360-A-4 #1999-0065 1000 Riverside St. Building Expansion Tuchenhogen - Zajac, UC. 1359-74

CITY OF PORTLAND, MAINE DEVELOPMENT REVIEW APPLICATION PLANNING DEPARTMENT PROCESSING-FORM

19990065	
I. D. Number	

Tuchenhagen - Zajac, LLC Applicant 1000 Riverside St, Portland, ME 04103 Applicant's Mailing Address Environmental Engineering & Re Consultant/Agent 828-1272 Applicant or Agent Daytime Telephone, Fax Proposed Development (check all that apply): Office Retail Manufacturin Proposed Building square Feet or # of Units	New Building	Address of Proposed Site Assessor's Reference: Chart-Block Building Addition	Residential
-	, to suge of		
economic	Subdivision # of lots	PAD Review	14-403 Streets Review
Flood Hazard	Shoreland	HistoricPreservation	DEP Local Certification
Zoning Conditional Use (ZBA/PB)	Zoning Variance		Other
Fees Paid: Site Plan \$500.00	Subdivision	Engineer Review	Date: 5/21/99
Approval Date	Approved w/Conditions see attached Approval Expiration	Reviewer Denied Extension to date	Additional Sheets Attached
Performance Guarantee	Required*	Not Required	
* No building permit may be issued until a perf	ormance guarantee has been su	pmitted as indicated below	
Performance Guarantee Accepted			
☐ Inspection Fee Paid	date date	amount amount	expiration date
Building Permit	date		
Performance Guarantee Reduced	date	remaining balance	signature
☐ Temporary Certificate Of Occupancy	date	Conditions (See Attached)	
Final Inspection			
Certificate Of Occupancy	date	signature	
Performance Guarantee Released	date		
☐ Defect Guarantee Submitted	date	signature	Augustian data
	submitted date	amount	expiration date

WRITTEN STATEMENTS FOR

TUCHENHAGEN-ZAJAC LLC

Submitted to:

City of Portland City Hall 389 Congress Street Portland, Maine 04101

Submitted by:

Environmental Engineering & Remediation, Inc. 222 St. John Street Suite 314 Portland, Maine 04102

May 21, 1999

Written Statements For Tuchenhagen-Zajac, LLC

Plan Narrative

Tuchenhagen-Zajac, LLC (formerly Zajac) is located at 1000 Riverside Street in Portland adjacent to the Riverside Golf Course. The company is a light industrial/manufacturing facility concentrating in the food and pharmaceutical industries. Their business has increased dramatically with the recent Tuchenhagen merge. The existing facility is approximately 18,000 SF and sits on a 3.87 acre parcel. The building consists of office space and manufacturing and employs about 60 people. The proposed 17,500 SF expansion will provide additional manufacturing area as well as employment for another 20 people.

All rights of ways, easements and encumberances of record are noted in the attached deed. Solid waste disposal is currently contracted out and will continue in that fashion. There are two trash receptacles located at the back of the facility.

The applicant has requested "capacity to serve" letters from the City of Portland (sewer), Portland Water District, Central Maine Power and Northern Utilities. These letters have not yet been received but will be forwarded to the City when they are.

An attached Stormwater Management Report discusses the pre and post drainage conditions. There are no drainage or topography problems associated with the site.

The project is anticipated to be constructed within six months. The project schedule will be to start construction on July 1st and complete construction by the end of the year.

There are no state or federal permits required. There are no other pending applications.

The applicant's evidence of financial capability to undertake and complete this development is attached. The applicant's technical capability to undertake this project is evident in their selection of Environmental Engineering & Remediation, Inc. of Portland for the site engineering and Cimino Construction of Scarborough for construction of the building addition.

QUITCLAIM DEED WITH COVENANT

915 FOREST AVENUE ASSOCIATES ("Grantor"), a Maine general partnership whose mailing address is c/o William M. Zajac, 413 Old Ocean House Road, Cape Elizabeth, Maine 04107, for full value and consideration paid, hereby grants to TUCHENHAGEN-ZAJAC, LLC, ("Grantee"), a Maryland limited liability company whose mailing address at 9160 Red Branch Road, Columbia, Maryland 21202, with QUITCLAIM COVENANT, the following real estate in the City of Portland, County of Cumberland, and State of Maine:

A certain lot or parcel of land with the buildings situated thereon on the northwesterly side of Riverside Street, in the City of Portland, County of Cumberland and State of Maine, and being further bounded and described as follows:

Beginning at an iron pin in a maple tree on said Northwesterly side of Riverside Street at the point of beginning of a parcel of land conveyed to the City of Portland by deed dated June 16, 1965, and recorded in the Cumberland County Registry of Deeds in Book 2901, Page 527; thence running Northwesterly by said City of Portland land six hundred sixty (660) feet to a point; thence running Southwesterly parallel with said Riverside Street three hundred (300) feet to a point; thence running Southeasterly parallel with the first described course six hundred sixty (660) feet to a point on the Northwesterly sideline of said Riverside Street; thence running Northeasterly by said Riverside Street three (300) feet to the point of beginning.

Excepting and reserving from the above-described parcel of land the parcel of land conveyed by deed from Earl J. Wahl and Gail C. Wahl to Portland Valve, Inc. dated April 9, 1975 and recorded in the Cumberland County Registry of Deeds in Book 3666, Page 211.

The above-described premises are conveyed subject to all rights of way, easements and encumbrances of record, including but not limited to the terms and conditions of an Agreement with the City of Portland relative to any excavations referenced in a deed of Hamlin Seed & Gravel Co., Inc. to the City of Portland dated June 16, 1965 and recorded in the Cumberland County Registry of Deeds in Book 2901, Page 527.

The above-described premises were conveyed by Riverside 1000 to the Grantor herein by Deed dated November 17, 1995, and recorded in the Cumberland County Registry of Deeds in Book 12218, Page 338.

IN WITNESS WHEREOF, the said 915 Forest Avenue Associates has caused this instrument to be signed this 7 of January, 1999.

Signed, Sealed and Delivered in the presence of:

915 FOREST AVENUE ASSOCIATES

By: <u>CC-Cll-</u> William M. Zaja

Its General Partner

STATE OF MAINE CUMBERLAND, ss

January Z 1999

Personally appeared the above-named William M. Zajac, General Partner of 915 Forest Avenue Associates, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of 915 Forest Avenue Associates.

Before me,

Notary Public/Attorney At Law

Print Name: Garage y Las Form

My Commission Expires:

P. RBP Zajac Dood, wpd



CITY OF PORTLAND

August 6, 1999

Steve Bradstreet EER 222 St. John Street, suite 314 Portland, ME 04102

RE: Tuchenhagen-Zajac at 1000 Riverside Street.

Dear Mr. Bradstreet

This letter is to confirm the revision to the approved site plan of the Tuchenhagen project located at 1000 Riverside Street. The approved revision includes the planting of new trees along the new driveway instead of relocating existing trees. The revised plan has been reviewed and approved by the project review staff including representatives of the Planning, Public Works, Building Inspections, Fire and Parks Departments.

If you have any questions regarding the revision please contact the planning staff at 874-8720.

Sincerely,

Joseph E. Gray, Jr.

Director of Planning and Urban Development

cc:

Alexander Jaegerman, Chief Planner

Sarah Hopkins, Senior Planner

P. Samuel Hoffses, Building Inspector

Jeff Tarling, City Arborist

William Bray, Director of Public Works

Tony Lombardo, Project Engineer

Lt. Gaylen McDougall, Fire Prevention

Penny Littell, Associate Corporation Counsel

Inspection Department

Development Review Coordinator

Kathleen Brown, Director of Economic Development

Susan Doughty, Assessor's Office

Approval Letter File

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CITY OF PORTLAND

July 19,1999

Steve Bradstreet EER 222 St. John Street, suite 314 Portland, ME 04102

RE: Tuchenhagen-Zajac at 1000 Riverside Street.

Dear Mr. Bradstreet

This letter is to confirm the revision to the approved site plan of the Tuchenhagen project located at 1000 Riverside Street. The approved revision includes the use of a non-woven geotextile with a crushed stone ballast for the construction of the wet pond. The revised plan has been reviewed and approved by the project review staff including representatives of the Planning, Public Works, Building Inspections, Fire and Parks Departments.

If you have any questions regarding the revision please contact the planning staff at 874-8720.

Sincerely,

Joseph E. Gray, Jr.

Director of Planning and Urban Development

cc:

Alexander Jaegerman, Chief Planner

Sarah Hopkins, Senior Planner

P. Samuel Hoffses, Building Inspector

Jeff Tarling, City Arborist

William Bray, Director of Public Works

Tony Lombardo, Project Engineer

Lt. Gaylen McDougall, Fire Prevention

Penny Littell, Associate Corporation Counsel

Inspection Department

Development Review Coordinator

Kathleen Brown, Director of Economic Development

Susan Doughty, Assessor's Office

Approval Letter File

O:\PLAN\DEVREVW\RIV1000\LETTERS\REVSP.SH

Department of Planning and Urban Development SUBDIVISION/SITE DEVELOPMENT

COST ESTIMATE OF IMPROVEMENTS TO BE COVERED BY PERFORMANCE GUARANTEE

		DRA	1	Date		
Name of Project Tuc,	henhagen - Riverside	Zajac	,			
Address/Location /000	Riverside	Street				
Developer	'					
Form of Performance Guarante	e					
Type of Development:	Subdivision		Site Plan Majo	or/Minor)		
TO BE FILLED OUT BY AI				·		
		PUBLIC		1	PRIVATE	
<u>Item</u>	Quantity	<u>Unit Cost</u>	Subtotal	Quantity	Unit Cost	Subtotal
1. STREET/SIDEWALK Road Granite Curbing Sidewalks Esplanades Monuments Street Lighting Other 2. SANITARY SEWER	47	30	1410	0 0 0 0 0		
Manholes Piping Connections Other				56	1900 28 20	1900 1568 7500
3 STORM DRAINAGE Manholes Catchbasins Piping Detention Basin Other				2 250' 1 10 cy	1756 30	3500 7500 1750 500
4. SITE LIGTING	MA					
5. EROSION CONTROL				400'	2,50	1000
5. RECREATION AND	MA				50,	760

OPEN SPACE AMENITIES

,			PUBLIC			PRIVATE	
<u>lte</u>	<u>rm</u>	Quantity:	<u>Unit Cost</u>	Subtotal	Quantity:	Unit Cost	Subtotal
7	LANDSCAPING (Attach breakdown of plant materials, quantities, and unit costs)			thes.	25_	285	17/25
							- 43
8.	MISCELLANEOUS				36000 SF	_,25	9000
	TOTAL:	Part least the second s					145785
	GRAND TOTAL:					//,	89,49800
IN:	SPECTION FEE (to be filled	out by City)				CUT	Property Constitution of the Constitution of t
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D	<u>10</u>						
B:	Alternative Assessment:						
		name)		(name)	第一 (4) (4) (4) (4) (4) (4) (4) (4) (4) (4)		

CIMINO CONSTRUCTION CO. Mailing Address: P. O. Box 1627 Portland, Maine 04104-1627

Tel. (207) 883-5138

125 Pleasant Hill Road, Scarborough, Maine 04074

Fax (207) 883-1163

Fax Transmittal Sheet

Date: July 1	3, 1999		
To: Deluca-	Hoffman		
Attention: 3	Jim Wendell		
Total Numb	er of Pages (including this cove	er sheet) 3	
From: Santo	o Cimino		
Item:	Shop Drawings	Prints	Specifications
	Letter	XXX Other	
Purpose:			
	For Approval	For Your Us	e
_XX	XX Review & Comme	nt For Yo	ur Information
	Other		
	review and let me know if you White Bros. (854-9173). He w		
Thanks,			
Santo			



CITY OF PORTLAND

June 29, 1999

Steve Bradstreet EER 222 St. John Street, Suite 314 Portland, ME 04102

RE:

Tuchenhagen-Zajac LLC at 1000 Riverside Street

Dear Mr. Bradstreet:

On June 29, 1999, the Portland Planning Authority granted minor site plan approval for the Tuchenhagen addition at 1000 Riverside Street.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

Please note the following provisions and requirements for all site plan approvals:

- 1. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. A one year extension may be granted by this department if requested by the applicant in writing prior to the expiration date of the site plan.
- 2. A performance guarantee in a form acceptable to the City of Portland and an inspection fee equal to 1.7% of the performance guarantee will have to be posted before beginning any site construction or issuance of a building permit.
- 3. A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
- 4. Prior to construction, a preconstruction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the preconstruction meeting.
- 5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)



DeLUCA-HOFFMAN ASSOCIATES, INC. CONSULTING ENGINEERS

778 MAIN STREET SUITE 8 SOUTH PORTLAND, MAINE 04106 TEL. 207 775 1121 FAX 207 879 0896 ROADWAY DESIGN

■ ENVIRONMENTAL ENGINEERING

TRAFFIC STUDIES AND MANAGEMENT

■ PERMITTING

AIRPORT ENGINEERING

■ SITE PLANNING

CONSTRUCTION ADMINISTRATION

MEMORANDUM

TO:

Sarah Hopkins, Senior Planner

FROM:

Jim Wendel, P.E. Development Review Coordinator

DATE:

June 29, 1999

RE:

Site Plan Review

Tuchenhagen-Zajac LLC 1000 Riverside Street

A review of the revised site plan submission dated 6/17/99, rev. C, has been completed. We offer the following comment:

1. The wet pond calculations are appropriate. However, coordination with the applicant's engineer has indicated that he will provide another revised plan with some additional details of the wet pond.

Based on the above submitted plans and item one above, all technical design issues are addressed.

Should you have any questions please call.





222 St. John Stitert, Suite 314, Portland, Maint 0410 Itl 207/828-1272

Post-It® Fax Note 7671	Date M of pages
To Jim Wender	From Savah Kapkin
Co./Dept.	Co.
Phone #	Phone #
Fax # 879 0896	Fax #

June 18, 1999

Ms. Sarah Hopkins Senior Planner City Hall 389 Congress Street Portland, ME 04112

Subject:

Tuchenhagen-Zajac Development

Dear Sarah:

Attached are 7 sets of plans and 3 sets of supporting wet pond calculations. This submission addresses the comments in your June 11, 1999 letter. There have been a couple of additional changes to the plans resulting from a meeting with the State Fire Marshall and receipt of S.W. Cole Engineering's geotechnical report. The changes do not change the layout or overall concept of the project, but need to be brought to your attention. The following discussion addresses the comments in your letter:

- 1. A note has been shown on sheet C100 regarding the installation of circular granite curb for both entrances. The existing entrance has circular granite curb into the property which will be replaced or reset by the contractor for the Riverside Street reconstruction. The new entrance will be the responsibility of the site contractor. Either way, the installation will be coordinated with the Riverside Street reconstruction.
- 2. The parking spaces were mistakenly shown as 9'x18'. These have been revised on the layout plan (C100) and the striping plan (C102).
- 3. A note has been modified on sheet C100 to clearly note the Riverside Street reconstruction work as it applies to granite curb at the entrances and sidewalk.
- 4. A wet pond has been designed incorporating the design of the detention basin. The volume above the permanent pool elevation has remained constant, therefore not changing the detention basin design. The pond has been reoriented to provide a longer axis for total suspended solids to settle out. The wet pond design required deepening the pond depth by 5 feet. This is shown on sheet C101. The wet pond design calculations are attached (3 copies).

Ms. Sarah Hopkins June 18, 1999 Page 2

> With the design of the wet pond came the regrading of the detention pond 5. which appears on sheet C101.

7568258

An erosion control plan and narrative is shown on sheet C101 with б. accompanying details on sheet C103.

Two other plan modifications that are shown on the attached plans are addressed below:

In meeting with the State Fire Marshall and Code Enforcement it was determined This requires the that a sprinkler system is required for the building expansion. installation of a 6-inch fire service from the main in Riverside Street to the utility room of the new addition. I have discussed this with Jim Pandiscio of the Portland Water District (PWD) and he indicated that a fire service is acceptable without the need of a separate capacity letter. The only thing he requested is that the water main tap be done by a PWD certified contractor. This has been noted on sheet C100.

The second plan modification is the lowering of the floor elevation of the proposed addition. S.W. Cole Engineering's borings revealed soft clays that would be compressed with the fill under the stab and building loads. By lowering the proposed finish floor by 2.4 feet, we have minimized building settlement. This required minor grading revisions to the parking lot, the most evident being a foot drop in elevation at the catch basin. The revised design did not change the watershed areas so the stormwater calculations are still valid.

I trust that the above discussion satisfactorily addresses the City's comments. Should you have any additional questions, please feel free to give me a call. I appreciate the planning staff's responsiveness in reviewing this project in a very timely manner.

Very truly,

Environmental Engineering

& REMEDIATION, INC.

Stephen J. Bradstreet, P.E.

Enclosure



7568258

TSS Ramoval Efficiencies for Wet Ponds

		' •				. '
1 Pond	L:W > 4:1	Depth	1/2 V	1V	2V	_ 3V
		3	84	90	93	94
		5	86	93	95	96
		7	- 88	94	96	97
1 Pond	2:1 < L:W < 4:1	Depth	1/2 V	1V	2·V	3V
		3	78	85	89	90
		5	82	. 88	92	93
		7	83	89	93	94
1 Fond	1:1 < L:W < 2:1	Depth	1/2 V	1V	2V	VE
		3	73	79	83	84
•		5	75	83	87	88
		7	76	84	29	90
2 Ponds	L:W > 4:1	Depth	1/2 V	17	2V	37
		3 .1	86	, 93	95	96
		6	88	94	97	'97
ı		7	88	94	97	99
	•			·		
2 Ponds	2:1 < L:W < 4:1	Depth	1/2 V	1٧	2V	-3V
		3	84	90	93	95
		5	85	93	95	96
		7	86	. 93	96	97
2 Ponds	1:1 < L:W < 2:1	Dapth	1/2 V	1V	2V	30
	1	.8	81	88	92	93
		5	82	89	93	94
		7	83	80	94	95
3 Ponds	L:W > 4:1	Depth	1/2 V	1V	2V	. 30
		3	88	93	96	97
		, 6	88	94	97	98
		7	89	95	97	98
3 Ponds	2:1 < L:W < 4:1	Depth	1/2 V	1V	2V	JV
		3	86	93	95	96
	,	5	'86	93	1.96	97
		7	87	94	97	97
88.						
3 Pends	1:1 < L:W < 2:1	Depth	1/2 V	1V.	27	L 3V
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Project Zajac Location Subject	By SUR Checked Revised	DATE	9 9 Sheet Of Job No		ER Englin Reme	ommental tening & diation, Inc.
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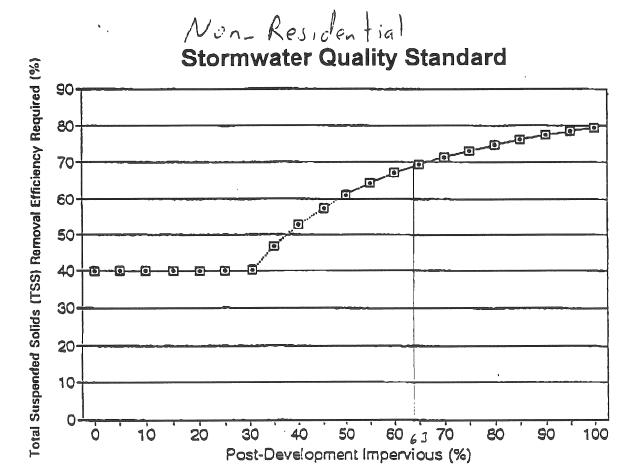


Figure 5.1.

For the purposes of this manual, impervious surface is fully defined as a hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, and/or a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious areas include, but are not limited to, rooftops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam, or other surfaces which similarly impede the natural infiltration of stormwater.

This BMP manual is not regulatory. However, the practices described in this manual are designed to ensure that stormwater runoff from a development site not adversely affect the physical, biological, and chemical properties of the receiving water or of associated aquatic habitats. As such, use of this manual may assist compliance with applicable statutes, regulations, and ordinances. Other equivalent techniques of stormwater treatment, of course, will also assist with compliance.

Alternatively, the criterion of reducing post development TSS loadings to predevelopment levels may be applied. This criterion is not intended to be used as an alternative to achieving adequate control where existing high sediment loadings are the result of poor management of "developed" sites such as farmlands where appropriate erosion control components of a USDA conservation management plan are not being used, or sites where land disturbed by previous development (e.g., gravel pits or log yards) was not permanently stabilized (EPA, 1993.)

