

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

**78 GABRIEL DRIVE  
AUGUSTA, MAINE**

**CITY OF AUGUSTA PLANNING BOARD**

**MAJOR DEVELOPMENT  
REVIEW APPLICATION**

by

Thayer Engineering Co., Inc.  
17 Hasson Street, Farmingdale, Maine

March 5, 2014

## DEVELOPMENT REVIEW APPLICATION

### **Applicant Please Read First:**

It is the Applicant's responsibility to read the relevant sections of the Augusta Land Use Ordinance and provide the material required to constitute a complete application. No application will be placed on the Planning Board agenda until it has been deemed complete by staff at the Bureau of Planning. An application that includes all of the information described in this packet shall constitute a completed application. Waivers from certain standards may be requested in writing as an alternative to providing the required information.

This application form is for major development and minor development site plan applications which are:

**MAJOR DEVELOPMENT:** Any multi-family or non-residential development project that:

- a. creates more than 20,000 square feet of new floor space in the CD or IA zones; or
- b. creates more than 10,000 square feet of new floor area in zones not listed in a. above; or
- c. that disturbs more than 43,560 square feet (1 acre) of land; or
- d. creates more than 43,560 square feet (1 acre) of new impervious surface; or
- e. new construction that generates more than 100 trips in the peak hour for the proposed use; or
- f. proposes a new wireless communication facility that will require construction of a new tower.

**MINOR DEVELOPMENT:** Any multi-family or non-residential development project that:

- a. creates between 5,000 and 20,000 square feet of new floor area in the CD and IA zones; or
- b. creates between 1,000 and 10,000 square feet of new floor area in zones not listed in a. above; or
- c. that disturbs between 10,000 and 43,560 square feet of land; or
- d. creates between 10,000 and 43,560 square feet of new impervious surface; or
- e. creates four (4) or more residential units in a pre-existing single family, duplex, or multi-family structure; or
- f. new construction that generates between 35 and 99 trips in all zoning districts except CD and IA, in the peak hour for the proposed use; or
- g. any change of use where the proposed use requires 25% more on-site parking, as calculated using the parking requirements in the Land Use Ordinance, than the applicant proposes to make available on site; or
- h. proposes collocation of a wireless communication facility on an existing tower that will require construction of a new equipment shed.
- i. all uses proposing to construct a drive-through service or vehicle re-fueling pumps that do not otherwise qualify for major or minor development review.

When a proposed use qualifies as both a Development review and a Conditional Use, this single application shall be used. The staff and Planning Board review shall take both required approvals into account during a single review process.

Please note that a **complete application is required** before it will be reviewed by the Planning Board. The attached application must be submitted with the required plans, drawings, reports, and narratives as outlined in Chapter 4 of the Land Use Ordinance and Section 6.3.4 of the Land Use Ordinance.

The application review for a Major and **Minor Development** will proceed as follows:

1. Pre-Application review with Planning Staff, as necessary
2. Application submission to Planning Board.
3. Notification of abutters upon receipt of Application for Minor Development
4. Public hearing within thirty (30) days of receipt of complete application
5. Planning Board decision within thirty (30) days of the close of a public hearing.

Decisions on a Major or Minor Development are generally made in a single Planning Board meeting, however, if additional information is required, the hearing may be continued and require additional Planning Board meetings.

#### **FEES:**

1. For all applications: \$0.15 + the cost of first class postage for each abutter that will be notified as required by the ordinance.
2. For Major Development review: \$2,000 + (\$0.15 x each new square foot over 25,000). Maximum fee = \$4,000.
3. For Minor Development review: \$250 + (\$0.15 x each new square foot over 5,000). Maximum fee = \$1,000.

**City of Augusta**  
**Development Review Application**  
 Bureau of Planning, Department of Development Services

<b>Address of Proposed development:</b> 78 Gabriel Drive		
<b>Zone(s):</b> IA (Business and Industrial District)		
<b>Project Name:</b> NRF Warehouse Expansion		
<b>Existing Building (sq. ft.):</b> 101,640 sq. ft.	<b>Proposed Building (sq. ft.):</b> 151,640 sq. ft. including existing.	
<b>Existing Impervious (sq. ft.):</b> 251,880 sq. ft. total including building.	<b>Proposed Impervious (sq. ft.):</b> 334,121 sq. ft. total including building.	
<b>Proposed Total Disturbed Area of the Site:</b> 12 acres ± total.		
Proposed disturbance of greater than one acre requires a Chapter 500, Stormwater Management Permit from the Maine Department of Environmental Protection (DEP).		
<b>Owner's Name/Address:</b>  New North Augusta Trust c/o NRF Distributors Inc. Attn: Norman Pomerleau P.O. Box 2467 Augusta, ME 04338-2467  <b>Phone #:</b> 207-622-4744 <b>Cell #:</b> <b>e-mail:</b>	<b>Applicant's Name/Address:</b>  New North Augusta Trust c/o NRF Distributors Inc. Attn: Norman Pomerleau P.O. Box 2467 Augusta, ME 04338-2467  <b>Phone #:</b> 207-622-4744 <b>Cell #:</b> <b>e-mail:</b>	<b>Consultant's Name/Address:</b> Elliot B. Thayer, PE PLS Thayer Engineering Co., Inc. 17 Hasson Street Farmingdale, ME 04344  <b>Phone #:</b> 207-582-7762 <b>Cell #:</b> 207-441-7762 <b>e-mail:</b> ethayer@thayereng.com
<b>Tax Map #:</b> 1  <b>Lot #:</b> 216	<b>Lot Size (acres):</b> 60.82 ac.  <b>Frontage (Feet):</b> 60 feet	<b>Form for Evidence of Standing</b> (deed, purchase and sale agreement, other):  Book 7021/96, Kennebec County Registry of Deeds
<b>For Staff Use</b>		
<b>Fee Calculation:</b> Major Development max fee is \$4,000; Minor Development max fee is \$1,000 <b>Major Development:</b> \$2,000 + (number of sq ft over 25,000 x \$0.15) = \$4,000 (max. fee) <b>Minor Development:</b> \$250 + (number of sq ft over 5,000 x \$0.15) = <b>All Development:</b> Number of Abutters x (1oz First Class postage fee + \$0.15) = <b>Total Fee:</b>		
<b>Signatures</b>		
<b>Applicant:</b> _____		<b>Date:</b> _____
<b>Owner:</b> _____		<b>Date:</b> _____
<b>Agent:</b> <u>Elliot B. Thayer, PE PLS</u>		<b>Date:</b> <u>3/5/2014</u>

**Checklist.** The checklist below must be completed by the applicant. The required material or a written waiver request must be provided.

<b>Information Required on Plan(s)</b> See Augusta Land Use Ordinance for greater detail	<b>Included</b>	<b>Waiver Requested</b>
a. Name of Site Plan (Sec 4.5.2.1 of the Land Use Ordinance)	√	
b. Owner(s) name and address (4.5.2.2)	√	
c. Deed reference to subject parcel (4.5.2.3)	√	
d. Engineer's name, address, signature and seal (4.5.2.4)	√	
e. Surveyor's name, address, signature and seal (4.5.2.5)	√	
f. Scale, both in graphic and written form (4.5.2.6)	√	
g. Date and Revision box (4.5.2.7)	√	
h. Zoning designation(s) (4.5.2.8)	√	
i. North Arrow (true and magnetic, dated or grid) (4.5.2.9)	√	
j. Ownership, location and present use of abutting land (4.5.2.11)	√	
k. Location map (4.5.2.12)	√	
l. Streets, existing & proposed, with curve data (4.5.2.13 & 4.6.2.5)	√	
m. Drainage and erosion control (4.5.2.14)	√	
n. Utilities, existing and proposed (4.5.2.15)	N/A	
o. Topography, 2 foot contours (4.5.2.16)	√	
p. Parcel boundaries and dimensions (4.5.2.17)	√	
q. Proposed Use of the property (4.5.2.18)	√	
r. Proposed public or common areas (4.5.2.19)	N/A	
s. Boundary Survey and associated information (4.5.2.20)	√	
t. Traffic controls, off-street parking and facilities (4.5.2.21)	√	
u. Proposed fire protection plans or needs (4.5.2.22)	√	
v. Landscaping and buffering (4.5.2.23)	√	
w. Outdoor lighting plan (4.5.2.24)	√	
x. Freshwater wetlands (4.4.1.14)	√	
y. River, stream or brook (4.4.1.15)	√	
<b>Information Required in Written Project Narrative</b> See Augusta Land Use Ordinance for greater detail	<b>Included</b>	<b>Waiver Requested</b>
a. Pollution – Undue water or air pollution (4.4.1.1)	√	
b. Water – Sufficient potable water (4.4.1.2)	√	
c. Municipal Water – is there adequate supply (4.4.1.3)	√	
d. Soil Erosion – unreasonable soil erosion (4.4.1.4)	√	
e. Road congestion and safety (4.4.1.5 & 4.5.2.21)	√	
f. Sewage waste disposal – adequate provisions (4.4.1.6)	√	
g. Solid waste – adequate provisions (4.4.1.7)	√	
h. Aesthetic, cultural, and natural values (4.4.1.8)	√	
i. Conformity with city ordinances and plans (4.4.1.9)	√	
j. Financial and technical ability (4.4.1.10)	√	
k. Surface water, shoreland, outstanding rivers (4.4.1.11)	√	
l. Ground water – negative impact (4.4.1.12)	√	
m. Flood areas (4.4.1.13)	√	
n. Freshwater wetlands – description of impact (4.4.1.14)	√	
o. Stormwater – management plans (4.4.1.16)	√	
p. Access to direct sunlight (4.4.1.17)	√	
q. State Permits – description of requirements (4.4.1.18)	√	
r. Outdoor lighting – description of lighting plans (4.4.1.20)	√	

<b>Additional Information Required in Written Narrative</b> See Augusta Land Use Ordinance for greater detail		
<b>Where the items below duplicate the items above, identical responses are permitted and encouraged.</b>	<b>Included</b>	<b>Waiver Requested</b>
s. Neighborhood Compatibility – description per ordinance (6.3.4.1)	√	
t. Compliance with Plans and Policies (6.3.4.2)	√	
u. Traffic Pattern, Flow, and Volume analysis (6.3.4.3)	√	
v. Public facilities – Utilities including stormwater (6.3.4.4)	√	
w. Resource protection and the environment (6.3.4.5)	√	
x. Performance Standards (6.3.4.6)	√	
y. Financial and Technical Ability (6.3.4.7)	√	

### Application Materials

The application materials that are required for a complete application are listed below:

<b>Paper Copies</b>	<b>Included</b>	<b>Waiver Requested</b>
11 copies of the application form and narrative	√	
11 copies of the deed, Purchase & Sale agreement, or other document to show standing	√	
3 copies of any stormwater report	√	
2 copies of any traffic report	√	
7 reduced-sized copies of the complete plan set on 11" x 17" size paper	√	
4 full-sized copies of the complete plan set on ANSI D or E size paper	√	
11 copies of a letter authorizing the agent to represent the applicant	√	
Payment in full of application fee (Note: an abutter notification fee will be assessed after the application is determined to be complete. The fee is \$0.15 plus the cost of first class postage for each abutter that will be notified as required by the ordinance.)	√	
<b>Electronic Copy</b>		
1 CD that includes each of the application documents in Adobe PDF format	√	

<b>For Official Use:</b>		
<input type="checkbox"/> \$_____ <b>Application</b> Fee Paid.	Received By (Initials): _____	Date: _____
<input type="checkbox"/> \$_____ <b>Abutter</b> Notification Fee Paid.	Received By (Initials): _____	Date: _____

NEW NORTH AUGUSTA TRUST  
NRF DISTRIBUTORS, INC.  
485 OLD BELGRADE ROAD  
AUGUSTA, ME 04330

January 28, 2014

Maine Department of Environmental Protection  
17 State House Station  
Augusta, ME 04330-0017

City of Augusta  
16 Cony Street  
Augusta, ME 04330-5201

To Whom It May Concern:

Please be advised that Elliot B. Thayer, PE of Thayer Engineering Company, Inc. has been engaged to provide all site engineering services for New North Augusta Trust's proposed project for NRF Distributors' warehouse expansion located at 78 Gabriel Drive, Augusta, Maine. As such, Elliot Thayer is authorized to act as agent on our behalf in the preparation, presentation, and administration of land use applications for the Department of Environmental Protection and for the City of Augusta.

If there should be any questions, please do not hesitate to contact me at your convenience.

Sincerely,



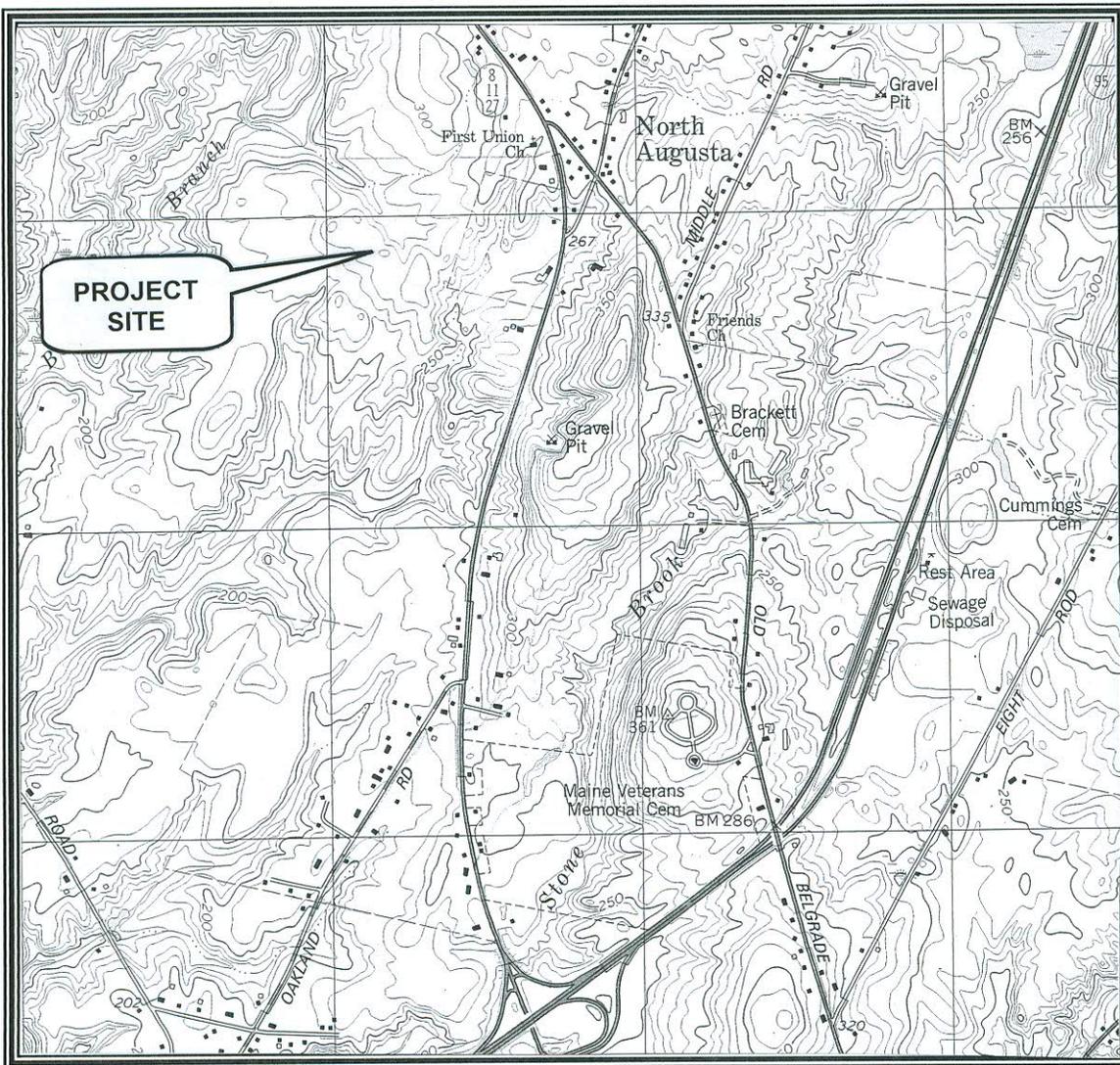
New North Augusta Trust  
NRF Distributors, Inc.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**LOCATION MAP**



Portion of Augusta, Maine  
USGS 7.5 minute quadrangle map  
1 inch = 2,000 feet



**NRF WAREHOUSE EXPANSION  
for  
NEW NORTH AUGUSTA TRUST**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**DEVELOPMENT DESCRIPTION**

The application is for the construction of a 50,000 square-foot building addition onto the west side of the existing 101,640 square-foot NRF warehouse at 78 Gabriel Drive in Augusta, Maine, with an expanded truck loading/parking area and fire access road also to the west containing about 38,000 square feet of new impervious area. The building addition will contain warehouse space for receiving and distributing flooring products. This \$3.5 million expansion is necessary to accommodate growth and to consolidate satellite warehouse facilities to this principal location.

This facility is physically buffered from the surrounding area by a protected 31-acre Wildlife Buffer Zone to the north and west, and by being about 2,200 feet westerly of Civic Center Drive and about 700 feet off the west end of Gabriel Drive. The Central Maine Commerce Center property to the south is developed with various commercial and governmental uses, and a business park subdivision. The uses adjoining immediately to the south are a state police automobile repair facility and parking lots.

Gabriel Drive is more than adequate for safe access, and all interior driveways and maneuvering areas meet current standards.

The current number of employees is 16 employees on the 1st shift, 12 employees on the 2<sup>nd</sup> shift, and 3 employees on the 3<sup>rd</sup> shift, and is expected to remain the same after the expansion. There are currently 53 passenger car parking spaces including 3 handicap spaces on the easterly side of the building, which will not change.

Truck traffic to and from this NRF facility is expected to increase as a result of the building expansion. The current number of trucks arriving/leaving the facility is 25 per day Sunday through Friday, and after expansion is expected to be 29 per day Sunday through Friday. Truck parking to the south of the building will be expanded westerly from the existing 29 spaces to a total of 39 spaces.

Water and sewer are supplied by Greater Augusta Utilities District. Water used and wastewater generated will not significantly change as a result of this proposed building expansion.

Contemporaneously with this application, New North Augusta Trust is applying to MDEP for approval of a Minor Amendment under the Maine Site Location of

Development Law, to MDEP for a Tier 2 Natural Resources Protection Act (NRPA) Permit for proposed wetland impact, and to U.S. Army Corps of Engineers for a Department of the Army Permit for the proposed wetland impact.

The existing impervious areas on the subject lot contain about 5.7 acres, and the proposed expansion will increase that by about 2 acres. Stormwater quantity and quality control for the existing site is accomplished through a soil filter/detention pond constructed during the original project in 2002-2003 to the west of the warehouse. The pond will be modified into an underdrained gravel filter wet pond to provide quantity and quality control for the existing facility plus the proposed expansion. Roof water is and will continue to be directed through interior roof drains and storm drains to the wet pond. Surface water from the new impervious areas will be directed to the wet pond. The attached stormwater calculations and report show that the volume and outlet control of the wet pond will control the anticipated increase in flow from the proposed building addition, and also show that the underdrained gravel filter will provide treatment for quality.

Before earth moving begins, the portion of the site being developed will be protected from erosion and sedimentation by the installation of sediment barriers as called for on the Site Plan and on the Erosion Control & Details Plan, and the outlet of the stormwater pond will be fitted with a temporary perforated filter and shown on the Erosion Control & Details Plan.

Reference is made to the accompanying plans by Thayer Engineering Company, Inc., entitled:

- “Plan of Boundary Survey, New North Augusta Trust, Central Maine Business Park, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Existing Conditions Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Site Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Erosion Control & Details Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Pre-Development Drainage Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014; and
- “Post-Development Drainage Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**RIGHT, TITLE AND INTEREST**

The existing facility and land being developed is owned by the New North Augusta Trust as described in a deed dated August 15, 2002, recorded in Kennebec County Registry of Deeds in Book 7021, Page 96. The address of the property is 78 Gabriel Drive and is Lot 216 on Augusta Tax Map 1.

Following is a copy of the deed.

TRANSFER  
TAX  
PAID

WARRANTY DEED  
**025606**

KNOW ALL BY THESE PRESENTS That **Wishcamper-O'Neil Properties, Inc.**, a Maine corporation ("Grantor"), with a place of business in Portland, Cumberland County, Maine, for consideration paid, grants to **Roger R. Pomerleau, Trustee of the New North Augusta Trust**, under Declaration of Trust dated November 6, 1998 and recorded in Kennebec County Registry of Deeds in Book 5779, Page 257 ("Grantee"), with a mailing address of c/o NRF Distributors, Inc., P. O. Box 2467, Old Belgrade Road, Augusta, Maine 04338-2467, with Warranty Covenants, the land in Augusta, Kennebec County, Maine, described as follows:

See Exhibit A attached hereto and incorporated herein.

IN WITNESS WHEREOF, the said Wishcamper-O'Neil Properties, Inc. has caused this instrument to be sealed with its corporate seal and signed in its corporate name by William A. Houlihan, its Vice President, this 15<sup>th</sup> day of August, 2002.

