10 A Am I aware of that fact?
11 Q Right.
12 A I have heard that that is true, but I have no proof.
13 Q Okay. When you were working at Allied Paper did you
14 have anything to do with the efforts to clean up the
15 creek and the pond insofar as PCB's are concerned?
16 A No.
17 Q There's just one other area that I want to talk about
18 quickly. Mr. Herbert, you gave a recorded interview
19 with a private investigator by the name of Ron
20 Rinehart, is that correct?
21 A Well, I don't know the gentleman's name, but it was a
22 private investigator, yes.
23 Q And tape recorded?
24 A Yes.
25 Q At one point in your interview the investigator was

1 talking about bypasses from the pumphouse used by
2 Mills C and D and he asked you about the frequency of
3 the bypasses, and you indicated if you averaged it
4 all out it would probably amount to one -- hang on a
5 second. I'll tell you what, I'll just read the
6 question and then I'll read the answer and I'll ask
7 you if you remember that.
8 All right. You're talking about the
9 bypasses from the Mill D pumphouse and Mr. Rinehart
10 asked:
11 "Did that happen very often? Now one of the
12 other employees told me that it happened quite
13 often."
14 And in response to this question you responded:
15 "It depends on what you term often or quite
16 often."
17 Mr. Rinehart then said:
18 "Once a week, once a shift?"
19 And you said:
20 "No, I would say that probably if you averaged
21 it out over a year, probably once or once and a half
22 a week."
23 Do you recall making that statement to the
24 private investigator?
25 A Yes, sir.

1 MS. ANDERSON: Is there a time frame on
2 that?
3 A No, there was no time frame on it.
4 Q I think you're right.
5 A He just asked me if I seen it overflow and I told
6 him.
7 Q And in response to that you said once or once and a
8 half times per week?
9 A Yeah. It could have been more; it could have been
10 less.
11 Q Do you stand by that statement today?
12 A Yes, sir. That I actually observed it.
13 Q Right.
14 A You see, I was only there eight hours a day.
15 Q Okay.
16 A It ran for 24 hours a day.
17 Q Mr. Herbert, I believe that's all I have for you.
18 Thank you very much.
19 MS. ANDERSON: I'm going to have some cross
20 and I'd like a few minutes.
21 (Recess taken from 3:00 to 3:20)
22 EXAMINATION
23 BY MS. ANDERSON:
24 Q Mr. Herbert, I have a number of follow-up questions
25 for you that relate in part to this day's deposition

1 and part to your first day of deposition.
2 First thing I want to cover was Mr.
3 Cunningham asked you at the beginning of this whole
4 process whether or not you were receiving a pension
5 from SCM and you answered yes?
6 A Yes.
7 Q Are you slanting your testimony in any way in desire
8 to protect that pension you're receiving from SCM?
9 A No, Ma'am.
10 Q You are telling the truth here?
11 A Yes, Ma'am.
12 MR. OLSAN: Objection.
13 Q During the first day of deposition we were discussing
14 the Mill C sewer line that led to Portage Creek
15 before the clarifier was installed. We actually
16 touched -- Mr. Cunningham touched on that two times
17 during the course of that deposition. I would like
18 for you to explain to me where that Mill C sewer line
19 that had led to Portage Creek led after the clarifier
20 was installed?
21 A It still went down Bryant Street. It went physically
22 down the street underground, came out in the bypass
23 around Mill E. I showed you where the bypass was at
24 that time. At that point we attached a line to that
25 line, took it over, tied it in with the line coming

1 correct?
2 A Yes, sir.
3 Q And you had two pumps for this purpose?
4 A Two pumps to pump from that station over to Mill A,
5 yes.
6 Q Does that then mean that you also had two pipes
7 leading to Mill A?
8 A One.
9 Q One pipe. So you had two pumps leading into one pipe
10 which led to Mill A, correct?
11 A Yes, sir.
12 Q Now, before this pipe reached Mill A was there any
13 place where water could overflow into the creek?
14 A No, sir.
15 Q So this was a direct line directly to the pumping
16 station?
17 A Yes, sir.
18 Q Can you describe the pumping station at Mill A for us?
19 A Same thing we had -- approximately the same thing we
20 had at Mill D, except it was a little bit bigger and
21 we had three pumps in it instead of two.
22 Q The tank itself was a little bit bigger?
23 A Yes, sir.
24 Q Would waste water in that tank ever overflow?
25 A Yeah. At that time, that period of time, yes, there

1 was an overflow.
2 Q Why would that happen?
3 A It had more volume than we could handle, something
4 would happen to a pump, a pump would get plugged.
5 Q And would that water simply overflow the top of the
6 tank?
7 A No.
8 Q How would that water get out of the tank?
9 A Overflow the weir.
10 Q And where would that weir lead to?
11 A Portage Creek.
12 Q And how often would that happen?
13 A I have no way of knowing.
14 Q Was it a common occurrence?
15 MS. ANDERSON: Lack of foundation.
16 A What's your frame of reference, common?
17 Q Did you ever see it happen?
18 A Did I ever see it happen? Yes, sir.
19 Q Would it happen approximately once a week?
20 A I'd have to speculate.
21 MS. ANDERSON: We don't want you to do that.
22 Q When the water would overflow the weir was there a
23 separate pipe which led directly to Portage Creek?
24 A Yes.
25 Q And how long of a distance did that water have to

1 Q Okay.
2 A It goes in a westerly direction.
3 Q So it would flow west and where was the overflow weir
4 located?
5 A At the end of this pipe. The pipe was added onto,
6 took over, brought back into this pumphouse. At that
7 point was where the overflow, the additional T was put
8 in with one side up and a raise on it so that if
9 something happened and the pumphouse quit, to protect
10 all the equipment in the mill, to let the water run
11 over into the creek.
12 Q If that hadn't been there would there have been damage
13 to the equipment?
14 A Oh, it's possible. Yeah.
15 Q Could you draw an arrow to the area where the overflow
16 T was located, and then label it in the margin,
17 please?
18 A Oh, Lord, you haven't got much room here. It's right
19 about there. It's on this side of the creek. At
20 about that point (indicating).
21 Q Why don't you draw an arrow that points to that area.
22 A (Indicating)
23 MR. COHEN: Is the witness indicating that
24 the T was on the westerly or easterly side of the
25 creek?