By SSB DATE 6/15/95
Checked DATE Sheet Of DATE Job No. 5. Side slopes - Due to the industrial area with no residential areas around, and site constraints, 311 side slopes are proposed. Pond is not in clay soils, though clay
is encountered 12 to 15 fort below existing grade. Pond is not in high permable soils Pond outlet is matching existing pond outlet. There is no indication of the outlet being below ground water table The pipe inlet to the pend is within one fact of the permonent paul elevation 9 for the detention pond. Riprap protection will be placed around the putlet structures inlet pipe. 10, The paved drivenay at elevation 66 will act as a 100 foot level spillway. Fill embantiment design is not required.

Since pond is being excavated. er en la companya de la co



CITY OF PORTLAND

June 11, 1999

Steve Bradstreet EER 222 St. John Street Portland ME 04102

RE: Tuckenhagen-Zajac Development

Dear Steve:

Representatives from Public Works, Planning, Fire, Traffic, Corporation Counsel and Building Inspections have reviewed the Tuckenhagen submission dated 5-20-99.

We have made the following comments:

- Granite curb radii must be placed at the driveway opening.
- Parking spaces should measure 9 x 19 ft. with an aisle width of 24 feet.
- A note should be added to the plan regarding the road construction work along Riverside.
- We will need to see a treatment plan for the stormwater leaving the site.
- Please submit the elevation/grading of the expanded detention basin.
- Please submit an erosion control plan.

These are the final comments regarding the proposed plan.

We anticipate approving the site plan when we receive the requested items.

Please call if you have any questions.

Sincerely,

Sarah Hopkins

Sou L

Senior Planner

cc: Alexander Jaegerman, Chief Planner
Jim Wendel, Development Review Coordinator

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DeLUCA-HOFFMAN ASSOCIATES, INC. CONSULTING ENGINEERS

778 MAIN STREET SUITE 8 SOUTH PORTLAND. MAINE 04106 TEL. 207 775 1121 FAX 207 879 0896 ROADWAY DESIGN

ENVIRONMENTAL ENGINEERING

■ TRAFFIC STUDIES AND MANAGEMENT

■ PERMITTING

■ AIRPORT ENGINEERING

SITE PLANNING

■ CONSTRUCTION ADMINISTRATION

MEMORANDUM

TO:

Sarah Hopkins, Senior Planner

FROM:

Jim Wendel, P.E., Development Review Coordinator

DATE:

June 8, 1999

RE:

Site Plan Review

Tuchenhagen-Zajac LLC 1000 Riverside Street

A review of the site plan dated 5/20/99 has been completed. We offer the following comments:

- 1. The parking layout reflects a layout with parking space dimensions other than 9' x 19' and an aisle width of 24'.
- 2. The narrative suggests that the entrance is based on the road reconstruction work in Riverside Street; recommend the plan note this detail for clarity. If the curb from the road reconstruction ends at the right-of-way line, we suggest that the curb be extended through the radius of the entrance curb with appropriate tip-down curb pieces. This recommendation would apply to both curb cuts.
- 3. The stormwater management report is satisfactory. However, water quality measures are required since the expanded parking is greater than the minimum 25 cars or 10 trucks criteria. This standard can be waived if the applicant can demonstrate that the runoff will receive treatment before it enters the receiving waters.
- 4. The elevation and/or grading of the bottom of the expanded detention basin is not clear.
- 5. Erosion control notes in conformance with the technical standards manual are needed. An appropriate temporary erosion control BMP should be shown for the detention basin outlet pipe.

Should you have any questions, please call.



222 St. John Street, Suite 314, Portland, Maine 04102 Tel 207/828-1272

June 18, 1999

Ms. Sarah Hopkins Senior Planner City Hall 389 Congress Street Portland, ME 04112

Subject:

Tuchenhagen-Zajac Development

Dear Sarah:

Attached are 7 sets of plans and 3 sets of supporting wet pond calculations. This submission addresses the comments in your June 11, 1999 letter. There have been a couple of additional changes to the plans resulting from a meeting with the State Fire Marshall and receipt of S.W. Cole Engineering's geotechnical report. The changes do not change the layout or overall concept of the project, but need to be brought to your attention. The following discussion addresses the comments in your letter:

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- 4. A wet pond has been designed incorporating the design of the detention basin. The volume above the permanent pool elevation has remained constant, therefore not changing the detention basin design. The pond has been reoriented to provide a longer axis for total suspended solids to settle out. The wet pond design required deepening the pond depth by 5 feet. This is shown on sheet C101. The wet pond design calculations are attached (3 copies).

- 5. With the design of the wet pond came the regrading of the detention pond which appears on sheet C101.
- 6. An erosion control plan and narrative is shown on sheet C101 with accompanying details on sheet C103.

Two other plan modifications that are shown on the attached plans are addressed below:

In meeting with the State Fire Marshall and Code Enforcement it was determined that a sprinkler system is required for the building expansion. This requires the installation of a 6-inch fire service from the main in Riverside Street to the utility room of the new addition. I have discussed this with Jim Pandiscio of the Portland Water District (PWD) and he indicated that a fire service is acceptable without the need of a separate capacity letter. The only thing he requested is that the water main tap be done by a PWD certified contractor. This has been noted on sheet C100.

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I trust that the above discussion satisfactorily addresses the City's comments. Should you have any additional questions, please feel free to give me a call. I appreciate the planning staff's responsiveness in reviewing this project in a very timely manner.

Very truly,

Environmental Engineering

& Remediation, Inc.

Stephen J. Bradstreet, P.E.

Enclosure



Project Zajac Location Subject	By SJA Checked Revised	DATE	//5/99 Sheet Job No	_ Of	EER Environmental Engineering & Remediation, Inc.
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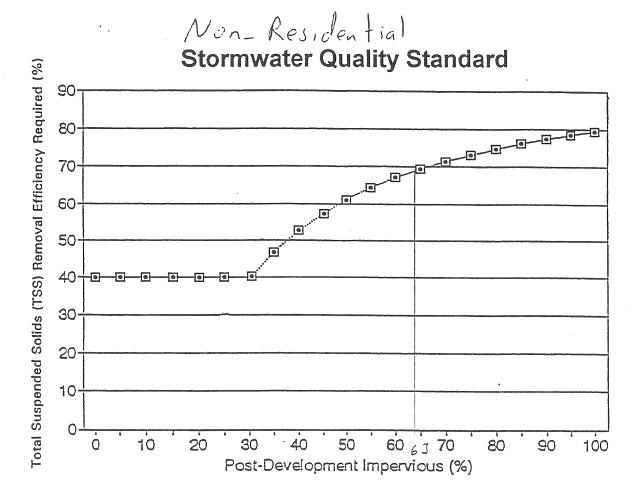


Figure 5.1.

For the purposes of this manual, *impervious surface* is fully defined as a hard surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, and/or a hard surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious areas include, but are not limited to, rooftops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam, or other surfaces which similarly impede the natural infiltration of stormwater.

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UN. 18.1999 4.17FM DELUCA HOFFMAN ASSOC

TSS Removal Efficiencies for Wet Ponds

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DeLUCA-HOFFMAN ASSOCIATES, INC. CONSULTING ENGINEERS

778 MAIN STREET SUITE 8 SOUTH PORTLAND, MAINE 04106 TEL. 207 775 1121 FAX 207 879 0896 ■ ROADWAY DESIGN

■ ENVIRONMENTAL ENGINEERING

■ TRAFFIC STUDIES AND MANAGEMENT

■ PERMITTING

AIRPORT ENGINEERING

SITE PLANNING

CONSTRUCTION ADMINISTRATION

MEMORANDUM

TO:

Sarah Hopkins, Senior Planner

FROM:

Jim Wendel, P.E., Development Review Coordinator

DATE:

June 8, 1999

RE:

Site Plan Review

Tuchenhagen-Zajac LLC 1000 Riverside Street

A review of the site plan dated 5/20/99 has been completed. We offer the following comments:

- 1. The parking layout reflects a layout with parking space dimensions other than 9' x 19' and an aisle width of 24'.
- 2. The narrative suggests that the entrance is based on the road reconstruction work in Riverside Street; recommend the plan note this detail for clarity. If the curb from the road reconstruction ends at the right-of-way line, we suggest that the curb be extended through the radius of the entrance curb with appropriate tip-down curb pieces. This recommendation would apply to both curb cuts.
- 3. The stormwater management report is satisfactory. However, water quality measures are required since the expanded parking is greater than the minimum 25 cars or 10 trucks criteria. This standard can be waived if the applicant can demonstrate that the runoff will receive treatment before it enters the receiving waters.
- 4. The elevation and/or grading of the bottom of the expanded detention basin is not clear.
- 5. Erosion control notes in conformance with the technical standards manual are needed. An appropriate temporary erosion control BMP should be shown for the detention basin outlet pipe.

Should you have any questions, please call.

Project Zajac Location	By 5 J	DATE 6/	Otton Comments of Comments	EER Environmental Engineering & Remediation, Inc.
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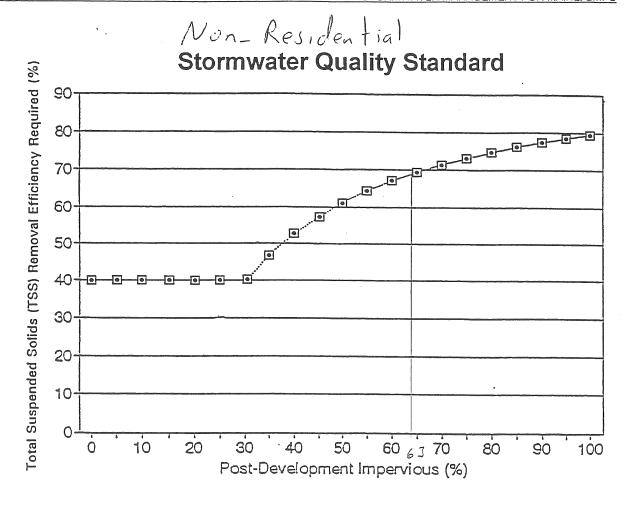


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TSS Removal Efficiencies for Wet Ponds

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1 Pond	L:W > 4:1	Depth	1/2 V	1V	2V	3V
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WRITTEN STATEMENTS FOR

TUCHENHAGEN-ZAJAC LLC

Submitted to:

City of Portland City Hall 389 Congress Street Portland, Maine 04101

Submitted by:

Environmental Engineering & Remediation, Inc. 222 St. John Street Suite 314 Portland, Maine 04102

May 21, 1999

Written Statements For Tuchenhagen-Zajac, LLC

Plan Narrative

Tuchenhagen-Zajac, LLC (formerly Zajac) is located at 1000 Riverside Street in Portland adjacent to the Riverside Golf Course. The company is a light industrial/manufacturing facility concentrating in the food and pharmaceutical industries. Their business has increased dramatically with the recent Tuchenhagen merge. The existing facility is approximately 18,000 SF and sits on a 3.87 acre parcel. The building consists of office space and manufacturing and employs about 60 people. The proposed 17,500 SF expansion will provide additional manufacturing area as well as employment for another 20 people.

All rights of ways, easements and encumberances of record are noted in the attached deed. Solid waste disposal is currently contracted out and will continue in that fashion. There are two trash receptacles located at the back of the facility.

The applicant has requested "capacity to serve" letters from the City of Portland (sewer), Portland Water District, Central Maine Power and Northern Utilities. These letters have not yet been received but will be forwarded to the City when they are.

An attached Stormwater Management Report discusses the pre and post drainage conditions. There are no drainage or topography problems associated with the site.

The project is anticipated to be constructed within six months. The project schedule will be to start construction on July 1st and complete construction by the end of the year.

There are no state or federal permits required. There are no other pending applications.

The applicant's evidence of financial capability to undertake and complete this development is attached. The applicant's technical capability to undertake this project is evident in their selection of Environmental Engineering & Remediation, Inc. of Portland for the site engineering and Cimino Construction of Scarborough for construction of the building addition.

QUITCLAIM DEED WITH COVENANT

915 FOREST AVENUE ASSOCIATES ("Grantor"), a Maine general partnership whose mailing address is c/o William M. Zajac, 413 Old Ocean House Road, Cape Elizabeth, Maine 04107, for full value and consideration paid, hereby grants to TUCHENHAGEN-ZAJAC, LLC, ("Grantee"), a Maryland limited liability company whose mailing address at 9160 Red Branch Road, Columbia, Maryland 21202, with QUITCLAIM COVENANT, the following real estate in the City of Portland, County of Cumberland, and State of Maine:

A certain lot or parcel of land with the buildings situated thereon on the northwesterly side of Riverside Street, in the City of Portland, County of Cumberland and State of Maine, and being further bounded and described as follows:

Beginning at an iron pin in a maple tree on said Northwesterly side of Riverside Street at the point of beginning of a parcel of land conveyed to the City of Portland by deed dated June 16, 1965, and recorded in the Cumberland County Registry of Deeds in Book 2901, Page 527; thence running Northwesterly by said City of Portland land six hundred sixty (660) feet to a point; thence running Southwesterly parallel with said Riverside Street three hundred (300) feet to a point; thence running Southeasterly parallel with the first described course six hundred sixty (660) feet to a point on the Northwesterly sideline of said Riverside Street; thence running Northeasterly by said Riverside Street three (300) feet to the point of beginning.

Excepting and reserving from the above-described parcel of land the parcel of land conveyed by deed from Earl J. Wahl and Gail C. Wahl to Portland Valve, Inc. dated April 9, 1975 and recorded in the Cumberland County Registry of Deeds in Book 3666, Page 211.

The above-described premises are conveyed subject to all rights of way, easements and encumbrances of record, including but not limited to the terms and conditions of an Agreement with the City of Portland relative to any excavations referenced in a deed of Hamlin Seed & Gravel Co., Inc. to the City of Portland dated June 16, 1965 and recorded in the Cumberland County Registry of Deeds in Book 2901, Page 527.

The above-described premises were conveyed by Riverside 1000 to the Grantor herein by Deed dated November 17, 1995, and recorded in the Cumberland County Registry of Deeds in Book 12218, Page 338.

IN WITNESS WHEREOF, the said 915 Forest Avenue Associates has caused this instrument to be signed this 7_ of January, 1999.

Signed, Sealed and Delivered in the presence of:

915 FOREST AVENUE **ASSOCIATES**

Its General Partner

STATE OF MAINE CUMBERLAND, ss

January Z 1999

Personally appeared the above-named William M. Zajac, General Partner of 915 Forest Avenue Associates, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of 915 Forest Avenue Associates.

Before me,

Notary Public/Attorney At Law

Print Name: Gergaey Laster

My Commission Expires:

P: RBP Zajac Deed, wpd



June 7, 1999

Ms. Sarah Hopkins Senior Planner Planning Department City of Portland 389 Congress Street Portland, Maine 04101

Subject:

Tuchenhagen-Zajac LLC

Major Site Development

Dear Sarah:

Attached are seven copies of "capacity to serve" letters from the utilities. Also attached are copies of their financial capability.

If you have any questions or need additional information, please feel free to give me a call.

Very truly,

Environmental Engineering & Remediation, Inc.

Stephen J. Bradstreet, P.E.

C:\SJBEER\524\hopkins2.doc



Mail Code: P.O. Box 1596 Baltimore, MD 21203 Tel: 410-244-4059

May 24, 1999

EER Incorporated Suite 3154 222 St John Street Portland, Maine 04102

Attention: Stephen Bradstreet

Re: Tuchenhagen-Zajac, LLC Pennit Application

Mr. Bradstreet:

We have been advised that in connection with the permit application of Tuchenhagen-Zajac, LLC for expansion of its facility in Portland, Maine, you have requested certain information pertaining to its funding agreements. To the best of my knowledge, Tuchenhagen-Zajac, LLC has been and is a wholly-owned limited liability company of Tuchenhagen North America. Tuchenhagen-Zajac. LLC is a part of a cash management borrowing pool of Tuchenhagen North America, Inc. and its affiliated U.S. companies. Over the past year, there has been at least a million dollar available in such cash management pool on a daily basis that could be borrowed. The actual amount available fluctuated greatly during the year and was often many multiples of that amount.

I hope that this letter provides you with the information which you seek, but should you have any questions, please don't hesitate to call me at 410-244-4059.

Regards

The First National Bank of Maryland

Fugers A Sutter V

cc: Sandy Zajac, Tuchenhagen-Zajac, LLC



162 Canco Road, Portland, Maine 04103

May 27, 1999

Mr. Stephen J. Bradstreet, P.E. Environmental Engineering & Remediation, Inc. 222 St. John Street, Suite 314 Portland, ME 04102

RE: Capacity To Serve 1000 Riverside Street, Portland

Dear Mr. Bradstreet:

This letter is to advise that Central Maine Power Company has sufficient 3 phase electrical capacity in the area to serve the proposed 180,000 square foot project for Tuchenhagen-Zajac.

I have enclosed a Smart Power Contractor's Handbook to help answer questions that you may have on this project. Please refer to Section 900 on underground services.

I have made a site visit and Tuchenhangen-Zajac presently has a 3 phase, 3 wire feed to an existing radial 75 kVA transformer with a deep well base located in front of the building. I propose that CMP Co. set an additional pole, approximately 10 feet in an easterly direction and in line with existing Pole 103, on Riverside Street. The proposed new pole would be within road limits. The customer will provide the trench and material (per Contractor's Handbook) along property line to the proposed new site. This is just a proposal and when plans are available, please forward them to me so we can go over other alternatives to providing electrical service to this site that you may have.

Presently, CMP Co. is billing for all 3-phase installations.

- Lath

I hope you find this information helpful and look forward to hearing from you and all concerned parties on this project.

If you have any questions regarding this matter, please call me at 791-8025.

Sincerely.

Gary Crabtree

Energy Services Advisor

GC/rr Enc.



2 June 1999

Mr. Stephen J. Bradstreet, PE, Environmental Engineering & Remediation, Inc., 222 St. John Street, Suite 314, Portland, Maine 04102.

RE: Sanitary Sewer Capacity of the City Sewer System and the Portland Water District Sewage Treatment Facilities to Handle Anticipated Wastewater Flows, from the Expansion of the Tuchenhagen-Zajac LLC Facility.

Dear Mr. Bradstreet:

Both the existing eight inch diameter PVC sanitary sewer pipe, located in Riverside Street, and the Portland Water District sewage treatment facilities, located off Marginal Way, have adequate capacity to transport and treat the anticipated wastewater flows of 300 GPD, from your proposed expansion, at #1000 Riverside Street, City of Portland.

Anticipated Wastewater Flows from the Proposed Expansion

Twenty Additional Employees @ 15 GPD/Employee

=300 GPD

Total Proposed Increase in Wastewater Flows for this Project

=300 GPD

If I can be of further assistance, please call me at 874-8832.

Sincerely,

CITY OF PORTLAND

Frank J. Brancely, BA, MA

Senior Engineering Technician

FJB

cc:

Joseph E. Gray, Director, Department of Planning & Urban Development, City of Portland Sarah Hopkins, Senior Planner, Dept. of Planning & Urban Development, City of Portland Katherine A. Staples, PE, City Engineer, City of Portland Bradley A. Roland, PE, Environmental Projects Engineer, City of Portland Anthony W. Lombardo, PE, Project Engineer, City of Portland Stephen K. Harris, Assistant Engineer, City of Portland Desk File

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(207) 774-5961 FAX (207) 761-8307

May 25,1999

Stephen J Bradstreet, PE EER, Inc 222 St John St Suite 314 Portland, Me 04102

Re: 1000 Riverside St- Portland

Dear Mr bradstreet

This letter is to confirm there should be an adequate supply of clean and healthful water to serve the needs of the proposed expansion at 1000 Riverside St. in Portland. Checking District records, I find there is a 12" water in Riverside. A map is enclosed indicating the water mains and hydrants in the general area of the site. Checking the usage history of the property, it currently averages 11,200 gallons per month for domestic water usage. Adding several bathrooms to the current line should not affect the current setup of a 2" service with a 1" meter. If it does the water meter can be up sized to 1 ½" which is a 90 gallon a minute meter.

The current data from the nearest hydrant indicates there should be adequate capacity of water.