**WISHCAMPER-O'NEIL PROPERTIES,  
INC.**

By: William A. Houlihan  
Its: Vice President  
Printed Name: William A. Houlihan

STATE OF MAINE  
COUNTY OF CUMBERLAND, ss.

On August 15, 2002, personally appeared the above-named William A. Houlihan, Vice President of said corporation, and acknowledged the foregoing to be his free act and deed and the free act and deed of said corporation.

Before me,  
Robert B. Patterson  
Notary Public Attorney At Law  
Printed Name: Robert B. Patterson, Jr

R. Patterson 40

**Exhibit A**

Certain lots or parcels of land situated westerly of Civic Center Drive, so-called, and northerly and westerly of Gabriel Drive, so-called, in the City of Augusta, Kennebec County, State of Maine, (the "Premises") and being bounded and described as follows:

**Parcel One - Lot 1 and Lot 2**

Lot 1 and Lot 2 as shown on a plan entitled "Subdivision Plan, Central Maine Business Park, H.R.C. Development Co., Inc., Civic Center Drive, Augusta, Maine", dated November 1987, revised through February 8, 1989, by Thayer Engineering Company, Inc., Farmingdale, Maine, recorded in Kennebec County Registry of Deeds in Plan File E-89081 and E-89082 (1989 Plan), and being bounded and described as follows:

Beginning at the intersection of the northwesterly right-of-way line of Civic Center Drive with the northeasterly right-of-way line of Gabriel Drive as shown on said 1989 Plan, reference deed recorded in said Registry of Deeds in Book 3784, Page 42;

thence N 52° 48' 29" W along the northeasterly right-of-way line of Gabriel Drive a distance of 98.94 feet to a point of curvature;

thence in a general northwesterly direction along a curve to the left having a radius of 830.00 feet through a central angle of 18° 01' 17" an arc length of 261.06 feet to the southerly corner of Lot 3 as shown on said 1989 Plan, said corner being N 61° 49' 07" W and a chord distance of 259.99 feet from the last mentioned point;

thence N 37° 41' 38" E along the southeasterly line of Lot 3 a distance of 230.00 feet to the easterly corner of Lot 3;

thence N 55° 26' 15" W along the northeasterly line of Lot 3 a distance of 325.27 feet to the southerly corner of Lot 6 as shown on said 1989 Plan;

thence N 40° 36' 25" E along the southeasterly line of Lot 6 and along the southeasterly line of Lot 7 a distance of 588.23 feet to the southwesterly line of land now or formerly of First United Pentecostal Church, reference deed recorded in said Registry of Deeds in Book 1630, Page 281;

thence S 58° 12' 25" E along the southwesterly line of said land of First United Pentecostal Church and along the southwesterly line of land now or formerly of Violette, reference deed recorded in said Registry of Deeds in Book 2186, Page 241, a distance of 279.68 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and a northwesterly corner of land now or formerly of Blethen, reference deed recorded in said Registry of Deeds in Book 1393, Page 240;

thence S 14° 34' 18" W along the westerly line of said land of Blethen a distance of 199.94 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and the northwesterly corner of other land of said Blethen, reference deed recorded in said Registry of Deeds in Book 1259, Page 352;

thence S 18° 08' 39" W along the westerly line of said other land of Blethen a distance of 99.99 feet to a ¾-inch rod capped "Thayer Engineering Company" and the

W0047831 1)

northwesterly corner of land now or formerly of Poulin, reference deed recorded in said Registry of Deeds in Book 1285, Page 84;

thence S 20° 31' 33" W along the westerly line of said land of Poulin a distance of 99.99 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and the northwesterly corner of other land of said Poulin, reference deed recorded in said Registry of Deeds in Book 1327, Page 356;

thence S 22° 00' 51" W along the westerly line of said other land of Poulin a distance of 25.00 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and the southwesterly corner of said other land of Poulin;

thence S 58° 12' 25" E along the southwesterly line of said other land of Poulin a distance of 150.00 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and the northwesterly right-of-way line of Civic Center Drive;

thence in a general southwesterly direction along the northwesterly right-of-way line of Civic Center Drive along a curve to the right having a radius of 2,405.703 feet through a central angle of 6° 29' 12" an arc length of 272.36 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and the easterly corner of land now or formerly of Harris, reference deed recorded in said Registry of Deeds in Book 2689, Page 2, said corner being S 25° 33' 20" W and a chord distance of 272.22 feet from the last mentioned iron rod;

thence N 61° 20' 45" W along the northeasterly line of said land of Harris a distance of 156.59 feet to a 1-inch iron pipe;

thence S 46° 38' 44" W along the northwesterly line of said land of Harris a distance of 109.61 feet to a ¾-inch iron rod capped "Thayer Engineering Company";

thence S 52° 48' 29" E along the southwesterly line of said land of Harris a distance of 188.56 feet to a ¾-inch iron rod capped "Thayer Engineering Company" and the northwesterly right-of-way line of Civic Center Drive;

thence in a general southwesterly direction along the northwesterly right-of-way line of Civic Center Drive along a curve to the right having a radius of 2,405.703 feet through a central angle of 0° 07' 08" an arc length of 4.99 feet to the point of beginning, said point being S 32° 00' 40" W and a chord distance of 4.99 feet from the last mentioned iron rod, containing 7.33 acres, more or less.

Parcel One is conveyed TOGETHER WITH a 50-foot wide easement for access and utilities for the benefit of Lots 1 and 2 on the southeasterly side of Lot 3 as shown on said 1989 Plan and as further described in Article V.F of the Declaration of Covenants and Easements of the Central Maine Business Park dated December 14, 1989, recorded in said Registry of Deeds in Book 3666, Page 122, and as reserved in a deed of Wishcamper – O'Neil Properties, Inc. to U.A. Local 716 J.A.T. Building, Inc., dated August 31, 1999, recorded in said Registry of Deeds in Book 6042, Page 181.

Parcel One is conveyed subject to a 5-foot wide snow storage and utility easement on the southwesterly side of Lot 1 along Gabriel Drive as shown on said 1989 Plan and as further described in Article V.B of said Declaration of Covenants and Easements of the Central Maine Business Park, and as described in a deed of Wishcamper – O'Neil

Properties, Inc. to City of Augusta, Maine, dated August 6, 1990, recorded in said Registry of Deeds in Book 3784, Page 42.

Parcel One is conveyed subject to a sign location easement over and across an area fifty (50) feet by fifty (50) feet located at a southerly corner of Lot 1 and adjoining the northwesterly right-of-way line of Civic Center Drive and the northeasterly line of said land of Harris as shown on said 1989 Plan and as described in Article V.G of said Declaration of Covenants and Easements of the Central Maine Business Park.

Parcel One is conveyed subject to possible rights of others in and to the well near the southerly corner of said land of Harris as shown on said 1989 Plan.

Parcel One is conveyed subject to a drainage easement described in a deed of Gabriel V. Dostie and Ludger A. Dostie to State of Maine, dated April 1, 1987, recorded in said Registry of Deeds in Book 3130, Page 24.

Parcel One is conveyed subject to a drainage easement of State of Maine as set forth in a condemnation dated August 1, 1956 and recorded in Book 1056, Page 440.

Parcel One is conveyed SUBJECT TO the notes, conditions and easements set forth on a Plan entitled "Subdivision Plan, Central Maine Business Park, H.R.C. Development Co., Inc., Civic Center Dr., Augusta, Maine" dated November 1987, revised through February 8, 1989 by Thayer Engineering, Inc. Farmingdale, Maine recorded in said Registry of Deeds in Book Plan File E-89081 and E-89082.

The Warranty Covenants of this deed shall not apply to that portion of the Premises which is described in the Governor's Deed from the State of Maine to H.R.C. Development Company, Inc., dated April 20, 1989, recorded in said Registry of Deeds in Book 3537, Page 348.

Lot One of Parcel One is conveyed subject to the rights and easements granted to Central Maine Power Company and New England Telephone and Telegraph Company by deed dated June 4, 1990 and recorded in said Registry of Deeds in Book 3774, Page 295.

**Parcel Two - Gabriel Drive Extension**

The parcel designated "Phase 2A, Gabriel Drive Extension" on a plan entitled "Modification to the Central Maine Business Park Subdivision, New North Augusta Trust, Gabriel Drive & Ludger Drive, Augusta, Maine", drawings 1 and 2 of 2, dated and revised through June 11, 2002, by Thayer Engineering Company, Inc., Farmingdale, Maine, recorded in Kennebec County Registry of Deeds in Plan File E2002-126 and E2002-127 (2002 Plan), and being bounded and described as follows:

(W0047831 1)

Beginning at the northwesterly terminus of Gabriel Drive as accepted by the City of Augusta, reference deed recorded in said Registry of Deeds in Book 3784, Page 42, on the northeasterly line of Lot 24 as shown on the 1989 Plan at a point southwesterly of and opposite Road Centerline Station 23+00, all as shown on the 2002 Plan;

thence N 39° 18' 29" W along the northeasterly line of Lot 24 a distance of 195.00 feet to a point of curvature opposite Road Centerline P.C. Station 24+95.00;

thence in a general northwesterly direction along the northeasterly line of Lot 24 and along the northeasterly line of Lot 23 as shown on the 1989 Plan along a curve to the left having a radius of 1,470.00 feet through a central angle of 2° 06' 03" an arc length of 53.90 feet to a southerly corner of Lot #13-22 as shown on the 2002 Plan, said corner being N 40° 21' 30" W and a chord distance of 53.90 feet from the last mentioned point;

thence N 48° 35' 28" E along a southeasterly line of Lot #13-22 a distance of 60.00 feet to a point and the southwesterly line of Lot #10A as shown on the 2002 Plan;

thence in a general southeasterly direction along the southwesterly line of Lot #10A along a curve to the right having a radius of 1,530.00 feet through a central angle of 0° 37' 19" an arc length of 16.61 feet to a point of reverse curvature, said point being S 41° 05' 52" E and a chord distance of 16.61 feet from the last mentioned point;

thence in a general easterly direction along the southerly line of Lot #10A along a curve to the left having a radius of 20.00 feet through a central angle of 88° 31' 16" an arc length of 30.90 feet to a point of tangency, said point being S 85° 02' 51" E and a chord distance of 27.92 feet from the last mentioned point;

thence N 50° 41' 31" E along the southeasterly line of Lot #10A a distance of 30.52 feet to the southwesterly line of proposed Ludger Drive as shown on the 2002 Plan at a point northwesterly of and opposite Road Centerline Station 10+80.00;

thence S 39° 18' 29" E along the southwesterly line of proposed Ludger Drive through Road Centerline Station 10+80.00 a distance of 60.00 feet to the northwesterly line of Lot 5 as shown on the 1989 Plan;

thence S 50° 41' 31" W along the northwesterly line of Lot 5 a distance of 30.00 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and a point of curvature;

thence in a general southerly direction along the westerly line of Lot 5 along a curve to the left having a radius of 20.00 feet through a central angle of 90° 00' 00" an arc length of 31.42 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and a point of tangency, said point being S 5° 41' 31" W and a chord distance of 28.28 feet from the last mentioned iron rod;

thence S 39° 18' 29" E along the southwesterly line of Lot 5 a distance of 135.00 feet to the northwesterly terminus of Gabriel Drive;

thence S 50° 41' 31" W along the northwesterly terminus of Gabriel a distance of 60.00 feet to the point of beginning, containing 18,170 square feet, more or less.

Parcel Two is conveyed SUBJECT TO rights and easements conveyed to the Augusta Sanitary District dated August 17, 1990 and recorded in the Kennebec County Registry of Deeds in Book 3784, Page 48.

Parcel Two is conveyed subject to the rights and easements granted to Central Maine Power Company and New England Telephone and Telegraph Company by deed dated June 4, 1990 and recorded in said Registry of Deeds in Book 3774, Page 295.

Parcel Two is conveyed SUBJECT TO access rights of others.

**Parcel Three - Lot #6 through #10A & Ludger Drive**

The parcel designated "Phase 2B, Future Development of Lots #6 through #10A & Ludger Drive" on the 2002 Plan, and being bounded and described as follows:

Beginning on the southeasterly line of proposed Ludger Drive on the northwesterly line of Lot 5 as shown on said 1989 Plan at a point southeasterly of and opposite Road Centerline Station 10+80.00 at an easterly corner of the parcel labeled "Phase 2A, Gabriel Drive Extension", all as shown on said 2002 Plan;

thence N 39° 18' 29" W along a northeasterly line of "Phase 2A, Gabriel Drive Extension" through Road Centerline Station 10+80.00 distance of 60.00 feet to a northerly corner of "Phase 2A, Gabriel Drive Extension";

thence S 50° 41' 31" W along a northwesterly line of "Phase 2A, Gabriel Drive Extension" a distance of 30.52 feet to a point of curvature;

thence in a general westerly direction along the northerly line of "Phase 2A, Gabriel Drive Extension" along a curve to the right having a radius of 20.00 feet through a central angle of 88° 31' 16" an arc length of 30.90 feet to a point of reverse curvature, said point being N 85° 02' 51" W and a chord distance of 27.92 feet from the last mentioned point;

thence in a general northwesterly direction along a northeasterly line of "Phase 2A, Gabriel Drive Extension" along a curve to the left having a radius of 1,530.00 feet through a central angle of 0° 37' 19" an arc length of 16.61 feet to an easterly corner of Lot #13-22 as shown on the 2002 Plan, said point being N 41° 05' 52" W and a chord distance of 16.61 feet from the last mentioned point;

thence continuing in a general northwesterly direction along a northeasterly line of Lot #13-22 along a curve to the left having a radius of 1,530.00 feet through a central angle of 17° 22' 20" an arc length of 463.90 feet to a point, said point being N 50° 05' 42" W and a chord distance of 462.12 feet from the last mentioned corner;

thence N 1° 30' 41" W along an easterly line of Lot #13-22 a distance of 294.19 feet;

thence N 7° 09' 13" W along an easterly line of Lot #13-22 a distance of 600.00 feet to the southwesterly line of land now or formerly of Beland, reference deed recorded in said Registry of Deeds in Book 3563, Page 122;

(W0047831 1)

thence S 58° 12' 25" E along the southwesterly line of said land of Beland, along the southwesterly line of land now or formerly of Lajoie, reference deed recorded in said Registry of Deeds in Book 3964, Page 275, along the southwesterly line of land now or formerly of LeClerc, reference deed recorded in said Registry of Deeds in Book 3058, Page 9, along the southwesterly line of land now or formerly of LaRochelle, reference deed recorded in said Registry of Deeds in Book 2701, Page 136, along the southwesterly line of land now or formerly of Hallowell, reference deeds recorded in said Registry of Deeds in Book 2995, Page 123 and Book 2810, Page 94, along the southwesterly line of land now or formerly of Rocque, reference deed recorded in said Registry of Deeds in Book 2152, Page 310, along the southwesterly line of land now or formerly of Doyon, reference deed recorded in said Registry of Deeds in Book 5670, Page 270, along the southwesterly line of land now or formerly of Peaslee, reference deed recorded in said Registry of Deeds in Book 1995, Page 255, and along the southwesterly line of land now or formerly of First United Pentecostal Church, reference deeds recorded in said Registry of Deeds in Book 1905, Page 131, Book 1729, Page 21 and Book 1630, Page 281, marked in part by a stone wall, a distance of 1,930.00 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and the northerly corner of Lot 2 as shown on the 1989 Plan;

thence S 40° 36' 25" W along the northwesterly line of Lot 2 a distance of 588.23 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and the easterly corner of Lot 4B as shown on a plan entitled "Modification to the Central Maine Business Park Subdivision, Wishcamper – O'Neil Properties, Inc., Civic Center Drive, Augusta, Maine", dated March 1990, by Thayer Engineering Company, Inc., Farmingdale, Maine, recorded in said Registry of Deeds in Plan File D-90049 (1990 Plan);

thence N 57° 53' 58" W along the northeasterly line of Lot 4B and along the northeasterly line of Lot 4A as shown on said 1990 Plan a distance of 417.45 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and the easterly corner of Lot 5;

thence N 17° 10' 53" W along the easterly line of Lot 5 a distance of 200.00 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and the northeasterly corner of Lot 5;

thence in a general southwesterly direction along the northwesterly line of Lot 5 along a curve to the left having a radius of 470.00 feet through a central angle of 28° 38' 52" an arc length of 235.00 feet to a 5/8-inch iron rod found capped "Thayer Engineering Company" and a point of tangency, said point being S 65° 00' 57" W and a chord distance of 232.56 feet from the last mentioned iron rod;

thence S 50° 41' 31" W along the northwesterly line of Lot 5 a distance of 125.00 feet to the point of beginning, containing 23.92 acres, more or less.

That portion of Parcel Three labeled and depicted as "Ludger Drive" on said 2002 Plan is conveyed SUBJECT TO access rights of others .

**Parcel Four - Lots #13-22**

The parcel designated "Phase 3 (Development of Lot 13-22) Lot #13-22" on said 2002 Plan, and being bounded and described as follows:

Beginning on the northeasterly line of Lot 23 as shown on said 1989 Plan at a point southwesterly of and opposite Road Centerline Station 25+50.00 and at the westerly corner of the parcel labeled "Phase 2A, Gabriel Drive Extension", all as shown on said 2002 Plan;

thence in a general northwesterly direction along the northeasterly line of Lot 23 along a curve to the left having a radius of 1,470.00 feet through a central angle of 12° 53' 38" an arc length of 330.81 feet to a ¾-inch iron rod found capped "Thayer Engineering Company", said iron rod being N 47° 51' 21" W and a chord distance of 330.11 feet from the last mentioned point;

thence S 34° 18' 42" W along the northwesterly line of Lot 23 a distance of 501.44 feet to a ¾-inch iron rod found capped "Thayer Engineering Company" and the northeasterly line of land now or formerly of SCI Technology, Inc., as described in a deed recorded in said Registry of Deeds in Book 4872, Page 97;

thence N 58° 09' 24" W along the northeasterly line of said land of SCI Technology, Inc. a distance of 2,480.59 feet to the northerly corner of said land of SCI Technology, Inc. and the southeasterly line of land now or formerly of Waterhouse, as described in a deed recorded in said Registry of Deeds in Book 3035, Page 138;

thence N 51° 36' 30" E along the southeasterly line of said land of Waterhouse and along the southeasterly line of land now or formerly of Dostie, as described in a deed recorded in said Registry of Deeds in Book 1409, Page 257, through a slate marker found a distance of 1,354.85 feet to the westerly corner of land now or formerly of Beland, as described in a deed recorded in said Registry of Deeds in Book 3563, Page 122. said corner being N 51° 36' 30" E and 5.36 feet from said slate marker;

thence S 58° 12' 25" E along the southwesterly line of said land of Beland a distance of 1,389.23 feet to the northwesterly corner of Lot #9A as shown on said 2002 Plan;

thence S 7° 09' 13" E along the westerly line of Lot #9A a distance of 600.00 feet to the northwesterly corner of Lot #10A as shown on said 2002 Plan;

thence S 1° 30' 41" E along the westerly line of Lot #10A a distance of 294.19 feet to the southwesterly corner of Lot #10A;

thence in a general southeasterly direction along the southwesterly line of Lot #10A along a curve to the right having a radius of 1,530.00 feet though a central angle of 17° 22' 20" an arc length of 463.90 feet to a northerly corner of "Phase 2A, Gabriel Drive Extension", said corner being S 50° 05' 42" E and a chord distance of 462.12 feet from the last mentioned corner;

thence S 48° 35' 28" E along a northwesterly line of "Phase 2A, Gabriel Drive Extension" a distance of 60.00 feet to the point of beginning, containing 60.82 acres, more or less.

{W0047831 1}

The Premises are conveyed TOGETHER WITH rights to a drainage easement over, across, under and through an area thirty (30) feet by forty (40) feet located on the northeasterly side of Lot 23 as shown on said 1989 Plan opposite Road Centerline Station 27+70 and as described in Article V.C of said Declaration of Covenants and Easements of the Central Maine Business Park.

The Warranty Covenants of this deed shall not apply to that portion of the premises lying northwesterly of a line on the northwesterly side of the above described parcel which is labeled "(N 49° 28' 33" E, Extension of Beland Westerly Line) (per Plan Ref. 2 & 7)" as shown on said 2002 Plan.

That portion of Parcel Four labeled and depicted as Gabriel Drive on the plan entitled "Subdivision Plan, Central Maine Business Park, H.R.C. Development Co., Inc., Civic Center Dr., Augusta, Maine dated November 1987, revised through February 8, 1989 by Thayer Engineering Company, Inc., Farmingdale, Maine, recorded in said Registry of Deeds in Plan File E-89081 and E-89082- is conveyed SUBJECT TO to access rights of others.

Bearings are based upon a magnetic north observation as referenced on the 1989 Plan.

The above-described premises are hereby conveyed SUBJECT TO and TOGETHER WITH the restrictions, conditions, rights and easements set forth in the Declaration of Covenants and Easements, Central Maine Business Park, dated December 14, 1989, recorded in Kennebec County Registry of Deeds in Book 3666, Page 122.

The Premises are SUBJECT TO the notes, conditions and easements set forth on a plan entitled "Modification to the Central Maine Business Park Subdivision, New North Augusta Trust, Gabriel Drive & Ludger Drive, Augusta, Maine", drawings 1 and 2 of 2, dated and revised through June 11, 2002, by Thayer Engineering Company, Inc., Farmingdale, Maine, recorded in Kennebec County Registry of Deeds in Plan File E2002-126 and E2002-127.