1 THE WITNESS: It's on the easterly side of
2 the creek.
3 MR. COHEN: Thank you.
4 THE WITNESS: Your map is not -- whoever
5 drew it, it's not correct because there's a mill pond
6 here and not just a creek. There's a great big mill
7 pond here. Right there (indicating).
8 BY MR. CUNNINGHAM, CONTINUING:
9 Q Now, the overflow T -- strike that. The water would
10 pass by the overflow T prior to entering into the
11 pumphouse, is that correct?
12 A Without seeing the actual drawing I would say yes,
13 that the T was just ahead of where it turned and went
14 into the pumphouse collection station.
15 Q So if any water --
16 MS. ANDERSON: But you're speculating? But
17 you're not sure?
18 A I'd have to look at that actual drawing to see where
19 the actual placement was.
20 Q If the T was located -- strike that. If the water had
21 to pass through the area where the T was prior to
22 going to the pumphouse, would that mean that any water
23 that overflowed at the overflow T would have come
24 solely from Mill C?
25 A No, it could have come from Mill D.

1 Q Okay. Could you draw on here where the Mill D
2 pipeline was?
3 A It came right up this creek (indicating).
4 Q Is that on the east side?
5 A Yep, the east side.
6 Q And did that intersect the pipeline from mill --
7 A No, went in -- wait a minute. I'll have to look at
8 the drawing of the pumphouse whether there was two
9 pipes that went in or whether there was one.
10 Q When you were working there did you generate numerous
11 diagrams and charts?
12 A Yes, sir.
13 Q Would things like that help you in your
14 recollection --
15 A Sure it would.
16 Q -- Of these? When you stopped working for Allied
17 Paper --
18 A Yes, sir.
19 Q -- Were your records and diagrams still at the Allied
20 Paper offices?
21 A Yes, sir.
22 Q Do you have any idea what happened to those records
23 since then?
24 A No, sir.
25 Q What types of records would have been there when you

1 left their employment?
2 A All of my notes, all of my diaries, all the drawings
3 that I made. I worked for Allied, I assumed or I
4 always figured that anything I did I was paid for and
5 it was their property, so I did not remove it.
6 Q When you left their employment where was your office?
7 A In the engineering office located in the end of this
8 building (indicating).
9 Q That's in Mill C, correct?
10 A Wait a minute, this building, end of this building
11 (indicating).
12 Q And that's where you stored all of your records and
13 diagrams and diaries?
14 A Well, that's where they were when I left. Now, what
15 they did with them after I left, I couldn't tell you.
16 Q You said you had diaries. What did you compile
17 diaries for?
18 A Oh, it was just personal records to tell me what I did
19 on such and such a day, because a lot of times they'd
20 come back and ask what happened on such and such a day
21 and I don't have a photographic memory, so all those
22 diaries were fine. If they told me what day I'd go
23 back and look and see what I wrote down that day.
24 Q Did you compile those diaries throughout the course of
25 your employment?

1 the pipe that led from the clarifier to the creek?
2 A Yes, sir.
3 Q Can you tell us the nature of these drawings?
4 A This is --
5 Q Can you tell me why you did those drawings?
6 A Sure, because we had to have a direction for the
7 people that were installing the clarifier and the
8 piping where to come from, where to go to.
9 Q So your drawings were instructions for the people that
10 were installing this equipment?
11 A Yes, sir.
12 Q Now, I would like to talk about how the waste water
13 got from the individual mills up to the clarifier. So
14 why don't we start with Mill C.
15 A Mill C?
16 Q Yes. Earlier we talked about the fact that before the
17 clarifier was installed the waste water went directly
18 to the creek. Now, how did that change after the
19 clarifier was installed?
20 A A pumping station was installed at the north end, or
21 the south end of Mill D underground. The top was
22 open, had three pumps -- two pumps, two pumps, the
23 water came by gravity down the sewer pipe.
24 Q From Mill C?
25 A From Mill C. A weir was installed and it was diverted

1 around and into that pumping station. The waste water
2 from Mill D was pumped up to that same pumping
3 station, so the waste water from Mill C and the waste
4 water from Mill D ended up in the one pumping station.
5 From there it was pumped through pipelines over to
6 Mill A where we had another pumping station,
7 collection system. This was underground. The top
8 being open. We had three pumps in there. The two
9 sewers from Mill A were weired off and dumped into
10 that pumping station. The water from there was pumped
11 through a 20-inch pipeline up to the clarifier which
12 was about a half a mile south of the collection point.
13 Q Now, the water that came from Mill C flowed by
14 gravity, correct?
15 A Yes, sir.
16 Q And the water that came from Mill D, was that pumped
17 or was that gravity, also?
18 A Most of it was pumped.
19 Q So did they have a separate pump within Mill D?
20 A Yes, sir.
21 Q How many such pumps did they have?
22 A Memory, three.
23 Q How would the waste water in Mill D be collected
24 before it went through this pump?
25 A We dug a sump in one of the sewers and enlarged it,