Riverside St @Evergreen Drive Hydrant # 1764 Static pressure = 71 PSI Flow = 1244GPM Last Tested = 8/8/88

If the district can be of further assistance in this matter, please let us know.

Sincerely,

Portland Water District

Jim Pandiscio

Means Coordinator



Northern Utilities, Inc.

May 26, 1999

Mr. Stephen Bradstreet EER, Inc. 222 St. John Street Suite 314 Portland, ME 04102

Re: Natural Gas Service to 1000 Riverside Street

Dear Mr. Bradstreet:

This letter is in response to your letter dated May 19, 1999 to Northern Utilities requesting determination on whether there is sufficient capacity to serve a proposed 180,000 SF. expansion at Tuchenhagen-Zajac. Based on typical heating requirements of a facility of this size, Northern has sufficient capacity to serve the proposed facility with natural gas.

If you have any further questions or comments please call me at 800-924-8002.

Sincerely,

Michael T. Smith

Industrial Sales Engineer



Mail Code: P.O. Box 1596 Baltimore, MD 21203 Tel- 410-244-4059

May 24, 1999

EER Incorporated Suite 3154 222 St John Street Portland, Maine 04102

Attention: Stephen Bradstreet

Re: Tuchenhagen-Zajac, LLC Permit Application

Mr. Bradstreet:

We have been advised that in connection with the permit application of Tuchenhagen-Zajac, LLC for expansion of its facility in Portland, Maine, you have requested certain information pertaining to its funding agreements. To the best of my knowledge, Tuchenhagen-Zajac, LLC has been and is a wholly-owned limited liability company of Tuchenhagen North America. Tuchenhagen-Zajac. LLC is a part of a cash management borrowing pool of Tuchenhagen North America, Inc. and its affiliated U.S. companies. Over the past year, there has been at least a million dollar available in such cash management pool on a daily basis that could be borrowed. The actual amount available fluctuated greatly during the year and was often many multiples of that amount.

I hope that this letter provides you with the information which you seek, but should you have any questions, please don't hesitate to call me at 410-244-4059.

Regards

The First National Bank of Maryland

Eugene A. Sutter, V

cc: Sandy Zajac, Tuchenhagen-Zajac, LLC

162 Canco Road, Portland, Maine 04103

May 27, 1999

Mr. Stephen J. Bradstreet, P.E. Environmental Engineering & Remediation, Inc. 222 St. John Street, Suite 314 Portland, ME 04102

RE: Capacity To Serve 1000 Riverside Street, Portland

Dear Mr. Bradstreet:

This letter is to advise that Central Maine Power Company has sufficient 3 phase electrical capacity in the area to serve the proposed 180,000 square foot project for Tuchenhagen-Zajac.

I have enclosed a Smart Power Contractor's Handbook to help answer questions that you may have on this project. Please refer to Section 900 on underground services.

I have made a site visit and Tuchenhangen-Zajac presently has a 3 phase, 3 wire feed to an existing radial 75 kVA transformer with a deep well base located in front of the building. I propose that CMP Co. set an additional pole, approximately 10 feet in an easterly direction and in line with existing Pole 103, on Riverside Street. The proposed new pole would be within road limits. The customer will provide the trench and material (per Contractor's Handbook) along property line to the proposed new site. This is just a proposal and when plans are available, please forward them to me so we can go over other alternatives to providing electrical service to this site that you may have.

Presently, CMP Co. is billing for all 3-phase installations.

I hope you find this information helpful and look forward to hearing from you and all concerned parties on this project.

If you have any questions regarding this matter, please call me at 791-8025.

Sincerely,

Gary Crabtree

Energy Services Advisor

milent

GC/rr Enc.



2 June 1999

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Dear Mr. Bradstreet:

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Anticipated Wastewater Flows from the Proposed Expansion

Twenty Additional Employees @ 15 GPD/Employee

=300 GPD

Total Proposed Increase in Wastewater Flows for this Project

=300 GPD

If I can be of further assistance, please call me at 874-8832.

Sincerely,

CITY OF PORTLAND

Frank J. Brancely, BA, MA

Senior Engineering Technician

FJB cc:

Joseph E. Gray, Director, Department of Planning & Urban Development, City of Portland Sarah Hopkins, Senior Planner, Dept. of Planning & Urban Development, City of Portland

Katherine A. Staples, PE, City Engineer, City of Portland

Bradley A. Roland, PE, Environmental Projects Engineer, City of Portland

Anthony W. Lombardo, PE, Project Engineer, City of Portland Stephen K. Harris, Assistant Engineer, City of Portland

Desk File

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(207) 774-5961 FAX (207) 761-8307

May 25,1999

Stephen J Bradstreet, PE EER, Inc 222 St John St Suite 314 Portland, Me 04102

Re: 1000 Riverside St- Portland

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The current data from the nearest hydrant indicates there should be adequate capacity of water.

Riverside St @Evergreen Drive Hydrant # 1764 Static pressure = 71 PSI Flow = 1244GPM Last Tested = 8/8/88

If the district can be of further assistance in this matter, please let us know.

Sincerely,

Portland Water District

Jim Pandiscio

Means Coordinator



Northern Utilities, Inc.

May 26, 1999

Mr. Stephen Bradstreet EER, Inc. 222 St. John Street Suite 314 Portland, ME 04102

Re: Natural Gas Service to 1000 Riverside Street

Dear Mr. Bradstreet:

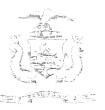
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If you have any further questions or comments please call me at 800-924-8002.

Sincerely,

Michael T. Smith

Industrial Sales Engineer



2 June 1999

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Twenty Additional Employees @ 15 GPD/Employee

Total Proposed Increase in Wastewater Flows for this Project

=300 GPD

=300 GPD

If I can be of further assistance, please call me at 874-8832.

Sincerely,

CITY OF PORTLAND

Frank J. Brancely, BA, MA

Senior Engineering Technician

FJB cc:

Joseph E. Gray, Director, Department of Planning & Urban Development, City of Portland

√Sarah Hopkins, Senior Planner, Dept. of Planning & Urban Development, City of Portland

Katherine A. Staples, PE, City Engineer, City of Portland

Bradley A. Roland, PE, Environmental Projects Engineer, City of Portland

Anthony W. Lombardo, PE, Project Engineer, City of Portland

Stephen K. Harris, Assistant Engineer, City of Portland

Desk File

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June 11, 1999

Steve Bradstreet EER 222 St. John Street Portland ME 04102

RE: Tuckenhagen-Zajac Development

Dear Steve:

Representatives from Public Works, Planning, Fire, Traffic, Corporation Counsel and Building Inspections have reviewed the Tuckenhagen submission dated 5-20-99.

We have made the following comments:

- Granite curb radii must be placed at the driveway opening.
- Parking spaces should measure 9 x 19 ft. with an aisle width of 24 feet.
- A note should be added to the plan regarding the road construction work along Riverside.
- We will need to see a treatment plan for the stormwater leaving the site.
- Please submit the elevation/grading of the expanded detention basin.
- Please submit an erosion control plan.

These are the final comments regarding the proposed plan.

We anticipate approving the site plan when we receive the requested items.

Please call if you have any questions.

Sincerely,

Sarah Hopkins Senior Planner

Sour L

cc: Alexander Jaegerman, Chief Planner

Jim Wendel, Development Review Coordinator

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June 29, 1999

Steve Bradstreet EER 222 St. John Street, Suite 314 Portland, ME 04102

RE: Tuchenhagen-Zajac LLC at 1000 Riverside Street

Dear Mr. Bradstreet:

On June 29, 1999, the Portland Planning Authority granted minor site plan approval for the Tuchenhagen addition at 1000 Riverside Street.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

Please note the following provisions and requirements for all site plan approvals:

- 1. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. A one year extension may be granted by this department if requested by the applicant in writing prior to the expiration date of the site plan.
- 2. A performance guarantee in a form acceptable to the City of Portland and an inspection fee equal to 1.7% of the performance guarantee will have to be posted before beginning any site construction or issuance of a building permit.
- 3. A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
- 4. Prior to construction, a preconstruction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the preconstruction meeting.
- 5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

The Development Review Coordinator must be notified five (5) working days prior to date required for final site inspection. Please make allowances for completion of site plan requirements 6. determined to be incomplete or defective during the inspection. This essential as all site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact the Planning Staff.

Sincerely.

Director of Planning and Urban Development

Alexander Jaegerman, Chief Planner cc:

Sarah Hopkins, Senior Planner

P. Samuel Hoffses, Building Inspector

Marge Schmuckal, Zoning Administrator

Tony Lombardo, Project Engineer

Development Review Coordinator

William Bray, Director of Public Works

Jeff Tarling, City Arborist

Penny Littell, Associate Corporation Counsel

Lt. Gaylen McDougall, Fire Prevention

Inspection Department

Kathleen Brown, Director of Economic Development

Susan Doughty, Assessor's Office

Approval Letter File



July 19,1999

Steve Bradstreet EER 222 St. John Street, suite 314 Portland, ME 04102

RE: Tuchenhagen-Zajac at 1000 Riverside Street.

Dear Mr. Bradstreet

This letter is to confirm the revision to the approved site plan of the Tuchenhagen project located at 1000 Riverside Street. The approved revision includes the use of a non-woven geotextile with a crushed stone ballast for the construction of the wet pond. The revised plan has been reviewed and approved by the project review staff including representatives of the Planning, Public Works, Building Inspections, Fire and Parks Departments.

If you have any questions regarding the revision please contact the planning staff at 874-8720.

Sincerely,

Joseph E. Gray, Jr.

Director of Planning and Urban Development

cc:

Alexander Jaegerman, Chief Planner

Sarah Hopkins, Senior Planner

P. Samuel Hoffses, Building Inspector

Jeff Tarling, City Arborist

William Bray, Director of Public Works

Tony Lombardo, Project Engineer

Lt. Gaylen McDougall, Fire Prevention

Penny Littell, Associate Corporation Counsel

Inspection Department

Development Review Coordinator

Kathleen Brown, Director of Economic Development

Susan Doughty, Assessor's Office

Approval Letter File

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August 6, 1999

Steve Bradstreet EER 222 St. John Street, suite 314 Portland, ME 04102

RE: Tuchenhagen-Zajac at 1000 Riverside Street.

Dear Mr. Bradstreet

This letter is to confirm the revision to the approved site plan of the Tuchenhagen project located at 1000 Riverside Street. The approved revision includes the planting of new trees along the new driveway instead of relocating existing trees. The revised plan has been reviewed and approved by the project review staff including representatives of the Planning, Public Works, Building Inspections, Fire and Parks Departments.

If you have any questions regarding the revision please contact the planning staff at 874-8720.

Sincerely,

Joseph E. Gray, Jr.

Director of Planning and Urban Development

cc:

Alexander Jaegerman, Chief Planner

Sarah Hopkins, Senior Planner

P. Samuel Hoffses, Building Inspector

Jeff Tarling, City Arborist

William Bray, Director of Public Works

Tony Lombardo, Project Engineer

Lt. Gaylen McDougall, Fire Prevention

Penny Littell, Associate Corporation Counsel

Inspection Department

Development Review Coordinator

Kathleen Brown, Director of Economic Development

Susan Doughty, Assessor's Office

Approval Letter File

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design Side

CITY OF PORTLAND, MAINE DEVELOPMENT REVIEW APPLICATION PLANNING DEPARTMENT PROCESSING FORM

199	90065	
D	Number	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

Tuchenhagen - Zajac, LLC		5/21/99			
Applicant		Application Date			
1900 Riverside St, Portland, ME 04103		_			
Applicant's Mailing Address		Project Name/Description			
Environmental Engineering & Re					
Consultant/Agent 774-6907		Address of Proposed Site			
828-1272 774-6907 Applicant or Agent Daytime Telephone, Fax		Accessed Deference: Chart Disch	-1-4		
L.		Assessor's Reference: Chart-Block	(-LOT		
Proposed Development (check all that apply): Office Retail Manufacturing	New Building Build Warehouse/Distribution	ling Addition	Residential Recify)		
Proposed Building square Feet or # of Units	Acreage of Site	9	Zoning		
Check Review Required:					
	division lots	PAD Review	14-403 Streets Review		
☐ Flood Hazard ☐ Sho	reland	HistoricPreservation	tification		
Zoning Conditional Zon Use (ZBA/PB)	ing Variance	2 du versa	* · · · · · · · · · · · · · · · · · · ·		
Fees Paid: Site Plan\$500.00 S	ubdivision	E. Ind what so	hall on		
Planning Approval Status:	R	devie RAVIII CAPI	M. my		
Approved Approved	proved w/Conditions Attached	Historic Preservation E. And Av. 1940 Revie Parameters Scape	Pro		
Approval Date Appr	oval Expiration	Ex			
OK to Issue Building Permit					
	signature	date			
Performance Guarantee	uired*	Not-Rec			
* No building permit may be issued until a perform	ance guarantee has been submit	tted as indicated			
Performance Guarantee Accepted					
	date	a	expiration date		
	44.15		-oxpiration date		
Inspection Fee Paid	-1-1-				
_	date	amount			
Building Permit Issued					
	date				
Performance Guarantee Reduced					
	date	remaining balance	signature		
☐ Temporary Certificate of Occupancy		Conditions (See Attached)			
	date	conditions (coo / macrica)			
Final leanastics					
Final Inspection	data	oigneture			
Certificate Of Occupancy	date	signature			
	date				
Performance Guarantee Released	part 2 h				
Defect Guarantee Submitted	date	signature			
Service osasimos	submitted date	amount	expiration date		



DeLUCA-HOFFMAN ASSOCIATES, INC. CONSULTING ENGINEERS

778 MAIN STREET SUITE 8 SOUTH PORTLAND, MAINE 04106 TEL. 207 775 1121 FAX 207 879 0896 ROADWAY DESIGN

■ ENVIRONMENTAL ENGINEERING

■ TRAFFIC STUDIES AND MANAGEMENT

■ PERMITTING

■ AIRPORT ENGINEERING

SITE PLANNING

■ CONSTRUCTION ADMINISTRATION

MEMORANDUM

TO:

Sarah Hopkins, Senior Planner

FROM:

Jim Wendel, P.E. Development Review Coordinator

DATE:

June 29, 1999

RE:

Site Plan Review

Tuchenhagen-Zajac LLC 1000 Riverside Street

A review of the revised site plan submission dated 6/17/99, rev. C, has been completed. We offer the following comment:

1. The wet pond calculations are appropriate. However, coordination with the applicant's engineer has indicated that he will provide another revised plan with some additional details of the wet pond.

Based on the above submitted plans and item one above, all technical design issues are addressed.

Should you have any questions please call.



June 30, 1999

Ms. Sarah Hopkins Senior Planner Planning Department City of Portland 389 Congress Street Portland, Maine 04101

Subject:

Tuchenhagen-Zajac LLC

Dear Sarah:

There has been one minor addition to the Site Grading, Drainage and Erosion Control Plan. During my final review of the plans I realized that the construction of the wet pond would be down into the stiff clay layer. This will disturb the clay and cause a colloidal suspension of the clay particles. Since the purpose of the wet pond is to remove suspended solids I felt that a non-woven geotextile with a crushed stone ballast is required to prevent this suspension. A note regarding this has been added to the plans.

I have talked with Jim Wendel about this and he agrees with my recommendation. Enclosed are seven prints of this sheet for staff review.

If you have any questions or need additional information, please feel free to give me a call.

Very truly,

Environmental Engineering & Remediation, Inc.

Stephen J. Bradstreet, P.E.

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August 4, 1999

Ms. Sarah Hopkins, Senior Planner Planning Department City of Portland 389 Congress Street Portland, Maine 04101

Subject:

Tuchenhagen-Zajac, LLC

Tree Replacement

Dear Sarah:

We would like to request a change in the approved site plan regarding the disposition of the pine trees abutting the Riverside Golf Course parking lot. We had a pre-construction meeting on site Monday morning with Jim Wendel, Nancy Knauber, White Brothers and the golf course maintenance superintendent. At that time we found that Dig Safe had painted out the gas service to the building and the 8" transmission line. The trees that we had proposed to be spaded and relocated to line up with the trees lining the first fairway are extremely close to the gas lines. Seeing the close proximity to the gas lines we would like to remove the existing trees and replace them with new trees of the same type and number. The size will obviously be smaller but will be specified to be 7 to 8 feet high. Our concern is in spading trees that close to a high pressure gas line.

If this is acceptable to the City, we would appreciate an approval letter regarding the same. If you have any questions, please feel free to give me a call.

Very truly,

Environmental Engineering

& Remediation, Inc.

Stephen J. Bradstreet, P.E.

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August 17, 1999

Ms. Sarah Hopkins, Senior Planner Planning Department City of Portland 389 Congress Street Portland, Maine 04101

Subject:

Tuchenhagen-Zajac, LLC Overhead Door Relocation

Dear Sarah:

We would like to request a change in the approved site plan regarding the location of one of the overhead doors. We have just been informed by the building manufacturer's structural engineers that the left most loading door is located within a bay requiring bracing to meet design codes. They have requested that the loading door be moved one more bay to the left. This will eliminate two parking spaces. The plan provides more spaces than required for this use. These two spaces can be provided between the two loading doors if requested, but I do feel it makes sense in that location.

If this is acceptable to the City, we would appreciate an approval letter regarding the same. If you have any questions, please feel free to give me a call.

Very truly,

Environmental Engineering

& Remediation, Inc.

Stephen J. Bradstreet, P.E.

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ALLFIRST BANK

25 SOUTH CHARLES STREET, SUITE 1501 15TH FLOOR INTERNATIONAL DIVISION BALTIMORE, MD 21201

INTERNATIONAL COLLECTIONS: (410) 244-4566
LETTERS OF CREDIT: (410) 244-4475/545-2052/244-4538

April 2, 2002

CITY OF PORTLAND PLANNING AND URBAN DEVELOPMENT 389 CONGRESS STREET, PORTLAND, ME 04101

RE: Our Letter of Credit Number: SB-902402-0101 Amount: USD189,498.00

Current USD Balance:189,498.00

Date of Issue: 07/27/1999 Account of: TUCHENHAGEN-ZAJAC

ATTN: SANDY ZAJAC 1000 RIVERSIDE STREET

PORTLAND, ME 04103

Prior Expiration Date: 06/01/2002

Ladies and Gentlemen:

According to the original terms of this letter of credit, it has been automatically renewed for an additional period.

The new expiration date is: 06/01/2003

This letter is a notification only and is not an amendment to the credit.

Very truly yours,

Thank you for the opportunity to be of service to you.

Authorized Signature

CC: TUCHENHAGEN-ZAJAC
ATTN: SANDY ZAJAC
1000 RIVERSIDE STREET
PORTLAND, ME
04103

KEEHN WILLIAM, R.

Bank: 0101 Branch: 999

: 101-744

Letter of Credit File SB-902402-0101



DIVISION DIRECTORS

Mark B. Adelson

Housing & Neighborhood Services

Alexander Q. Jaegerman Planning

John N. Lufkin Economic Development

DEPARTMENT OF PLANNING AND DEVELOPMENT

TO:

Duane Kline, Finance Department

FROM:

Alexander Jaegerman, Chief Planner

DATE:

May 7, 2002

SUBJECT:

Request for Release of Performance Guarantee

1000 Riverside Street; Tuchenhagen-Zajac LLC

(ID#1999-0065)

(CBL# 360-A-004)

Please release the Letter of Credit account # SB-902402-0101 for the Tuchenhagen-Zajac project at 1000 Riverside Street.

Original Sum

\$ 189,498.00

Approved:

Alexander Jaegerman

Planning Division Director

cc:

Sarah Hopkins, Development Review Services Manager

√ Jay Reynolds, Development Review Coordinator

Todd Merkle, Public Works

Code Enforcement

File

STORMWATER MANAGEMENT REPORT

FOR

TUCHENHAGEN-ZAJAC, LLC

Submitted to:

City of portland
City Hall
389 Congress Street
Portland, Maine 04101

Submitted by:

Environmental Engineering & Remediation, Inc. 222 St. John Street Suite 314 Portland, Maine 04102

Stormwater Management Report for Tuchenhagen-Zajac, LLC Portland, Maine

PROJECT LOCATION

The Tuchenhagen-Zajac, LLC parcel is located at 1000 Riverside Street adjacent to the Riverside Golf Course. The site watershed feeds a ravine within the golf course property that eventually outlets to the Presumpscot River approximately 2,000 feet to the northwest. The site watershed is bounded by Riverside Street to the east, a mini-storage facility to the south, and the golf course property to the west and north. The major portion of the site being developed in barren/gravel storage yard area.