The Premises are further SUBJECT TO the Polyphase Contract dated July 10, 1990 between Central Maine Power Company and Wishcamper-O'Neil Properties, Inc., recorded in Kennebec County Registry of Deeds in Book 3864, Page 210 as revised by documents recorded in Kennebec County Registry of Deeds in Book 4186, Page 162; Book 4428, Page 238; Book 4909, Page 241; Book 5264, Page 153; and Book 5514, Page 14.



**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**March 14, 2014 ADDENDUM**

**Narrative Section S: 6.3.4.1.b, c, d  
Neighborhood Compatibility**

The existing NRF warehouse and the proposed addition, located in Urban Growth Area District IA, are more than 500 feet from any residential properties. The proposed development is within an existing established business park.

*(b) Are the elements of the site plan (e.g., buildings, circulation, open space and landscaping) designed and arranged to maximize the opportunity for privacy by the residents of the immediate area?*

The elements of the site plan provide privacy by the residents of the immediate area. The NRF warehouse is buffered from adjoining residential properties by a protected forested 31-acre wildlife buffer zone which is from 350 feet to 750 feet wide. The visual impact of the development on the neighborhood will be minimal considering the building addition will be on the westerly side of the existing building about 2,200 feet away from Civic Center Drive and, with the exception of Central Maine Commerce Center to the south, will be inconspicuous or invisible to abutters. The adjoining uses immediately to the south in Central Maine Commerce Center are a State Police automobile repair facility and parking lots. All warehousing operations take place inside the building. Truck loading and unloading docks are on the southerly side of the building facing the adjoining commercial uses.

*(c) Will the proposal maintain safe and healthful conditions within the neighborhood? This criterion shall not be limited to the standards affecting safety and health as outlined in this land use ordinance. Additional regulations may be found in the City of Augusta Code of Ordinances as amended.*

The proposal will maintain safe and healthful conditions within the neighborhood. The proposal is an expansion of the same use in an approved business park. Access to the facility is over Gabriel Drive, which was constructed to City standards for a commercial/business park. Noise and lighting impacts are minimized by the buffers and the separation from residential properties and from Civic Center Drive. Stormwater quantity and quality control elements will limit stormwater flows from the site to levels that will be the same or less than the pre-2002 development levels, and stormwater

quality will be improved through retention and an under-drained gravel filter wet pond system. Erosion and Sedimentation Control measures are specified and will be implemented to ensure that the facility will have minimal adverse impact on the neighborhood. Water supply and wastewater disposal are provided by Greater Augusta Utilities District. Solid waste is recycled and/or disposed of at licensed facilities. There are no identified natural, scenic or historic areas in the vicinity of the proposed project site. There will be no undue adverse effects on the aesthetics of the area. No significant wildlife habitat has been identified within the project site.

*(d) Will the proposal have a significant detrimental effect on the value of adjacent properties (which could be avoided by reasonable modifications of the plan)? In determining whether this criterion has been met, the Planning Board may require the applicant to submit an appraisal prepared by a State of Maine certified appraiser.*

The proposal will have no significant detrimental effect on the value of adjacent properties. The proposal is an expansion of the same use in an existing established business park. The site design and the building location on the property present compatibility to surrounding uses. The proposed building addition will be the same type and design and at the same elevation as the existing building. Noise and lighting impacts are minimized by the buffers and the separation from residential properties and from Civic Center Drive.

#### **Narrative Section T: In Accordance with 2007 Comprehensive Plan**

*Why do you think the proposal is in accordance with the 2007 Comprehensive Plan?*

The NRF Distributors facility and the proposed expansion are in accordance with the 2007 Augusta Comprehensive Plan. The site at the west end of Gabriel Drive in Central Maine Business Park is located in Urban Growth Area District IA, and is within an area designated in the 2007 Comprehensive Plan as a Growth Area "...within which the majority of development in the coming ten years should take place".

#### **Narrative Section U: 6.3.4.3.c Traffic Flow, Pattern and Volume**

*(c) Does the proposal provide access for emergency vehicles and for persons attempting to render emergency services?*

The proposal provides access for emergency vehicles and for persons attempting to render emergency services. The facility is in an open level area at the westerly end of Gabriel Drive, which was constructed to City standards for a commercial/business park. The driveways, maneuvering areas, and automobile and truck parking areas are and will be in conformance with established design standards. Road access is provided around the entire building. Access into the modern building constructed in 2002-2003

is in conformance with applicable standards, and the proposed addition will comply with access standards.

**Narrative Section W: 6.3.4.5.b, d, e**  
**Resource Protection and Environment**

*(b) Does the proposal conform to applicable local, State DEP and Federal EPA air quality standards including but not limited to odor, dust, fumes or gases which are noxious, toxic or corrosive, suspended solid or liquid particles, or any air contaminant which may obscure and observer's vision?*

The proposal conforms to applicable local, State DEP and Federal EPA air quality standards including but not limited to odor, dust, fumes or gases which are noxious, toxic or corrosive, suspended solid or liquid particles, or any air contaminant which may obscure and observer's vision. The proposed NRF warehouse addition is an expansion of the existing operations. No air quality permits are required. The warehouse is heated with natural gas. The warehouse operations generate no emissions.

*(d) Will all sewage and industrial wastes be treated and disposed of in such a manner as to comply with applicable federal, state and local standards?*

All sewage and industrial wastes will be treated and disposed of in such a manner as to comply with applicable federal, state and local standards. Sewage and industrial wastes are limited to those from employee bathrooms and from solid wastes such as packing materials, and flooring samples and extras. Greater Augusta Utility District provides sewer service. Solid wastes that are generated from daily operations are recycled and/or disposed of at licensed facilities.

*(e) Shoreland and Wetland Districts: Will the proposal:*

- (i). Maintain save and healthful conditions;*
- (ii). Not result in water pollution, erosion, or sedimentation to surface waters;*
- (iii). Adequately provide for the disposal of all wastewater;*
- (iv). Not have an adverse impact on spawning grounds, fish, aquatic life, bird or other wildlife habitat;*
- (v). Conserve shore cover and visual, as well as actual points of access to inland and coastal waters;*
- (vi). Protect archeological and historic reserves as designated in the 1988 Growth Management Plan;*
- (vii). Avoid problems associates with flood plan development and use; and*
- (viii). Conform with provisions of Sections 5.3.1, Special Shoreland Standards.*

The facility is not located in a Shoreland District or a Wetland District. Two small wet meadow-type wetlands totaling 21,258 square feet will be impacted by the proposed expansion, which will be permitted by MDEP and Army Corps of Engineers prior to construction.

**Narrative Section X: 6.3.4.6.b, c**  
**Performance Standards**

*(b) Can the proposed land use be conducted so that noise generated shall not exceed the performance levels specified in the performance standards section of this ordinance? Detailed plans for the elimination of objectionable noises may be required before the issuance of a building permit.*

The proposed land use will be conducted so that noise generated shall not exceed the performance levels specified in the performance standards section of the ordinance. Warehouse operations are conducted inside the enclosed building and generate no significant noise outside of the building. Truck docks are on the southerly side of the building facing adjoining commercial uses. The loading and unloading of trucks is done with the truck trailers essentially sealed to the docks, so those operations are effectively inside the building and generate no significant noise outside of the building.

*(c) If the proposal involves intense glare or heat, whether direct or reflected, is the operation conducted within an enclosed building or with other effective screening in such a manner as to make such glare or heat completely imperceptible from any point along the property line? Detailed plans for the elimination of intense glare or heat may be required before issuance of a building permit. Temporary construction is excluded from the criterion.*

The proposal does not involve intense glare or heat, and the operations are conducted within an enclosed building.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA A.  
POLLUTION**

The development will not result in undue water or air pollution.

Water supply and wastewater disposal for the existing facility is provided by Greater Augusta Utility District. Annual water usage is approximately 12,000 cubic feet. Water used and wastewater generated will not significantly change as a result of this proposed building expansion.

Stormwater quantity and quality control for the existing site is accomplished with a stormwater detention pond, which will be modified into a wet pond with an underdrained gravel filter as shown on the site construction drawings. Erosion and Sedimentation Control during construction will be accomplished by the site contractor in accordance with contract specifications in the site construction drawings and documents.

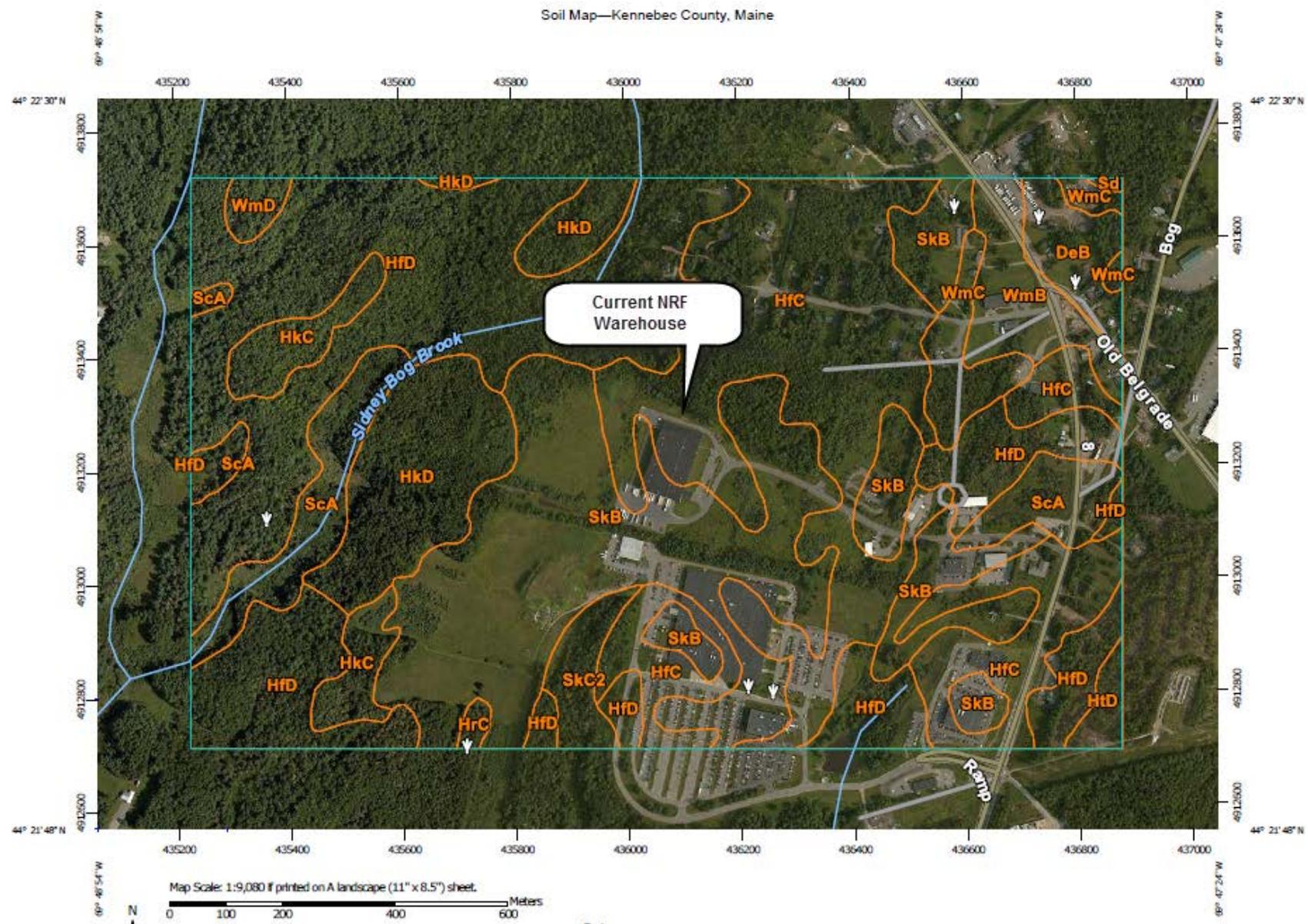
According to the "Soil Survey of Kennebec County Maine" published by the USDA, Soil Conservation Service (see attachment), the soils on the development site are Hartland very fine sandy loam (HfC), 8 to 15 percent slopes and Scio very fine sandy loam (SkB), 3 to 8 percent slopes, both of which are deep, moderately well to well-drained soils.

Two (2) low value wet-meadow type wetland areas totaling 21,258 square feet that are located within the areas of the building and pavement expansion will be impacted. Permits from US Army Corps of Engineers and Maine Department of Environmental Protection for that wetland impact are being applied for contemporaneously with this application.

Solid waste generated during construction will be removed from the site and disposed of at approved disposal facilities as part of the construction contract. Excavated soils will be used on site as appropriate wherever possible. Solid wastes generated from daily operations are recycled and/or disposed of at licensed facilities.

The existing NRF Distributors operations generate no undue air pollution, and this proposal will be an expansion of the same resulting in no undue air pollution.

Soil Map—Kennebec County, Maine



Map Scale: 1:9,080 if printed on a landscape (11" x 8.5") sheet.

0 100 200 400 600 Meters

0 400 800 1600 2400 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



### MAP LEGEND

<b>Area of Interest (AOI)</b>		 Spoil Area	
	Area of Interest (AOI)	 Stony Spot	
<b>Soils</b>		 Very Stony Spot	
	Soil Map Unit Polygons	 Wet Spot	
	Soil Map Unit Lines	 Other	
	Soil Map Unit Points	 Special Line Features	
<b>Special Point Features</b>		<b>Water Features</b>	
	Blowout	 Streams and Canals	
	Borrow Pit	<b>Transportation</b>	
	Clay Spot	 Rails	
	Closed Depression	 Interstate Highways	
	Gravel Pit	 US Routes	
	Gravelly Spot	 Major Roads	
	Landfill	 Local Roads	
	Lava Flow	<b>Background</b>	
	Marsh or swamp	 Aerial Photography	
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kennebec County, Maine  
 Survey Area Data: Version 12, Dec 5, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 17, 2010—Aug 21, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Kennebec County, Maine (ME011)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DeB	Deerfield loamy fine sand, 0 to 8 percent slopes	7.8	1.9%
HrC	Hartland very fine sandy loam, 8 to 15 percent slopes	98.3	23.8%
HrD	Hartland very fine sandy loam, 15 to 25 percent slopes	116.9	28.3%
HkC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	11.1	2.7%
HkD	Hinckley gravelly sandy loam, 15 to 30 percent slopes	28.2	6.8%
HrC	Holls fine sandy loam, 8 to 15 percent slopes	0.9	0.2%
HtD	Holls-Rock outcrop complex, 15 to 30 percent slopes	2.6	0.6%
ScA	Scantic silt loam, 0 to 3 percent slopes	22.5	5.4%
Sd	Scarboro mucky peat	0.3	0.1%
SkB	Solo very fine sandy loam, 3 to 8 percent slopes	95.9	23.2%
SkC2	Solo very fine sandy loam, 8 to 15 percent slopes, eroded	5.8	1.4%
WmB	Windsor loamy sand, 3 to 8 percent slopes	11.6	2.8%
WmC	Windsor loamy sand, 8 to 15 percent slopes	8.9	2.2%
WmD	Windsor loamy sand, 15 to 30 percent slopes	2.5	0.6%
Totals for Area of Interest		413.2	100.0%

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA B. and C.  
POTABLE AND MUNICIPAL WATER**

The proposed development expansion will not significantly increase water usage. Annual water usage is approximately 12,000 cubic feet, supplied by Greater Augusta Utility District.

See Greater Augusta Utility District letter dated February 27, 2014 from Michael A. Morey, Engineering Services Supervisor, attached, confirming the district's ability to supply water for the proposed facility.

Phone: (207) 622-3701

## GREATER AUGUSTA UTILITY DISTRICT

Fax: (207) 622-4539

12 Williams Street  
Augusta, ME 04330-5225

[www.greteraugustautilitydistrict.org](http://www.greteraugustautilitydistrict.org)

BRIAN TARBUCK  
General Manager

TRUSTEES:

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DONALD A. ROBERTS  
SUKEY SIKORA

February 27, 2014

Mr. Elliot Thayer, P.E.  
Thayer Engineering Co.  
17 Hasson Street  
Farmingdale, Maine 04344-1613

RE: New North Augusta Trust, 78 Gabriel Drive, Augusta, Maine

Dear Elliot:

This letter is to convey to you that the District has sufficient capacity of safe drinking water within its system to adequately supply the proposed 50,000 square foot warehouse expansion located at 78 Gabriel Drive with domestic water. The area water pressure is approximately 64 psig at the last fire hydrant at Ludger Drive.

Water supply capacity of the fire suppression system for the proposed expansion will need to be verified by the sprinkler system designer. The District will need to review any modifications to the sprinkler riser entrance.

The District also has adequate capacity within its sanitary sewer collection system to receive discharge from this proposed expansion given the fact that there will be no net increase since the expansion is all warehouse use.

The District will require the submittal of final site development plans in AutoCAD format for its records and review of impervious area.

Please contact me at 622-3701 ext. 123 or e-mail at [mmorey@augustawater.org](mailto:mmorey@augustawater.org) should you have any questions or concerns.

Sincerely,

GREATER AUGUSTA UTILITY DISTRICT



Michael A. Morey  
Engineering Services Supervisor

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA D.  
SOIL EROSION**

This proposal is for the construction of a 50,000 square-foot building addition with approximately 37,350 square feet of parking, loading and road areas. Stormwater runoff will be directed to drainage ways and an existing stormwater detention pond that will be modified into a wet pond with an underdrained gravel filter. Erosion and Sedimentation Control measures are specified and will be implemented to ensure that the construction of this project will have minimal adverse impact on the adjacent resources. Reference is made to the attached plans for Erosion and Sedimentation Control Details.

The following plan for controlling sedimentation and erosion is based upon sound conservation practices including those outlined in the "Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices" by the Cumberland County Soil and Water Conservation District and the Maine Department of Environmental Protection, dated March 1991 (as revised) ("BMPs").

**GENERAL CONSIDERATIONS**

In areas where ground cover is removed between September 15<sup>th</sup> and May 1<sup>st</sup>, mulch shall be applied as called for in this plan within 2 days of the removal of the ground cover.

In areas where ground cover is removed, the area shall be stabilized as soon as is practical either by a structural method meeting the standards as called for in the BMPs or by permanent vegetative cover.

Any construction activities taking place between November 1<sup>st</sup> and April 15<sup>th</sup> shall adhere to the following Winter Construction Plan:

1. The interim period for any exposed area shall be limited to 2 calendar days;
2. No more than 1 acre of the site may be without stabilization at one time;

3. Where required, installation of filter barrier may be modified from detail on plans to substitute 6-inches of clean gravel over the bottom of the filter barrier in lieu of trenching and backfilling fabric. All areas within 100 feet of protected natural resource must be protected by a double row of filter barriers;
4. Mulching and seeding rates shall adhere to the Temporary Seeding and Mulching Schedule set forth herein. Note that all mulching rates shall be doubled as shown in Note 1 of the schedule and should follow the sensitive area schedule. At the end of each construction day, all areas that have been brought to final grade must be stabilized. Mulch may not be spread on top of snow;
5. All vegetated ditch lines that have not been stabilized by November 1, or will be worked during the winter, must be stabilized with an appropriate stone lining backed by an appropriate gravel bed or geotextile unless specifically released from this standard by the Department of Environmental Protection; and
6. Construction shall be planned to eliminate the need for seeding during the fall, winter or mud season.

### **CONSTRUCTION EROSION CONTROL MEASURES**

#### **PROPOSED SCHEDULE FOR IMPLEMENTATION OF EROSION & SEDIMENTATION CONTROL MEASURES**

- (1) Prior to any earth-moving, grubbing or construction activities, filter barriers shall be installed in the locations shown on the accompanying "Site Plan" and as specified in this plan;
- (2) The topsoil shall be removed and stockpiled on-site. Filter barriers shall be installed around any stockpiles expected to remain longer than three days. Stockpiles expected to remain longer than 15 days shall be treated with mulch;
- (3) Stabilize areas within 100 feet of a wetland or water body within 7 days or prior to a predicted storm event, whichever comes first;
- (4) The site shall be rough-graded and stabilized against erosion as called for in this plan;
- (5) Immediately following final grading, all graded or disturbed areas not to be graveled, paved, ripped or otherwise built on are to be spread with a minimum compacted depth of 4 inches of topsoil, seeded and mulched to provide a permanent vegetative cover. The seeding will occur between April

15th and September 15<sup>th</sup> in order to ensure a successful germination. The permanent seeding shall be applied in accordance with this plan; and

- (6) The filter barriers shall remain in place until all areas have been permanently stabilized and an adequate grass catch has been achieved (>90% coverage with no evidence of washing or rilling of the topsoil). It will be the responsibility of the applicant to properly remove the filter barriers and to remove and properly dispose of the collected sediment once the site has been permanently stabilized.

### **MAINTENANCE OF EROSION & SEDIMENTATION CONTROL MEASURES**

Inspections of disturbed and impervious areas, erosion and sedimentation control measures, and areas where vehicles enter or exit the site shall occur at least once a week and before and after a storm event, prior to completion of permanent stabilization. If best management practices need to be modified or if additional BMPs are necessary, implementation shall be completed within 7 calendar days and prior to any storm event. All measures must be maintained in effective operating condition until areas are permanently stabilized.