1 made a drop pit, suction pipes in there for the pump
2 on the east side of the creek where the creek went
3 through underneath the mill. The water on the other
4 side was brought across and put into that same sump
5 and then from there it was pumped up through a
6 pipeline up to the clarifier, or to the collection
7 point, which was at the south end of Mill D.
8 Q So all of the waste water that was generated in Mill D
9 would end up in this sump, is that correct?
10 A Yes, sir.
11 Q Is a sump -- or can you define what a sump is for me?
12 A Well, this is a term that we use. It's just a big pit
13 that you let everything run into and then you pump out
14 of it.
15 Q Was that pit lined with anything?
16 A Concrete.
17 Q And from that sump the water would travel to the pump
18 at Mill D and then to the pumping station that was
19 utilized by both Mills C and D, is that correct?
20 A The pump at that point sat on the floor and the
21 suction lines went down into the pit. The sump picked
22 the water up out of there and then pumped it up to the
23 pumping station at the end of the mill, yes.
24 Q Now, was there a similar collection system for the
25 water generated in Mill C?

1 Q Yes.
2 A At the top of the page?
3 MR. HEINTZ: Third line.
4 A All right. You have a question on that?
5 Q Yeah, what are we referring to here when we refer to
6 unbleached sulfite pulp, if you can tell me?
7 A Sulfite refers to the fact it's wood pulp produced by
8 an acidic agent of sulfur.
9 Q And --
10 A Just a minute
11 Q Sure. Thank you.
12 A Chemical pulp is usually either chemical or alkaline
13 in nature, depending on what -- in the early days it
14 was all acidic. Now it's virtually all alkaline in
15 the pulp industry. So that's what the sulfite means,
16 sulfite pulp. Unbleached means just what it says.
17 Now if you're a mill producing, say, craft grocery
18 bags, you'd use nothing but unbleached pulp. Now in
19 some grades we could use unbleached pulp. And this
20 says that that is blended with our de-ink -- it
21 doesn't say it but it should -- and also with
22 bleached pulp, depending on what you're making.
23 Q It also says that it's repulped and blended with the
24 reclaimed pulp, and I guess what I'm wondering is
25 whether or not this unbleached sulfite pulp would

1 have also made its way through the Mill A de-inking
2 mill?
3 A No, no. That's misleading what I read. What it
4 means is this. When a non-self-contained mill, like
5 all the Kalamazoo mills, buys its pulp, it comes in
6 dry form. It comes in bales weighing about 400
7 pounds. You have to re-pulp that into a slurry,
8 before you can do anything. Then it goes in the
9 beaters or in the machines that would be mixed with
10 other kinds of pulp.
11 Q To your knowledge, in another instance would that
12 unbleached pulp be bleached at Bryant Mill?
13 A No.
14 Q Okay.
15 A When we buy -- bought unbleached, it was to use as
16 unbleached. There would be no point in bleaching.
17 Q Okay. Thanks. Let me turn you to the next page,
18 page three, which refers to sampling points and flow
19 sheets. And the first paragraph states that major
20 water use and reuse practices are indicated on flow
21 sheets one through three. The major streams and
22 respective sampling points are indicated by circled
23 numbers on the appropriate flow sheets. A
24 description of these points are as follows. And then
25 there is a list of 11 points, sampling points at the

1 Bryant Mill and my question is whether or not in
2 reviewing this it's your understanding that items 3
3 through 11, which would be the chlorine bleach, the
4 number one sewer mill at Mill C, the number two sewer
5 mill at Mill C, Mill D, various sewer mills and Mill
6 E were all sources which were flowing directly to
7 Portage Creek and not going to the clarifier as of
8 the date of this document?
9 A I wouldn't have inferred that. I thought that meant
10 points where they were taking samples for this study.
11 Q Well, I will tell you maybe we should go through this
12 then. Let me refer you a number of pages later to
13 figure one. Maybe I can help you with that. Yeah, I
14 think you've actually got it. That's it. And this
15 is the figure one that I think was referred to on the
16 prior page.
17 MR. HEINTZ: Mike, if we establish whether
18 this witness has seen this document before today?
19 Q Okay. We can do that. Have you ever seen this
20 document before, sir?
21 A No. I shouldn't say no. I don't recollect ever
22 having seen it.
23 Q Look at the first page of the document. It states
24 "This was done at the request of Dr. Ward Harrison,
25 President of Allied Paper, performed by the engineers

1 from the National Council." Do you recall that
2 Allied had a relationship with the National Council
3 of Stream Improvement as of 1963?
4 A Strictly platonic.
5 Q We can only hope. And do you believe that -- well,
6 seriously, do you believe they had a relationship
7 with them as some sort of consulting?
8 A I don't usually refer to business intercourse as a
9 relationship.
10 Q Fair enough.
11 A But anyway.
12 Q Okay. That having been said, looking at figure one,
13 there is one discharge which is indicated as coming
14 from the clarifier and that's --
15 A Numbers denote sample points.
16 Q Correct, which should correspond, I believe, with
17 each of the enumerated items on the prior page we
18 looked at.
19 A Right.
20 Q And number two is clarifier effluent which indicates
21 a discharge there. Number one is the influent which
22 indicates a -- some sort of piping system from Mill A
23 to the clarifier. Do you see that?
24 A Yeah.
25 MR. HEINTZ: Where are you pointing?