PRE-DEVELOPMENT CONDITIONS

The \pm 3.9-acre parcel consists of a 180,000 SF light industrial building with associated paved and gravel parking area, barren/gravel storage yard area, lawn area and scrub/brush/meadow area. The site currently drains in a north-northwesterly direction to an existing detention basin located in the northwest corner of the parcel. The basin outlets to a ravine located on the opposite side of fairway number 1, where it flows to the Presumpscot River.

The parcel has a slight slope of approximately 1 percent. The site collects drainage from a catch basin located on the mini storage facility property and directs it to the existing detention facility. The drainage area contributing flow to the detention basin is approximately 2.98 acres consisting of \pm 1.36 acres of impervious area and \pm 1.62 acres of grass, shrub and barren area. Riverside Street is currently under construction with a stormdrain is being placed within Riverside Street to collect any street runoff.

POST-DEVELOPMENT CONDITIONS

The proposed development will increase the pavement and building area to \pm 2.48 acres with the remaining area of \pm 1.44 acres consisting of a lawn and grass/shrub area, for a total post-development watershed area of 3.92 acres.

The overall drainage pattern for the site will not change. Additional site drainage that was sheeting off the site to the west is now being collected and directed to the detention basin. This, along with detention, reduces the impact to the abutting property.

Runoff on-site will be collected by either the stormdrain system within the parking area or the existing swale along the northside of the property. Both systems outlet to the expanded detention basin.

STORMWATER RUNOFF CALCULATIONS

Stormwater runoff calculations for this project were made using the Hydro CAD computer program, which is based on the Soil Conservation Service's TR-20 methodology. Runoff was predicted based on the standard type III storm. Three storms were modeled; the two year storm (3.0 inches in 24 hours); the ten year storm (4.7 inches in 24 hours); and the 25 year storm (5.5 inches in 24 hours). The detention basin has been routed with each storm to assure that it is large enough.

Based on the calculations in Appendix A, the stormwater results are tabulated below.

Year Storm Pre-Development		Post-Development - Subareas					
Event	Subarea 1	Subarea 2	1	2	3	4	5
2	0.57 CFS	1.48 CFS	0.57	2.27	1.90	0.32	0.00
10	1.18 CFS	2.66 CFS	1.18	4.02	3.24	1.04	0.03
25	1.48 CFS	3.22 CFS	1.48	4.84	3.86	1.44	0.10

The detention area is being expanded to reduce post-development flows to below pre-development conditions. The detention area will also provide stormwater quality control and filter out impurities washed off the road and driveway areas.

With the detention area, the following table indicates the reduced flows at the outlet of the detention area.

Year Storm Event	Pre-Development	Post-Development	Post-Development Percent Reduction
2	1.57 CFS	1.15 CFS	27%
10	3.49 CFS	3.15 CFS	10%
25	4.07 CFS	3.93 CFS	3%

The reduction of post-development flows is achieved by modifying the existing outlet control structure utilizing a new orifice and replacing the existing 15" PVC culvert with a 6" PVC culvert to control the flow for the three storm events. The peak flood elevation for the 25-year storm does not encroach any abutting properties. Even with the increase of 0.94 acres in the post-development watershed area, the detention area reduces peak flows off site by 3 to 27 percent.

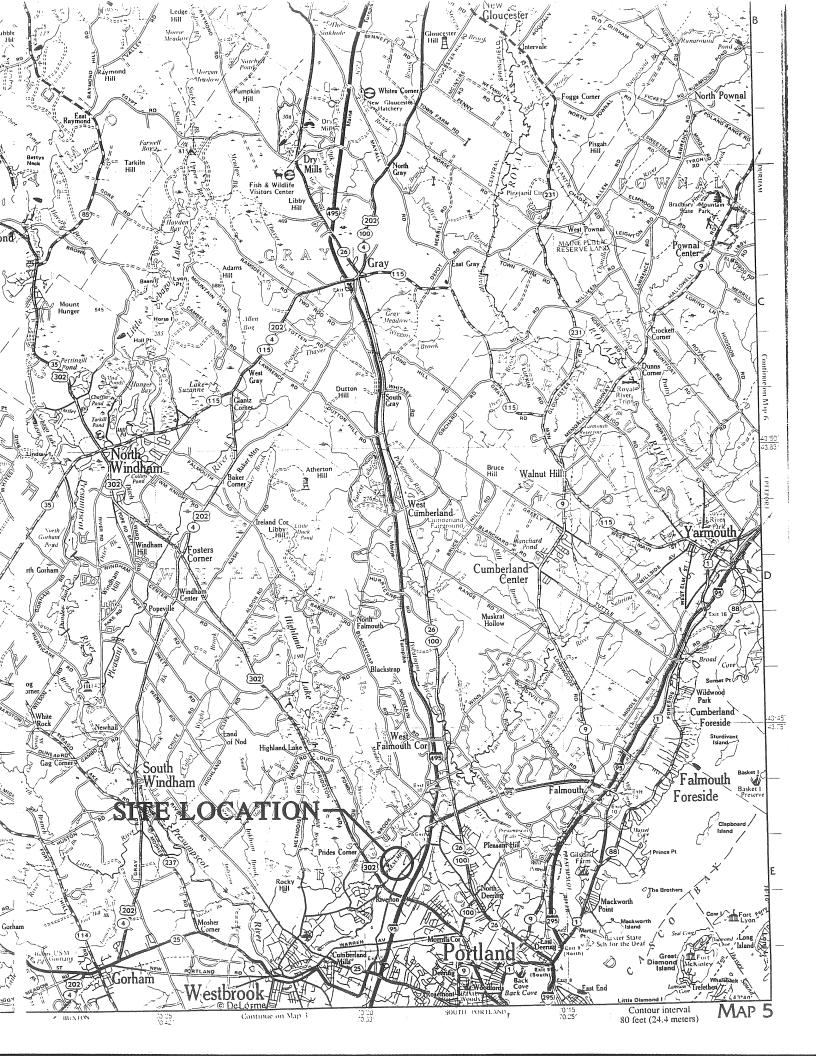
SUMMARY AND CONCLUSIONS

While the proposed buildings and paved areas generate additional runoff, the proposed expansion of the existing detention area with modifications to the outlet structure; reduces the rate of runoff below pre-development conditions. The combination of the detention area and increased collection area has reduced the runoff rate off the property and lessens the impact to abutting properties.

PRE-DEVELOPMENT STORMWATER CALCULATIONS

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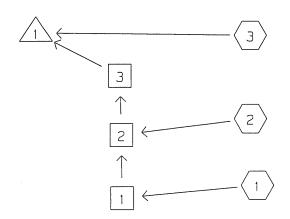
NUMBER 75

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14 May 99

POND 1



SUBCATCHMENT REACH POND LINE		SUBCATCHMENT	REA	сн _	POND		LINK
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= Existing Detention Pond

= Mini-Storage Lot	->	REACH 1
= Area draining to parking lot CB	->	REACH 2
- Area draining to detention basin	->	POND 1
= 8" PVC	->	REACH 2
= 15" CMP	->	REACH 3
- Channel	->	POND 1
	Area draining to parking lot CB Area draining to detention basin 8" PVC 15" CMP	Area draining to parking lot CB -> Area draining to detention basin -> 8" PVC -> 15" CMP ->

TYPE III 24-HOUR RAINFALL= 3.00 IN

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SUBCATCHMENT 1

Mini-Storage Lot

PEAK= .57 CFS @ 12.16 HRS, VOLUME= .05 AF

ACRES	CN		SCS TR-20 METHOD
.35	98	Bldg, Pav't, Gravel	TYPE III 24-HOUR
.13	39	Grass-Good	RAINFALL= 3.00 IN
.48	82		SPAN= 10-20 HRS, dt=.1 HRS

Tc (min) Comment Method 12.4 TR-55 SHEET FLOW AB Grass: Dense n=.24 L=60' P2=3 in s=.011 '/' SHALLOW CONCENTRATED/UPLAND FLOW BC 1.7 Paved Kv=20.3282 L=215' s=.011 '/' V=2.13 fps _____

> Total Length= 275 ft Total Tc= 14.1

SUBCATCHMENT 1 RUNOFF PEAK= .57 CFS @ 12.16 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.01	.01	.01	.01	.01	.01	.01	.02	.02	.02
11.00	.02	.02	.03	.03	.04	.04	.05	.08	.13	.19
12.00	.32	.54	.56	.44	.34	.26	.18	.14	.11	.10
13.00	.09	.08	.08	.07	.07	.07	.06	.06	.06	.06
14.00	.06	.05	.05	.05	.05	.05	.05	.05	.04	.04
15.00	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
16.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
17.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
18.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
19.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
20.00	.01									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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14 May 99

SUBCATCHMENT 2

Area draining to parking lot CB

PEAK= 1.48 CFS @ 12.03 HRS, VOLUME= .10 AF

_	ACRES	CN		SCS TR-20 METHOD
	.62	98	Bldg, Pav't	TYPE III 24-HOUR
	.11	39	Grass-Good	RAINFALL= 3.00 IN
	.73	89		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	2.6
Smooth surfaces n=.011 L=150'	P2=3 in s=.007'/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	2.9
Paved Kv=20.3282 L=295' s=.00	7 '/' V=1.7 fps	
	Total Length= 445 ft Total Tc=	5.5

SUBCATCHMENT 2 RUNOFF PEAK= 1.48 CFS @ 12.03 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.04	.04	.05	.05	.05	.06	.06	.06	.07	.07
11.00	.08	.09	.10	.11	.13	.15	.23	.36	.50	.72
12.00	1.44	1.23	.77	.59	.44	.29	.22	.19	.18	.16
13.00	.14	.14	.13	.13	.12	.12	.11	.11	.10	.10
14.00	.10	.09	.09	.09	.09	.08	.08	.08	.08	.08
15.00	.07	.07	.07	.07	.06	.06	.06	.06	.06	.05
16.00	.05	.05	.05	.05	.05	.05	.05	.04	.04	.04
17.00	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
18.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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SUBCATCHMENT 3

Area draining to detention basin

PEAK= .17 CFS @ 12.56 HRS, VOLUME= .03 AF

ACRES	CN		SCS TR-20 METHOD
.37	98	Bldg, Pav't	TYPE III 24-HOUR
.47	68	Grass<50%	RAINFALL= 3.00 IN
.49	39	Grass-Good	SPAN= 10-20 HRS, dt=.1 HRS
.44	35	Brush-Fair	
1.77	58		

Method		Comment	Tc (min)
TR-55 SHEET FLOW		AB	22.2
Grass: Dense n=.24	L=140' P2=3	3 in s=.014 '/'	
SHALLOW CONCENTRATED	/UPLAND FLOW	BC	4.3
Grassed Waterway K	Iv=15 L=460'	s=.014 '/' V=1.77 fps	
		Total Length= 600 ft	Total Tc= 26.5

SUBCATCHMENT 3 RUNOFF PEAK= .17 CFS @ 12.56 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.00	0.00	.01	.04	.10	.14	.17	.17	.15	.13	.12
13.00	.11	.10	.09	.08	.08	.08	.07	.07	.07	.07
14.00	.07	.06	.06	.06	.06	.06	.06	.06	.06	.05
15.00	.05	.05	.05	.05	.05	.05	.05	.05	.04	.04
16.00	.04	.04	.04	.04	.04	.04	.04	.04	.03	.03
17.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
18.00	.03	.03	.03	.03	.02	.02	.02	.02	.02	.02
19.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
20.00	.02									

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8" PVC REACH 1

Qin = .57 CFS @ 12.16 HRS, VOLUME= .05 AF

Qout= .56 CFS @ 12.20 HRS, VOLUME= .05 AF, ATTEN= 1%, LAG= 2.5 MIN

14 May 99

DEPTH	END AREA	DISCH		
_(FT)	(SQ-FT)	(CFS)	8" PIPE	STOR-IND+TRANS METHOD
0.	0.0	0.00		PEAK DEPTH= .31 FT
	1 0.0	.03	n = .009	PEAK VELOCITY= 3.6 FPS
	1 0.0	.11	LENGTH= 240 FT	TRAVEL TIME = 1.1 MIN
	2 .1	.24	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
	5 .3	1.03		
	5 .3	1.21		
•	6 .3	1.32		
•	6 .3	1.33		
•	6 .3	1.32		
	7 .3	1.23		

REACH 1 OUTFLOW PEAK= .56 CFS @ 12.20 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	.01	.01	.01	.01	.01	.01	.01	.02	.02
11.00	.02	.02	.02	.03	.03	.04	.05	.07	.11	.17
12.00	.27	.47	.56	.48	.37	.29	.21	.15	.12	.11
13.00	.09	.08	.08	.07	.07	.07	.07	.06	.06	.06
14.00	.06	.05	.05	.05	.05	.05	.05	.05	.05	.04
15.00	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
16.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
17.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
18.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
19.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
20.00	.02									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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REACH 2 15" CMP

Qin = 1.82 CFS @ 12.05 HRS, VOLUME= .16 AF

Qout= 1.76 CFS @ 12.07 HRS, VOLUME= .16 AF, ATTEN= 3%, LAG= 1.2 MIN

14 May 99

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .77 FT
	1 .1	.05	n = .024	PEAK VELOCITY= 2.2 FPS
. 3	3.2	.22	LENGTH= 30 FT	TRAVEL TIME = .2 MIN
. 4	4 .3	.48	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
	9.9	2.07		
1.0	0 1.1	2.42		
1.3	1 1.2	2.64		
1.2	2 1.2	2.66		
1.2	2 1.2	2.64		
1.3	3 1.2	2.47		

REACH 2 OUTFLOW PEAK= 1.76 CFS @ 12.07 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.04	.05	.05	.06	.06	.07	.07	.08	.08	.09
11.00	.10	.11	.12	.14	.16	.19	.27	.42	.60	.87
12.00	1.65	1.73	1.34	1.10	.82	.60	.43	.36	.30	.27
13.00	.24	.23	.21	.20	.19	.19	.18	.17	.17	.16
14.00	.15	.15	.14	.14	.14	.13	.13	.13	.12	.12
15.00	.12	.11	.11	.11	.10	.10	.10	.09	.09	.09
16.00	.08	.08	.08	.08	.07	.07	.07	.07	.07	.07
17.00	.07	.06	.06	.06	.06	.06	.06	.06	.05	.05
18.00	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
19.00	.05	.04	.04	.04	.04	.04	.04	.04	.04	.04
20.00	.04									

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REACH 3 Channel

Qin = 1.76 CFS @ 12.07 HRS, VOLUME= .16 AF
Qout= 1.63 CFS @ 12.18 HRS, VOLUME= .16 AF, ATTEN= 7%, LAG= 6.9 MIN

DEPTH END A	REA DISCH		
(FT) (SQ-1	FT) (CFS)	2' x 3' CHANNEL	STOR-IND+TRANS METHOD
0.0 0	.0 0.00	SIDE SLOPE= .5 '/'	PEAK DEPTH= .53 FT
.3	.8 .58	n = .08	PEAK VELOCITY= 1.0 FPS
.6 1	.9 2.06	LENGTH= 200 FT	TRAVEL TIME = 3.2 MIN
.9 3	.4 4.57	SLOPE= .011 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
1.3 5	.9 9.59		
1.8 10	.1 19.68		
2.4 16	.3 37.51		
3.0 24	.0 62.80		

REACH 3 OUTFLOW PEAK= 1.63 CFS @ 12.18 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.01	.02	.04	.05	.06	.06	.07	.07	.08	.08
11.00	.09	.10	.11	.12	.14	.16	.19	.26	.39	.58
12.00	.99	1.50	1.63	1.37	1.08	.82	.61	.47	.39	.32
13.00	.28	.25	.23	.21	.20	.20	.19	.18	.18	.17
14.00	.16	.16	.15	.14	.14	.14	.13	.13	.13	.12
15.00	.12	.12	.11	.11	.11	.10	.10	.10	.09	.09
16.00	.09	.08	.08	.08	.08	.08	.07	.07	.07	.07
17.00	.07	.07	.07	.06	.06	.06	.06	.06	.06	.05
18.00	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
19.00	.05	.05	.05	.04	.04	.04	.04	.04	.04	.04
20.00	.04									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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POND 1 Existing Detention Pond

Qin = 1.67 CFS @ 12.19 HRS, VOLUME= .19 AF

Qout= 1.57 CFS @ 12.27 HRS, VOLUME= .19 AF, ATTEN= 6%, LAG= 4.6 MIN

ELEVAI	ION AR	EA INC	.STOR C	JM.STOR	STOR-I	IND METHOD		
(F7	(S	F) (CF)	(CF)	PEAK S	STORAGE =	646	CF
61	9	0	0	0	PEAK	ELEVATION=	62.5	FT
63	.0 2	133	1173	1173	FLOOD	ELEVATION=	66.0	FT
64	0 2	772	2453	3626	START	ELEVATION=	61.9	FT
65	5.0 4	545	3659	7284	SPAN=	10-20 HRS, đ	lt=.1 F	IRS
66	5.0 7	200	5873	13157	Tdet=	14.1 MIN (.1	8 AF)	

ROUTE INVERT OUTLET DEVICES

1 P 61.9' 15" CULVERT

n=.009 L=15' S=.25'/' Ke=.5 Cc=.9 Cd=.6

2 P 62.7' 1' x 1' ORIFICE/GRATE

Q=.6 Width 2/3 SQR(2g) (H^1.5 - [H-Height]^1.5)

POND 1 TOTAL OUTFLOW PEAK= 1.57 CFS @ 12.27 HOURS

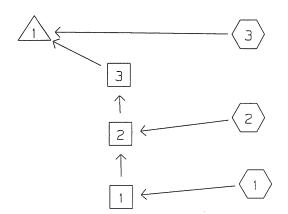
HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	.01	.01	.02	.03	.03	.04	.04	.05
11.00	.06	.07	.08	.10	.11	.12	.14	.18	.25	.38
12.00	.65	1.10	1.51	1.56	1.38	1.15	.94	.76	.63	.53
13.00	.45	.40	.36	.33	.31	.29	.28	.27	.26	.25
14.00	.24	.23	.22	.21	.21	.20	.20	.19	.19	.19
15.00	.18	.18	.17	.17	.17	.16	.16	.15	.15	.14
16.00	.14	.13	.13	.13	.12	.12	.12	.11	.11	.11
17.00	.11	.10	.10	.10	.10	.10	.09	.09	.09	.09
18.00	.08	.08	.08	.08	.08	.08	.07	.07	.07	.07
19.00	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
20.00	.06									

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14 May 99

POND 1



SUBCATCHMENT REACH POND	C LINK
-------------------------	--------

= Existing Detention Pond

SUBCATCHMENT 1	= Mini-Storage Lot	->	REACH 1
SUBCATCHMENT 2	= Area draining to parking lot CB	->	REACH 2
SUBCATCHMENT 3	= Area draining to detention basin	->	POND 1
REACH 1	= 8" PVC	->	REACH 2
REACH 2	= 15" CMP	->	REACH 3
REACH 3	= Channel	->	POND 1

TYPE III 24-HOUR RAINFALL= 4.70 IN

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14 May 99

SUBCATCHMENT 1 Mini-Storage Lot

PEAK= 1.18 CFS @ 12.15 HRS, VOLUME= .10 AF

ACRES	CN		SCS TR-20 METHOD
.35	98	Bldg, Pav't, Gravel	TYPE III 24-HOUR
.13	39_	Grass-Good	RAINFALL= 4.70 IN
.48	82		SPAN= 10-20 HRS, dt=.1 HRS

Method Comment Tc (min) TR-55 SHEET FLOW 12.4 AB Grass: Dense n=.24 L=60' P2=3 in s=.011 '/' 1.7 SHALLOW CONCENTRATED/UPLAND FLOW BC Paved Kv=20.3282 L=215' s=.011 '/' V=2.13 fps

