Northern Wake Fire Department - Pump Chart

All Pressures and Flows are RULE OF THUMB (Rounded). All friction loss is listed in 100 ft. lengths.

Pump Pressure = NP+FL+/- EL = Preconnect

Nozzle Pressures: High Pressure Fog: 100 psi. - Low Pressue Fog 50 psi.

Smooth Bore: 50 psi. (Handlines) 80 psi. (Master Stream)

Hose Diameter	Nozzle Type	Pre-Connect Length	GPM	Pump Discharge Pressure	FL / 100 ft.
1 3/4"	FOG	200 ft.	95	130 psi	15 psi
1 3/4"	FOG	200 ft.	125	150 psi	25 psi
1 3/4"	FOG	200 ft.	150	170 psi	35 psi
1 3/4"	FOG	200 ft.	200	220 psi	60 psi
1 3/4" (KEY)	**15/16"**	**400 ft.**	**185**	**150 psi**	**25 psi**
1 3/4" (KEY)	**LP FOG**	**200 ft.**	**185**	**100 psi**	**25 psi**
1 3/4" (KEY)	**15/16" SB**	**200 ft.**	**185**	**100 psi**	**25 psi**
2" w/ 2.5 Coupling	**1 1/8" SB**	**300 ft.**	**265**	**140 psi**	**30 psi**

Cross-Lays on Engine 21 and Engine 41

2 1/2"	FOG	250 ft.	150	115 psi	5 psi
2 1/2"	FOG	250 ft.	200	125 psi	10 psi
2 1/2"	FOG	250 ft.	250	140 psi	15 psi
2 1/2"	1"	250 ft.	200	75 psi	10 psi
2 1/2"	**1 1/8"**	**250 ft.**	**250**	**90 psi**	**15 psi**
2 1/2"	1 1/4"	250 ft.	325	100 psi	20 psi

Mercury Monitor - ADD 10 psi. for Appliance FL

3"	**FOG**	**300 ft.**	**500**	**170 psi**	**20 psi**
3"	1"	300 ft.	266	110 psi	6 psi
3"	1 1/8"	300 ft.	336	120 psi	9 psi
3"	1 1/4"	300 ft.	415	140 psi	16 psi

TFT Blitz Monitor - ADD 10 psi. for Appliance FL

3"	**FOG**	**300 ft.**	**500**	**170 psi**	**20 psi**
3"	1"	300 ft.	266	110 psi	6 psi
3"	1 1/4"	300 ft.	415	140 psi	16 psi
3"	1 1/2"	300 ft.	473	145 psi	18 psi

Dual 2 1/2" Inlet Apollo (Style 3421/3423) - Dual 3" supply used, 10 psi. Appliance FL

3"	1 3/8"	-	500	-	5 psi
3"	1 1/2"	-	600	-	7 psi
3"	1 3/4"	-	800	-	15 psi
3"	2"	-	1000	-	20 psi
3"	FOG	-	500	-	5 psi

5" Inlet TFT XFH-1ST Monitor - ADD 10 psi. for Appliance FL

5"	1 3/8"	-	500	-	2 psi
5"	1 1/2"	-	600	-	3 psi
5"	1 3/4"	-	800	-	5 psi
5"	2"	-	1000	-	8 psi
5"	FOG	-	500	-	2 psi

Supply Hose -- Rule of Thumb FL

Hose Size	GPM	FL / 100'
3"	150	2
3"	200	3
3"	250	5
3"	300	7
3"	333	10
3"	400	15
3"	500	20
3"	600	30
3"	800	50
3"	1,000	80

Hose Size	GPM	FL / 100'
5"	500	2
5"	1,000	8
5"	1,250	15
5"	1,500	20

Relay Operations: (50 psi + FL per 100' of Supply Hose to Attack Engine)

50 psi + Supply Hose FL based upon Attack Engine's GPM. Set for either 500 gpm or 1000 gpm.

1 3/4" Bumper Line (150ft) (FOG PDP= 90 psi)

Nozzle:	GPM	FL / 100'
FOG	185 GPM	25 psi

1" Hose (Forestry or Booster)

Nozzle:	GPM	FL / 100'
FOG	13	3
FOG	25	10
FOG	60	55

SPRINKLER SYSTEM SUPPORT: 150 psi.

STANDPIPE SYSTEM: 25 psi.

ELEVATION: Add or Subtract 5 psi per story (+/- 5 psi / 10 ft. of Elevation)

COURT-YARD LAY:

1ea. 1¾" – (150' 1¾" and 150' of 3") = 95 psi.
+ 3 psi. for each additional 100 ft. of 3" (185 GPM)

2ea. 1¾" – (2ea. 150' of 1¾" and 150' of 3") = 105 psi.
+ 11 psi. for each additional 100 ft. of 3" (370 GPM)

LADDER TRUCK OPERATION: NP + EL + 15 psi System Loss (500 GPM flow)

FOAM HANDLINES:

* 95 GPM w/ 200 psi at the Foam Eductor
* Maximum Hose Lay after the Foam Eductor is 200 ft.
* 95 GPM Nozzle must be used with the 95 GPM Eductor.

GPM Formula: ---------->

GPM Formula Order of Operations: FL=C(Q/100)^2x(L/100)

FL Formula: CQ^2L	
Size	**Coefficient**
1"	150
1.5"	24
1 3/4"	15.5
1.88 KEY	7.3
2" Key	4.13
2 1/2"	2
3"	0.8
5"	0.08