1 Q There is a little one in a box right next to Mill A.
2 MR. HEINTZ: There is, huh?
3 Q Well, it would seem to make sense. In any event, if
4 there is any discrepancy as to whether that is a
5 number one or not, because it is indicating with an
6 arrow that is going to the clarifier and one is
7 indicated as being the clarifier influent. In any
8 event, for purposes of my question, let's assume
9 that's a number one that's indicated in the clarifier
10 influent.
11 MR. HEINTZ: Well, I will object for lack
12 of foundation.
13 Q Fair enough.
14 There is only one point that's one source
15 that's indicated to be a discharge from the clarifier
16 and that's number two, is that correct?
17 A That's correct.
18 Q Items 3 through 11 each indicate lines drawn from
19 their respective buildings to points along Portage
20 Creek, is that correct?
21 A Yeah, I don't find them all yet but I'm sure they do.
22 MR. HEINTZ: I will object to that
23 characterization.
24 Q Well, let me ask whether or not that's your
25 interpretation of figure one?

1 MR. HEINTZ: He's already indicated that
2 these were sampling points, not necessarily discharge
3 points and he testified with regard to the 11 points
4 that you alerted him to on page three to the same
5 effect.
6 Q Mr. Gilman, referring you back to page -- the third
7 page of the document at the top where it says
8 sampling points and flow sheets, the second sentence,
9 it reads "The major streams and respective sampling
10 points are indicated by circled numbers on the
11 appropriate flow sheets." Does that at all indicate
12 to you that these, in addition to being sample
13 points, might also be from the respective mills into
14 the creek?
15 A Okay. That's a different question.
16 Q Uh-huh.
17 MR. HEINTZ: And there don't happen to be
18 any circled numbers on figure one. I think you're
19 confusing the witness.
20 Q Fair enough.
21 MR. HEINTZ: Because you are mixing apples
22 and pears.
23 Q Fair enough. The circled numbers are indicated on
24 diagram one which is the following diagram, but let's
25 stick to diagram one for the time being because I

1 think you will find those circled numbers conform
2 with the circled numbers in the diagram.
3 MR. HEINTZ: If you say so.
4 Q Let me refer you to table two --
5 A I am still sticking to my answer that I think these
6 were sampling points.
7 Q It's your answer that you don't think this is
8 indicating that each of those sampling points, items
9 3 through 11, were sampling points which were
10 discharging directly into Portage Creek, is that
11 correct?
12 A That is correct, I do not agree to that.
13 Q Do you have reason to believe as of 1963 they were
14 not discharging directly to Portage Creek?
15 A Yes.
16 Q Let me refer you, if I could, to table two which is
17 on page six.
18 A Table two.
19 Q Uh-huh. I am looking specifically at the first
20 column. It says sample and the very first item is
21 3-11. Do you understand -- would you accept that
22 that would indicate sampling points 3 through 11?
23 A Yes.
24 Q The total counts per day are indicated in that column
25 to be 21,895?

1 A On that day, correct.
2 Q The next column is clarifier influent which indicates
3 29,300.
4 MR. HEINTZ: Next column or next line?
5 Q Next line.
6 A Next line.
7 Q The next down is clarifier effluent at 14,400. You
8 can certainly take a look through this table if you
9 want, but would this in any way indicate to you that
10 the total pounds per day being sampled at sample
11 points 3 through 11 are separate totals than those
12 being indicated for the clarifier effluent?
13 A Clarifier influent I think you mean.
14 Q Actually I meant effluent but --
15 A They would have nothing to do with the clarifier
16 effluent so I don't know how to answer that.
17 Q Why would they have nothing to do with the clarifier
18 effluent?
19 A Because this is after the waste discharge has been
20 settled in the clarifier. The effluent, the solid
21 materials have already been taken out at the bottom
22 of the clarifier, put in the sludge bed.
23 MR. HEINTZ: If you add up the total
24 columns, the total pounds per day, it adds up to more
25 than the total. So you're mixing apples and oranges.

1 MR. COHEN: If I add up the total in all
2 the pounds per day, it equals the -- more than the
3 total what?
4 MR. HEINTZ: It says total BOD produced by
5 Bryant division, 51,985. If you add 21 plus 14 plus
6 5 plus 14, you're way over 51 and, as a result,
7 you're double adding. You're double counting.
8 A No, one is pounds and one is BOD.
9 MR. COHEN: Actually I think you're adding
10 apples and oranges.
11 Q (By Mr. Cohen) Let me refer you to diagram one, if I
12 could, Mr. Gilman, on page 15.
13 A That is the one we were looking at before.
14 Q It's the one right after figure one which is the map,
15 the next page. And maybe you could just educate me a
16 little, if you can, on some of the abbreviations that
17 are used on here. By Slu, we are referring to
18 slusher, is that correct?
19 A I don't know. I don't know what an Slu is. Maybe
20 slurry.
21 Q Slurry?
22 A I don't know.
23 Q Can we work across and see whether or not you can
24 identify these?
25 A You didn't ask me about the dynapulper.

1 Q I got the feeling that one was not an abbreviation.
2 Do you know what Riff refers to and Riff head box?
3 A Yes. If you have a flow of slurry in a trough and
4 you have a little obstruction along the bottom,
5 anything that settles in the slurry or is heavier
6 than the specific gravity of the general slurry will
7 go down there and get trapped. It's just a way of
8 getting any heavy additional materials out of there.
9 Q Is Riff an abbreviation for something?
10 A Riffler.
11 Q Thank you.
12 A I don't know what Br.Stk Olv is.
13 Q I am going with brown stock Oliver.
14 A That's a good guess. Okay.
15 Q I have nothing else for you on that document,
16 Mr. Gilman.
17 Do you -- does the name Popageorge ring a
18 bell to you at all?
19 A Well, he just got beaten for presidency.
20 Q Poppa George, okay.
21 A That was his nickname, by the way.
22 Q Was it?
23 A Yeah.
24 Q Well, aside from the former chief executive.
25 A Besides that, it doesn't mean anything to me.