SUBCATCHMENT 1 RUNOFF PEAK= 1.18 CFS @ 12.15 HOURS

Total Length= 275 ft Total Tc= 14.1

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.03	.03	.04	.04	.04	.05	.05	.05	.06	.06
11.00	.07	.07	.08	.09	.10	.12	.14	.21	.31	.44
12.00	.71	1.13	1.13	.87	.66	.49	.35	.26	.21	.19
13.00	.17	.15	.14	.13	.13	.12	.12	.11	.11	.11
14.00	.10	.10	.09	.09	.09	.09	.09	.08	.08	.08
15.00	.08	.07	.07	.07	.07	.07	.06	.06	.06	.06
16.00	.05	.05	.05	.05	.05	.05	.05	.05	.04	.04
17.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
18.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

TYPE III 24-HOUR RAINFALL= 4.70 IN

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SUBCATCHMENT 2

Area draining to parking lot CB

PEAK= 2.66 CFS @ 12.02 HRS, VOLUME= .19 AF

ACRES	CN		SCS TR-20 METHOD
.62	98	Bldg, Pav't	TYPE III 24-HOUR
.11	39	Grass-Good	RAINFALL= 4.70 IN
.73	89		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	2.6
Smooth surfaces n=.011 L=150'	P2=3 in s=.007 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	2.9
Paved Kv=20.3282 L=295' s=.00	7 '/' V=1.7 fps	
	Total Length= 445 ft Total Tc=	5.5

SUBCATCHMENT 2 RUNOFF PEAK= 2.66 CFS @ 12.02 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.09	.10	.11	.11	.12	.13	.14	.14	.15	.16
11.00	.17	.19	.21	.24	.26	.30	.46	.70	.96	1.35
12.00	2.61	2.18	1.34	1.02	.75	.49	.37	.33	.30	.27
13.00	.25	.23	.22	.21	.21	.20	.19	.18	.18	.17
14.00	.16	.16	.15	.15	.15	.14	.14	.13	.13	.13
15.00	.12	.12	.12	.11	.11	.10	.10	.10	.09	.09
16.00	.09	.08	.08	.08	.08	.08	.08	.07	.07	.07
17.00	.07	.07	.07	.06	.06	.06	.06	.06	.06	.05
18.00	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
19.00	.05	.05	.05	.05	.05	.05	.04	.04	.04	.04
20.00	.04									

TYPE III 24-HOUR RAINFALL= 4.70 IN

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SUBCATCHMENT 3

Area draining to detention basin

PEAK= 1.04 CFS @ 12.40 HRS, VOLUME= .13 AF

ACRES	CN		SCS TR-20 METHOD
.37	98	Bldg, Pav't	TYPE III 24-HOUR
.47	68	Grass<50%	RAINFALL= 4.70 IN
.49	39	Grass-Good	SPAN= 10-20 HRS, dt=.1 HRS
.44	35	Brush-Fair	
1.77	58		

Method	Comment	Tc (min)				
TR-55 SHEET FLOW	AB	22.2				
Grass: Dense n=.24	L=140' P2=3 in $s=.014'/'$					
SHALLOW CONCENTRATED/U	/UPLAND FLOW BC	4.3				
Grassed Waterway Kv=	v=15 L=460' s=.014 '/' V=1.77 fps					
	Total Length= 600 ft T	Total Tc= 26.5				

SUBCATCHMENT 3 RUNOFF PEAK= 1.04 CFS @ 12.40 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.01	.05
12.00	.15	.38	.72	.97	1.04	.97	.84	.69	.56	.46
13.00	.39	.34	.31	.28	.26	.24	.23	.23	.22	.21
14.00	.20	.20	.19	.18	.18	.17	.17	.17	.16	.16
15.00	.16	.15	.15	.15	.14	.14	.13	.13	.13	.12
16.00	.12	.11	.11	.11	.10	.10	.10	.10	.10	.09
17.00	.09	.09	.09	.09	.08	.08	.08	.08	.08	.07
18.00	.07	.07	.07	.07	.07	.07	.06	.06	.06	.06
19.00	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
20.00	.06									

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REACH 1 8" PVC

Qin = 1.18 CFS @ 12.15 HRS, VOLUME= .10 AF

Qout= 1.15 CFS @ 12.19 HRS, VOLUME= .10 AF, ATTEN= 3%, LAG= 2.7 MIN

DEPTH :	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	8" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .52 FT
.1	0.0	.03	n = .009	PEAK VELOCITY= 4.0 FPS
.1	0.0	.11	LENGTH= 240 FT	TRAVEL TIME = 1.0 MIN
.2	.1	.24	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
.5	.3	1.03		
.5	.3	1.21		
.6	.3	1.32		
.6	. 3	1.33		
.6	.3	1.32		
.7	. 3	1.23		

REACH 1 OUTFLOW PEAK= 1.15 CFS @ 12.19 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.02	.03	.03	.04	.04	.04	.05	.05	.06	.06
11.00	.06	.07	.08	.09	.10	.11	.13	.18	.28	.40
12.00	.62	1.00	1.15	.95	.72	.55	.39	.28	.23	.20
13.00	.17	.16	.14	.14	.13	.13	.12	.12	.11	.11
14.00	.10	.10	.10	.09	.09	.09	.09	.08	.08	.08
15.00	.08	.08	.07	.07	.07	.07	.06	.06	.06	.06
16.00	.06	.05	.05	.05	.05	.05	.05	.05	.05	.04
17.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
18.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

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REACH 2 15" CMP

Qin = 3.40 CFS @ 12.05 HRS, VOLUME= .29 AF

Qout= 2.47 CFS @ 12.10 HRS, VOLUME= .29 AF, ATTEN= 27%, LAG= 3.2 MIN

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= 1.25 FT
. 1	1	.05	n = .024	PEAK VELOCITY= 2.3 FPS
.3	. 2	.22	LENGTH= 30 FT	TRAVEL TIME = .2 MIN
. 4	. 3	.48	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 9	.9	2.07		
1.0	1.1	2.42		
1.1	1.2	2.64		
1.2	1.2	2.66		
1.2	1.2	2.64		
1.3	1.2	2.47		

REACH 2 OUTFLOW PEAK= 2.47 CFS @ 12.10 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.10	.14	.13	.16	.16	.18	.18	.20	.20	.22
11.00	.23	.25	.28	.32	.36	.41	.58	.86	1.21	1.72
12.00	2.45	2.47	2.47	2.47	2.43	1.19	.70	.69	.47	.53
13.00	.38	.43	.33	.38	.31	.34	.30	.31	.28	.29
14.00	.26	.26	.24	.25	.23	.23	.22	.22	.21	.21
15.00	.20	.20	.19	.18	.18	.17	.17	.16	.15	.15
16.00	.14	.14	.13	.13	.13	.13	.12	.12	.12	.12
17.00	.11	.11	.11	.11	.10	.10	.10	.09	.09	.09
18.00	.09	.09	.08	.08	.08	.08	.08	.08	.08	.08
19.00	.08	.08	.08	.07	.07	.07	.07	.07	.07	.07
20.00	.07									

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REACH 3 Channel

Qin = 2.47 CFS @ 12.10 HRS, VOLUME= .29 AF

Qout= 2.49 CFS @ 12.20 HRS, VOLUME= .29 AF, ATTEN= 0%, LAG= 6.0 MIN

DEPTH EN	ND AREA	DISCH		
_(FT)	(SQ-FT)	(CFS)	2' x 3' CHANNEL	STOR-IND+TRANS METHOD
0.0	0.0	0.00	SIDE SLOPE= .5 '/'	PEAK DEPTH= .66 FT
.3	.8	.58	n=.08	PEAK VELOCITY= 1.1 FPS
.6	1.9	2.06	LENGTH= 200 FT	TRAVEL TIME = 2.9 MIN
.9	3.4	4.57	SLOPE= .011 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
1.3	5.9	9.59		
1.8	10.1	19.68		
2.4	16.3	37.51		
3.0	24.0	62.80		

REACH 3 OUTFLOW PEAK= 2.49 CFS @ 12.20 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.04	.07	.12	.14	.15	.16	.17	.18	.19	.20
11.00	.22	.23	.25	.28	.31	.35	.42	.59	.89	1.29
12.00	1.83	2.34	2.49	2.47	2.46	2.07	1.29	.78	.63	.54
13.00	.49	.44	.40	.37	.36	.34	.33	.32	.30	.29
14.00	.28	.27	.26	.25	.24	.24	.23	.23	.22	.21
15.00	.21	.20	.20	.19	.18	.18	.17	.17	.16	.16
16.00	.15	.14	.14	.14	.13	.13	.13	.12	.12	.12
17.00	.12	.11	.11	.11	.11	.10	.10	.10	.10	.09
18.00	.09	.09	.09	.08	.08	.08	.08	.08	.08	.08
19.00	.08	.08	.08	.08	.08	.07	.07	.07	.07	.07
20.00	.07									

TYPE III 24-HOUR RAINFALL= 4.70 IN

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POND 1 Existing Detention Pond

Qin = 3.54 CFS @ 12.36 HRS, VOLUME= .42 AF

Qout= 3.49 CFS @ 12.39 HRS, VOLUME= .42 AF, ATTEN= 2%, LAG= 1.5 MIN

ELEVATION	AREA	INC.STOR	CUM.STOR	STOR-IND METHOD
(FT)	(SF)	(CF)	(CF)	PEAK STORAGE = 1009 CF
61.9	0	0	O	PEAK ELEVATION= 62.8 FT
63.0	2133	1173	1173	FLOOD ELEVATION= 66.0 FT
64.0	2772	2453	3626	START ELEVATION= 61.9 FT
65.0	4545	3659	7284	SPAN= 10-20 HRS, dt=.1 HRS
66.0	7200	5873	13157	Tdet= 9.8 MIN (.41 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	61.9'	15" CULVERT
			n=.009 L=15' S=.25'/' Ke=.5 Cc=.9 Cd=.6
2	P	62.7'	1' x 1' ORIFICE/GRATE
			Q=.6 Width 2/3 SQR(2g) (H^1.5 - [H-Height]^1.5)

POND 1 TOTAL OUTFLOW PEAK= 3.49 CFS @ 12.39 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	.01	.02	.04	.06	.10	.12	.14	.16	.17
11.00	.19	.21	.22	.25	.27	.31	.35	.44	.65	1.00
12.00	1.55	2.27	2.96	3.35	3.48	3.25	2.56	1.86	1.39	1.14
13.00	.99	.87	.77	.70	.66	.62	.59	.56	.54	.52
14.00	.50	.48	.46	.45	.43	.42	.41	.40	.40	.39
15.00	.38	.37	.36	.35	.34	.33	.32	.31	.30	.29
16.00	.28	.27	.26	.25	.24	.24	.23	.23	.22	.22
17.00	.21	.21	.20	.20	.20	.19	.19	.18	.18	.18
18.00	.17	.17	.16	.16	.16	.15	.15	.15	.15	.15
19.00	.14	.14	.14	.14	.14	.14	.14	.13	.13	.13
20.00	.13									

TYPE III 24-HOUR RAINFALL= 5.50 IN

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REACH 1

SUBCATCHMENT 1

SUBCATCHMENT REACH POND LINK

= Mini-Storage Lot

SUBCATCHMENT 2 = Area draining to parking lot CB -> REACH 2

SUBCATCHMENT 3 = Area draining to detention basin -> POND 1

REACH 1 = 8" PVC -> REACH 2

REACH 2 = 15" CMP -> REACH 3

REACH 3 = Channel -> POND 1

POND 1 = Existing Detention Pond ->

TYPE III 24-HOUR RAINFALL= 5.50 IN

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SUBCATCHMENT 1

Mini-Storage Lot

PEAK= 1.48 CFS @ 12.15 HRS, VOLUME= .13 AF

ACRES	CN		SCS TR-20 METHOD
.35	98	Bldg, Pav't, Gravel	TYPE III 24-HOUR
.13	39	Grass-Good	RAINFALL= 5.50 IN
.48	82		SPAN= 10-20 HRS, dt=.1 HRS

 Method
 Comment
 Tc (min)

 TR-55 SHEET FLOW
 AB
 12.4

 Grass: Dense n=.24 L=60' P2=3 in s=.011'/'
 SHALLOW CONCENTRATED/UPLAND FLOW BC
 1.7

 Paved Kv=20.3282 L=215' s=.011'/' V=2.13 fps
 Total Length= 275 ft Total Tc= 14.1

SUBCATCHMENT 1 RUNOFF PEAK= 1.48 CFS @ 12.15 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.05	.05	.05	.06	.06	.06	.07	.07	.08	.08
11.00	.09	.10	.11	.12	.14	.15	.19	.27	.40	.57
12.00	.90	1.42	1.40	1.07	.82	.61	.43	.31	.26	.23
13.00	.20	.18	.17	.16	.16	.15	.14	.14	.13	.13
14.00	.12	.12	.11	.11	.11	.11	.10	.10	.10	.10
15.00	.09	.09	.09	.08	.08	.08	.08	.07	.07	.07
16.00	.07	.06	.06	.06	.06	.06	.06	.06	.05	.05
17.00	.05	.05	.05	.05	.05	.05	.04	.04	.04	.04
18.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
19.00	.04	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

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SUBCATCHMENT 2

Area draining to parking lot CB

PEAK= 3.22 CFS @ 12.02 HRS, VOLUME= .23 AF

ACRES	CN_	
.62	98	Bldg, Pav't
.11	39	Grass-Good
.73	89	

SCS TR-20 METHOD TYPE III 24-HOUR RAINFALL= 5.50 IN

SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	2.6
Smooth surfaces n=.011 L=150'	P2=3 in s=.007'/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	2.9
Paved Kv=20.3282 L=295' s=.00	7 '/' V=1.7 fps	
	Total Length= 445 ft Total To	= 5.5

SUBCATCHMENT 2 RUNOFF PEAK= 3.22 CFS @ 12.02 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.12	.13	.14	.15	.16	.16	.17	.18	.19	.20
11.00	.21	.24	.27	.30	.33	.38	.57	.86	1.18	1.65
12.00	3.16	2.63	1.61	1.22	.90	.58	.44	.39	.36	.33
13.00	.29	.27	.26	.25	.25	.24	.23	.22	.21	.20
14.00	.19	.19	.18	.18	.17	.17	.16	.16	.15	.15
15.00	.15	.14	.14	.13	.13	.12	.12	.12	.11	.11
16.00	.10	.10	.10	.10	.09	.09	.09	.09	.09	.08
17.00	.08	.08	.08	.08	.07	.07	.07	.07	.07	.06
18.00	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
19.00	.06	.06	.06	.05	.05	.05	.05	.05	.05	.05
20.00	.05									

TYPE III 24-HOUR RAINFALL= 5.50 IN

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SUBCATCHMENT 3 Area draining to detention basin

PEAK= 1.60 CFS @ 12.38 HRS, VOLUME= .19 AF

_	ACRES	CN		SCS TR-20 METHOD
	.37	98	Bldg, Pav't	TYPE III 24-HOUR
	.47	68	Grass<50%	RAINFALL= 5.50 IN
	.49	39	Grass-Good	SPAN= 10-20 HRS, dt=.1 HRS
	.44	35_	Brush-Fair	
	1.77	5.8		

Method	Comment		Tc (min)			
TR-55 SHEET FLOW	AB		22.2			
Grass: Dense n=.24	L=140' P2=3 in s=	.014 '/'				
SHALLOW CONCENTRATED/	UPLAND FLOW BC		4.3			
Grassed Waterway Kv	r=15 L=460' s=.014',	'' V=1.77 fps				
	Total Ler	ngth= 600 ft Total T	c= 26.5			

SUBCATCHMENT 3 RUNOFF PEAK= 1.60 CFS @ 12.38 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	.01	.02	.04	.09	.18
12.00	.36	.72	1.22	1.55	1.60	1.45	1.24	1.01	.80	.66
13.00	.56	.48	.43	.39	.36	.34	.32	.31	.30	.29
14.00	.28	.27	.26	.25	.24	.24	.23	.23	.22	.22
15.00	.21	.21	.20	.20	.19	.19	.18	.17	.17	.16
16.00	.16	.15	.15	.14	.14	.14	.13	.13	.13	.12
17.00	.12	.12	.12	.11	.11	.11	.11	.10	.10	.10
18.00	.10	.09	.09	.09	.09	.09	.09	.09	.08	.08
19.00	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
20.00	.08									

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14 May 99

REACH 1 8" PVC

Qin = 1.48 CFS @ 12.15 HRS, VOLUME= .13 AF

Qout= 1.27 CFS @ 12.30 HRS, VOLUME= .13 AF, ATTEN= 14%, LAG= 9.2 MIN

DEPTH	END AREA	DISCH		
_(FT)	(SQ-FT)	(CFS)	8" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .67 FT
.1	. 0.0	.03	n = .009	PEAK VELOCITY= 4.0 FPS
.1	0.0	.11	LENGTH= 240 FT	TRAVEL TIME = 1.0 MIN
. 2	.1	.24	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 5	.3	1.03		
. 5	.3	1.21		
. 6	.3	1.32		
. 6	.3	1.33		
. 6	.3	1.32		
.7	.3	1.23		

REACH 1 OUTFLOW PEAK= 1.27 CFS @ 12.30 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.02	.05	.05	.05	.06	.06	.07	.07	.08	.08
11.00	.09	.09	.10	.12	.13	.15	.17	.24	.36	.52
12.00	.79	1.24	1.25	1.27	1.02	.64	.50	.34	.28	.24
13.00	.21	.19	.17	.16	.16	.15	.15	.14	.14	.13
14.00	.13	.12	.12	.11	.11	.11	.10	.10	.10	.10
15.00	.09	.09	.09	.09	.08	.08	.08	.08	.07	.07
16.00	.07	.06	.06	.06	.06	.06	.06	.06	.05	.05
17.00	.05	.05	.05	.05	.05	.05	.05	.04	.04	.04
18.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
19.00	.04	.04	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

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15" CMP REACH 2

Qin = 4.15 CFS @ 12.05 HRS, VOLUME= .35 AF

Qout= 2.47 CFS @ 12.10 HRS, VOLUME= .35 AF, ATTEN= 40%, LAG= 3.3 MIN

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= 1.25 FT
.1	1	.05	n = .024	PEAK VELOCITY= 2.3 FPS
.3	.2	.22	LENGTH= 30 FT	TRAVEL TIME = .2 MIN
. 4	.3	.48	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 9	. 9	2.07		
1.0	1.1	2.42		
1.1	1.2	2.64		
1.2	1.2	2.66		
1.2	1.2	2.64		
1.3	1.2	2.47		

REACH 2 OUTFLOW PEAK= 2.47 CFS @ 12.10 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.13	.19	.18	.21	.21	.23	.24	.26	.26	.28
11.00	.30	.33	.36	.41	.46	.52	.73	1.08	1.51	2.12
12.00	2.46	2.47	2.47	2.47	2.47	2.47	2.43	.89	.57	.63
13.00	.45	.52	.40	.46	.37	.42	.35	.38	.33	.35
14.00	.31	.32	.29	.30	.28	.28	.26	.26	.25	.25
15.00	.24	.24	.22	.22	.21	.21	.20	.19	.18	.18
16.00	.17	.16	.16	.16	.15	.15	.15	.14	.14	.14
17.00	.13	.13	.13	.13	.12	.12	.12	.11	.11	.11
18.00	.10	.10	.10	.10	.10	.10	.10	.09	.09	.09
19.00	.09	.09	.09	.09	.09	.09	.09	.09	.08	.08
20.00	.08									

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REACH 3 Channel

Qin = 2.47 CFS @ 12.10 HRS, VOLUME= .35 AF

Qout= 2.48 CFS @ 12.20 HRS, VOLUME= .35 AF, ATTEN= 0%, LAG= 6.0 MIN

DEPTH	END AREA	DISCH		
_(FT)	(SQ-FT)	(CFS)	2' x 3' CHANNEL	STOR-IND+TRANS METHOD
0.0	0.0	0.00	SIDE SLOPE= .5 '/'	PEAK DEPTH= .65 FT
.3	.8	.58	n= .08	PEAK VELOCITY= 1.1 FPS
. 6	1.9	2.06	LENGTH= 200 FT	TRAVEL TIME = 2.9 MIN
. 9	3.4	4.57	SLOPE= .011 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
1.3	5.9	9.59		
1.8	3 10.1	19.68		
2.4	16.3	37.51		
3.0	24.0	62.80		