A log report shall be kept summarizing the scope of the inspection, name(s) and qualification of the inspector(s), the date(s) of the inspections and major observations relating to operation of erosion and sedimentation controls and pollution prevention measures. Follow-up to correct deficiencies or enhance controls shall also be indicated in the logbook.

- (1) Filter barriers shall be inspected weekly and/or after any sustained rainstorm for undercutting, overtopping, gaps, or sediment buildup. Should the barriers not be functioning properly they shall immediately be repaired or replaced and sediment removed as necessary. Any sediment removed shall be spread and stabilized in areas on the site not subject to erosion. If additional barriers are found to be necessary they shall be installed immediately;
- (2) Mulched areas shall be inspected weekly and prior to any storm event for insufficient coverage (less than 90% coverage) and, if necessary, immediately be brought into conformance with the specifications of this plan;
- (3) If germination of temporary seeding is unsuccessful (<90% catch) within 30 days of seeding, the area shall be reseeded; and
- (4) If germination of final seeding is unsuccessful (<90% catch) within 30 days of seeding, the area shall be reseeded.

## **DESCRIPTIONS OF EROSION CONTROL MEASURES**

### **Filter Barrier**

#### Description

Filter barrier shall be used as a sediment barrier to intercept and retain small amounts of sediment from disturbed or unprotected areas of limited extent. The filter barrier shall conform to the materials and installation specifications as set forth in the BMPs and shall be installed in the locations shown on the accompanying "Site Plan".

NOTE: Locations of filter barrier are shown for general purposes only on the "Site Plan". Final locations may be modified based on actual field conditions and as site conditions warrant. Such field changes or modifications shall be approved by the Engineer.

#### Maintenance

The filter barrier shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

The fabric shall be replaced promptly when it decomposes or becomes ineffective before the barrier is no longer necessary.

A second line of filter barrier shall be installed if the sediment level reaches one half the height of the first barrier.

The filter barrier shall be removed when no longer needed and the sediment collected shall be properly disposed of in a manner that will not damage adjacent properties or water bodies.

### **Mulch Matting Slope Protection**

#### **Description**

Mulch Matting Slope Protection shall be used on newly constructed steep slopes to prevent erosion. The matting shall conform to the materials and installation specifications as set forth in the BMPs and shall be installed in the locations shown on the accompanying "Site Plan".

#### **Maintenance**

The matting slopes shall be inspected in the spring, in the fall and following severe storms for slumping, sliding or seepage problems. Any required repairs shall be made immediately.

### **Rip Rap Slope Protection**

#### **Description**

Rip Rap Slope Protection shall be installed on prolonged steep slopes and in the areas shown on the Site Plan. The installation and materials of the Rip Rap Slope Protection shall be as set forth in the BMPs and as shown on the Details Plan.

#### **Maintenance**

The Rip Rap Slope Protection shall be inspected periodically and any problems shall be repaired as necessary. If any erosion or scouring is apparent, repairs will be made immediately.

### **Rip Rap Headwall And Rip Rap Apron**

#### **Description**

Rip Rap headwalls shall be installed at the inlets and outlets of all culverts. The outlet of the culvert shall be further protected from erosion by the installation of a Rip Rap Apron. The installation and materials of the Rip Rap Headwall and Rip Rap Apron shall be as set forth in the BMPs and as shown on the Details Plan.

## Maintenance

The Rip Rap Headwall and Rip Rap Apron shall be inspected periodically and any problems shall be repaired as necessary. If any erosion or scouring is apparent, repairs will be made immediately.

## **Temporary Seeding**

### Description

For areas in which permanent stabilization is not feasible within 90 days from the start of construction or when construction will be interrupted for longer than 2 months, the disturbed areas shall be stabilized with a temporary vegetative cover or with mulch secured with erosion control netting. The installation of temporary seeding (application rates, depths and timing and fertilizer application) shall conform to the specifications as set forth in the BMPs.

### Temporary Seeding and Mulching Schedule

April 1 to July 1: Annual Rye Grass at 0.90 pounds/1,000 square feet

July 7 to August 15: Sudan Grass at 0.90 pounds/1,000 square feet

August 15 to October 15: Winter Rye at 2.00 pounds/1,000 square feet

- (1) Mulching shall be applied at a rate of 90 pounds/1,000 square feet (180 pounds/1,000 square feet for winter construction).
- (2) Temporary seeding rates shall be as follows:
  - Conservation mix of perennial rye grass @ 1 pound/1,000 square feet
  - Fertilizer @ 25 pounds/1,000 square feet
  - Lime @ 100 pounds/1,000 square feet
  - Mulch @ 100 pounds/1,000 square feet
- (3) The time limit for mulching in sensitive areas maybe overridden by the most current weather forecast. All exposed soils in sensitive areas shall be mulched prior to every anticipated storm event.

## Maintenance

Visual inspections shall be used to determine if an adequate catch has been achieved. Any areas with less than a 90% catch shall be reseeded.

## **Mulch**

### **Description**

Hay mulch shall be used to temporarily stabilize exposed soil and to aid in the establishment of temporary or permanent seeding.

Mulch shall be used on all areas of bare soil not brought to final grade within one week at a rate of not less than 1 bale per 1,000 square feet. On areas where slopes average greater than 8% and on all waterways and ditches, mulch shall be secured with anchored erosion control netting.

The installation of temporary mulching (application rates, depths and timing, quality standards and maintenance) shall conform to the specifications as set forth in the BMPs and as called for in this plan.

## **Mulch Matting**

### **Description**

Mulch matting shall consist of straw, coconut or excelsior sandwiched between photodegradable netting. Matting shall be used as follows:

- (1) in the base of swales with greater than 5% pitch;
- (2) on steep slopes where rilling may occur;
- (3) in any sensitive areas subject to erosion or as indicated on plans;
- (4) on any disturbed or newly graded slopes 2:1 and steeper that are to be vegetated; and
- (5) where straw mulch has been determined to be ineffective based on observations made in the field, or as directed by the Engineer.

The mulch matting shall be installed in accordance with the BMPs.

## **Grass Swale**

### **Description**

The installation of the grass swales shall conform to the specifications as set forth in the Typical Grass Swale Detail shown on the Details Plan and in the BMPs. Seeding of

the swale shall be in conformance with specifications as set forth in the BMPs under Seed Mixtures for Permanent Seedings.

The following is a suggested schedule of application:

Loam: 4 inches evenly spread and raked  
Seed Mixture: Creeping Red Fescue, 0.23 pounds/1,000 square feet  
Crownvetch, 0.34 pounds/1,000 square feet  
Tall Fescue, 0.34 pounds/1,000 square feet  
Red Top, 0.05 pounds/1,000 square feet  
Lime: 100 pounds/1,000 square feet  
Fertilizer @ 25 pounds/1,000 square feet  
Mulch @ 100 pounds/1,000 square feet

Seed and mulch will be applied not more than two days after preparation of the seedbed (loam). Fill-in seeding will be done in those areas where grass has not attained a sufficient catch of 90%.

A layer of hay mulch (or other appropriate mulch as specified by the BMPs) and jute erosion mesh will be used to help hold in moisture and protect the soil from erosion before the seed germinates.

### **Catch Basin Inlet Protection**

#### **Description**

Hay bales shall be entrenched around all proposed catch basins to filter sediment from any runoff entering the catch basin.

The inlet protection shall be installed immediately after catch basin installation and shall be installed in accordance with the BMPs and as set forth on the Details Plan.

### **Permanent Seeding**

#### **Description**

Permanent seeding will be installed on all disturbed soils (except for those areas to be built on or ripped) to ensure stabilization of the soil and for aesthetic considerations.

The installation of permanent seeding (application rates, depths and timing and fertilizer application) shall conform to the specifications as set forth in the BMPs. All permanent seeding shall be completed by September 15<sup>th</sup>. Any work contemplated beyond September 15<sup>th</sup> shall adhere to the winter construction schedule.

The following is a suggested schedule of application:

Loam: 4 inches evenly spread and raked.

Seed Mixture: Creeping Red Fescue, 1.15 pounds/1,000 square feet.

Kentucky Bluegrass, 1.15 pounds/1,000 square feet.

Lime: 100 pounds/1,000 square feet

Fertilizer @ 25 pounds/1,000 square feet

Mulch @ 100 pounds/1,000 square feet

Seed and mulch shall be applied not more than two days after preparation of the seedbed (loam). Fill-in seeding shall be done in those areas where grass has not attained a sufficient catch of 90%.

A layer of hay mulch (or other appropriate mulch as specified by the BMPs) will be used to help hold in moisture and protect the soil from erosion before the seed germinates.

### Maintenance

Planted areas shall be protected from damage by grazing, fire, traffic, and undesirable weed and wood growth as applicable. Visual inspections shall be used to determine if an adequate catch has been achieved. Any areas with less than a 90% catch shall be reseeded.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA E.  
ROAD CONGESTION AND SAFETY**

Gabriel Drive is more than adequate for safe access for passenger vehicles and trucks. Interior driveways and maneuvering areas meet all dimensional standards. The proposed loading, parking and road areas also meet dimensional standards.

The current number of employees is 16 employees on the 1st shift, 12 employees on the 2<sup>nd</sup> shift, and 3 employees on the 3<sup>rd</sup> shift, which is expected to remain the same after the expansion.

Truck traffic to and from this NRF facility is expected to increase as a result of the building expansion. The current number of trucks arriving/leaving the facility is 25 per day Sunday through Friday, and after the expansion is expected to be 29 per day Sunday through Friday.

As required by Maine Department of Environmental Protection Site Law Permit L-014767-39-D-M, development of lots in Central Maine Business Park is subject to traffic improvements being made at the intersection of Gabriel Drive and Civic Center Drive in three (3) phases based on an allocation of building capacity on the lots. Two (2) memorandums from Paul Minor of the Maine Department of Transportation (MDOT), dated February 7, 1989 and August 29, 1988(9), attached hereto, state that the required Civic Center Drive improvements for Phases I and II were completed and approved by MDOT. The Phase II building capacity that is now available to the lots owned by New North Augusta Trust/NRF Distributors is 151,640 square feet. This proposed expansion will result in a total of 151,640 square feet, therefore no improvements to the Gabriel Drive – Civic Center Drive intersection are required for this expansion.

# STATE OF MAINE

Inter-Departmental Memorandum Date 2/7/89

To Chuck Kellogg

Dept. D.E.P. - Land Bureau

From Paul J. Minor, Director

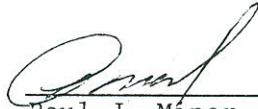
Dept. M.D.O.T. - Planning

Subject Central Maine Business Park (L-014767-39-A-N) Augusta

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Review has been made on a set of plans (dated December 30, 1988) submitted by T.Y. Lin/Hunter-Ballew Assoc. which incorporate the improvements required on the August 9, 1988 order of Board of Environmental Protection for the first two phases of the development. Our findings indicate that their design is acceptable and complies with those improvements deemed necessary for Phase I and II.

We request, that at such time Phase III plans are ready, that they also be submitted to MDOT for review.



Paul J. Minor, Director  
Bureau of Planning

PJM/RR/rw

cy: File

RECEIVED  
FEB 10 1989  
PLANNING  
BUREAU

# STATE OF MAINE

Inter-Departmental Memorandum Date August 29, 1988  
(1989)

To Chuck Kellogg Dept. D.E.P.  
From Paul Minor, Director Dept. M.D.O.T. - Planning  
Subject Central Maine Business Park (L-14767-39-A-N) Augusta

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The Department has found that the highway widening as required for Phase I and Phase II of the above referenced project has been constructed. Prior to occupancy and/or at such time when the applicant is ready to obtain an entrance permit from MDOT's Division Field Office (Fairfield), the appropriate lane striping will need to be implemented and coordinated with the Division Traffic Engineer to ensure that the bypass lane and left turn lane will be striped with the specifications outlined in Item #6 in the Department Order dated August 9, 1988.

  
Paul J. Minor, Director  
Bureau of Planning

PJM/RR/rw

cy: Timothy O'Neil, HRC Development Co., Inc.  
File

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA F.  
SEWAGE WASTE DISPOSAL**

The proposed building expansion will not result in an increase of wastewater. Municipal sewer serves the existing NRF facility.

See Greater Augusta Utility District letter dated February 27, 2014 from Michael A. Morey, Engineering Services Supervisor, attached to Criteria B. and C., confirming the District's ability to handle wastewater discharge from the proposed facility.

Phone: (207) 622-3701

## GREATER AUGUSTA UTILITY DISTRICT

Fax: (207) 622-4539

12 Williams Street  
Augusta, ME 04330-5225

[www.greteraugustautilitydistrict.org](http://www.greteraugustautilitydistrict.org)

BRIAN TARBUCK  
General Manager

**TRUSTEES:**

KENNETH R. KNIGHT, Chair  
DAVID P. SMITH, Vice Chair  
STEPHEN J. ROBERGE, Clerk  
CHARLENE HAMIWKA, Treasurer

**TRUSTEES:**

DAVE BUSTIN  
LESLEY JONES  
ANDREW McPHERSON  
DONALD A. ROBERTS  
SUKEY SIKORA

February 27, 2014

Mr. Elliot Thayer, P.E.  
Thayer Engineering Co.  
17 Hasson Street  
Farmingdale, Maine 04344-1613

RE: New North Augusta Trust, 78 Gabriel Drive, Augusta, Maine

Dear Elliot:

This letter is to convey to you that the District has sufficient capacity of safe drinking water within its system to adequately supply the proposed 50,000 square foot warehouse expansion located at 78 Gabriel Drive with domestic water. The area water pressure is approximately 64 psig at the last fire hydrant at Ludger Drive.

Water supply capacity of the fire suppression system for the proposed expansion will need to be verified by the sprinkler system designer. The District will need to review any modifications to the sprinkler riser entrance.

The District also has adequate capacity within its sanitary sewer collection system to receive discharge from this proposed expansion given the fact that there will be no net increase since the expansion is all warehouse use.

The District will require the submittal of final site development plans in AutoCAD format for its records and review of impervious area.

Please contact me at 622-3701 ext. 123 or e-mail at [mmorey@augustawater.org](mailto:mmorey@augustawater.org) should you have any questions or concerns.

Sincerely,

GREATER AUGUSTA UTILITY DISTRICT



Michael A. Morey  
Engineering Services Supervisor

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA G.  
SOLID WASTE**

The proposed project is not expected to cause an unreasonable burden on the municipality. See attached letter dated February 6, 2014 from Lesley G. Jones, PE, Director of Solid Waste, City of Augusta, for her comments on the project.

Solid wastes that are generated from daily operations are recycled and/or disposed of at licensed facilities, and are as follows;

- 600 lbs of office paper per month, all recycled;
- 2,000 lbs of corrugated paper waste per month, all recycled;
- 11.7 tons of wood waste (pallets) per month, all recycled;
- 14 tons of general refuse per month goes to Hatch Hill or Waterville.

The solid wastes listed above are the total from the Gabriel Drive facility plus solid wastes from NRF satellite facilities that are disposed of through the Gabriel Drive facility. The proposed expansion will not change the above amounts, since the satellite operations are to be moved to the expanded Gabriel Drive facility.

Solid waste generated during construction will be removed from the site and disposed of at approved disposal facilities as part of the construction contract. Excavated soils will be used on site as appropriate wherever possible.



*City of Augusta, Maine*  
*Department of Public Works*

February 6, 2014

Elliot Thayer, PLS, P. E.  
Thayer Engineering Co.  
17 Hansen Street  
Farmingdale, ME 04344-1613

RE: North Augusta Trust warehouse expansion for NRF  
78 Gabriel Drive  
Augusta, Maine 04330  
City of Augusta Application for Major Development  
MDEP Minor Amendment to Site Location Permit

Dear Elliot,

This is in response to your request, dated January 30, 2014, for the City of Augusta Application for Major Development and MDEP Site Location of Development Minor Amendment Permit to expand the existing 100,000 sq. foot warehouse by 50,000 sq. feet.

The City of Augusta owns and operates the Hatch Hill Solid Waste Facility located on South Belfast Avenue. This is a regional facility that serves Augusta and seven surrounding communities. Approximately 28,000 tons of material are received and either landfilled or recycled annually. In 2001, the City started placing waste in Expansion III, our newest landfill expansion, which has an estimated remaining life of 15 years based on projected waste volumes.

Sufficient capacity is available in Expansion III to accommodate the additional non-recyclable waste that would be generated by this addition to the existing warehouse. If you have any questions or need more information, please feel free to contact me at 626-2435.

Sincerely,

Lesley Jones, P. E.  
Director of Solid Waste

Physical Address:  
Augusta Public Works  
55 North Street, Augusta, ME 04330

Mailing Address:  
Augusta Public Works  
16 Cony Street, Augusta, ME 04330-5298

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA H.  
AESTHETIC, CULTURAL, AND NATURAL VALUES**

There are no identified natural, scenic or historic areas in the vicinity of the proposed project site. There will be no undue adverse effects on the aesthetics of the area. No significant wildlife habitat has been identified within the project site.

The NRF Warehouse location is buffered from adjoining properties to the north and west by a protected 31-acre Wildlife Buffer Zone which is from 350 feet to 750 feet wide.

The NRF Warehouse is nearly invisible from Civic Center Drive at a distance of about 2,200 feet, and is approximately 700 feet off the end of Gabriel Drive.

Central Maine Commerce Center to the south contains commercial uses and a business/industrial park subdivision. Uses adjoining immediately to the south of the NRF facility are a state police automobile repair garage and parking lots.

Attached are the following:

- a copy of a letter dated February 4, 2014 received from Don Cameron, Ecologist, Maine Natural Areas Program, stating that there are no rare botanical features documented specifically within the project area;
- a copy of a letter dated February 20, 2014 from John Perry, Environmental Review Coordinator, Maine Department of Inland Fisheries & Wildlife (MDIFW), stating that according to MDIFW records there are no known significant wildlife habitats associated with the project as defined by the Natural Resources Protection Act; and
- a letter dated February 7, 2014 from Kirk Mohny, Deputy State Historic Preservation Officer, Maine Historic Preservation Commission, stating that there will be no historic properties affected by the proposed undertaking.



STATE OF MAINE  
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY  
93 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333-0093

PAUL R. LePAGE  
GOVERNOR

WALTER E. WHITCOMB  
COMMISSIONER

February 4, 2014

Elliot Thayer, PLS, PE  
Thayer Engineering Co.  
17 Hasson Street  
Farmingdale, ME 04344

Re: Rare and exemplary botanical features in proximity to: Project 870569, New North Augusta Trust warehouse expansion, 78 Gabriel Drive, Augusta, Maine

Dear Mr. Thayer:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received January 31, 2014 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Augusta, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

Letter to Elliot Thayer  
Comments RE: Warehouse expansion, Augusta, Maine  
February 4, 2014  
Page 2 of 2

The Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,



Don Cameron  
Ecologist  
Maine Natural Areas Program  
207-287-8041  
[don.s.cameron@maine.gov](mailto:don.s.cameron@maine.gov)



PAUL R. LEPAGE  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF  
INLAND FISHERIES & WILDLIFE  
284 STATE STREET  
41 STATE HOUSE STATION  
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK  
COMMISSIONER

February 20, 2014

Elliot Thayer  
17 Hasson St.  
Farmingdale, ME 04344 -1613

**RE: Information Request - NRF Distributors Warehouse Expansion, Augusta**

Dear Elliot:

Per your request received January 30, 2014, we have reviewed current MDIFW information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of *NRF Distributors Warehouse Expansion Project* in Augusta.

Our information indicates no locations of Endangered, Threatened, or Special Concern species within the project area. Additionally, our Department has not mapped any Essential or fisheries habitats that would be directly affected by your project.