1 Q Let me show you this document and --
2 MR. COHEN: John, did you get the letter
3 that I sent to you about the fact that this was --
4 MR. LENSER: Yes, I did.
5 MR. HEINTZ: Care to disclose where you
6 obtained it?
7 MR. COHEN: I will but not today. It's not
8 some great mystery, but actually I just would prefer
9 to know where I got it from doesn't mind having it
10 disclosed. It's not subject to protective order, if
11 that's at all one of your concerns. That was
12 checked. But, yes, I will do that.
13 MS. HELMS: What's the exhibit number?
14 MR. LENSER: 169.
15 Q 169 and it is a --
16 A 167 mine looks like. Is that right?
17 Q I'm sorry, it's 167, correct. It's a document
18 caption Monsanto's PCB program W.B. Popageorge,
19 P-O-P-A-G-E-O-R-G-E, present at an ANSI committee
20 C-107 meeting, September 14, 1971 and I believe it is
21 a 16-page document. I'm not going to ask you to look
22 through the whole thing unless you want to,
23 Mr. Gilman, but I have a couple questions on specific
24 parts of this. Presumably you have never seen this
25 document before, other than perhaps --

1 A Not to my knowledge.
2 Q Have you ever heard of ANSI?
3 A No, been wondering what --
4 Q ANSI?
5 A -- what is it?
6 Q I believe -- I think I know what it is but probably
7 my knowledge isn't particularly important. I believe
8 it's an organization that deals with standards.
9 A Of what?
10 Q Standards, it deals with setting standards in any
11 number of industries. By standards --
12 A Yeah. American National Standards Institute. How
13 about that? I don't know.
14 Q At page five --
15 MR. HEINTZ: Five at the top?
16 Q Five at the top, yes.
17 A All right, I have page five.
18 Q The third paragraph, the last sentence reads, and
19 this is with reference to PCB's, "These are uses such
20 as in paint formulations, specialty ink uses, the
21 plasticizer sealants, adhesives, and paper coatings
22 of all sorts." And my question is whether or not
23 sitting here today you have an understanding that
24 PCB's, in addition to being present in some forms of
25 carbonless copy paper, also had a usage in other

1 (Exhibit Number 8 marked)
2 Q I just have one short question about this document,
3 Mr. Falvey. First of all, is that your name at the
4 bottom of this document?
5 A Yes.
6 Q And again, do you recall specifically receiving this
7 particular document?
8 A No.
9 Q The second sentence of the first paragraph says,
10 "While Allied does not concur with your rating of "I"
11 (inadequate) and the calculation of our 1977
12 surveillance fee." Then it goes on to talk about a
13 dollar amount. But my question is do you know what
14 surveillance fee is?
15 A The surveillance fee, to my knowledge, was a fee that
16 was paid to the state for their monitoring of the
17 Portage Creek.
18 Q Okay.
19 A That would have been my only knowledge of it.
20 Q Actually, I have another question for you. I just
21 realized I misspoke. The second paragraph says, "As
22 I stated to you, the discharge of the sand filter
23 backwash water from the Bryant Mill will be picked up
24 and sent to our Bryant clarifier as per the plans
25 submitted in our letter of November 30th, 1977 to

1 MS. ANDERSON: At which time it went to the
2 clarifier?
3 A Yes.
4 Q Do you know how long it took from the original
5 decision to install the clarifier, we will separate
6 them, at Monarch before the clarifier was actually up
7 and functioning?
8 MS. ANDERSON: I believe Mr. Falvey
9 testified
10 in his first day of deposition he was not a
11 participant in the decision to put in the clarifier
12 at Monarch.
13 MR. OLSAN: But then he testified that he
14 was
15 told that the clarifier was going to be installed.
16 Q So from the time you were told to begin plans on the
17 clarifier until the clarifier was up and functioning,
18 how long did that take?
19 A An estimate?
20 Q An estimate.
21 A A year-and-a-half.
22 Q How about King?
23 A The King was two years later.
24 Q No, I'm saying from the time that you were told to
25 begin work with the clarifier until the time it was

1 up and functioning at King. Was it about the same
2 period of time it took at Monarch?
3 A It would be about the same. It would be two years
4 between Monarch and King and it was about a
5 year-and-a-half at Monarch.
6 Q Of the planning stage and installation stage?
7 A Yes.
8 Q Did you ever have any meetings or attend any meetings
9 with the Kalamazoo River Improvement Company?
10 A No formal meetings, no.
11 Q Any meetings?
12 A No, not that I can -- no.
13 Q Did you ever talk to any representative or member of
14 the Kalamazoo River Improvement Company?
15 A The Kalamazoo River Company? Tony Palladino would be
16 the only one that I can even vaguely remember.
17 Q Let me show you again Falvey Exhibit 4 which is the
18 May 25th, 1959 memo from Les Stoeffler to Levy and
19 Morrison and your cc's on it. If you would just
20 review that, I am going to ask you a question about
21 the first paragraph.
22 In the first paragraph reference is made to
23 an inevitable ruling. Do you know whether any such
24 ruling was ever made?
25 A No, I do not. I wouldn't have any feel for that at