REACH 3 OUTFLOW PEAK= 2.48 CFS @ 12.20 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.05	.09	.16	.18	.20	.21	.22	.24	.25	.26
11.00	.28	.30	.32	.36	.40	.45	.54	.77	1.13	1.60
12.00	2.11	2.43	2.48	2.47	2.47	2.47	2.46	1.99	1.10	.63
13.00	.57	.52	.48	.45	.43	.41	.39	.38	.36	.35
14.00	.34	.32	.31	.30	.29	.28	.28	.27	.26	.26
15.00	.25	.24	.24	.23	.22	.21	.21	.20	.19	.19
16.00	.18	.17	.17	.16	.16	.15	.15	.15	.14	.14
17.00	.14	.14	.13	.13	.13	.12	.12	.12	.11	.11
18.00	.11	.10	.10	.10	.10	.10	.10	.10	.10	.09
19.00	.09	.09	.09	.09	.09	.09	.09	.09	.09	.08
20.00	.08									

TYPE III 24-HOUR RAINFALL= 5.50 IN

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POND 1

Existing Detention Pond

Qin = 4.08 CFS @ 12.38 HRS, VOLUME= .55 AF

Qout= 4.07 CFS @ 12.42 HRS, VOLUME= .54 AF, ATTEN= 0%, LAG= 2.6 MIN

ELEVATION	AREA	INC.STOR	CUM.STOR	STOR-IND METHOD
(FT)	(SF)	(CF)	(CF)	PEAK STORAGE = 1094 CF
61.9	0	0	0	PEAK ELEVATION= 62.9 FT
63.0	2133	1173	1173	FLOOD ELEVATION= 66.0 FT
64.0	2772	2453	3626	START ELEVATION= 61.9 FT
65.0	4545	3659	7284	SPAN= 10-20 HRS, dt=.1 HRS
66.0	7200	5873	13157	Tdet= 8.7 MIN (.54 AF)

OUTLET DEVICES # ROUTE INVERT 61.9' **15" CULVERT** n=.009 L=15' S=.25'/' Ke=.5 Cc=.9 Cd=.6 62.7' 1' x 1' ORIFICE/GRATE 2 P Q=.6 Width 2/3 SQR(2g) (H^1.5 - [H-Height]^1.5)

POND 1 TOTAL OUTFLOW PEAK= 4.07 CFS @ 12.42 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	.01	.03	.06	.11	.15	.17	.20	.22	.24
11.00	.26	.28	.29	.32	.35	.40	.47	.62	.91	1.39
12.00	2.04	2.78	3.46	3.90	4.06	3.99	3.79	3.30	2.42	1.67
13.00	1.27	1.10	.99	.90	.83	.78	.74	.71	.69	.66
14.00	.64	.61	.59	.57	.55	.53	.52	.51	.50	.48
15.00	.47	.46	.45	.44	.42	.41	.40	.39	.38	.37
16.00	.35	.34	.33	.32	.31	.30	.29	.29	.28	.27
17.00	.27	.26	.26	.25	.25	.24	.23	.23	.22	.22
18.00	.21	.21	.20	.20	.19	.19	.19	.19	.18	.18
19.00	.18	.18	.18	.17	.17	.17	.17	.17	.17	.16
20.00	.16									

POST-DEVELOPMENT STORMWATER CALCULATIONS

Project Zajac Location Subject Post-De	By S B Checked Revised	DATE	SHEET OF Job No	EER Environmental Engineering & Remediation, Inc.
Sub-Area	1 -	Samoa		levelopment 151
	riaus -	45,9 6	= 41,310 S	
	Good		= 6,480 51	= = 1,15 A
H = 71 - 6 $L = 445'$ $AB = 150'$	8.35 = BC =	3	- ,006	
			cining to n	ew.CB
		32.8 th		F = 168 A
H = 70 - 6 $L = 180'$		= 2.15		/180= 011
A B = 1	80'			
5-b-Are			1 1	mard golf cours
39 G rass	- Good -	25.5 14		
H = 70.5 $L = 600$ $AB = 140'$	- 63 = BC	7.5 = 460'	7.5/600 =	.013

Project	By SJ () Checked Revised	_ DATE	Sheet 4 Of	EER ENVIRONMENTAL ENGINEERING & REMEDIATION, INC.
Sub-Area	5 -	Aroq dra	ining arou	nd parting lat
GN Imper				
39 Grass				F = .56 A
H = 70.5 L = 460'	-63 =	7.5	.016	
AB = 100	'BC	= 3601		

ndations of various is or sewer design ng....ering practice.

3(S)C

88

48

-19

pipes and conduits
phs commonly
ressure-conduit
s described hereinthe flow charactert rt prepared by
roc circular pipes
1.10 This chart, as
s solution of the

t diameter scale raulic radius of the oi of S and n will t point, sets of error a compatible tic may be found

ed on log-log scales rehably more conlus graphs usually and in some texts or

f closed-conduit ze and n value. For are used for design (§ Special slide uation. Usual be found in Table

.....16

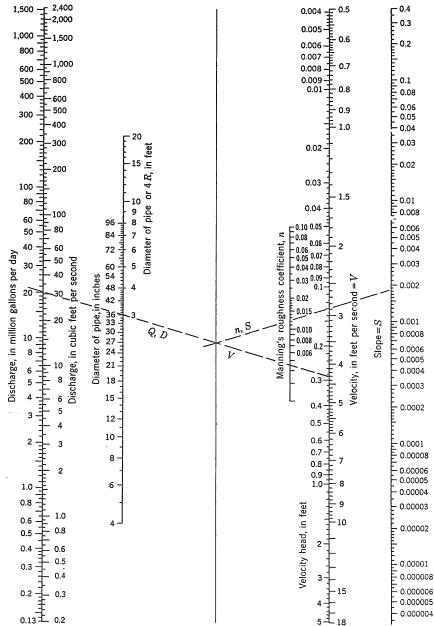


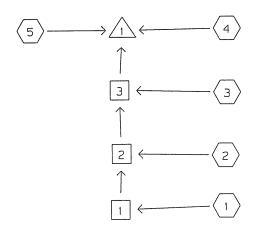
FIGURE 22.—Alignment chart for Manning formula for pipe flow.

in which the nomenclature is basically the same as that used in Equation 13 and C is a coefficient related to roughness.

The formula is used widely for pressure-conduit or pipe flow, although it is equally applicable to open-channel conditions. Published values for C have come largely from pipe-flow experiments, while many of the reported n values are from open-channel flow tests. The Hazen-Williams

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SUBCATCHMENT REAC	POND	□ LINK
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SUBCATCHMENT 1	= Mini-Storage Lot	->	REACH 1
SUBCATCHMENT 2	= Area draining to existing CB	->	REACH 2
SUBCATCHMENT 3	= Area draining to new CB	->	REACH 3
SUBCATCHMENT 4	= Area draining along golf course	->	POND 1
SUBCATCHMENT 5	= Area draining around parking lot	->	POND 1
REACH 1	= 8" PVC	->	REACH 2
REACH 2	= 15" PVC between CBs	->	REACH 3
REACH 3	= 15" PVC outlet to detention pond	->	POND 1
POND 1	= Detention Pond	->	

TYPE III 24-HOUR RAINFALL= 3.00 IN

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14 May 99

SUBCATCHMENT 1

Mini-Storage Lot

PEAK= .57 CFS @ 12.16 HRS, VOLUME= .05 AF

ACRES	CN		SCS TR-20 METHOD
.35	98	Bldg, Pav't	TYPE III 24-HOUR
.13	39_	Grass-Good	RAINFALL= 3.00 IN
.48	82		SPAN= 10-20 HRS, dt=.1 HRS

 Method
 Comment
 Tc (min)

 TR-55 SHEET FLOW
 AB
 12.4

 Grass: Dense n=.24 L=60' P2=3 in s=.011'/'
 s=.011'/'

 SHALLOW CONCENTRATED/UPLAND FLOW BC
 1.7

 Paved Kv=20.3282 L=215' s=.011'/' V=2.13 fps

SUBCATCHMENT 1 RUNOFF PEAK= .57 CFS @ 12.16 HOURS

Total Length= 275 ft Total Tc= 14.1

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.01	.01	.01	.01	.01	.01	.01	.02	.02	.02
11.00	.02	.02	.03	.03	.04	.04	.05	.08	.13	.19
12.00	.32	.54	.56	.44	.34	.26	.18	.14	.11	.10
13.00	.09	.08	.08	.07	.07	.07	.06	.06	.06	.06
14.00	.06	.05	.05	.05	.05	.05	.05	.05	.04	.04
15.00	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
16.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
17.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
18.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
19.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
20.00	.01									

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SUBCATCHMENT 2 Area draining to existing CB

14 May 99

PEAK= 2.27 CFS @ 12.03 HRS, VOLUME= .16 AF

 CRES	CN		SCS TR-20 METHOD
.95	98	Bldg, Pav't	TYPE III 24-HOUR
 .15	39	Grass-Good	RAINFALL= 3.00 IN
1.10	90		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	2.8
Smooth surfaces n=.011 L=150'	P2=3 in s=.006 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	3.1
Paved Kv=20.3282 L=295' s=.00	6 '/' V=1.57 fps	
	Total Length= 445 ft Total Tc=	5.9

SUBCATCHMENT 2 RUNOFF PEAK= 2.27 CFS @ 12.03 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	. 70	.80	.90
10.00	.07	.07	.08	.08	.09	.09	.10	.11	.11	.12
11.00	.13	.14	.16	.19	.21	.24	.36	.56	.79	1.12
12.00	2.20	1.98	1.23	.94	.69	.46	.34	.30	.28	.25
13.00	.22	.21	.20	.20	.19	.18	.18	.17	.16	.15
14.00	.15	.14	.14	.14	.13	.13	.13	.12	.12	.12
15.00	.11	.11	.11	.10	.10	.10	.09	.09	.09	.08
16.00	.08	.08	.08	.07	.07	.07	.07	.07	.07	.07
17.00	.06	.06	.06	.06	.06	.06	.05	.05	.05	.05
18.00	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04
19.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
20.00	.04									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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SUBCATCHMENT 3

Area draining to new CB

PEAK= 1.90 CFS @ 12.00 HRS, VOLUME= .12 AF

	ACRES	CN	
	.68	98	Pav't
_	.07	39	Grass-Good
	. 75	92	

SCS TR-20 METHOD TYPE III 24-HOUR RAINFALL= 3.00 IN

SPAN= 10-20 HRS, dt=.1 HRS

Method			Comment	Tc	(min)	
TR-55 SHEET FLOW			AB			2.5
Smooth surfaces	n = .011	L=180'	P2=3 in	s=.011 '/'		

SUBCATCHMENT 3 RUNOFF PEAK= 1.90 CFS @ 12.00 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.06	.06	.07	.07	.08	.08	.09	.09	.10	.10
11.00	.11	.12	.14	.16	.17	.22	.36	.52	.69	1.13
12.00	1.90	1.03	.75	.58	.40	.26	.22	.21	.19	.17
13.00	.15	.15	.14	.14	.13	.13	.12	.12	.11	.11
14.00	.10	.10	.10	.10	.09	.09	.09	.09	.08	.08
15.00	.08	.08	.07	.07	.07	.07	.06	.06	.06	.06
16.00	.06	.05	.05	.05	.05	.05	.05	.05	.05	.05
17.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
18.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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SUBCATCHMENT 4

Area draining along golf course

PEAK= .32 CFS @ 12.42 HRS, VOLUME= .04 AF

ACRES	CN		SCS TR-20 METHOD
.47	98	Bldg, Pav't	TYPE III 24-HOUR
,53	39	Grass-Good	RAINFALL= 3.00 IN
1 00	~ ¬		GD7N 10 00 IIDC .

1.00 67 SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment		Tc (min)			
TR-55 SHEET FLOW	AB		22.9			
Grass: Dense n=.24	L=140' P2=3 in s=.03	L3 '/'				
SHALLOW CONCENTRATED/	UPLAND FLOW BC			4.5		
Grassed Waterway Kv:	=15 L=460' s=.013'/'	V=1.71 fps				
	Total Leng	th= 600 ft	Total Tc=	27.4		

SUBCATCHMENT 4 RUNOFF PEAK= .32 CFS @ 12.42 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.01
12.00	.03	.10	.20	.29	.32	.31	.28	.23	.19	.16
13.00	.13	.12	.10	.09	.09	.08	.08	.08	.07	.07
14.00	.07	.07	.06	.06	.06	.06	.06	.06	.06	.05
15.00	.05	.05	.05	.05	.05	.05	.05	.04	.04	.04
16.00	.04	.04	.04	.04	.04	.03	.03	.03	.03	.03
17.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
18.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
19.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
20.00	.02									

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SUBCATCHMENT 5

Area draining around parking lot

PEAK= 0.00 CFS @ 20.00 HRS, VOLUME= 0.00 AF

ACRES	<u>CN</u>		SCS TR-20 METHOD
.03	98	Pav't	TYPE III 24-HOUR
.56	39	Grass-Good	RAINFALL= 3.00 IN
.59	42		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)				
TR-55 SHEET FLOW	AB	16.1				
Grass: Dense n=.24	L=100' P2=3 in s=.016 '/'					
SHALLOW CONCENTRATED/	JPLAND FLOW BC	3.2				
Grassed Waterway Kv	=15 L=360' s=.016'/' V=1.9 fps					
	Total Length= 460 ft	Total Tc= 19.3				

SUBCATCHMENT 5 RUNOFF PEAK= 0.00 CFS @ 20.00 HOURS

HOUR _	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20.00	0.00									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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REACH 1 8" PVC

Qin = .57 CFS @ 12.16 HRS, VOLUME= .05 AF

Qout= .56 CFS @ 12.20 HRS, VOLUME= .05 AF, ATTEN= 1%, LAG= 2.5 MIN

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	8" PIPE	STOR-IND+TRANS METHOD
0.	0.0	0.00		PEAK DEPTH= .31 FT
	1 0.0	.03	n = .009	PEAK VELOCITY= 3.6 FPS
	1 0.0	.11	LENGTH= 240 FT	TRAVEL TIME = 1.1 MIN
	2 .1	.24	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
	5 .3	1.03		
	5 .3	1.21		
	6 .3	1.32		
	6 .3	1.33		
•	6 .3	1.32		
	7 .3	1.23		

REACH 1 OUTFLOW PEAK= .56 CFS @ 12.20 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	.01	.01	.01	.01	.01	.01	.01	.02	.02
11.00	.02	.02	.02	.03	.03	.04	.05	.07	.11	.17
12.00	.27	.47	.56	.48	.37	.29	.21	.15	.12	.11
13.00	.09	.08	.08	.07	.07	.07	.07	.06	.06	.06
14.00	.06	.05	.05	.05	.05	.05	.05	.05	.05	.04
15.00	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03
16.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02
17.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
18.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
19.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
20.00	.02									

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REACH 2 15" PVC between CBs

Qin = 2.61 CFS @ 12.05 HRS, VOLUME= .21 AF

Qout= 2.54 CFS @ 12.07 HRS, VOLUME= .21 AF, ATTEN= 3%, LAG= 1.2 MIN

DEPTH END P	AREA DISCH		
(FT) (SQ-	-FT) (CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.00		PEAK DEPTH= .52 FT
.1	.1 .14	n = .009	PEAK VELOCITY= 5.2 FPS
.3	.2 .58	LENGTH= 100 FT	TRAVEL TIME = .3 MIN
. 4	.3 1.29	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
.9	.9 5.52		
1.0 1	1.1 6.45		
1.1 1	1.2 7.03		
1.2 1	1.2 7.10		
1.2 1	1.2 7.03		
1.3 1	1.2 6.60		

REACH 2 OUTFLOW PEAK= 2.54 CFS @ 12.07 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.06	.08	.08	.09	.10	.11	.11	.12	.13	.14
11.00	.15	.16	.19	.21	.24	.28	.39	.60	.87	1.24
12.00	2.35	2.50	1.83	1.46	1.09	.78	.56	.47	.40	.36
13.00	.32	.30	.28	.27	.26	.25	.24	.23	.22	.21
14.00	.21	.20	.19	.19	.18	.18	.17	.17	.17	.16
15.00	.16	.15	.15	.14	.14	.13	.13	.13	.12	.12
16.00	.11	.11	.10	.10	.10	.10	.10	.09	.09	.09
17.00	.09	.09	.08	.08	.08	.08	.08	.07	.07	.07
18.00	.07	.07	.07	.07	.06	.06	.06	.06	.06	.06
19.00	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
20.00	.05									

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REACH 3 15" PVC outlet to detention pond

Qin = 4.31 CFS @ 12.02 HRS, VOLUME= .33 AF

Qout= 4.15 CFS @ 12.04 HRS, VOLUME= .33 AF, ATTEN= 4%, LAG= .8 MIN

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.	0.0	0.00		PEAK DEPTH= .71 FT
	1 .1	.14	n = .009	PEAK VELOCITY= 5.8 FPS
	3 .2	.58	LENGTH= 120 FT	TRAVEL TIME = .3 MIN
•	4 .3	1.29	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
•	9.9	5.52		
1.	0 1.1	6.45		
1.	1 1.2	7.03		
1.	2 1.2	7.10		
1.	2 1.2	7.03		
1.	3 1.2	6.60		

REACH 3 OUTFLOW PEAK= 4.15 CFS @ 12.04 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.09	.15	.14	.16	.17	.19	.20	.21	.22	.24
11.00	.25	.28	.32	.36	.41	.48	.71	1.08	1.51	2.27
12.00	4.02	3.72	2.59	2.15	1.50	1.13	.78	.71	.58	.55
13.00	.47	.45	.42	.41	.39	.38	.37	.35	.34	.32
14.00	.31	.30	.29	.28	.28	.27	.26	.26	.25	.24
15.00	.24	.23	.22	.22	.21	.20	.20	.19	.18	.17
16.00	.17	.16	.16	.15	.15	.15	.15	.14	.14	.14
17.00	.13	.13	.13	.12	.12	.12	.12	.11	.11	.11
18.00	.10	.10	.10	.10	.10	.10	.10	.09	.09	.09
19.00	.09	.09	.09	.09	.09	.09	.09	.09	.08	.08
20.00	.08									

TYPE III 24-HOUR RAINFALL= 3.00 IN

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POND 1 Detention Pond

Qin = 4.20 CFS @ 12.04 HRS, VOLUME= .38 AF

Qout= 1.15 CFS @ 12.59 HRS, VOLUME= .37 AF, ATTEN= 73%, LAG= 33.0 MIN

ELEVATION	AREA	INC.STOR	CUM.STOR	STOR-IND METHOD
(FT)	(SF)	(CF)	(CF)	PEAK STORAGE = 5799 CF
61.9	0	0	0	PEAK ELEVATION= 63.6 FT
63.0	5000	2750	2750	FLOOD ELEVATION= 66.0 FT
64.0	5700	5350	8100	START ELEVATION= 61.9 FT
65.0	7550	6625	14725	SPAN= 10-20 HRS, dt=.1 HRS
66.0	10200	8875	23600	Tdet= 63 MIN (.37 AF)

ROUTE INVERT OUTLET DEVICES

1 P 61.9' 6" CULVERT

n=.009 L=15' S=.25'/' Ke=.5 Cc=.9 Cd=.6

2 P 63.5' 10" ORIFICE/GRATE

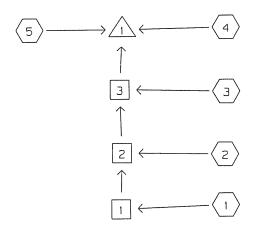
Q=.6 PI r^2 SQR(2g) SQR(H-r)

POND 1 TOTAL OUTFLOW PEAK= 1.15 CFS @ 12.59 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	.01	.01	.02	.02	.03	.05	.07	.08	.10
11.00	.12	.14	.17	.19	.22	.26	.32	.41	.53	.67
12.00	.87	.97	1.04	1.08	1.12	1.15	1.15	1.15	1.13	1.11
13.00	1.09	1.08	1.06	1.05	1.03	1.02	1.00	.98	.97	.95
14.00	.93	.91	.89	.88	.84	.81	.77	.73	.69	.66
15.00	.62	.59	.56	.52	.49	.46	.43	.40	.38	.35
16.00	.33	.31	.29	.27	.26	.24	.23	.22	.22	.21
17.00	.20	.20	.19	.18	.18	.17	.17	.17	.16	.16
18.00	.15	.15	.14	.14	.14	.14	.13	.13	.13	.13
19.00	.12	.12	.12	.12	.12	.12	.11	.11	.11	.11
20.00	.11									