***Significant Wildlife Habitat***

At this time, Significant Wildlife Habitat, which includes Wading Bird and Waterfowl Habitat, Deer Wintering Areas, Seabird Nesting Islands, Shorebird Areas and Significant Vernal Pools, has not been mapped within the project area. A comprehensive statewide inventory for Significant Vernal Pools, however, has not been completed. Surveys of the vernal pools in the project boundary will need to be conducted prior to final project design to determine whether there are Significant Vernal Pools present. Once surveys are completed, our Department will need to verify vernal pool data sheets prior to final determination of significance.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

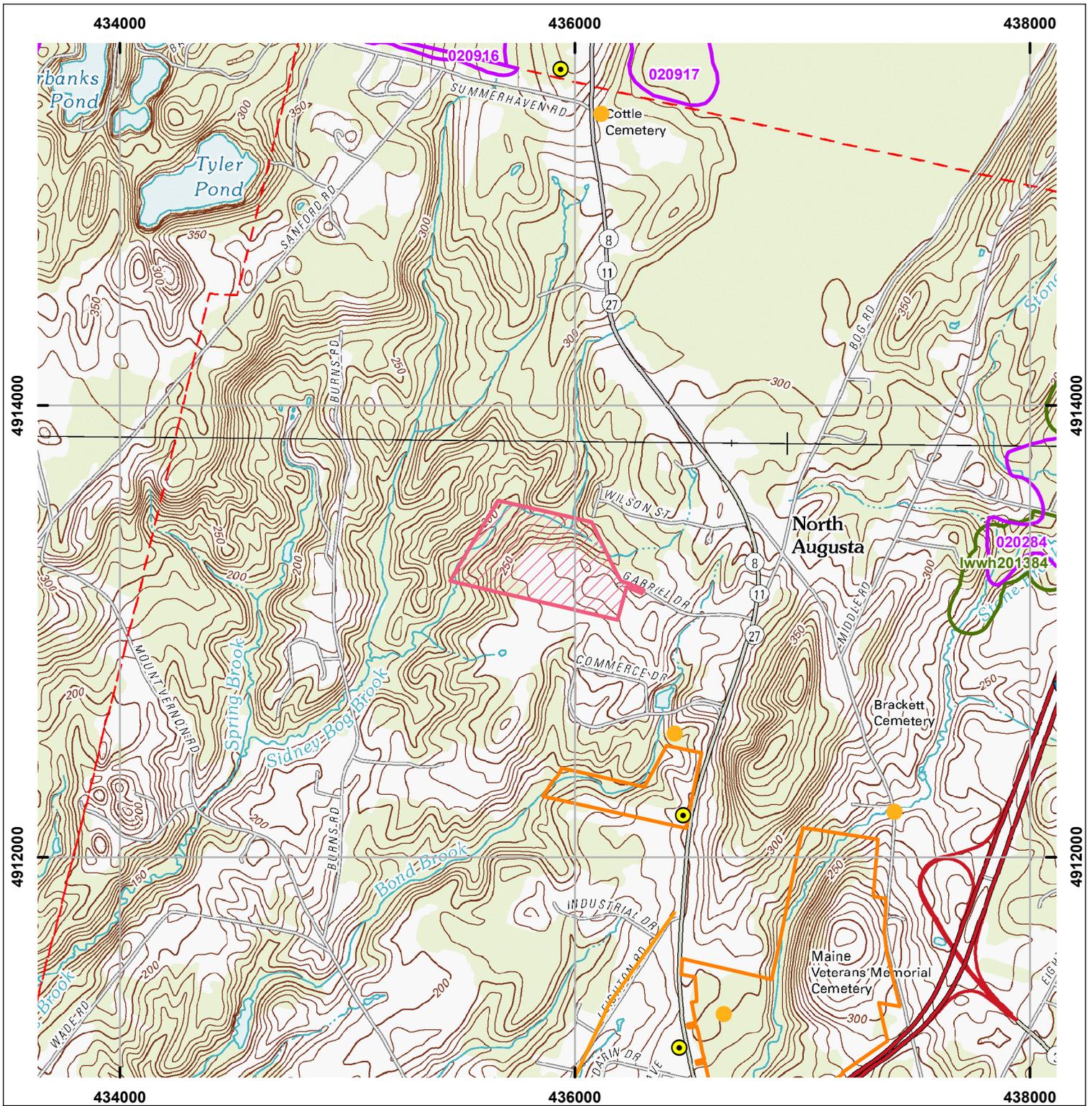
Letter to Elliot Thayer  
Comments RE: NRF Distributors Warehouse Expansion  
January 30, 2014

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in blue ink, appearing to read "John Perry". The signature is fluid and cursive, with the first name "John" being more prominent than the last name "Perry".

John Perry  
Environmental Review Coordinator

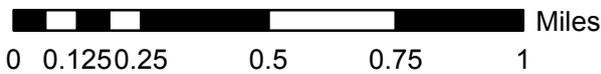


## Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: NRF Distributors Warehouse Expansion (Version 1)



Maine Department of  
Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 2/11/2014

- |                    |                               |  |
|--------------------|-------------------------------|--|
| ProjectPoints      | Deer Winter Area              | Roseate Tern   |
| ProjectLines       | LURC p-fw                     | Piping Plover/Least Tern                                 |
| ProjectPolys       | Cooperative DWAs              | Aquatic ETSc (2.5 mi review)                             |
| ProjectSearchAreas | Seabird Nesting Islands       | Rare Mussels (5 mi review)                               |
|                    | Shorebird Areas               | A and B List Ponds                                       |
|                    | Inland Waterfowl/Wading Bird  | Arctic Charr Habitat                                     |
|                    | Shoreland Zoning_lwwh         | E. Brook Trout Joint Venture Subwatershed Classification |
|                    | Tidal Waterfowl/Wading Bird   | Redfin Pickerel/Swamp Darter Habitats (buffer100ft)      |
|                    | Significant Vernal Pools      | Special Concern-occupied habitats(100ft buffer)          |
|                    | Environmental Review Polygons | Wild Lake Trout Habitats                                 |





MAINE HISTORIC PRESERVATION COMMISSION  
55 CAPITOL STREET  
65 STATE HOUSE STATION  
AUGUSTA, MAINE  
04333

PAUL R. LEPAGE  
GOVERNOR

EARLE G. SHETTLEWORTH, JR.  
DIRECTOR

February 7, 2014

Mr. Elliot B. Thayer  
Thayer Engineering Co.  
17 Hasson Street  
Farmingdale, ME 04344

Project: MHPC# 0133-14 – North Augusta Trust warehouse expansion for NRF  
Distributors; 78 Gabriel Drive; Central Maine Business  
Park

Town: Augusta, ME

Dear Mr. Thayer:

In response to your recent request, I have reviewed the information received January 31, 2014 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the information submitted, I have concluded that there will be **no historic properties affected** by the proposed undertaking, as defined by Section 106.

Please contact Robin Reed of our staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohny  
Deputy State Historic Preservation Officer

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA I.  
CONFORMITY WITH CITY ORDINANCES AND PLANS**

The proposed expansion conforms with the guidelines set forth in “Appendix A - Land Ordinance” of the Revised Code of Ordinances, City of Augusta, Maine, Codified through Ord. No. 11-182, passed December 15, 2011 (Supplement No. 4).

This proposal is for the construction of a 50,000 square-foot building addition for warehousing and distribution. According to the City of Augusta Land Use Ordinance, the property is located in the “IA” or Business and Industrial District, in which the “...manufacture, processing, packaging, storage and distribution of products...” are permitted.

The proposed building and improvements, and the existing parcel and existing improvements, exceed all “District Dimensional Requirements.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA J.  
FINANCIAL AND TECHNICAL ABILITY**

New North Augusta Trust has adequate financial resources to complete the proposed development. The total estimated cost of the proposed building and site improvements is \$3,500,000. Attached is a letter confirming financial capacity from Robert D. Hazard, Senior Vice President, Peoples United Bank, dated March 3, 2014.

NRF Distributors is well known and respected in the local community, throughout New England and beyond. New North Augusta Trust complied with all Federal, State and local environmental and land use standards when building the original warehouse in 2002 and 2003.

Thayer Engineering Company, Inc. has been retained by New North Augusta Trust for the land surveying, civil engineering and site design of the proposed development, and for the preparation and administration of the site permit applications for the City of Augusta, Maine Department of Environmental Protection and US Army Corps of Engineers. Thayer Engineering Company has successfully completed many similar projects in the City of Augusta and the State of Maine over the last 32 years.

A certificate of good standing and the corporate information summary NRF Distributors Inc. follows:

Interactive Corporate Services

**MAINE**  
Department of the Secretary of State  
Bureau of Corporations, Elections and Commissions

Corporate Name Search

**Information Summary**

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Tue Feb 04 2014 11:43:12. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
N.R.F. DISTRIBUTORS INC.	19730829 D	BUSINESS CORPORATION	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
01/23/1973	N/A	MAINE

**Other Names** (A=Assumed ; F=Former)  
NONE

**Clerk/Registered Agent**  
JACOB A. MANHEIMER  
MERRILL'S WHARF  
254 COMMERCIAL STREET  
PORTLAND, ME 04101



Robert D. Hazard

Senior Vice President

Commercial Banking

T: 617.603.2512 C: 617.833.1339 F: 617.426.5362

E: robert.hazard@peoples.com

March 3, 2014

Mr. Bob Haluzak  
c/o New North Augusta Trust  
485 Old Belgrade Road  
Augusta, ME 04330

Dear Bob:

On behalf of People's United Bank (the "Bank"), it is my pleasure to provide this letter of interest to New North Augusta Trust (the "Trust") to provide additional construction financing of up to Three Million Five Hundred Thousand (\$3,500,000) based upon our ongoing discussions and our knowledge of the Trust.

Please note, we do not represent to have a commitment to lend at this time. If you opt to move forward with the Bank, our decision to provide additional financing to the Trust will be evidenced by the issuance of a formal commitment letter ("Commitment Letter"). Any issuance of a Commitment Letter will be subject to, among other things, additional due diligence for the project, internal credit approval and negotiation of key terms and conditions which will ultimately be reflected in the final loan documentation.

This letter is issued with the understanding that the Trust will keep this letter confidential and neither its existence, nor any of its contents shall be disclosed without the Bank's prior written approval except: (i) as may be compelled to be disclosed in a judicial or administrative proceeding or as otherwise required by law, and (ii) on a confidential and "need to know" basis, to the Company's directors, officers, employees, advisors, and agents.

Bob, I very much appreciate the opportunity to present this letter of interest and look forward to working closely with you and your team in connection with the Company's financing needs. Should you have any questions or concerns, please call me directly at 617-603-2512 or by email at [Robert.hazard@peoples.com](mailto:Robert.hazard@peoples.com). Regardless, I will follow up with you in a few days to discuss the opportunity and establish next steps.

Sincerely,

A handwritten signature in cursive script that reads "Robert Hazard".

Robert Hazard

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA K.  
SURFACE WATER, SHORELAND, OUTSTANDING RIVERS**

There are no rivers or brooks within the proposed area of development. Sidney Bog Brook flows southerly along the westerly boundary of the New North Augusta Trust property, and is buffered from the developable area by a protected 31-acre Wildlife Buffer Zone.

Stormwater flows from the existing and proposed development will be controlled for quantity and treated for quality by directing the surface water to a stormwater pond southwesterly of the building. The stormwater detention pond will be modified as part of this project to increase capacity, and to increase treatment of quality using retention and an underdrained gravel filter system.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA L.  
GROUNDWATER**

There are no identified significant sand and gravel aquifers on the New North Augusta Trust property.

This proposal is for a building addition. Stormwater will be treated and controlled through a soil filter/detention pond as described in this application.

Sewer is directed to the municipal sewer system owned and maintained by Greater Augusta Utility District.

Solid waste is recycled, taken to Hatch Hill, and/or removed by a licensed contractor.

No adverse environmental effect on groundwater is expected from this project.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

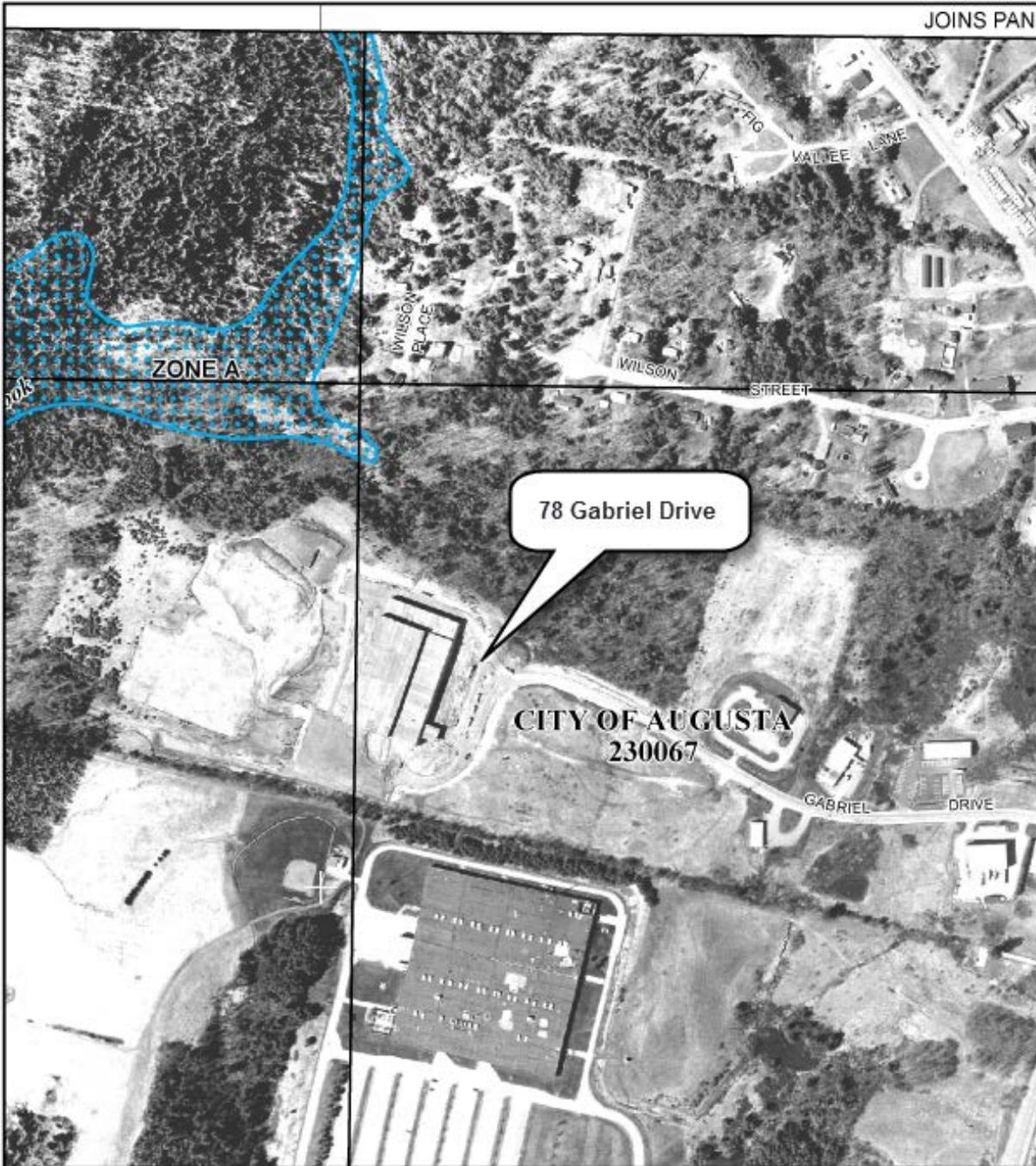
78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

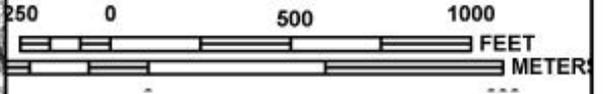
**REVIEW CRITERIA M.  
FLOOD AREAS**

The proposed development will not cause any increase in off-site flooding. As summarized in this application, "Review Criteria O. Stormwater", peak discharges of stormwater after development will be reduced to or below predevelopment levels.

There are no flood hazard areas at the proposed building addition location as defined by Federal Emergency Management Agency (FEMA) flood zone maps (see attached).



MAP SCALE 1" = 500'



NIP  
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0506D

**FIRM**  
FLOOD INSURANCE RATE MAP  
KENNEBEC COUNTY,  
MAINE  
(ALL JURISDICTIONS)

PANEL 506 OF 775  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AUGUSTA, CITY OF	230067	0506	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
23011C0506D  
**EFFECTIVE DATE**  
JUNE 16, 2011

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA N.  
FRESHWATER WETLANDS**

Two (2) wet meadow type wetland areas totaling 21,258 square feet will be filled as part of this proposal. These areas are low value and not much more than shallow depressions in a field.

Compensatory mitigation is proposed to allow for the wetland impact. A Conservation Easement on Lots 1 and 2 on Gabriel Drive and Civic Center Drive is being offered by New North Augusta Trust in its applications to MDEP and to U.S. Army Corps of Engineers.

The proposed preservation of Lots 1 and 2 contains 7.33 acres, which exceeds the Army Corps compensation ratio of 15 to 1 and the MDEP compensation ratio of 8 to 1.

The proposed preservation area includes areas of high value wetlands of special significance.

**NEW NORTH AUGUSTA TRUST  
for  
NRF WAREHOUSE EXPANSION**

78 Gabriel Drive  
Augusta, Maine

**CITY OF AUGUSTA  
MAJOR DEVELOPMENT REVIEW APPLICATION**

**REVIEW CRITERIA O.  
STORMWATER**

This proposal is for the construction of a 50,000-square foot addition to the existing 101,640-square foot NRF Distributors warehouse at 78 Gabriel Drive in Augusta. The existing facility was approved by City of Augusta, MDEP and U.S. Army Corps of Engineers in 2002.

MDEP permits for Minor Amendment of the Site Location of Development for site development and NRPA Tier 2 for wetland impact are being applied for concurrently with this application, and an Application for Department of the Army Permit has been filed for wetland impact.

The proposed stormwater quantity and quality controls meet City of Augusta and MDEP standards as presented in Stormwater Management Report dated February 25, 2014 by SJR Engineering, submitted herewith. Stormwater runoff is currently directed to an extended detention pond that handles flows from the site, which will be modified into an underdrained gravel filter wet pond to control the quantity and to treat the quality of stormwater flowing from the site. Standard erosion and sedimentation control measures will be taken to ensure that the construction of this project will have minimal adverse impact on the adjacent resources. The predevelopment condition is considered to be as it existed prior to the original 2002 development of the facility.

Reference is made to the attached plans by Thayer Engineering Company, Inc., entitled:

- “Plan of Boundary Survey, New North Augusta Trust, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Existing Conditions Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Site Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Erosion Control & Details Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014;
- “Predevelopment Drainage Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014; and
- “Postdevelopment Drainage Plan, NRF Distribution Center, 78 Gabriel Drive, Augusta, Maine”, dated February 28, 2014.

**Maine DEP Site Law Permit Application**  
**Stormwater Management Report**

**Project: NRF Distribution Center**  
**Gabriel Drive, Augusta, Maine**

**Date: February 25, 2014**

**Prepared for:**  
Thayer Engineering Co.  
63 Second Avenue  
Augusta, ME 04330  
207-622-1462

**Prepared by:**  
SJR Engineering  
21 Mayflower Road  
Augusta, Maine  
207-622-1676

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**Stormwater Narrative**  
**NRF Distribution Center**  
Gabriel Drive, Augusta, Maine

SJR Engineering has completed Stormwater calculations to support the expansion of the NRF Distribution Center located on Gabriel Drive in Augusta, Maine. The calculations support plans being prepared by Thayer Engineering Company for the facility expansion project. In 2002, Thayer Engineering completed the first phase of the project which included the extension of Gabriel Drive to access the project. The 60.82-acre site proposed for development is located off the northwesterly end of Gabriel Drive and is Lot #13-22 of the Central Maine Business Park in Augusta. In 2002, the site was undeveloped and was comprised of 30 acres of field and 31 acres of woodland. The site is bounded on the north by a residential subdivision, on the east by undeveloped lots within the Central Maine Business Park, on the south by the former Digital Corporation site now of SCI Technologies, Inc., and on the west by Sidney Bog Brook. In 2002 the developer approved and constructed a 102,520 s.f. office and warehouse building, approximately 1 acre of paved access driveways, and 2.24 acres of paved parking and maneuvering areas. The project created 5.61 acres of impervious area and 10.27 acres of developed areas. At the time, Maine DEP approved the project on the sliding scale TSS removal criteria. At the time, the project created an extended detention basin to support the project. The project was required to meet the 40% TSS removal standard. The basin provided a 55% TSS removal rate for the development site.

Now in 2014, the developer is proposing to expand the current facilities by constructing a 1.19 acre building addition to be attached to the existing building. The parking and loading areas will also be expanded to support the project. The expansion will create 2.05 acres of new impervious area in this phase. Predominately the development is over existing non-paved developed areas. After development the site will have a total impervious area of 7.66 acres and 12.05 acres of developed area.

To meet the current Maine DEP General Standard requirements, the new 2014 paved and developed areas are required to be treated. The 2002 approved areas would not be required to meet new or additional standards as long as the 2002 areas are not being re-developed or changed. In this case, we will re-construct the existing extended detention basin into a new wet pond. As a result, the 2002 areas draining to the pond was evaluated in the General Standard calculations to bring the entire site into compliance with the General Standard requirements. Areas approved in 2002, not draining to the pond will remain as approved and will not be changed. As a result of the 2002 and 2014 development and construction of the new wet pond, the site will capture 91% of the site impervious areas and 83% of the developed areas. Maine DEP allows 90% capture if additional volumes are included within the treatment areas to compensate for areas lost. The wet pond has been designed with added volume to compensate for the areas lost or not treated. Re-constructing the existing pond into a wet pond will bring the site into compliance with the current DEP rules and regulations. This will be done voluntarily by the developer and it makes economic sense to re-use the current detention facilities on site to meet the current rules.

Maine DEP has required impervious and developed areas be treated to meet the Basic, General, and Flooding standards for Site Law Projects. We have assumed the pre developed conditions for the parcel was undeveloped woods and meadow prior to its development in 2002. The original pre-developed drainage plans and calculations were utilized as the baseline for comparison of the post development conditions in 2002 and 2014.

DEP Jurisdiction: The proposed project includes the development of 12.05 acres of developed area and the creation of 7.66 acres of impervious area. In 2002, 10.27 acres of developed area and 5.61 acres of impervious area was approved by the Department and constructed. The project triggered the Site Law when the original project was developed in 2002. The project is not within an urban impaired stream or a severely blooming lake. As a result, the Basic Standards, General Standards, and the Flooding Standard apply to this project. See Section 4A and 4B of the Chapter 500 Rules, pages 4&5.