1 all.
2 Q That's the only question I have for you on that one.
3 Where did the sludge end up from the
4 Monarch clarifier?
5 A Originally the sludge beds were on the south side of
6 Portage Creek on our territory, on our property.
7 After the lease option of the Bryant Division, the
8 Monarch sludge was pumped across the creek into the
9 Bryant sludge beds.
10 Q What happened to the sludge beds that were originally
11 at Monarch?
12 A Final disposition of those beds would have to have
13 been answered by George Brooks.
14 Q How about from the King clarifier? Where did the
15 sludge go?
16 A The sludge from the King clarifier was pumped
17 approximately three quarters of a mile out to
18 Recreation Park along the Kalamazoo River.
19 Q Were sludge beds maintained out there?
20 A Yes.
21 Q What was the reason for diverting the chlorine drop
22 leg to Portage Creek?
23 A My understanding, the determination was made by all
24 parties concerned that the chlorine water was not a
25 contaminated water and could be dumped directly into

1 the creek.
2 Q Were you involved in that decision at all?
3 A Not in the decision.
4 Q Were you involved in designing it so the chlorine
5 drop leg would divert to Portage Creek?
6 A Yes.
7 MR. COHEN: What mill are we talking about?
8 MR. OLSAN: Monarch.
9 Q I'm sorry, that was from the Monarch?
10 A Yes.
11 Q Were you involved in diverting the Bryant chlorine
12 drop leg to Portage Creek?
13 A No.
14 Q Do you know whether the Bryant chlorine drop leg was
15 diverted to the Portage Creek?
16 A No, I do not know about the Bryant.
17 Q Was there a chlorine Oliver at King?
18 A Yes, there was.
19 Q Was a drop leg diverted to some body of water from
20 the King Mill?
21 A Yes.
22 Q Which body of water? Where was it diverted to?
23 A To the discharge from the, beyond the clarifier.
24 Q What do you mean by the discharge beyond the
25 clarifier?

1 Q Sir, my understanding of the Denver process is that
2 it's a de-inking process, is that correct?
3 A Yes.
4 Q What was your involvement with the Denver process,
5 sir?
6 A Layout of equipment.
7 Q Let me backtrack a little bit. Was the King Mill
8 de-inking when you arrived in 1958?
9 A Yes.
10 Q Was the Denver process something new that the King
11 Mill was switching over to at that time?
12 A Over to? I think it was in addition, an improvement
13 to what they had.
14 Q An improvement to the existing system?
15 A Yes.
16 Q What did your involvement with the Denver process
17 specifically entail, and maybe I can break it down
18 for you a little bit. Did installing the Denver
19 process require any additional piping?
20 A Yes.
21 Q Was this piping for fresh water?
22 A It could be fresh water, yes.
23 Q Was it also piping for waste water?
24 A Yes.
25 Q Was it piping for the carrying away of waste water

1 from the process?
2 A No, can I try to emphasis this a little bit?
3 Q Please.
4 A I would say the waste water will go for the de-inking
5 system to a holding tank and then to the waste water
6 treatment plant.
7 Q Were you involved in the piping of the waste water to
8 the holding tank and the design of that system?
9 A Yes.
10 Q Mr. Hagard, after you got involved in laying out the
11 Denver process for the King Mill, what was your next
12 -- let me backtrack a little bit. What was your job
13 title at that time?
14 A Staff engineer.
15 Q How long did you hold that position?
16 A August of '58 till 1961.
17 Q Okay. Did you have other responsibilities besides
18 the Denver process during that time period --
19 A Oh, yes.
20 Q -- At the King Mill? I take it the laying out of the
21 Denver process was your first major job
22 responsibility at Allied Paper, is that correct, sir?
23 A It was in progress when I got there. It was already
24 started.
25 Q You worked on that until it was completed --

1 A Yes.
2 Q -- Is that correct? What did you do next, sir?
3 A I worked at projects at Bryant Mill.
4 Q This is still while you're a staff engineer, sir?
5 A Yes.
6 Q What was that project?
7 A That would be layout, making drawings, work with the
8 crafts, and complete the jobs.
9 Q Were these a variety of tasks, sir?
10 A Yes.
11 Q Are you still in the -- at this point between 1958
12 and 1961 are you still designing and drawing out
13 different systems for the mill, sir, as you were at
14 the plant in Stockholm, I'm sorry, in Norway?
15 A Yes.
16 Q Is that accurate? Okay. In 1961, sir, what did you
17 do?
18 A I was transferred from engineering to maintenance.
19 Q What was your job title in maintenance, sir?
20 A Superintendent of maintenance.
21 Q How did your job responsibilities change when you
22 became superintendent of maintenance?
23 A You were responsible for all the maintenance
24 personnel, the equipment, the buildings, the roads.
25 Q You were no longer involved in designing

1 specifications for the mills?
2 A Not while in maintenance.
3 MS. ANDERSON: Was this an accurate
4 description of what you did between 1958 to '61,
5 designing specifications for the mills?
6 THE WITNESS: Yeah, prior to maintenance,
7 yes.
8 MR. VASILOFF: I'll go back into that in
9 some detail, Wendy. I'm just trying to make a
10 chronology at this point. I understand it's a broad
11 reference to his responsibilities.
12 BY MR. VASILOFF, CONTINUING:
13 Q Sir, how long did you have the position of
14 superintendent of maintenance?
15 A From '61 to December of '62.
16 Q Okay. What did you do in December of 1962?
17 A I left Allied Paper.
18 Q Did you leave for another job, sir?
19 A Yes.
20 Q What job was that?
21 A Eimco Corporation in Salt Lake City, Utah.
22 Q Why did you leave, sir?
23 A The idea when I come over in 1956 was just to stay
24 here for a few years.
25 Q Okay.