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	SUBCATCHMENT	REACH	POND	LINK
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SUBCATCHMENT 1	= Mini-Storage Lot	->	REACH 1
SUBCATCHMENT 2	= Area draining to existing CB	->	REACH 2
SUBCATCHMENT 3	= Area draining to new CB	->	REACH 3
SUBCATCHMENT 4	= Area draining along golf course	->	POND 1
SUBCATCHMENT 5	= Area draining around parking lot	->	POND 1
REACH 1	= 8" PVC	->	REACH 2
REACH 2	= 15" PVC between CBs	->	REACH 3
REACH 3	= 15" PVC outlet to detention pond	->	POND 1
POND 1	= Detention Pond	->	

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SUBCATCHMENT 1

Mini-Storage Lot

PEAK= 1.18 CFS @ 12.15 HRS, VOLUME= .10 AF

ACRES	CN	
.35	98	Bldg, Pav't
.13	39	Grass-Good
.48	82	

SCS TR-20 METHOD TYPE III 24-HOUR RAINFALL= 4.70 IN

SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	12.4
Grass: Dense n=.24 L=60' P2=3	s in s=.011 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	1.7
Paved Kv=20.3282 L=215' s=.01	11 '/' V=2.13 fps	
	Total Length= 275 ft Total	Tc= 14.1

SUBCATCHMENT 1 RUNOFF PEAK= 1.18 CFS @ 12.15 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.03	.03	.04	.04	.04	.05	.05	.05	.06	.06
11.00	.07	.07	.08	.09	.10	.12	.14	.21	.31	.44
12.00	.71	1.13	1.13	.87	.66	.49	.35	.26	.21	.19
13.00	.17	.15	.14	.13	.13	.12	.12	.11	.11	.11
14.00	.10	.10	.09	.09	.09	.09	.09	.08	.08	.08
15.00	.08	.07	.07	.07	.07	.07	.06	.06	.06	.06
16.00	.05	.05	.05	.05	.05	.05	.05	.05	.04	.04
17.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
18.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

TYPE III 24-HOUR RAINFALL= 4.70 IN

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SUBCATCHMENT 2 Area draining to existing CB

PEAK= 4.02 CFS @ 12.03 HRS, VOLUME= .29 AF

ACRES	CN		SCS TR-20 METHOD
.95	98	Bldg, Pav't	TYPE III 24-HOUR
.15	39_	Grass-Good	RAINFALL= 4.70 IN
1.10	90		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	2.8
Smooth surfaces n=.011 L=150'	P2=3 in s=.006 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	3.1
Paved Kv=20.3282 L=295' s=.00	6 '/' V=1.57 fps	
	Total Length= 445 ft Total T	'c= 5.9

SUBCATCHMENT 2 RUNOFF PEAK= 4.02 CFS @ 12.03 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	. 90
10.00	.15	.16	.17	.18	.19	.21	.22	.23	.24	.25
11.00	.27	.29	.33	.37	.41	.47	.70	1.07	1.47	2.05
12.00	3.92	3.45	2.11	1.60	1.17	.77	.57	.51	.46	.42
13.00	.38	.35	.34	.33	.32	.30	.29	.28	.27	.26
14.00	.25	.24	.23	.23	.22	.22	.21	.20	.20	.19
15.00	.19	.18	.18	.17	.17	.16	.15	.15	.14	.14
16.00	.13	.13	.13	.12	.12	.12	.12	.11	.11	.11
17.00	.11	.10	.10	.10	.10	.09	.09	.09	.09	.08
18.00	.08	.08	.08	.08	.08	.08	.08	.07	.07	.07
19.00	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
20.00	.07									

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L=180'

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SUBCATCHMENT 3

Area draining to new CB

PEAK= 3.24 CFS @ 12.00 HRS, VOLUME= .21 AF

ACRES CN_ .68 98 Pav't 39 .07 Grass-Good .75 92

Smooth surfaces n=.011

SCS TR-20 METHOD TYPE III 24-HOUR RAINFALL= 4.70 IN

SPAN= 10-20 HRS, dt=.1 HRS

Tc (min) Comment Method 2.5 TR-55 SHEET FLOW ABs=.011 '/' P2=3 in

SUBCATCHMENT 3 RUNOFF PEAK= 3.24 CFS @ 12.00 HOURS .80 .90 .30 .50 .60 .70 0.00 .20 .40 .10 HOUR .19 .20 .18 .12 .15 .16 .17 10.00 .13 .14.15 .93 .29 .65 1.22 1.96 11.00 .21 .23 .26 .32 .40 .31 .28 1.25 .96 .67 .42 .37 .34 12.00 3.24 1.73 .22 .21 .20 .19 .18 .17 .23 .22 13.00 . 25 .24 .13 .17 .16 .15 .15 .14 .14.14 .16 .16 14.00 .10 .10 .09 .10 .12 15.00 .13 .12 .12 .11 .11 .08 .07 16.00 .09 .09 .09 .08 .08 .08 .08 .08 .07 .06 .06 .06 .06 .06 17.00 .07 .07 .07 .07 .05 .05 .05 .05 .05 .05 .05 .05 .06 .05 18.00 .05 .05 .05 .05 .05 .05 .05 .05 .05 .05 19.00 20.00 .04

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SUBCATCHMENT 4

Area draining along golf course

PEAK= 1.04 CFS @ 12.37 HRS, VOLUME= .12 AF

ACRES	CN			
.47	98	Bldg,	Pav't	
.53	39	Grass-Good		
1.00	67			

SCS TR-20 METHOD TYPE III 24-HOUR RAINFALL= 4.70 IN

SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment			Tc (min)
TR-55 SHEET FLOW	AB			22.9
Grass: Dense n=.24	L=140' P2=3 in s=.013	1 / 1		
SHALLOW CONCENTRATED/	JPLAND FLOW BC			4.5
Grassed Waterway Kv	=15 L=460' s=.013'/'	V=1.71 fps		
	Total Length	= 600 ft	Total Tc=	27.4

SUBCATCHMENT 4 RUNOFF PEAK= 1.04 CFS @ 12.37 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.01
11.00	.01	.01	.02	.02	.03	.04	.05	.07	.11	.17
12.00	.29	.52	.81	1.01	1.03	.93	.79	.64	.51	.41
13.00	.34	.29	.26	.23	.21	.20	.19	.18	.17	.17
14.00	.16	.16	.15	.14	.14	.14	.13	.13	.13	.12
15.00	.12	.12	.11	.11	.11	.11	.10	.10	.10	.09
16.00	.09	.09	.08	.08	.08	.08	.08	.07	.07	.07
17.00	.07	.07	.07	.06	.06	.06	.06	.06	.06	.06
18.00	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
19.00	.05	.05	.05	.05	.04	.04	.04	.04	.04	.04
20.00	.04									

TYPE III 24-HOUR RAINFALL= 4.70 IN

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SUBCATCHMENT 5

Area draining around parking lot

PEAK= .03 CFS @ 12.60 HRS, VOLUME= .01 AF

 ACRES	CN_		SCS TR-20 METHOD
.03	98	Pav't	TYPE III 24-HOUR
 .56	39_	Grass-Good	RAINFALL= 4.70 IN
.59	42		SPAN= 10-20 HRS, d

SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment		I	<u>c (min)</u>
TR-55 SHEET FLOW	AB			16.1
Grass: Dense n=.24	L=100' P2=3 in s=.01	6 '/'		
SHALLOW CONCENTRATED/	JPLAND FLOW BC			3.2
Grassed Waterway Kv	=15 L=360' s=.016'/'	V=1.9 fps		
	Total Lengt	th= 460 ft	Total Tc=	19.3

SUBCATCHMENT 5 RUNOFF PEAK= .03 CFS @ 12.60 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	.01	.02	.03	.03	.03	.03	.03
13.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
14.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
15.00	.02	.02	.02	.02	.02	.02	.02	.02	.01	.01
16.00	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
17.00	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
18.00	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
19.00	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
20.00	.01									

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8" PVC REACH 1

Qin = 1.18 CFS @ 12.15 HRS, VOLUME= .10 AF

Qout= 1.15 CFS @ 12.19 HRS, VOLUME= .10 AF, ATTEN= 3%, LAG= 2.7 MIN

DEPTH E	ND AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	8" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .52 FT
.1	0.0	.03	n= .009	PEAK VELOCITY= 4.0 FPS
.1	0.0	.11	LENGTH= 240 FT	TRAVEL TIME = 1.0 MIN
.2	.1	.24	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 5	.3	1.03		
.5	.3	1.21		
.6	.3	1.32		
.6	.3	1.33		
.6	.3	1.32		
.7	.3	1.23		

REACH 1 OUTFLOW PEAK= 1.15 CFS @ 12.19 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.02	.03	.03	.04	.04	.04	.05	.05	.06	.06
11.00	.06	.07	.08	.09	.10	.11	.13	.18	.28	.40
12.00	.62	1.00	1.15	.95	.72	.55	.39	.28	.23	.20
13.00	.17	.16	.14	.14	.13	.13	.12	.12	.11	.11
14.00	.10	.10	.10	.09	.09	.09	.09	.08	.08	.08
15.00	.08	.08	.07	.07	.07	.07	.06	.06	.06	.06
16.00	.06	.05	.05	.05	.05	.05	.05	.05	.05	.04
17.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03
18.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
19.00	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

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REACH 2 15" PVC between CBs

Qin = 4.77 CFS @ 12.05 HRS, VOLUME= .39 AF

Qout= 4.64 CFS @ 12.07 HRS, VOLUME= .39 AF, ATTEN= 3%, LAG= 1.2 MIN

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .76 FT
. 1	.1	.14	n= .009	PEAK VELOCITY= 5.9 FPS
. 3	.2	.58	LENGTH= 100 FT	TRAVEL TIME = .3 MIN
. 4	.3	1.29	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 9	.9	5.52		
1.0	1.1	6.45		
1.1	1.2	7.03		
1.2	2 1.2	7.10		
1.2	2 1.2	7.03		
1.3	3 1.2	6.60		

REACH 2 OUTFLOW PEAK= 4.64 CFS @ 12.07 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.13	.21	.19	.23	.22	.25	.26	.28	.29	.31
11.00	.33	.36	.40	.45	.50	.57	.81	1.21	1.71	2.38
12.00	4.32	4.55	3.32	2.63	1.93	1.39	.98	.82	.69	.63
13.00	.55	.52	.48	.47	.45	.43	.41	.40	.38	.37
14.00	.35	.34	.33	.32	.31	.30	.30	.29	.28	.27
15.00	.27	.26	.25	.24	.23	.23	.22	.21	.20	.20
16.00	.19	.18	.18	.17	.17	.17	.16	.16	.16	.15
17.00	.15	.15	.14	.14	.14	.13	.13	.13	.12	.12
18.00	.12	.11	.11	.11	.11	.11	.11	.11	.10	.10
19.00	.10	.10	.10	.10	.10	.10	.10	.10	.09	.09
20.00	.09									

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REACH 3

15" PVC outlet to detention pond

Qin = 7.66 CFS @ 12.02 HRS, VOLUME= .60 AF

Qout= 6.72 CFS @ 12.06 HRS, VOLUME= .60 AF, ATTEN= 12%, LAG= 2.2 MIN

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.	0.0	0.00		PEAK DEPTH= 1.25 FT
	1 .1	.14	n = .009	PEAK VELOCITY= 6.0 FPS
	3 .2	.58	LENGTH= 120 FT	TRAVEL TIME = .3 MIN
	4 .3	1.29	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
	9.9	5.52		
1.	0 1.1	6.45		
1.	1 1.2	7.03		
1.	2 1.2	7.10		
1.	2 1.2	7.03		
1.	3 1.2	6.60		

REACH 3 OUTFLOW PEAK= 6.72 CFS @ 12.06 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.20	.36	.31	.38	.37	.41	.43	.45	.48	.50
11.00	.53	.58	.66	.73	.82	.95	1.39	2.07	2.84	4.18
12.00	6.47	6.60	5.29	3.82	2.63	1.94	1.34	1.21	.99	.94
13.00	.80	.77	.71	.70	.66	.64	.62	.59	.57	.55
14.00	.52	.50	.49	.48	.47	.45	.44	.43	.42	.41
15.00	.40	.38	.37	.36	.35	.34	.33	.31	.30	.29
16.00	.28	.27	.26	.26	.25	.25	.24	.24	.23	.23
17.00	.22	.22	.21	.21	.20	.20	.19	.19	.18	.18
18.00	.17	.17	.17	.16	.16	.16	.16	.16	.16	.15
19.00	.15	.15	.15	.15	.15	.14	.14	.14	.14	.14
20.00	.14									

Data for Post-Development Drainage

TYPE III 24-HOUR RAINFALL= 4.70 IN

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POND 1 Detention Pond

Qin = 7.15 CFS @ 12.08 HRS, VOLUME= .73 AF Qout= 3.15 CFS @ 12.47 HRS, VOLUME= .71 AF, ATTEN= 56%, LAG= 23.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	STOR-IND METHOD PEAK STORAGE = 10446 CF
61.9	0	0	0	PEAK ELEVATION= 64.4 FT
63.0	5000	2750	2750	FLOOD ELEVATION= 66.0 FT
64.0	5700	5350	8100	START ELEVATION= 61.9 FT
65.0	7550	6625	14725	SPAN= 10-20 HRS, dt=.1 HRS
66.0	10200	8875	23600	Tdet= 61.2 MIN (.71 AF)

ROUTE INVERT OUTLET DEVICES

1 P 61.9' 6" CULVERT
n=.009 L=15' S=.25'/' Ke=.5 Cc=.9 Cd=.6

2 P 63.5' 10" ORIFICE/GRATE
Q=.6 PI r^2 SQR(2g) SQR(H-r)

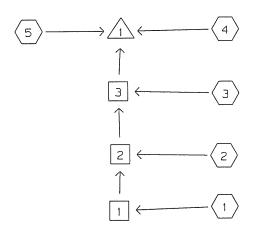
POND 1 TOTAL OUTFLOW PEAK= 3.15 CFS @ 12.47 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	. 90
	0.00	.02	.03	.06	.10	.14	.18	.22	.27	.31
10.00		.38	.42	.46	.50	.55	.62	.73	.87	.96
11.00	.34		2.53	2.97	3.12	3.14	3.07	2.94	2.76	2.56
12.00	1.09	1.70	_		1.64	1.52	1.43	1.35	1.29	1.23
13.00	2.35	2.15	1.96	1.78		1.08	1.06	1.05	1.04	1.02
14.00	1.18	1.16	1.13	1.10	1.09				.89	.87
15.00	1.01	.99	.98	.96	. 95	. 93	.92	.90		
16.00	.84	.80	.77	.73	.70	.67	.64	.61	.58	.55
17.00	.52	.49	.47	.44	.42	.40	.38	.36	.34	.32
	.31	.30	.28	.27	.26	.26	.25	.24	.24	.23
18.00			.22	.22	.22	.21	.21	.21	.21	.20
19.00	.23	.23	. 22	. 44	. 22	• 44 -4-				
20.00	.20									

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SUBCATCHMENT	REACH	∠ POND	LINK

SUBCATCHMENT 1	= Mini-Storage Lot	->	REACH 1
SUBCATCHMENT 2	= Area draining to existing CB	->	REACH 2
SUBCATCHMENT 3	= Area draining to new CB	->	REACH 3
SUBCATCHMENT 4	= Area draining along golf course	->	POND 1
SUBCATCHMENT 5	= Area draining around parking lot	->	POND 1
REACH 1	= 8" PVC	->	REACH 2
REACH 2	= 15" PVC between CBs	->	REACH 3
REACH 3	= 15" PVC outlet to detention pond	->	POND 1
POND 1	= Detention Pond	->	

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SUBCATCHMENT 1

Mini-Storage Lot

PEAK= 1.48 CFS @ 12.15 HRS, VOLUME= .13 AF

ACRES	CN	
.35	98	Bldg, Pav't
 .13	39	Grass-Good
 .48	82	•

SCS TR-20 METHOD TYPE III 24-HOUR RAINFALL= 5.50 IN

SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	12.4
Grass: Dense n=.24 L=60' P2=3	in $s=.011'/'$	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	1.7
Paved Kv=20.3282 L=215' s=.01	1 '/' V=2.13 fps	
	Total Length= 275 ft T	otal Tc= 14.1

SUBCATCHMENT 1 RUNOFF PEAK= 1.48 CFS @ 12.15 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.05	.05	.05	.06	.06	.06	.07	.07	.08	.08
11.00	.09	.10	.11	.12	.14	.15	.19	.27	.40	.57
12.00	.90	1.42	1.40	1.07	.82	.61	.43	.31	.26	.23
13.00	.20	.18	.17	.16	.16	.15	.14	.14	.13	.13
14.00	.12	.12	.11	.11	.11	.11	.10	.10	.10	.10
15.00	.09	.09	.09	.08	.08	.08	.08	.07	.07	.07
16.00	.07	.06	.06	.06	.06	.06	.06	.06	.05	.05
17.00	.05	.05	.05	.05	.05	.05	.04	.04	.04	.04
18.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
19.00	.04	.03	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

TYPE III 24-HOUR RAINFALL= 5.50 IN

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SUBCATCHMENT 2 Area draining to existing CB

PEAK= 4.84 CFS @ 12.03 HRS, VOLUME= .35 AF

ACRES	CN		SCS TR-20 METHOD
.95	98	Bldg, Pav't	TYPE III 24-HOUR
.15	39	Grass-Good	RAINFALL= 5.50 IN
1.10	90		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	AB	2.8
Smooth surfaces n=.011 L=150'	P2=3 in s=.006 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BC	3.1
Paved Kv=20.3282 L=295' s=.00	6 '/' V=1.57 fps	
	Total Length= 445 ft Total Tc=	= 5.9

SUBCATCHMENT 2 RUNOFF PEAK= 4.84 CFS @ 12.03 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.20	.21	.22	.23	.25	.26	.27	.29	.30	.32
11.00	.33	.37	.41	.46	.51	.58	.87	1.31	1.80	2.48
12.00	4.72	4.14	2.53	1.90	1.40	.92	.68	.60	.55	.50
13.00	.45	.42	.40	.39	.37	.36	.35	.33	.32	.31
14.00	.29	.28	.28	.27	.26	.26	.25	.24	.24	.23
15.00	.22	.22	.21	.20	.20	.19	.18	.18	.17	.16
16.00	.16	.15	.15	.15	.14	.14	.14	.13	.13	.13
17.00	.12	.12	.12	.12	.11	.11	.11	.10	.10	.10
18.00	.10	.09	.09	.09	.09	.09	.09	.09	.09	.09
19.00	.09	.08	.08	.08	.08	.08	.08	.08	.08	.08
20.00	.08									

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SUBCATCHMENT 3

Area draining to new CB

PEAK= 3.86 CFS @ 12.00 HRS, VOLUME= .25 AF

ACRES CN
.68 98 Pav't
.07 39 Grass-Good
.75 92

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN

SPAN= 10-20 HRS, dt=.1 HRS

14 May 99

 Method
 Comment
 Tc (min)

 TR-55 SHEET FLOW
 AB
 2.5

Smooth surfaces n=.011 L=180' P2=3 in s=.011 '/'

SUBCATCHMENT 3 RUNOFF PEAK= 3.86 CFS @ 12.00 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.15	.16	.17	.18	.19	.20	.21	.22	.23	.24
11.00	.26	.29	.32	.36	.39	.49	.79	1.13	1.47	2.35
12.00	3.86	2.06	1.48	1.14	.79	.50	.44	.40	.36	.33
13.00	.30	.28	.27	.26	.25	.24	.24	.23	.22	.21
14.00	.20	.19	.19	.18	.18	.17	.17	.17	.16	.16
15.00	.15	.15	.14	.14	.13	.13	.12	.12	.11	.11
16.00	.11	.10	.10	.10	.10	.10	.09	.09	.09	.09
17.00	.09	.08	.08	.08	.08	.07	.07	.07	.07	.07
18.00	.07	.06	.06	.06	.06	.06	.06	.06	.06	.06
19.00	.06	.06	.06	.06	.06	.06	.06	.05	.05	.05
20.00	.05									

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SUBCATCHMENT 4

Area draining along golf course

PEAK= 1.44 CFS @ 12.36 HRS, VOLUME= .16 AF

 ACRES	CN		SCS TR-20 METHOD
.47	98	Bldg, Pav't	TYPE III 24-HOUR
 .53	39_	Grass-Good	RAINFALL= 5.50 IN
1.00	67		SPAN= 10-20 HRS, dt=.1 HRS