Basic Standards

1. Erosion and sedimentation control plan – See Appendix A of Chapter 500 Rules
2. Inspection and Maintenance Plan – See Appendix A and B of Chapter 500 Rules
3. Housekeeping – See Appendix C of the Chapter 500 Rules

General Standards

1. Narrative
2. Drainage Plans
3. Calculations
4. Details, designs, and specifications for Wet Ponds.

Flooding Standards

1. Stormwater Management System must detain, retain, or result in infiltration of stormwater for the 2,10,25 storms such that the peak flows do not exceed “pre-development” conditions.

**Existing Conditions**

For the purposes of the calculations we have assumed the site is in the original undeveloped conditions prior to the site development in 2002. Existing development areas located on site today is considered a post development condition. The 60.82-acre site proposed for development is located off the northwesterly end of Gabriel Drive and is Lot #13-22 of the Central Maine Business Park as shown on a plan entitled “Modification to the Central Maine Business Park Subdivision, New North Augusta Trust, Gabriel Drive & Ludger Drive, Augusta, Maine”, dated June 11, 2002, by Thayer Engineering Company. The site is currently undeveloped and is comprised of 30 acres of field and 31 acres of woodland. The following is the original watershed description submitted in 2002 for the pre-development watershed.

Several wetland areas totaling approximately 1.73 acres within the developable area have been identified on the site and have been delineated on the Site Plan. The medium intensity soils map published in the “Soil Survey of Kennebec County, Maine” by the Soil Conservation Service shows that the soils in the watersheds include the Hydrologic Soil Groups A, B and C. The soils boundaries are delineated on the pre-development drainage plan. The project site is located at or near the top of its watershed that, in the pre-development condition, has been broken down into two subwatersheds (Subareas 1 and 2). According to the FIRM map entitled “FIRM, Flood Insurance Rate Map, City of

Augusta, Maine, Kennebec County, Panel 1 of 16", Community-Panel Number 2300067 0001 C, Map Revised June 15, 1994, Sidney Bog Brook is in a Special Flood Hazard Area inundated by 100-year flood and is shown as being in Zone A in which no base flood elevations have been determined.

Subarea 1 (22.13 acres) includes the portion of the site that drains to the south and west via a drainageway towards Sidney Bog Brook. The Design Point for this watershed is located in the drainageway at the property boundary, which is in an area reserved in the original Business Park plans for development of a future detention pond (Detention Pond 3).

Subarea 2 (53.45 acres) includes developed and undeveloped portions of the Business Park to the south, east and north, and a portion of a residential subdivision extending along the northerly border of the Business Park. This subarea drains to the west towards Sidney Bog Brook via a drainageway located in the northerly portion of the subject lot. The Design Point for this subarea is a point in this drainageway that is located in an area also reserved in the original Business Park plans for development of a future detention pond (Detention Pond 2). The two Subareas, Design Points and Hydrologic Flow lines of each subarea are shown on the pre-development drainage plan.

### **Proposed Conditions**

The current proposal includes the development of a 51,840 s.f. building addition to be attached onto the main building. Additional truck access and circulation areas are also being expanded to support the project. The project creates 2.05 acres of new impervious area. To meet the general standards, the existing detention pond will be re-constructed to a wet pond to provide effective treatment of runoff.

In 2002, the developer approved and constructed the NRF distribution center on the lot. The project created 5.61 acres of impervious area and created approximately 10.27 acres of developed area. The project has been constructed and the site is stable. As part of the construction an extended detention basin was developed to meet the sliding scale TSS removal standard required by Maine DEP at the time. The project had a TSS removal efficiency of 55% which exceeded the minimum 40% requirement.

In total, with the proposed expansion, the project will create 7.66 acres of impervious area and 12.05 acres of developed area. These impacts were used in the General Standard Calculations and include the entire lot development. The following summarizes the watershed characteristics.

Subarea 1 (12.23 acres) includes the majority of the development including the entire building, the truck parking and maneuvering area, the car parking area, a portion of the paved access driveway and a portion of new lawn and landscaping areas. Runoff from Subarea 1 will be directed into a Wet Pond to be constructed along the southerly boundary line westerly of the truck parking area. Runoff from the building roof will be collected by a roof drain system and directed into the detention pond via a storm drain. A storm drain system consisting of three catch basins will be installed in the car parking area and will empty into a rip rap ditch running along the southerly side of the truck parking area and then into the detention pond. Runoff from a portion of the paved access

road will be collected in two catch basins that will be connected to the car parking area stormdrain system. In addition, a grass swale running along the westerly side of the gravel access road located to the west of the building will direct runoff into the pond. The 2014 proposed building addition and parking expansion will also drain to the wet pond for treatment.

Subarea 2 (52.25 acres) is practically the same area as Subarea 2 in the pre-development condition. The easterly portion of the main access driveway to the site and a portion of the access driveway along the northerly side of the building are included in this subarea as is the extension of Gabriel Drive. The drainage patterns and the Design Point of the subarea will remain basically the same in the developed condition as in the pre-development condition. Runoff from Subarea 2 will be directed off site with no quantity controls being proposed. No 2014 impacts are proposed for this watershed.

Subarea 3 (12.24 acres) is located westerly of Subarea 1 and runoff from this subarea is directed southerly to Design Point 1 which is in the same location as Design Point 1 in the pre-development condition. Design Point 1 also receives runoff from Subarea 1 after it has passed through the Wet pond. Subarea 3 includes a portion of the access driveway and maneuvering area located along the northerly and westerly side of the building and a undeveloped area of the site westerly of the building. Runoff from Subarea 3 will be directed off site with no quantity controls being proposed.

The extended detention pond developed in 2002 will be converted to a wet pond. Pond 4P, is located along the southerly property line and extends from the southwest corner of the truck maneuvering area westerly. The outlet of the pond is directed to Design Point 1 where the runoff will be combined with that of Subarea 3. This pond has been designed to control runoff from Subarea 1 to the extent that the combined runoff rates of Subarea 1 and Subarea 3 at Design Point 1 will be less than the rates at the Design Point in the pre-development condition. The pond will also be effective in removing total suspended solids in the runoff from Subarea 1 as discussed in the section of this plan dealing with Stormwater Quality Treatment.

Project Location: The project is located off Gabriel Drive in Augusta.

Surface water on or abutting the site: Stormwater from the site flows into on site wetlands and discharges to Sidney Bog Brook.

Alterations to Land Cover: The drainage study is conducted on the sites 60.82 acres. The existing ground cover, prior to 2002 was 0% impervious, 0% Lawn, 100% woods and meadow. The proposed ground cover will result in approximately: 13% impervious, 7% lawn, and 80% woods and meadow.

Downstream ponds and Lakes: Stormwater from the site flows into Sydney Bog Brook, then flows to the Kennebec River. Enclosed is a U.S.G.S. Map showing the site location.

Historic Flooding: The developed portions of the site is not located in the Flood Zone except portions of the lower wetland areas adjacent to Sydney Bog Brook which may be subject to periodic flooding. No development occurs within this area.

Alterations to natural drainage ways: Natural drainage ways will not be altered as a result of the proposed development. Culverts will be installed to maintain current drainage flow patterns.

### **General Standard Calculations:**

A wet pond is being utilized to treat impervious and developed areas as far as practical. The project is required to effectively treat 95% of the impervious area and 80% developed area as described in the rules as far as practical. Where 95% is not practical, Maine DEP allows treatment as low as 90% of the impervious area if the applicant is able to demonstrate that treatment of greater depth of runoff than specified in the standards will result in at least an equivalent amount of overall treatment for the impervious area. To meet the 91% criteria, pond volumes were increased to capture 1.2" X the watershed impervious area and 0.48" X the watershed non-paved area. This increase in storage volume provides the additional treatment necessary to provide an equivalent amount of overall treatment of impervious area. Certain areas cannot practically receive treatment. The treatment area summary and general standard calculations are attached. As described in the attached calculation, the project captures 91% of the projects impervious area 83% of the projects overall developed areas. The project as developed meets the General Standards as outlined in the Chapter 500 stormwater rules. The general standard calculation is attached.

Proposed BMP's: Silt fence is shown at the bottom of all slopes, hay bale barriers at the top of slopes and in ditches are provided. Other BMP's proposed for this project are described below.

### **Wet Pond – Pond 4P**

A wet pond is proposed for water quality treatment. Since this project is required to meet the General and Flooding Standards, the wet pond has been designed to store and hold 1.7" X the watershed impervious area and 0.68" of the watersheds non-impervious developed area below the permanent pool and an additional 1.2" over the watersheds impervious area and 0.48" X the watersheds non-impervious development area over the permanent pool that will drain through a infiltration filter as described below. An outlet structure with a 12" outlet pipe will regulate the pond outflow. A riprap spillway is also developed to safely convey runoff from the pond in the event the outlet structure capacity is reached or is plugged during significant rain events. This outlet structure and spillway will act as the principal outlets and will provide emergency overflow as needed.

### **Wet Pond Design Criteria:**

Subareas 1S as described in the Hydrocad calculations drains to a wet pond (Pond 4P) for treatment. The area draining to the wet pond is 12.23 acres in size.

- a. Wet Pond Minimum Sizing Criteria:  
=1.7”X Watershed Impervious Area + 0.68”X Watershed Non-Impervious Area  
=47079.65 c.f. (below permanent pool elevation – elev 253.3)
- b. Gravel filter minimum storage sizing criteria:  
=1.2”X Watershed Impervious Area + 0.48”X Watershed Non-Imp. Dev. Area  
=30796.92 c.f.(above permanent pool elevation – elev 253.3)
- c. Mean Depth = Volume of permanent pool / Surface Area 1’ below pool  
Mean Depth = 47,407 c.f. (@elev253.3) / 9598 s.f. (@elev252.3)  
Mean Depth = 4.9’
- d. Length to Width Ratio: Minimum recommended length to width ratio is 2:1 per DEP recommendations. The proposed wet pond has a length to width ratio of 8:1.
- e. Pond 4P provides 47407 c.f. of storage below elevation 253.3 and 33049 c.f. above elevation 253.3 for a total storage volume of 80,456 c.f. which exceeds the sizing requirement. The pond outlet is set 1.7’ above the permanent pool at elevation 256.0 to provide 20” of filtered storage above the permanent pool. The pond top of berm is set at elevation 258.0 which is 2’ higher than the proposed outlet rim and 1.5’ higher than the emergency spillway. This is done to provide the minimum 1’ free board when runoff is flowing. The gravel filter drain will drain the pond down to elevation 253.3.
- f. Gravel Filter Drain Sizing: The gravel trench will be 4’ wide X 3’ deep. The underdrain piping shall be 6” slotted, rigid schedule 40 PVC or SDR 35 pipe. The trench shall be located in the pond 6’ wide bench. The trench length shall be 3’ of gravel trench per 1000 c.f. of channel protection volume (volume above permanent pool). Therefore the gravel trench length is calculated to be:  
= (28778 c.f. / 1000 c.f.) X 3’ = 28’
- g. Groundwater Impacts: Test Pits are provided within the pond areas. The pond will be lined with a 10 mil poly liner installed to prevent mixing of groundwater and pond water or an equivalent clay or native soil liner will be installed. Storm water will be routed through the outlet structure and discharged into natural swales and channels. The proposed pond will not significantly impact groundwater.
- h. Bedrock: Vertical ledge or boulder walls will be excavated should ledge be encountered to provide the pond storage required.

\*Note: The attached general standard calculation summarizes the volume calculations described above.

## Flooding Standard

Modeling assumptions: The flooding standard is required with this development because this is a Site Law Project. We have modeled the pond areas to demonstrate that the outlets have the required storage volume capacity and that they will pass the 25 year storm event without flooding the pond embankments. The “HydroCad” computer program was used to determine the peak storm water runoff for the pre- and post-development conditions. HydroCad is a storm water modeling system, which utilizes the TR-20 method developed by the Soil Conservation Service (SCS).

*The design assumptions used for this project are:*

Design storm: 24 hour, Type III rainfall distribution.

Rainfall: 24 hour precipitation values from U.S. Weather Bureau Technical Release No. 40:

2 year storm = 3.0 inches  
10 year storm = 4.4 inches  
25 year storm = 5.1 inches

*Site specific parameters for the project are listed below:*

Soils: Soils information to determine the hydrologic soil group for the site, are derived from the Soil Survey of Kennebec County by the United States Department of Agriculture Soil Conservation Service. The soils and hydrologic group are listed below:

<u>Soil Classification</u>	<u>Hydrologic Group</u>
Hartland – HfC	“B”
Hinckley - HkD	“A”
Scio - SkB	“C”
Windsor	“A”

Ground Cover:

*Pre- & Post Development:* The watershed ground cover is modeled as woods, grass, meadow and impervious.

<u>Cover Description</u>	<u>Curve Number:</u>
Impervious	98
Woods	55-70
Meadow	58-71
Lawn	61-74

## PRE- & POST-DEVELOPMENT HYDROLOGIC RESULTS

FLOODING STANDARD RESULTS REACH 1R			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR 10 YEAR	5.00	2.03	-146%
25 YEAR	16.05	9.49	-69%
25 YEAR	22.76	18.08	-26%

FLOODING STANDARD RESULTS SUB 2S			
Storm	PRE C.F.S.	POST C.F.S.	DIFFERENCE %
2 YEAR 10 YEAR	6.61	6.46	-2%
25 YEAR	23.51	22.98	-2%
25 YEAR	34.27	33.5	-2%

### **Conclusion:**

The above analysis points are located where the project crosses the property line and points of interest where flows converge downstream (Reach 1R) along the rear property line. Peak flows have been reduced through the development of the wet pond which serve both water quality and quantity control. The 2, 10, 25 and 100 year storms meet the pre-development flow as required. The proposed structures have the capacity to control flow from the 25 year storm which meets the Flooding Standard. As a result, the project does not significantly impact downstream structures or properties. We submit that the Flooding Standard has been met or exceeded with this development.

The proposed wet pond captures 91% of the impervious area and 83% of the developed area as required to meet the General Standards. The Basic Standards will be met with the proposed erosion control plans and stabilization details provided.

We submit that the project meets the Basic, General, and the Flooding standard as outlined in the Maine DEP Chapter 500 Stormwater Rules.

## Stormwater Maintenance Plan

### PART 1: RESPONSIBILITY FOR MAINTENANCE

The facilities manager and owners of the NRF distribution center will be responsible for maintenance of the stormwater system.

### PART 2: INSPECTIONS – During Construction and Post Construction

- Detention Facilities: Wet Pond
  - Embankment inspection and maintenance
  - Spillway maintenance
  - Sediment removal and disposal
  
- Ditches, Swales, or other open stormwater channels
  - Embankment inspection and maintenance
  - Channel inspection
  - Sediment removal and disposal
  
- Culverts, catch basins, stormwater control structures
  - Embankment inspection and maintenance
  - Inlet and Outlet inspection
  - Debris removal and disposal
  
- Buffers (no buffers proposed but applies to undeveloped areas adjacent to project)
  - Road / Access Embankment inspection and maintenance
  - Inlet and Outlet inspection
  - Debris removal and disposal
  - Appropriate Deed restrictions have been completed and recorded (Appendix G).

The owners representative will inspect the pond, swales, channels, stormwater structures to determine if the soil blockage or impaired capacity to pass flow exists. Inspections will be performed on a monthly basis from March to November, and quarterly during the remainder of the year. A record of inspections and maintenance or corrective measures shall be kept by the owner (see part 4).

### PART 3: MAINTENANCE AND CLEANING

The owner will regularly inspect for sediment accumulation, obstructions, debris, and other potential causes for operational difficulty in the conveyance and detention system as described in Part 2. Immediate action shall be taken to remedy detrimental obstructions. This may include dredging the wet pond when sediment accumulates.

Cleaning out of catch basins, culvert cleaning, and other means necessary to ensure the stormwater system is maintained.

- Wet Pond maintenance
  - Gravel Drain Inspection
  - Gravel Drain replacement
  - Sediment removal and disposal
  - Mowing
  - Harvesting and Weeding

The owner will regularly inspect the wet pond after every major storm event in the first few months to ensure proper function. There after the pond should be inspected bi-annually to ensure that it is draining within 24 hours. Sediment shall be removed from the pond when sediment reduces the pond volume by 25%. The removed sediment shall be hauled off site and disposed of. Mowing of the pond area shall be limited to 2 times per year to maintain grass heights to less than 12". Weeding and pruning of growth within the pond and pond back slopes will be completed as necessary. The pond outlet shall be inspected for erosion and make repairs as needed annually.

- Detention Facilities:

A mandatory scheduled maintenance will be performed every four weeks for a period of one hundred and twenty (120) days and will begin after satisfactory completion and acceptance of landscape construction. Ongoing maintenance will be required as necessary.

- Parking/Display Areas:

The access and parking areas shall be swept annually in the spring to remove accumulated sand generated by the winter. All sand, salt, etc. accumulated when sweeping the parking and display areas, shall be trucked off-site for disposal.

### PART 4: RECORD KEEPING

The owner will maintain inspection records, with recordings of condition of basins, and pipes and annotation of substantial precipitation events or mitigating circumstances in the intervening time for trending to develop the anticipated preventive maintenance schedule.

### PART 5: MAINTENANCE CONTRACT

Should proprietary devices be utilized, a maintenance contract will be established with the manufacturer for regular maintenance and cleaning of the device.

## PART 6: RE-CERTIFICATION

The owner shall submit a certification to Maine DEP within three months of the expiration of each five year interval from the date of issuance of the permit. The owner shall submit the maintenance log which identifies inspections completed, erosion problems found, when corrective action was taken, and who completed the work. The certification will include a statement indicating that the stormwater system is working and is being maintained in working condition in accordance with the permit requirements.



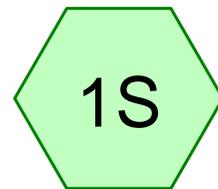
## Housekeeping: Reference Appendix C of Chapter 500 Rules

1. Spill Prevention: Normal household items such as cleaning supplies, paint, paint thinner, gasoline, oil containers, road salt, pesticides, fertilizer shall be kept within an enclosed structure with a concrete floor. Outside storage is prohibited.
2. Groundwater Protection: During construction, liquid petroleum products or other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. All such products shall be stored within an enclosed structure with a concrete floor. An “infiltration area” is any area of the site that by design or as a result of soils, topography, and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
3. Fugitive sediment and dust: A stabilized construction entrance shall be installed and maintained at the entrance to an existing public roadway. Areas to be loamed and seeded shall be stabilized in a timely fashion to prevent dust and sediment transport off the property. Should dust become a nuisance after final construction is complete, water may be used to control dust. No oil may be used for dust control.
4. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source. Regular inspection and maintenance is required to keep the site picked up. Trash bins shall be provided as needed to control debris.
5. Trench and foundation de-watering: Should de-watering be required during construction. Water shall be pumped from the trenches to a sediment control device such as a sediment forebay, dirtbag, or to a natural wooded buffer prior to discharge to a stormwater infiltration or storage area. Dirty water will not be allowed to discharge directly to a stream, wetland, or adjacent property.
6. Non-stormwater discharges: Non-stormwater discharges such as hydrant flushing, vehicle washing is not allowed within the pond or infiltration drainage areas.
7. Additional Requirements: Stormwater pollution shall be prevented.