1 A And then go back home and I was offered a job as a
2 salesman for Eimco in the Scandinavian countries.
3 Q In Europe?
4 A Yes.
5 Q I see. That was very attractive to you then?
6 A Yes, it was.
7 Q How long did you work for Eimco Corporation?
8 A From 1962 to 1966 in Europe.
9 Q What were you selling for Eimco Corporation, sir?
10 A It's liquid-solid separation equipment.
11 Q Were there any particular industries that were
12 purchasing the liquid-solid separation equipment?
13 A Pulp and paper industry, the mining industry.
14 Q What function does a liquid-solid separation -- what
15 function does liquid-solid separation have in the
16 pulp and paper industry, sir?
17 A Like a clarifier would be --
18 Q I see.
19 A -- A liquid-solid separation equipment.
20 Q Are they mainly used for waste treatment purposes,
21 sir?
22 A No.
23 Q What other functions do they have?
24 A They can have function of cleaning water, ground
25 water, and clean that before it is used to process.

1 Q I see. Anything else you can think of, sir?
2 A You mean any other equipment?
3 Q I'm sorry, any other uses that this equipment has in
4 the pulp and paper industry?
5 A Not off the top of my head, no.
6 Q In 1966 you left Eimco, what did you do next, sir?
7 A Now I left -- they discontinued the operation in
8 Scandinavia. They moved the office to Dusseldorf in
9 Germany and I didn't want to stay there, so I was
10 invited back and I worked for them in Birmingham,
11 Alabama from '66 to '68.
12 Q What was your job function when you were in
13 Birmingham, Alabama?
14 A Sales and service engineer.
15 Q Were you selling the same types of equipment, sir?
16 A Yes.
17 Q The description of the equipment's function in the
18 pulp and paper industry is the same for that time
19 period as you just gave me?
20 A Yes, sir.
21 Q What happened in 1968?
22 A Then I was offered a job at Allied Paper and came
23 back to Allied Paper in Kalamazoo, Michigan.
24 Q You know what month that was, sir?
25 A Pardon?

1 Q Do you know what month in 1968?
2 A September. Yes.
3 Q What job did you take with Allied Paper in September
4 of 1968?
5 A Maintenance superintendent.
6 Q That was the same position you had left originally in
7 19 --
8 A Yes.
9 Q 1962, is that correct?
10 A Right.
11 Q Were your job responsibilities the same as they were
12 when you left in 1962, sir?
13 A Yes.
14 Q Okay. And how long did you hold the position of
15 maintenance superintendent from September of 1968?
16 A 1989 or '90.
17 Q I see. Was it still called Allied Paper when you
18 finally stopped working in 1989 or '90?
19 A Yes.
20 Q What did you do at this time, sir?
21 A When I --
22 Q When you last worked for Allied Paper, what happened
23 next?
24 A I retired in '88 then I worked half a year for
25 Performance Paper as a consultant, to July, yeah,

1 July the 1st of '89.
2 Q What areas, for lack of a better term, did you
3 consult with Performance Paper on?
4 A The same thing I did before, like layout and working
5 with the different crafts, get prices, work on budget
6 for the coming years and new equipment
7 Q My understanding from your previous testimony was
8 that when you were maintenance superintendent you
9 were not involved in layout, is that correct, sir, or
10 is that incorrect?
11 A Right.
12 Q That is correct. So when you became a consultant you
13 returned to something you had done a long time prior?
14 A I will be -- I was in engineering --
15 Q Sure.
16 A -- Like I said in '89 or '88 when I retired and I
17 just stayed in engineering for Performance Paper
18 until June the 30th of '89.
19 Q Okay. You returned to Allied Paper as a maintenance
20 superintendent --
21 A Yes.
22 Q -- In 1968? That's part of the engineering
23 department, sir?
24 A No.
25 Q Did at some point you switch over to the engineering

1 department --
2 A Yes.
3 Q -- Of Allied Paper? When was that, sir?
4 A I think I said 1991 or '90.
5 Q And then Allied Paper closed and you worked for
6 Performance Paper for half a year, is that correct?
7 A Yes.
8 Q When you went back to engineering in the late 1980's
9 let's say, what was your job responsibility for
10 Allied Paper?
11 A Budgeting, working on new equipment, layout,
12 purchasing new equipment.
13 Q Okay. Mr. Hagard, I'd like to return to the time
14 when you were -- when you first came to Allied Paper
15 at Kalamazoo in August of 1958, and specifically your
16 involvement with the Denver process at that time. Do
17 you recall specifically what you did to help the
18 installation of that process at the King Mill?
19 A I would think it would be mostly layout of equipment.
20 I think most of the equipment was already purchased
21 and it was just to lay out in the system.
22 Q What type of equipment?
23 A Pumps, pipes.
24 Q Okay. Where were the pumps laid out at the King
25 Mill?