Method		Comment			<u> Tc (min)</u>
TR-55 SHEET FLOW		AB			22.9
Grass: Dense n=.24	1 L=140' P2=3	s = .013	1/1		
SHALLOW CONCENTRATE	O/UPLAND FLOW	BC			4.5
Grassed Waterway	Kv=15 L=460'	s=.013 '/'	V=1.71 fps		
		Total Length=	600 ft	Total Tc=	27.4

SUBCATCHMENT 4 RUNOFF PEAK= 1.44 CFS @ 12.36 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	. 90
10.00	0.00	0.00	0.00	.01	.01	.01	.01	.02	.02	.03
11.00	.03	.04	.05	.06	.07	.08	.10	.13	.18	.28
12.00	.45	.76	1.16	1.41	1.42	1.27	1.06	.85	.67	.54
13.00	.45	.39	.34	.30	.28	.26	.24	.23	.22	.22
14.00	.21	.20	.19	.19	.18	.18	.17	.17	.16	.16
15.00	.16	.15	.15	.14	.14	.14	.13	.13	.12	.12
16.00	.11	.11	.11	.10	.10	.10	.10	.09	.09	.09
17.00	.09	.09	.08	.08	.08	.08	.08	.08	.07	.07
18.00	.07	07	.07	.06	.06	.06	.06	.06	.06	.06
19.00	.06	.06	.06	.06	.06	.06	.06	.06	.05	.05
20.00	.05									

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SUBCATCHMENT 5

Area draining around parking lot

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PEAK= .10 CFS @ 12.48 HRS, VOLUME= .02 AF

ACRES	CN		SCS TR-20 METHOD
.03	98	Pav't	TYPE III 24-HOUR
.56	39	Grass-Good	RAINFALL= 5.50 IN
.59	42		SPAN= 10-20 HRS, dt=.1 HRS

Method		Tc (min)						
TR-55 SHEET FLOW		AB				16.1		
Grass: Dense n=.24	L=100' P2=3	s=.016	1/1					
SHALLOW CONCENTRATED	/UPLAND FLOW	BC				3.2		
Grassed Waterway K	v=15 L=360'	s=.016 '/'	V=1.9	fps				
		Total Length=	460	ft	Total Tc=	19.3		

SUBCATCHMENT 5 RUNOFF PEAK= .10 CFS @ 12.48 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.00	0.00	.01	.04	.07	.09	.10	.09	.07	.06	.06
13.00	.05	.05	.04	.04	.04	.04	.04	.04	.04	.04
14.00	.04	.03	.03	.03	.03	.03	.03	.03	.03	.03
15.00	.03	.03	.03	.03	.03	.03	.03	.03	.02	.02
16.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
17.00	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
18.00	.02	.01	.01	.01	.01	.01	.01	.01	.01	.01
19.00	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
20.00	.01									

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REACH 1 8" PVC

Qin = 1.48 CFS @ 12.15 HRS, VOLUME= .13 AF

Qout= 1.27 CFS @ 12.30 HRS, VOLUME= .13 AF, ATTEN= 14%, LAG= 9.2 MIN

14 May 99

DEPTH	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	8" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .67 FT
	1 0.0	.03	n = .009	PEAK VELOCITY= 4.0 FPS
	1 0.0	.11	LENGTH= 240 FT	TRAVEL TIME = 1.0 MIN
	2 .1	.24	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
.!	5 .3	1.03		
.!	5 .3	1.21		
. (6 .3	1.32		
. (6.3	1.33		
. (6 .3	1.32		
	7 .3	1.23		

REACH 1 OUTFLOW PEAK= 1.27 CFS @ 12.30 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.02	.05	.05	.05	.06	.06	.07	.07	.08	.08
11.00	.09	.09	.10	.12	.13	.15	.17	.24	.36	.52
12.00	.79	1.24	1.25	1.27	1.02	.64	.50	.34	.28	.24
13.00	.21	.19	.17	.16	.16	.15	.15	.14	.14	.13
14.00	.13	.12	.12	.11	.11	.11	.10	.10	.10	.10
15.00	.09	.09	.09	.09	.08	.08	.08	.08	.07	.07
16.00	.07	.06	.06	.06	.06	.06	.06	.06	.05	.05
17.00	.05	.05	.05	.05	.05	.05	.05	.04	.04	.04
18.00	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
19.00	.04	.04	.03	.03	.03	.03	.03	.03	.03	.03
20.00	.03									

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REACH 2 15" PVC between CBs

Qin = 5.78 CFS @ 12.04 HRS, VOLUME= .48 AF

Qout= 5.64 CFS @ 12.06 HRS, VOLUME= .48 AF, ATTEN= 2%, LAG= 1.1 MIN

14 May 99

DEPTH I	END AREA	DISCH		
(FT)	(SQ-FT)	(CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .87 FT
.1	.1	.14	n = .009	PEAK VELOCITY= 6.0 FPS
.3	.2	.58	LENGTH= 100 FT	TRAVEL TIME = .3 MIN
. 4	.3	1.29	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 9	.9	5.52		
1.0	1.1	6.45		
1.1	1.2	7.03		
1.2	1.2	7.10		
1.2	1.2	7.03		
1.3	1.2	6.60		

REACH 2 OUTFLOW PEAK= 5.64 CFS @ 12.06 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.18	.28	.25	.30	.29	.33	.33	.36	.37	.40
11.00	.42	.46	.51	.57	.64	.72	1.00	1.51	2.11	2.92
12.00	5.25	5.51	3.86	3.25	2.47	1.64	1.19	.98	.83	.76
13.00	.66	.62	.57	.56	.53	.52	.49	.48	.46	.44
14.00	.42	.40	.39	.38	.37	.36	.35	.35	.34	.33
15.00	.32	.31	.30	.29	.28	.27	.26	.25	.24	.23
16.00	.22	.22	.21	.21	.20	.20	.19	.19	.19	.18
17.00	.18	.17	.17	.17	.16	.16	.15	.15	.14	.14
18.00	.14	.13	.13	.13	.13	.13	.13	.13	.12	.12
19.00	.12	.12	.12	.12	.12	.12	.11	.11	.11	.11
20.00	.11									

Data for Post-Development Drainage
TYPE III 24-HOUR RAINFALL= 5.50 IN
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REACH 3

15" PVC outlet to detention pond

Qin = 9.24 CFS @ 12.02 HRS, VOLUME= .72 AF

Qout= 6.70 CFS @ 12.30 HRS, VOLUME= .72 AF, ATTEN= 28%, LAG= 16.7 MIN

DEPTH (FT)	END AREA	DISCH (CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0		0.00	15 FIFE	PEAK DEPTH= 1.25 FT
			0.00	
.1	1	.14	n = .009	PEAK VELOCITY= 6.1 FPS
.3	.2	.58	LENGTH= 120 FT	TRAVEL TIME = .3 MIN
. 4	3	1.29	SLOPE= .005 FT/FT	SPAN= 10-20 HRS, dt=.1 HRS
. 9	. 9	5.52		
1.0	1.1	6.45		
1.1	1.2	7.03		
1.2	1.2	7.10		
1.2	1.2	7.03		
1.3	1.2	6.60		

REACH 3 OUTFLOW PEAK= 6.70 CFS @ 12.30 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.27	.46	.41	.48	.48	.52	.54	.58	.61	.63
11.00	.67	.73	.82	.92	1.02	1.19	1.72	2.55	3.48	5.08
12.00	6.52	6.60	6.60	6.70	3.55	2.22	1.69	1.39	1.23	1.08
13.00	.98	.90	.86	.82	.80	.76	.74	.70	.68	.65
14.00	.62	.60	.58	.57	.55	.54	.53	.51	.50	.48
15.00	.47	.46	.44	.43	.41	.40	.39	.37	.36	.34
16.00	.33	.32	.31	.31	.30	.29	.29	.28	.28	.27
17.00	.26	.26	.25	.25	.24	.23	.23	.22	.21	.21
18.00	.20	.20	.20	.19	.19	.19	.19	.19	.18	.18
19.00	.18	.18	.18	.18	.17	.17	.17	.17	.17	.16
20.00	.16									

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POND 1 Detention Pond

Qin = 8.44 CFS @ 12.26 HRS, VOLUME= .90 AF

Qout= 3.93 CFS @ 12.49 HRS, VOLUME= .89 AF, ATTEN= 53%, LAG= 13.6 MIN

ELEVATION	AREA	INC.STOR	CUM.STOR	STOR-IND METHOD
(FT)	(SF)	(CF)	(CF)	PEAK STORAGE = 13112 CF
61.9	0	0	0	PEAK ELEVATION= 64.8 FT
63.0	5000	2750	2750	FLOOD ELEVATION= 66.0 FT
64.0	5700	5350	8100	START ELEVATION= 61.9 FT
65.0	7550	6625	14725	SPAN= 10-20 HRS, dt=.1 HRS
66.0	10200	8875	23600	Tdet= 60.2 MIN (.89 AF)

ROUTE INVERT OUTLET DEVICES

1 P 61.9' 6" CULVERT

n=.009 L=15' S=.25'/' Ke=.5 Cc=.9 Cd=.6

2 P 63.5' 10" ORIFICE/GRATE

Q=.6 PI r^2 SQR(2g) SQR(H-r)

POND 1 TOTAL OUTFLOW PEAK= 3.93 CFS @ 12.49 HOURS

HOUR	0.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
10.00	.01	.02	.05	.10	.15	.21	.26	.32	.37	.41
11.00	.45	.49	.53	.57	.62	.67	.75	.86	.94	1.05
12.00	1.36	2.30	3.08	3.61	3.89	3.93	3.87	3.74	3.59	3.41
13.00	3.21	3.00	2.76	2.51	2.29	2.10	1.91	1.75	1.62	1.51
14.00	1.43	1.35	1.29	1.24	1.20	1.17	1.14	1.12	1.10	1.09
15.00	1.08	1.06	1.05	1.04	1.03	1.01	1.00	.99	. 97	.96
16.00	.94	93	.91	.90	.88	.86	.82	.79	.76	.73
17.00	.70	.67	.64	.61	.58	.56	.53	.50	.48	.46
18.00	.43	.41	.39	.37	.36	.34	.33	.32	.31	.30
19.00	.29	.28	.28	.27	.27	.26	.26	.26	.25	.25
20.00	.24									

NUMBER ISSUING BANK: | IRREVOCABLE |SB-902402-0101 ALLFIRST BANK 25 SOUTH CHARLES STREET STANDBY 15TH FLOOR LETTER OF CREDIT BALTIMORE, MD 21201 U.S.A. PLACE AND DATE OF ISSUE: | PLACE AND DATE OF EXPIRY: BALTIMORE, MD AT OUR COUNTERS 1999 JULY 27 2000 JUNE 1 APPLICANT: BENEFICIARY: TUCHENHAGEN ZAJAC CITY OF PORTLAND | PLANNING AND URBAN DEVELOPMENT 1000 RIVERSIDE ST. 389 CONGRESS STREEET. | PORTLAND, ME 04101 PORTLAND, ME 04103 AMOUNT: USD189,498.00 UP TO AN AGGREGATE THEREOF CREDIT AVAILABLE WITH: ALLFIRST BANK PARTIAL DRAWINGS: PERMITTED. 25 SOUTH CHARLES STREET 15TH FLOOR BALTIMORE, MD 21201 BY: PAYMENT | Against presentation of documents detailed herein and drafts at: SIGHT Drawn on: ALLFIRST BANK 25 SOUTH CHARLES STREET BALTIMORE, MD 21201

RE: NEW BUILDING 1000 RIVERSIDE ST. PORTLAND MAINE, 04103

ALLFIRST BANK HEREBY ISSUES ITS IRREVOCABLE LETTER OF CREDIT FOR THE ACCOUNT OF TUCHENHAGEN-ZAJAC AS DEVELOPER, HEREINAFTER REFERRED TO AS THE DEVELOPER, IN THE NAME OF THE CITY OF PORTLAND IN THE AGGREGATE AMOUNT OF USD189,498.00.

THE CITY, THROUGH ITS DIRECTOR OF PLANNING AND URBAN DEVELOPMENT, MAY DRAW ON THIS LETTER OF CREDIT BY PRESENTATION OF A SIGHT DRAFT AND THE ORIGINAL LETTER OF CREDIT AND ALL AMENDMENTS THERETO, AT ALLFIRST BANK OFFICES LOCATED AT 25 SOUTH CHARLES STREET, SUITE 1501, BALTIMORE MD 21201, STATING THAT:

(1) THE DEVELOPER HAS FAILED TO COMPLETE BY JUNE 1, 2000 OR BY THE EXPIRATION DATE OF ANY TEMPORARY CERTIFICATE OF OCCUPANCY ISSUED, WHICHEVER DATE COMES FIRST, AT THE DEVELOPER'S EXPENSE, THE WORK ON THE ROADS AND OTHER PUBLIC IMPROVEMENTS AS SET FORTH IN A CERTAIN SCHEDULE OF COSTS OF PUBLIC

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IMPROVEMENTS DATED JULY 22, 1999; OR

- (2) THE DEVELOPER HAS FAILED TO POST THE TEN PERCENT (10%) DEFECT BOND OR GUARANTEE REQUIRED BY THE PORTLAND CITY CODE SECTIONS 14-501 AND 14-525, OR (3) THE DEVELOPER HAS FAILED TO NOTIFY THE CITY FOR INSPECTIONS.
- IN THE EVENT OF ALLFIRST BANK'S DISHONOR OF THE CITY OF PORTLAND'S SIGHT DRAFT ALLFIRST BANK SHALL INFORM THE CITY OF PORTLAND IN WRITING OF THE REASON OR REASONS THEREOF WITHIN THREE (3) WORKING DAYS OF THE DISHONOR.

AFTER ALL UNDERGROUND WORK IN THE PUBLIC RIGHT OF WAY HAS BEEN COMPLETED AND INSPECTED TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS, INCLUDING BUT NOT LIMITED TO SANITARY SEWERS, STORM DRAINS, CATCH BASINS, MANHOLES, ELECTRICAL CONDUITS, AND OTHER REQUIRED IMPROVEMENTS CONSTRUCTED CHIEFLY BELOW GRADE, THE CITY OF PORTLAND DIRECTOR OF FINANCE AS PROVIDED IN SECTION 14-501 OF THE PORTLAND CITY CODE MAY AUTHORIZE ALLFIRST BANK, BY WRITTEN CERTIFICATION, TO REDUCE THE AVAILABLE AMOUNT OF THIS LETTER OF CREDIT BY A SPECIFIED AMOUNT.

IT IS A CONDITION OF THIS LETTER OF CREDIT THAT IT SHALL BE DEEMED AUTOMATICALLY EXTENDED WITHOUT AMENDMENT FOR ONE YEAR FROM THE PRESENT OR ANY FUTURE EXPIRATION DATE OF THIS LETTER OF CREDIT UNLESS AT LEAST SIXTY (60) DAYS PRIOR TO SUCH EXPIRATION DATE ALLFIRST BANK NOTIFIES THE DIRECTOR OF PLANNING AND URBAN DEVELOPMENT BY REGISTERED MAIL AT THE ABOVE LISTED ADDRESS THAT ALLFIRST BANK ELECTS NOT TO CONSIDER THIS LETTER OF CREDIT RENEWED FOR SUCH ADDITIONAL PERIOD.

IN THE EVENT OF SUCH NOTICE, THE CITY MAY DRAW HEREUNDER BY PRESENTATION OF A SIGHT DRAFT DRAWN ON THE BANK, ACCOMPANIED BY THE ORIGINAL LETTER OF CREDIT AND ALL AMENDMENTS THERETO, AND A STATEMENT PURPORTEDLY SIGNED BY THE DIRECTOR OF PLANNING AND URBAN DEVELOPMENT READING AS FOLLOWS:

THIS DRAWING RESULTS FORM NOTIFICATION THAT ALLFIRST BANK HAS ELECTED NOT TO RENEW ITS LETTER OF CREDIT NO. SB-902402-0101; OR
THIS DRAWING RESULTS FROM THE DEVELOPER'S FAILURE TO TIMELY COMPLETE TO THE SATISFACTION OF THE CITY THE PUBLIC IMPROVEMENTS SET FORTH IN A CERTAIN SCHEDULE OF COSTS OF PUBLIC IMPROVEMENTS DATED JULY 22, 199; OR
THIS DRAWING RESULTS FROM THE DEVELOPER'S FAILURE TO POST A TEN PERCENT (10%) DEFECT GUARANTEE OR BOND AS PROVIDED IN PARAGRAPH 14-501 OF THE PORTLAND CITY CODE; OR

THIS DRAWING RESULTS FROM THE DEVELOPER'S FAILURE TO NOTIFY THE CITY FOR INSPECTIONS.

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07/27/1999

THIS LETTER OF CREDIT WILL AUTOMATICALLY EXPIRE UPON THE EARLIER OF:

ALLFIRST BANK'S RECEIPT OF A WRITTEN NOTIFICATION FROM THE CITY OF PORTLAND THAT SAID WORK AS OUTLINED IN A CERTAIN SCHEDULE OF COSTS OF PUBLIC IMPROVEMENTS DATED JULY 22, 1999 BETWEEN THE DEVELOPER AND THE CITY OF PORTLAND HAS BEEN COMPLETED IN ACCORDANCE WITH THE CITY OF PORTLAND SPECIFICATIONS AND ALLFIRST BANK LETTER OF CREDIT NO. SB-902402-0101 MAY BE CANCELLED; OR

THE EXPIRATION DATE OF JUNE 1, 2000 OR ANY AUTOMATICALLY EXTENDED DATE AS SPECIFIED HEREIN.

PARTIAL DRAWINGS ARE PERMITTED.

WE ENGAGE WITH YOU THAT DRAFTS DRAWN UNDER AND IN COMPLIANCE WITH THE TERMS OF THIS CREDIT WILL BE DULY HONORED IF PRESENTED AT OUR OFFICE AT 25 SOUTH CHARLES STREET, SUITE 1501, BALTIMORE MD 21201 ON OR BEFORE JUNE 1, 2000 OR ANY AUTOMATICALLY EXTENDED DATE AS SPECIFIED HEREIN.

VERY TRULY YOURS,
ALLFIRST BANK

NAME
TITLE

THE CITY OF PORTLAND HAS ACCEPTED THE PROVIDING OF ALTERNATIVE SECURITY FOR
THE DEVELOPER'S OBLIGATIONS TO BE PERFORMED PURSUANT TO SECTION 14-501 AND/OR
SECTION 14-525 OF THE PORTLAND CITY CODE.

DATED:

BY:

JOSEPH E. GRAY JR.

ITS DULY AUTHORIZED DIRECTOR OF
PLANNING AND URBAN DEVELOPMENT

SEEN AND AGREED TO:

BY:

DATE:

REVIEWED PURSUANT TO SECTION 14-501 AND/OR SECTION 14-525, PORTLAND CITY CODE.

ALLFIRST BANK 25 SOUTH CHARLES STREET 15TH FLOOR

BALTIMORE, MD 21201

INTERNATIONAL COLLECTIONS: (410) 244-4566
LETTERS OF CREDIT: (410) 244-4475, 4582, 4587

April 4, 2000

CITY OF PORTLAND
PLANNING AND URBAN DEVELOPMENT
389 CONGRESS STREET,
PORTLAND, ME 04101

RE: Our Letter of Credit Number: SB-902402-0101

Amount: USD189,498.00

Current USD Balance:189,498.00

Date of Issue: 07/27/1999 Account of: TUCHENHAGEN-ZAJAC

ATTN: SANDY ZAJAC

1000 RIVERSIDE STREET

PORTLAND, ME 04103

Prior Expiration Date: 06/01/2000

Ladies and Gentlemen:

According to the original terms of this letter of credit, it has been automatically renewed for an additional period.

The new expiration date is: 06/01/2001

This letter is a notification only and is not an amendment to the credit.

Very truly yours,

Thank you for the opportunity to be of service to you.

Authorized Signature

cc: TUCHENHAGEN-ZAJAC ATTN: SANDY ZAJAC

1000 RIVERSIDE STREET

PORTLAND, ME

04103

SUTTER, EUGENE A.

Bank: 0101 Branch: 999

: 101-745