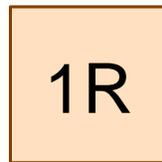
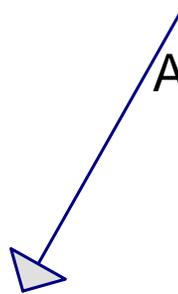




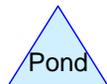
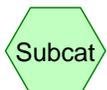
AREA 2



AREA 1



DRAINAGE 1-1



**Drainage Diagram for 2002-PRE**  
Prepared by Microsoft, Printed 2/25/2014  
HydroCAD® 9.10 s/n 02780 © 2010 HydroCAD Software Solutions LLC

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.830	30	Meadow, non-grazed, HSG A (1S)
0.610	30	Woods, Good, HSG A (2S)
2.320	39	EXISTING >75% Grass cover, Good, HSG A (2S)
16.780	55	Woods, Good, HSG B (2S)
18.560	58	Meadow, non-grazed, HSG B (1S, 2S)
5.060	61	EXISTING >75% Grass cover, Good, HSG B (2S)
6.720	70	Woods, Good, HSG C (1S, 2S)
18.900	71	Meadow, non-grazed, HSG C (1S, 2S)
1.970	74	EXISTING >75% Grass cover, Good, HSG C (2S)
1.040	98	EXISTING PAVED PARKING (2S)
1.140	98	EXISTING PAVED ROADS (2S)
0.650	98	EXISTING ROOFS (2S)
<b>75.580</b>		<b>TOTAL AREA</b>

**Summary for Subcatchment 1S: AREA 1**

Runoff = 5.04 cfs @ 12.54 hrs, Volume= 0.749 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.580	70	Woods, Good, HSG C
1.830	30	Meadow, non-grazed, HSG A
6.720	58	Meadow, non-grazed, HSG B
13.000	71	Meadow, non-grazed, HSG C
22.130	64	Weighted Average
22.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0280	0.13		<b>Sheet Flow, SF1-1</b> Grass: Dense n= 0.240 P2= 3.00"
11.3	690	0.0210	1.01		<b>Shallow Concentrated Flow, SCF1-1</b> Short Grass Pasture Kv= 7.0 fps
5.3	420	0.0360	1.33		<b>Shallow Concentrated Flow, SCF1-2</b> Short Grass Pasture Kv= 7.0 fps
29.5	1,210	Total			

**Summary for Subcatchment 2S: AREA 2**

Runoff = 6.61 cfs @ 13.02 hrs, Volume= 1.489 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.610	30	Woods, Good, HSG A
16.780	55	Woods, Good, HSG B
6.140	70	Woods, Good, HSG C
11.840	58	Meadow, non-grazed, HSG B
5.900	71	Meadow, non-grazed, HSG C
* 2.320	39	EXISTING >75% Grass cover, Good, HSG A
* 5.060	61	EXISTING >75% Grass cover, Good, HSG B
* 1.970	74	EXISTING >75% Grass cover, Good, HSG C
* 0.650	98	EXISTING ROOFS
* 1.140	98	EXISTING PAVED ROADS
* 1.040	98	EXISTING PAVED PARKING
53.450	62	Weighted Average
50.620		94.71% Pervious Area
2.830		5.29% Impervious Area

**2002-PRE**

Prepared by Microsoft

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Type III 24-hr 2 YEAR Rainfall=3.00"

Printed 2/25/2014

Page 4

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0710	0.27		<b>Sheet Flow, SF2-1</b> Grass: Short n= 0.150 P2= 3.00"
2.0	200	0.0550	1.64		<b>Shallow Concentrated Flow, SCF2-1</b> Short Grass Pasture Kv= 7.0 fps
14.3	430	0.0100	0.50		<b>Shallow Concentrated Flow, SCF2-2</b> Woodland Kv= 5.0 fps
35.8	1,630	0.0230	0.76		<b>Shallow Concentrated Flow, SCF2-3</b> Woodland Kv= 5.0 fps
1.0	420	0.0480	7.19	115.10	<b>Trap/Vee/Rect Channel Flow, CF2-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.048
59.2	2,780	Total			

**Summary for Reach 1R: DRAINAGE 1-1**

Inflow Area = 22.130 ac, 0.00% Impervious, Inflow Depth > 0.41" for 2 YEAR event  
 Inflow = 5.04 cfs @ 12.54 hrs, Volume= 0.749 af  
 Outflow = 5.00 cfs @ 12.62 hrs, Volume= 0.745 af, Atten= 1%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.32 fps, Min. Travel Time= 2.8 min  
 Avg. Velocity = 3.07 fps, Avg. Travel Time= 4.9 min

Peak Storage= 846 cf @ 12.57 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 237.74 cfs

2.00' x 2.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 900.0' Slope= 0.0800 '/'  
 Inlet Invert= 240.00', Outlet Invert= 168.00'



**Summary for Subcatchment 1S: AREA 1**

Runoff = 16.17 cfs @ 12.46 hrs, Volume= 1.989 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 YEAR Rainfall=4.40"

Area (ac)	CN	Description
0.580	70	Woods, Good, HSG C
1.830	30	Meadow, non-grazed, HSG A
6.720	58	Meadow, non-grazed, HSG B
13.000	71	Meadow, non-grazed, HSG C
22.130	64	Weighted Average
22.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0280	0.13		<b>Sheet Flow, SF1-1</b> Grass: Dense n= 0.240 P2= 3.00"
11.3	690	0.0210	1.01		<b>Shallow Concentrated Flow, SCF1-1</b> Short Grass Pasture Kv= 7.0 fps
5.3	420	0.0360	1.33		<b>Shallow Concentrated Flow, SCF1-2</b> Short Grass Pasture Kv= 7.0 fps
29.5	1,210	Total			

**Summary for Subcatchment 2S: AREA 2**

Runoff = 23.51 cfs @ 12.90 hrs, Volume= 4.223 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 YEAR Rainfall=4.40"

Area (ac)	CN	Description
0.610	30	Woods, Good, HSG A
16.780	55	Woods, Good, HSG B
6.140	70	Woods, Good, HSG C
11.840	58	Meadow, non-grazed, HSG B
5.900	71	Meadow, non-grazed, HSG C
* 2.320	39	EXISTING >75% Grass cover, Good, HSG A
* 5.060	61	EXISTING >75% Grass cover, Good, HSG B
* 1.970	74	EXISTING >75% Grass cover, Good, HSG C
* 0.650	98	EXISTING ROOFS
* 1.140	98	EXISTING PAVED ROADS
* 1.040	98	EXISTING PAVED PARKING
53.450	62	Weighted Average
50.620		94.71% Pervious Area
2.830		5.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0710	0.27		<b>Sheet Flow, SF2-1</b> Grass: Short n= 0.150 P2= 3.00"
2.0	200	0.0550	1.64		<b>Shallow Concentrated Flow, SCF2-1</b> Short Grass Pasture Kv= 7.0 fps
14.3	430	0.0100	0.50		<b>Shallow Concentrated Flow, SCF2-2</b> Woodland Kv= 5.0 fps
35.8	1,630	0.0230	0.76		<b>Shallow Concentrated Flow, SCF2-3</b> Woodland Kv= 5.0 fps
1.0	420	0.0480	7.19	115.10	<b>Trap/Vee/Rect Channel Flow, CF2-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.048
59.2	2,780	Total			

**Summary for Reach 1R: DRAINAGE 1-1**

Inflow Area = 22.130 ac, 0.00% Impervious, Inflow Depth > 1.08" for 10 YEAR event  
 Inflow = 16.17 cfs @ 12.46 hrs, Volume= 1.989 af  
 Outflow = 16.05 cfs @ 12.52 hrs, Volume= 1.981 af, Atten= 1%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.39 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 3.91 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1,959 cf @ 12.49 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 237.74 cfs

2.00' x 2.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 900.0' Slope= 0.0800 '/'  
 Inlet Invert= 240.00', Outlet Invert= 168.00'



**Summary for Subcatchment 1S: AREA 1**

Runoff = 22.92 cfs @ 12.45 hrs, Volume= 2.738 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR Rainfall=5.10"

Area (ac)	CN	Description
0.580	70	Woods, Good, HSG C
1.830	30	Meadow, non-grazed, HSG A
6.720	58	Meadow, non-grazed, HSG B
13.000	71	Meadow, non-grazed, HSG C
22.130	64	Weighted Average
22.130		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0280	0.13		<b>Sheet Flow, SF1-1</b> Grass: Dense n= 0.240 P2= 3.00"
11.3	690	0.0210	1.01		<b>Shallow Concentrated Flow, SCF1-1</b> Short Grass Pasture Kv= 7.0 fps
5.3	420	0.0360	1.33		<b>Shallow Concentrated Flow, SCF1-2</b> Short Grass Pasture Kv= 7.0 fps
29.5	1,210	Total			

**Summary for Subcatchment 2S: AREA 2**

Runoff = 34.27 cfs @ 12.87 hrs, Volume= 5.912 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR Rainfall=5.10"

Area (ac)	CN	Description
0.610	30	Woods, Good, HSG A
16.780	55	Woods, Good, HSG B
6.140	70	Woods, Good, HSG C
11.840	58	Meadow, non-grazed, HSG B
5.900	71	Meadow, non-grazed, HSG C
* 2.320	39	EXISTING >75% Grass cover, Good, HSG A
* 5.060	61	EXISTING >75% Grass cover, Good, HSG B
* 1.970	74	EXISTING >75% Grass cover, Good, HSG C
* 0.650	98	EXISTING ROOFS
* 1.140	98	EXISTING PAVED ROADS
* 1.040	98	EXISTING PAVED PARKING
53.450	62	Weighted Average
50.620		94.71% Pervious Area
2.830		5.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0710	0.27		<b>Sheet Flow, SF2-1</b> Grass: Short n= 0.150 P2= 3.00"
2.0	200	0.0550	1.64		<b>Shallow Concentrated Flow, SCF2-1</b> Short Grass Pasture Kv= 7.0 fps
14.3	430	0.0100	0.50		<b>Shallow Concentrated Flow, SCF2-2</b> Woodland Kv= 5.0 fps
35.8	1,630	0.0230	0.76		<b>Shallow Concentrated Flow, SCF2-3</b> Woodland Kv= 5.0 fps
1.0	420	0.0480	7.19	115.10	<b>Trap/Vee/Rect Channel Flow, CF2-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.048
59.2	2,780	Total			

**Summary for Reach 1R: DRAINAGE 1-1**

Inflow Area = 22.130 ac, 0.00% Impervious, Inflow Depth > 1.48" for 25 YEAR event  
 Inflow = 22.92 cfs @ 12.45 hrs, Volume= 2.738 af  
 Outflow = 22.76 cfs @ 12.50 hrs, Volume= 2.729 af, Atten= 1%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.12 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 4.18 fps, Avg. Travel Time= 3.6 min

Peak Storage= 2,531 cf @ 12.47 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 237.74 cfs

2.00' x 2.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 900.0' Slope= 0.0800 '/'  
 Inlet Invert= 240.00', Outlet Invert= 168.00'





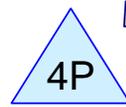
AREA 2



AREA 3



AREA 1



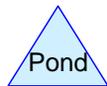
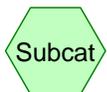
WET POND



DRAINAGE 1-1



POND TO NATURAL SWALE



**Drainage Diagram for 2014-POST**  
Prepared by Microsoft, Printed 2/26/2014  
HydroCAD® 9.10 s/n 02780 © 2010 HydroCAD Software Solutions LLC

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.830	30	Meadow, non-grazed, HSG A (3S)
0.610	30	Woods, Good, HSG A (2S)
2.320	39	EXISTING >75% Grass cover, Good, HSG A (2S)
16.780	55	Woods, Good, HSG B (2S)
13.710	58	Meadow, non-grazed, HSG B (1S, 2S, 3S)
1.790	61	2002 NEW >75% Grass cover, Good, HSG B (1S, 2S)
5.060	61	EXISTING >75% Grass cover, Good, HSG B (2S)
0.370	61	OFFSITE NEW >75% Grass cover, Good, HSG B (2S)
6.140	70	Woods, Good, HSG C (2S)
11.540	71	Meadow, non-grazed, HSG C (2S, 3S)
1.710	74	2002 NEW >75% Grass cover, Good, HSG C (1S, 2S, 3S)
1.970	74	EXISTING >75% Grass cover, Good, HSG C (2S)
0.890	74	WET POND (1S)
0.550	98	2002 NEW ACCESS DRIVES (2S)
2.670	98	2002 NEW PAVED PARKING (1S)
2.390	98	2002 NEW ROOF (1S)
0.860	98	2014 NEW PAVED PARKING (1S)
1.190	98	2014 NEW ROOF (1S)
1.040	98	EXISTING PAVED PARKING (2S)
1.140	98	EXISTING PAVED ROADS (2S)
0.650	98	EXISTING ROOFS (2S)
0.370	98	OFFSITE NEW LUDGER ROAD (2S)
<b>75.580</b>		<b>TOTAL AREA</b>

**Summary for Subcatchment 1S: AREA 1**

Runoff = 14.77 cfs @ 12.27 hrs, Volume= 1.429 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 1.190	98	2014 NEW ROOF
* 0.860	98	2014 NEW PAVED PARKING
* 2.390	98	2002 NEW ROOF
* 2.670	98	2002 NEW PAVED PARKING
* 1.190	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.970	74	2002 NEW >75% Grass cover, Good, HSG C
2.070	58	Meadow, non-grazed, HSG B
* 0.890	74	WET POND
12.230	84	Weighted Average
5.120		41.86% Pervious Area
7.110		58.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	100	0.0180	0.11		<b>Sheet Flow, SF1-1</b> Grass: Dense n= 0.240 P2= 3.00"
2.4	206	0.0410	1.42		<b>Shallow Concentrated Flow, SCF1-1</b> Short Grass Pasture Kv= 7.0 fps
0.5	315	0.0180	9.61	153.78	<b>Trap/Vee/Rect Channel Flow, CF 1-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.022
1.1	360	0.0150	5.51	88.24	<b>Trap/Vee/Rect Channel Flow, CF 1-2</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.035
19.4	981	Total			

**Summary for Subcatchment 2S: AREA 2**

Runoff = 6.46 cfs @ 13.02 hrs, Volume= 1.456 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2 YEAR Rainfall=3.00"

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Type III 24-hr 2 YEAR Rainfall=3.00"

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Area (ac)	CN	Description
0.610	30	Woods, Good, HSG A
16.780	55	Woods, Good, HSG B
6.140	70	Woods, Good, HSG C
9.300	58	Meadow, non-grazed, HSG B
4.860	71	Meadow, non-grazed, HSG C
* 2.320	39	EXISTING >75% Grass cover, Good, HSG A
* 5.060	61	EXISTING >75% Grass cover, Good, HSG B
* 1.970	74	EXISTING >75% Grass cover, Good, HSG C
* 0.650	98	EXISTING ROOFS
* 1.140	98	EXISTING PAVED ROADS
* 1.040	98	EXISTING PAVED PARKING
* 0.370	98	OFFSITE NEW LUDGER ROAD
* 0.370	61	OFFSITE NEW >75% Grass cover, Good, HSG B
* 0.550	98	2002 NEW ACCESS DRIVES
* 0.600	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.490	74	2002 NEW >75% Grass cover, Good, HSG C
52.250	62	Weighted Average
48.500		92.82% Pervious Area
3.750		7.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0710	0.27		<b>Sheet Flow, SF2-1</b> Grass: Short n= 0.150 P2= 3.00"
2.0	200	0.0550	1.64		<b>Shallow Concentrated Flow, SCF2-1</b> Short Grass Pasture Kv= 7.0 fps
14.3	430	0.0100	0.50		<b>Shallow Concentrated Flow, SCF2-2</b> Woodland Kv= 5.0 fps
35.8	1,630	0.0230	0.76		<b>Shallow Concentrated Flow, SCF2-3</b> Woodland Kv= 5.0 fps
1.0	420	0.0480	7.19	115.10	<b>Trap/Vee/Rect Channel Flow, CF2-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.048
59.2	2,780	Total			

**Summary for Subcatchment 3S: AREA 3**

Runoff = 2.06 cfs @ 12.51 hrs, Volume= 0.317 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2 YEAR Rainfall=3.00"

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Type III 24-hr 2 YEAR Rainfall=3.00"

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Area (ac)	CN	Description
1.830	30	Meadow, non-grazed, HSG A
2.340	58	Meadow, non-grazed, HSG B
6.680	71	Meadow, non-grazed, HSG C
* 0.000	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.250	74	2002 NEW >75% Grass cover, Good, HSG C
* 0.000	98	2002 NEW PAVED PARKING
11.100	62	Weighted Average
11.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0280	0.13		<b>Sheet Flow, SF3-1</b> Grass: Dense n= 0.240 P2= 3.00"
1.6	150	0.0470	1.52		<b>Shallow Concentrated Flow, SCF3-1</b> Short Grass Pasture Kv= 7.0 fps
0.5	200	0.0100	7.16	114.62	<b>Trap/Vee/Rect Channel Flow, CF3-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.022
5.5	300	0.0170	0.91		<b>Shallow Concentrated Flow, SCF3-2</b> Short Grass Pasture Kv= 7.0 fps
5.3	420	0.0360	1.33		<b>Shallow Concentrated Flow, SCF3-3</b> Short Grass Pasture Kv= 7.0 fps
25.8	1,170	Total			

**Summary for Reach 1R: DRAINAGE 1-1**

Inflow Area = 23.330 ac, 30.48% Impervious, Inflow Depth > 0.44" for 2 YEAR event  
 Inflow = 2.06 cfs @ 12.51 hrs, Volume= 0.862 af  
 Outflow = 2.03 cfs @ 12.62 hrs, Volume= 0.852 af, Atten= 2%, Lag= 6.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.05 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 3.45 fps, Avg. Travel Time= 4.4 min

Peak Storage= 451 cf @ 12.56 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 237.74 cfs

2.00' x 2.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 900.0' Slope= 0.0800 '/'  
 Inlet Invert= 240.00', Outlet Invert= 168.00'



**Summary for Reach 6R: POND TO NATURAL SWALE**

Inflow Area = 12.230 ac, 58.14% Impervious, Inflow Depth > 0.54" for 2 YEAR event  
 Inflow = 1.06 cfs @ 15.37 hrs, Volume= 0.549 af  
 Outflow = 1.06 cfs @ 15.42 hrs, Volume= 0.545 af, Atten= 0%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.01 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 2.81 fps, Avg. Travel Time= 1.9 min

Peak Storage= 113 cf @ 15.39 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 208.61 cfs

2.00' x 2.00' deep channel, n= 0.022  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 320.0' Slope= 0.0331 '/'  
 Inlet Invert= 250.60', Outlet Invert= 240.00'



**Summary for Pond 4P: WET POND**

Inflow Area = 12.230 ac, 58.14% Impervious, Inflow Depth > 1.40" for 2 YEAR event  
 Inflow = 14.77 cfs @ 12.27 hrs, Volume= 1.429 af  
 Outflow = 1.06 cfs @ 15.37 hrs, Volume= 0.549 af, Atten= 93%, Lag= 185.8 min  
 Primary = 1.06 cfs @ 15.37 hrs, Volume= 0.549 af  
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 253.30' Surf.Area= 16,549 sf Storage= 47,407 cf  
 Peak Elev= 255.57' @ 15.37 hrs Surf.Area= 21,387 sf Storage= 90,668 cf (43,261 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 172.0 min ( 978.2 - 806.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	148,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

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Type III 24-hr 2 YEAR Rainfall=3.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	292	0	0
244.00	664	478	478
245.00	1,187	926	1,404
246.00	1,862	1,525	2,928
247.00	2,687	2,275	5,203
248.00	3,664	3,176	8,378
249.00	4,790	4,227	12,605
250.00	6,069	5,430	18,035
251.00	7,500	6,785	24,819
252.00	9,079	8,290	33,109
253.00	10,810	9,945	43,053
253.20	16,307	2,712	45,765
254.00	18,239	13,818	59,583
255.00	20,222	19,231	78,814
256.00	22,267	21,245	100,058
257.00	24,413	23,340	123,398
258.00	26,655	25,534	148,932

Device	Routing	Invert	Outlet Devices
#1	Primary	251.00'	<b>12.0" Round Culvert</b> L= 135.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 251.00' / 250.32' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012
#2	Device 1	255.00'	<b>4.0" Vert. Orifice/Grate X 4.00</b> C= 0.600
#3	Device 1	256.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	256.50'	<b>8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 1.81</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

**Primary OutFlow** Max=1.07 cfs @ 15.37 hrs HW=255.57' (Free Discharge)

- ↑ 1=Culvert (Passes 1.07 cfs of 5.64 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 1.07 cfs @ 3.06 fps)
- ↑ 3=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=253.30' (Free Discharge)

- ↑ 4=Broad-Crested Rectangular Weir X 1.81 ( Controls 0.00 cfs)

**Summary for Subcatchment 1S: AREA 1**

Runoff = 26.60 cfs @ 12.27 hrs, Volume= 2.592 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 YEAR Rainfall=4.40"

Area (ac)	CN	Description
* 1.190	98	2014 NEW ROOF
* 0.860	98	2014 NEW PAVED PARKING
* 2.390	98	2002 NEW ROOF
* 2.670	98	2002 NEW PAVED PARKING
* 1.190	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.970	74	2002 NEW >75% Grass cover, Good, HSG C
2.070	58	Meadow, non-grazed, HSG B
* 0.890	74	WET POND
12.230	84	Weighted Average
5.120		41.86% Pervious Area
7.110		58.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	100	0.0180	0.11		<b>Sheet Flow, SF1-1</b> Grass: Dense n= 0.240 P2= 3.00"
2.4	206	0.0410	1.42		<b>Shallow Concentrated Flow, SCF1-1</b> Short Grass Pasture Kv= 7.0 fps
0.5	315	0.0180	9.61	153.78	<b>Trap/Vee/Rect Channel Flow, CF 1-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.022
1.1	360	0.0150	5.51	88.24	<b>Trap/Vee/Rect Channel Flow, CF 1-2</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.035
19.4	981	Total			

**Summary for Subcatchment 2S: AREA 2**

Runoff = 22.98 cfs @ 12.90 hrs, Volume= 4.128 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10 YEAR Rainfall=4.40"

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Type III 24-hr 10 YEAR Rainfall=4.40"