1 A Basement, most of them.
2 Q Do you know where in the basement of the King Mill
3 you laid these pumps out, sir?
4 A Are you familiar with the mill?
5 Q I am I would say very, very generally familiar with
6 the mill, and that may be stretching it.
7 A Say you go east on Lake Street.
8 Q Okay.
9 A Over the railroad tracks, the Denver process was
10 installed in the first building on your left-hand
11 side going east.
12 Q Okay. How many stories did that building have?
13 A That part had two stories, yes.
14 Q And was this building devoted entirely to de-inking?
15 A Yes. Yeah, that part of the mill was, yes.
16 Q And this is a separate building, separate from the
17 other buildings at the King Mill?
18 A No, the King Mill had a U shape like so, and the King
19 -- the Lake Street was here and that was the first
20 building, and there was an opening in the middle
21 where the railroad tracks came in.
22 Q Do you think you could draw that for me, that layout
23 you just described?
24 A I most certainly can.
25 Q Why don't we do that. Maybe it will help all of us

1 as we go along here. Sir, there's a couple pieces of
2 paper.
3 (Witness drew a diagram)
4 MS. ANDERSON: He'll ask you a question.
5 Q First, though, why don't we have you just in the
6 upper right-hand corner just initial this drawing for
7 us, please. Why don't we mark this as Hagard Exhibit
8 Number 1. Am I pronouncing your name right, sir?
9 A Yes.
10 MS. ANDERSON: Should we also have a date
11 put on this?
12 A You want me to date it?
13 MS. ANDERSON: Today's date might be nice
14 and also what this is depicting, at what time period.
15 Q I took it he was depicting as of 1958.
16 A Uh-huh.
17 Q When you came over to King Mill, if that's not
18 correct let me know.
19 A No, this is what it looked like when I came to Allied
20 in '58.
21 MS. ANDERSON: That's why I'm suggesting we
22 put 1958 on the exhibit. It may be helpful.
23 Q That's fine. Why don't you go ahead and do that,
24 sir, if it's accurate. If you could write in the
25 left-hand corner King Mill as it existed in 1958.

1 A (Indicating)
2 Q Why don't we go ahead and mark this as Hagard Exhibit
3 Number 1.
4 (Exhibit Number 1 marked)
5 Q Okay. Sir, I notice, also, in the lower left-hand
6 corner of what we've marked as Hagard Exhibit Number
7 1 there is two lines drawn?
8 A It's a little bit too far apart, the railroad.
9 Q Okay. Before we get started on the interior of the
10 building, was there any -- was there -- were there
11 any bodies of water in the King Mill -- near the King
12 Mill that would be depicted on this drawing?
13 A No.
14 Q Okay. Sir, you were saying that in the de-inking
15 building, which you've marked as D.I. building on
16 Hagard Exhibit Number 1, there were two stories, is
17 that correct, sir?
18 A When you asked me where the de-inking was, or the
19 Denver process, it was two stories. They were right
20 here. That part there had more than two stories
21 because the top was the waste water -- waste paper
22 supply to the pulpers.
23 Q Can you just draw a line for me where the boundary
24 was between the part of the de-inking building that
25 had two stories and the part that had the additional

1 third story to receive the waste paper?
2 A My guess would be just in the middle. That's the
3 best I can do (indicating).
4 Q Just your best estimate if you could draw it for me.
5 A (Indicating.)
6 Q And why don't you just mark with a third the portion
7 that had the third story.
8 A More than two stories?
9 Q Correct, that's fine.
10 A (Indicating.)
11 Q Now, you were going to explain to me where the pumps
12 that you laid out were placed in the de-inking room.
13 A This would be in the basement, this part, because the
14 Denver process was like this (indicating).
15 Q Why don't you mark that triangle DP if you would,
16 sir. Okay. Now, were the pumps directly underneath
17 the area that you've marked DP?
18 A They will be in the basement underneath there, yes.
19 Q Okay. What was the purpose of those pumps, sir?
20 A To pump the stock and water to the Denver process,
21 take it away.
22 Q I guess I'm confused. You said that the pumps would
23 pump the stock and water to the Denver process and
24 also take it away?
25 A Yes. Different pumps. In other words, some supply

1 and some takes it away.
2 Q Do you recall how many pumps in total there were that
3 you installed?
4 A No.
5 Q Was it more than five?
6 A I can't recall.
7 Q Okay. The pumps that took stock and water to the
8 Denver process, was this fresh water that was taken
9 to the Denver process?
10 A Both.
11 Q Fresh and --
12 A Fresh and waste water or --
13 Q White water?
14 A What they called white water.
15 Q Okay. Where did the fresh water come from that those
16 pumps used?
17 A I believe King Mill had wells.
18 Q Okay. Did this fresh water go through any treatment
19 before it was sent to the Denver process?
20 A Not at that time.
21 Q Okay. At some time in the future did it?
22 A Yes.
23 Q When was that, sir?
24 A Let's see, in the middle '70's.
25 Q Okay.

1 A No, wait a minute. Yes. The mill went down in '70,
2 yes, middle '70's.
3 Q Middle '70's or middle '60's?
4 A I'm sorry, middle '60's, yep. '70 there was no more
5 King Mill.
6 Q Okay. Do you know what the treatment consisted of?
7 A Yeah, it was a flotating, chemical flotating system.
8 Q Were chemicals added to the water?
9 A Uh-huh.
10 Q Do you know what chemicals were added to the water,
11 sir?
12 A No, sir.
13 Q Did you have any responsibility for that treatment?
14 A Nope.
15 Q Okay. With respect to the pumps that took the -- let
16 me ask you this question, some pumped stock and water
17 to the Denver process?
18 A Yeah.
19 Q And some pumps took it away you testified. What was
20 taken away from the Denver process?
21 A The finished product after it went through the Denver
22 process, it was cleaned and taken to process.
23 Q Okay.
24 A To the paper machine or the beater room.
25 Q So this is essentially finished de-inked stock that