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Area (ac)	CN	Description
0.610	30	Woods, Good, HSG A
16.780	55	Woods, Good, HSG B
6.140	70	Woods, Good, HSG C
9.300	58	Meadow, non-grazed, HSG B
4.860	71	Meadow, non-grazed, HSG C
* 2.320	39	EXISTING >75% Grass cover, Good, HSG A
* 5.060	61	EXISTING >75% Grass cover, Good, HSG B
* 1.970	74	EXISTING >75% Grass cover, Good, HSG C
* 0.650	98	EXISTING ROOFS
* 1.140	98	EXISTING PAVED ROADS
* 1.040	98	EXISTING PAVED PARKING
* 0.370	98	OFFSITE NEW LUDGER ROAD
* 0.370	61	OFFSITE NEW >75% Grass cover, Good, HSG B
* 0.550	98	2002 NEW ACCESS DRIVES
* 0.600	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.490	74	2002 NEW >75% Grass cover, Good, HSG C
52.250	62	Weighted Average
48.500		92.82% Pervious Area
3.750		7.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0710	0.27		<b>Sheet Flow, SF2-1</b> Grass: Short n= 0.150 P2= 3.00"
2.0	200	0.0550	1.64		<b>Shallow Concentrated Flow, SCF2-1</b> Short Grass Pasture Kv= 7.0 fps
14.3	430	0.0100	0.50		<b>Shallow Concentrated Flow, SCF2-2</b> Woodland Kv= 5.0 fps
35.8	1,630	0.0230	0.76		<b>Shallow Concentrated Flow, SCF2-3</b> Woodland Kv= 5.0 fps
1.0	420	0.0480	7.19	115.10	<b>Trap/Vee/Rect Channel Flow, CF2-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.048
59.2	2,780	Total			

**Summary for Subcatchment 3S: AREA 3**

Runoff = 7.48 cfs @ 12.41 hrs, Volume= 0.893 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10 YEAR Rainfall=4.40"

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Type III 24-hr 10 YEAR Rainfall=4.40"

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Area (ac)	CN	Description
1.830	30	Meadow, non-grazed, HSG A
2.340	58	Meadow, non-grazed, HSG B
6.680	71	Meadow, non-grazed, HSG C
* 0.000	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.250	74	2002 NEW >75% Grass cover, Good, HSG C
* 0.000	98	2002 NEW PAVED PARKING
11.100	62	Weighted Average
11.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0280	0.13		<b>Sheet Flow, SF3-1</b> Grass: Dense n= 0.240 P2= 3.00"
1.6	150	0.0470	1.52		<b>Shallow Concentrated Flow, SCF3-1</b> Short Grass Pasture Kv= 7.0 fps
0.5	200	0.0100	7.16	114.62	<b>Trap/Vee/Rect Channel Flow, CF3-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.022
5.5	300	0.0170	0.91		<b>Shallow Concentrated Flow, SCF3-2</b> Short Grass Pasture Kv= 7.0 fps
5.3	420	0.0360	1.33		<b>Shallow Concentrated Flow, SCF3-3</b> Short Grass Pasture Kv= 7.0 fps
25.8	1,170	Total			

**Summary for Reach 1R: DRAINAGE 1-1**

Inflow Area = 23.330 ac, 30.48% Impervious, Inflow Depth > 1.24" for 10 YEAR event  
 Inflow = 9.56 cfs @ 12.64 hrs, Volume= 2.417 af  
 Outflow = 9.49 cfs @ 12.71 hrs, Volume= 2.403 af, Atten= 1%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.39 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 4.46 fps, Avg. Travel Time= 3.4 min

Peak Storage= 1,337 cf @ 12.67 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 237.74 cfs

2.00' x 2.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 900.0' Slope= 0.0800 '/'  
 Inlet Invert= 240.00', Outlet Invert= 168.00'



**Summary for Reach 6R: POND TO NATURAL SWALE**

Inflow Area = 12.230 ac, 58.14% Impervious, Inflow Depth > 1.50" for 10 YEAR event  
 Inflow = 5.02 cfs @ 13.00 hrs, Volume= 1.528 af  
 Outflow = 5.01 cfs @ 13.03 hrs, Volume= 1.524 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.86 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 3.75 fps, Avg. Travel Time= 1.4 min

Peak Storage= 331 cf @ 13.01 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 208.61 cfs

2.00' x 2.00' deep channel, n= 0.022  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 320.0' Slope= 0.0331 '/'  
 Inlet Invert= 250.60', Outlet Invert= 240.00'



**Summary for Pond 4P: WET POND**

Inflow Area = 12.230 ac, 58.14% Impervious, Inflow Depth > 2.54" for 10 YEAR event  
 Inflow = 26.60 cfs @ 12.27 hrs, Volume= 2.592 af  
 Outflow = 5.02 cfs @ 13.00 hrs, Volume= 1.528 af, Atten= 81%, Lag= 44.0 min  
 Primary = 4.74 cfs @ 13.00 hrs, Volume= 1.520 af  
 Secondary = 0.28 cfs @ 13.00 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 253.30' Surf.Area= 16,549 sf Storage= 47,407 cf  
 Peak Elev= 256.54' @ 13.00 hrs Surf.Area= 23,421 sf Storage= 112,338 cf (64,930 cf above start)

Plug-Flow detention time= 422.7 min calculated for 0.438 af (17% of inflow)  
 Center-of-Mass det. time= 120.8 min ( 913.5 - 792.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	148,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

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Type III 24-hr 10 YEAR Rainfall=4.40"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	292	0	0
244.00	664	478	478
245.00	1,187	926	1,404
246.00	1,862	1,525	2,928
247.00	2,687	2,275	5,203
248.00	3,664	3,176	8,378
249.00	4,790	4,227	12,605
250.00	6,069	5,430	18,035
251.00	7,500	6,785	24,819
252.00	9,079	8,290	33,109
253.00	10,810	9,945	43,053
253.20	16,307	2,712	45,765
254.00	18,239	13,818	59,583
255.00	20,222	19,231	78,814
256.00	22,267	21,245	100,058
257.00	24,413	23,340	123,398
258.00	26,655	25,534	148,932

Device	Routing	Invert	Outlet Devices
#1	Primary	251.00'	<b>12.0" Round Culvert</b> L= 135.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 251.00' / 250.32' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012
#2	Device 1	255.00'	<b>4.0" Vert. Orifice/Grate X 4.00</b> C= 0.600
#3	Device 1	256.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	256.50'	<b>8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 1.81</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

**Primary OutFlow** Max=4.74 cfs @ 13.00 hrs HW=256.54' (Free Discharge)

- ↑ 1=Culvert (Passes 4.74 cfs of 6.25 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 1.97 cfs @ 5.64 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 2.77 cfs @ 3.53 fps)

**Secondary OutFlow** Max=0.14 cfs @ 13.00 hrs HW=256.54' (Free Discharge)

- ↑ 4=Broad-Crested Rectangular Weir X 1.81 (Weir Controls 0.14 cfs @ 0.47 fps)

**Summary for Subcatchment 1S: AREA 1**

Runoff = 32.68 cfs @ 12.26 hrs, Volume= 3.205 af, Depth> 3.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 YEAR Rainfall=5.10"

Area (ac)	CN	Description
* 1.190	98	2014 NEW ROOF
* 0.860	98	2014 NEW PAVED PARKING
* 2.390	98	2002 NEW ROOF
* 2.670	98	2002 NEW PAVED PARKING
* 1.190	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.970	74	2002 NEW >75% Grass cover, Good, HSG C
2.070	58	Meadow, non-grazed, HSG B
* 0.890	74	WET POND
12.230	84	Weighted Average
5.120		41.86% Pervious Area
7.110		58.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	100	0.0180	0.11		<b>Sheet Flow, SF1-1</b> Grass: Dense n= 0.240 P2= 3.00"
2.4	206	0.0410	1.42		<b>Shallow Concentrated Flow, SCF1-1</b> Short Grass Pasture Kv= 7.0 fps
0.5	315	0.0180	9.61	153.78	<b>Trap/Vee/Rect Channel Flow, CF 1-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.022
1.1	360	0.0150	5.51	88.24	<b>Trap/Vee/Rect Channel Flow, CF 1-2</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.035
19.4	981	Total			

**Summary for Subcatchment 2S: AREA 2**

Runoff = 33.50 cfs @ 12.87 hrs, Volume= 5.780 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 25 YEAR Rainfall=5.10"

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Area (ac)	CN	Description
0.610	30	Woods, Good, HSG A
16.780	55	Woods, Good, HSG B
6.140	70	Woods, Good, HSG C
9.300	58	Meadow, non-grazed, HSG B
4.860	71	Meadow, non-grazed, HSG C
* 2.320	39	EXISTING >75% Grass cover, Good, HSG A
* 5.060	61	EXISTING >75% Grass cover, Good, HSG B
* 1.970	74	EXISTING >75% Grass cover, Good, HSG C
* 0.650	98	EXISTING ROOFS
* 1.140	98	EXISTING PAVED ROADS
* 1.040	98	EXISTING PAVED PARKING
* 0.370	98	OFFSITE NEW LUDGER ROAD
* 0.370	61	OFFSITE NEW >75% Grass cover, Good, HSG B
* 0.550	98	2002 NEW ACCESS DRIVES
* 0.600	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.490	74	2002 NEW >75% Grass cover, Good, HSG C
52.250	62	Weighted Average
48.500		92.82% Pervious Area
3.750		7.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0710	0.27		<b>Sheet Flow, SF2-1</b> Grass: Short n= 0.150 P2= 3.00"
2.0	200	0.0550	1.64		<b>Shallow Concentrated Flow, SCF2-1</b> Short Grass Pasture Kv= 7.0 fps
14.3	430	0.0100	0.50		<b>Shallow Concentrated Flow, SCF2-2</b> Woodland Kv= 5.0 fps
35.8	1,630	0.0230	0.76		<b>Shallow Concentrated Flow, SCF2-3</b> Woodland Kv= 5.0 fps
1.0	420	0.0480	7.19	115.10	<b>Trap/Vee/Rect Channel Flow, CF2-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.048
59.2	2,780	Total			

**Summary for Subcatchment 3S: AREA 3**

Runoff = 10.89 cfs @ 12.40 hrs, Volume= 1.249 af, Depth> 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25 YEAR Rainfall=5.10"

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Area (ac)	CN	Description
1.830	30	Meadow, non-grazed, HSG A
2.340	58	Meadow, non-grazed, HSG B
6.680	71	Meadow, non-grazed, HSG C
* 0.000	61	2002 NEW >75% Grass cover, Good, HSG B
* 0.250	74	2002 NEW >75% Grass cover, Good, HSG C
* 0.000	98	2002 NEW PAVED PARKING
11.100	62	Weighted Average
11.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0280	0.13		<b>Sheet Flow, SF3-1</b> Grass: Dense n= 0.240 P2= 3.00"
1.6	150	0.0470	1.52		<b>Shallow Concentrated Flow, SCF3-1</b> Short Grass Pasture Kv= 7.0 fps
0.5	200	0.0100	7.16	114.62	<b>Trap/Vee/Rect Channel Flow, CF3-1</b> Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.022
5.5	300	0.0170	0.91		<b>Shallow Concentrated Flow, SCF3-2</b> Short Grass Pasture Kv= 7.0 fps
5.3	420	0.0360	1.33		<b>Shallow Concentrated Flow, SCF3-3</b> Short Grass Pasture Kv= 7.0 fps
25.8	1,170	Total			

**Summary for Reach 1R: DRAINAGE 1-1**

Inflow Area = 23.330 ac, 30.48% Impervious, Inflow Depth > 1.72" for 25 YEAR event  
 Inflow = 18.20 cfs @ 12.65 hrs, Volume= 3.344 af  
 Outflow = 18.08 cfs @ 12.71 hrs, Volume= 3.329 af, Atten= 1%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.63 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 4.66 fps, Avg. Travel Time= 3.2 min

Peak Storage= 2,137 cf @ 12.68 hrs  
 Average Depth at Peak Storage= 0.62'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 237.74 cfs

2.00' x 2.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 900.0' Slope= 0.0800 '/'  
 Inlet Invert= 240.00', Outlet Invert= 168.00'



**Summary for Reach 6R: POND TO NATURAL SWALE**

Inflow Area = 12.230 ac, 58.14% Impervious, Inflow Depth > 2.06" for 25 YEAR event  
 Inflow = 11.06 cfs @ 12.72 hrs, Volume= 2.100 af  
 Outflow = 11.02 cfs @ 12.75 hrs, Volume= 2.095 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.07 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 4.01 fps, Avg. Travel Time= 1.3 min

Peak Storage= 582 cf @ 12.74 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 208.61 cfs

2.00' x 2.00' deep channel, n= 0.022  
 Side Slope Z-value= 3.0 '/' Top Width= 14.00'  
 Length= 320.0' Slope= 0.0331 '/'  
 Inlet Invert= 250.60', Outlet Invert= 240.00'



**Summary for Pond 4P: WET POND**

Inflow Area = 12.230 ac, 58.14% Impervious, Inflow Depth > 3.14" for 25 YEAR event  
 Inflow = 32.68 cfs @ 12.26 hrs, Volume= 3.205 af  
 Outflow = 11.06 cfs @ 12.72 hrs, Volume= 2.100 af, Atten= 66%, Lag= 27.6 min  
 Primary = 5.80 cfs @ 12.72 hrs, Volume= 1.822 af  
 Secondary = 5.26 cfs @ 12.72 hrs, Volume= 0.278 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs  
 Starting Elev= 253.30' Surf.Area= 16,549 sf Storage= 47,407 cf  
 Peak Elev= 256.90' @ 12.72 hrs Surf.Area= 24,200 sf Storage= 120,987 cf (73,580 cf above start)

Plug-Flow detention time= 306.2 min calculated for 1.011 af (32% of inflow)  
 Center-of-Mass det. time= 98.9 min ( 886.6 - 787.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	243.00'	148,932 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
243.00	292	0	0
244.00	664	478	478
245.00	1,187	926	1,404
246.00	1,862	1,525	2,928
247.00	2,687	2,275	5,203
248.00	3,664	3,176	8,378
249.00	4,790	4,227	12,605
250.00	6,069	5,430	18,035
251.00	7,500	6,785	24,819
252.00	9,079	8,290	33,109
253.00	10,810	9,945	43,053
253.20	16,307	2,712	45,765
254.00	18,239	13,818	59,583
255.00	20,222	19,231	78,814
256.00	22,267	21,245	100,058
257.00	24,413	23,340	123,398
258.00	26,655	25,534	148,932

Device	Routing	Invert	Outlet Devices
#1	Primary	251.00'	<b>12.0" Round Culvert</b> L= 135.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 251.00' / 250.32' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012
#2	Device 1	255.00'	<b>4.0" Vert. Orifice/Grate X 4.00</b> C= 0.600
#3	Device 1	256.00'	<b>12.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Secondary	256.50'	<b>8.0' long x 8.0' breadth Broad-Crested Rectangular Weir X 1.81</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

**Primary OutFlow** Max=5.80 cfs @ 12.72 hrs HW=256.90' (Free Discharge)

- ↑ 1=Culvert (Passes 5.80 cfs of 6.46 cfs potential flow)
- ↑ 2=Orifice/Grate (Orifice Controls 2.21 cfs @ 6.34 fps)
- ↑ 3=Orifice/Grate (Orifice Controls 3.59 cfs @ 4.57 fps)

**Secondary OutFlow** Max=5.12 cfs @ 12.72 hrs HW=256.90' (Free Discharge)

- ↑ 4=Broad-Crested Rectangular Weir X 1.81 (Weir Controls 5.12 cfs @ 1.60 fps)

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**CITY OF AUGUSTA  
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**REVIEW CRITERIA P.  
ACCESS TO DIRECT SUNLIGHT**

The existing building does not block access to direct sunlight for structures utilizing solar energy through active or passive systems.

This proposal is for a building expansion, which will not block access to direct sunlight for structures utilizing solar energy through active or passive systems.

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**REVIEW CRITERIA Q.  
STATE PERMITS**

This proposal requires approval for Minor Amendment under the Maine Site Location of Development Law, Title 38 M.R.S.A. § 481- 484, and approval for a Tier 2 Natural Resources Protection Act (NRPA) Permit, Title 38 M.R.S.A. § 480-A to 480BB, both of which the applicant is applying for concurrently with this City of Augusta Major Development Review Application.

An Application for Department of the Army Permit for 21,258 square feet of wetland impact has been filed by the applicant with U.S. Army Corps of Engineers.

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**REVIEW CRITERIA R.  
OUTDOOR LIGHTING**

Exterior lighting will be shielded wall-pack security lighting with full cutoff visors, and the one (1) new light pole to be installed on the west side of the expanded parking lot will have fully shielded light fixtures.

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**REVIEW CRITERIA S.  
NEIGHBORHOOD COMPATIBILITY**

NRF Distributors is a light manufacturing facility located in a business and industrial district and neighborhood. The site design and the building location on the property present compatibility to surrounding uses. The proposed building addition will be the same type and design and at the same elevation as the existing building. Noise and lighting impacts are minimized by the buffers and the separation from residential properties and from Civic Center Drive.

The visual impact of the development on the neighborhood will be minimal considering the building addition will be on the westerly side of the existing building about 2,200 feet away from Civic Center Drive and, with the exception of Central Maine Commerce Center to the south, will be inconspicuous or invisible to abutters. The adjoining uses immediately to the south in Central Maine Commerce Center are a State Police automobile repair facility and parking lots. The NRF Warehouse is buffered from adjoining properties to the north and west by a protected 31-acre wildlife buffer zone which is from 350 feet to 750 feet wide.

Along the southerly property line adjoining the proposed expansion, a Bufferyard "A" is specified. New plantings that are needed to bring the buffer up to the standards required for Bufferyard "A" will be installed as soon as practical after final grading and the season permit. Maintenance of the vegetated buffer will be provided by the owner.

In addition to the stormwater quantity and quality control elements constructed as part of the 2002 building construction, modifications to the stormwater control pond as part of this expansion will be made to limit stormwater flows from the site to levels that will be the same or less than the pre-2002 development levels, and stormwater quality will be improved through retention and an under-drained gravel filter wet pond system.

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**REVIEW CRITERIA T.  
PLANS AND POLICIES**

The New North Augusta Trust proposed building expansion is in accordance with the adopted elements of the 1988 Growth Management Plan and the 2007 Augusta Comprehensive Plan.

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**REVIEW CRITERIA U.  
TRAFFIC PATTERN, FLOW AND VOLUME**

Traffic to and from NRF Distributors is not expected to change significantly as a result of the proposed building expansion.

Gabriel Drive is more than adequate for safe access for passenger vehicles and trucks. Interior driveways and maneuvering areas meet all dimensional standards. The proposed loading, parking and road areas also meet dimensional standards.

The current number of employees is 16 employees on the 1st shift, 12 employees on the 2<sup>nd</sup> shift, and 3 employees on the 3<sup>rd</sup> shift, which is expected to remain the same after the expansion.

Truck traffic to and from this NRF facility is expected to increase as a result of the building expansion. The current number of trucks arriving/leaving the facility is 25 per day Sunday through Friday, and after the expansion is expected to be 29 per day Sunday through Friday.

As required by Maine Department of Environmental Protection Site Law Permit L-014767-39-D-M, development of lots in Central Maine Business Park is subject to traffic improvements being made at the intersection of Gabriel Drive and Civic Center Drive in three (3) phases based on an allocation of building capacity on the lots. Two (2) memorandums from Paul Minor of the Maine Department of Transportation (MDOT), dated February 7, 1989 and August 29, 1988(9), attached to Criteria E, state that the required Civic Center Drive improvements for Phases I and II were completed and approved by MDOT. The Phase II building capacity that is now available to the lots owned by New North Augusta Trust/NRF Distributors is 151,640 square feet. This proposed expansion will result in a total of 151,640 square feet, therefore no improvements to the Gabriel Drive – Civic Center Drive intersection are required for this expansion.

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**REVIEW CRITERIA V.  
PUBLIC FACILITIES**

The NRF Distributors, Inc. facility is currently served by utilities that have adequate capacity for the proposed expansion for water (both domestic and fire flow); sanitary sewer; electricity/telephone; and storm drainage.

The proposed expansion will not cause a significant change in demand for services from public facilities.

See Review Criteria B, C, F, G and O for relevant information.

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**REVIEW CRITERIA W.  
RESOURCE PROTECTION AND ENVIRONMENT**

The proposed NRF warehouse addition is an expansion of the existing operations in an established business park.

There are no identified areas of resource protection or environmental significance that will be affected by this project.

A protected 31-acre Wildlife Buffer Zone surrounds the developed area on the north and west sides of the New North Augusta Trust property.

Stormwater runoff is directed to an extended detention pond that currently handles flows from the site, which will be modified into an underdrained gravel filter wet pond to control the quantity and to treat the quality of the stormwater flow from the proposed expansion.

Standard erosion and sedimentation control measures will be taken to ensure that the construction of this project will have minimal adverse impact on the adjacent resources.

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**REVIEW CRITERIA X.  
PERFORMANCE STANDARDS**

The proposed NRF Distributors warehouse expansion complies with all applicable performance and dimensional standards as outlined in the Augusta ordinances.

The proposal is an expansion of the existing permitted use in an established business park.

The warehouse and the proposed expansion site adjoin existing commercial uses to the east in Central Maine Business Park and to the south in Central Maine Commerce Center, and is buffered from residential uses to the north and west by a protected 31-acre Wildlife Buffer Zone which is from 350 feet to 750 feet wide.

The NRF Warehouse is nearly invisible from Civic Center Drive at a distance of about 2,200 feet, and is approximately 700 feet off the end of Gabriel Drive.

Noise, exterior lighting and landscaping are described in this application, and will be in compliance with the performance standards of the Augusta ordinances.

There are no new signs proposed as part of this project.

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**REVIEW CRITERIA Y.  
FINANCIAL AND TECHNICAL ABILITY**

The applicant does have adequate technical and financial ability to construct the development in compliance with the terms of the ordinance. See Review Criteria J.