South Carolina 1 CROP

A Summary of CROP Landscape Analyses Results

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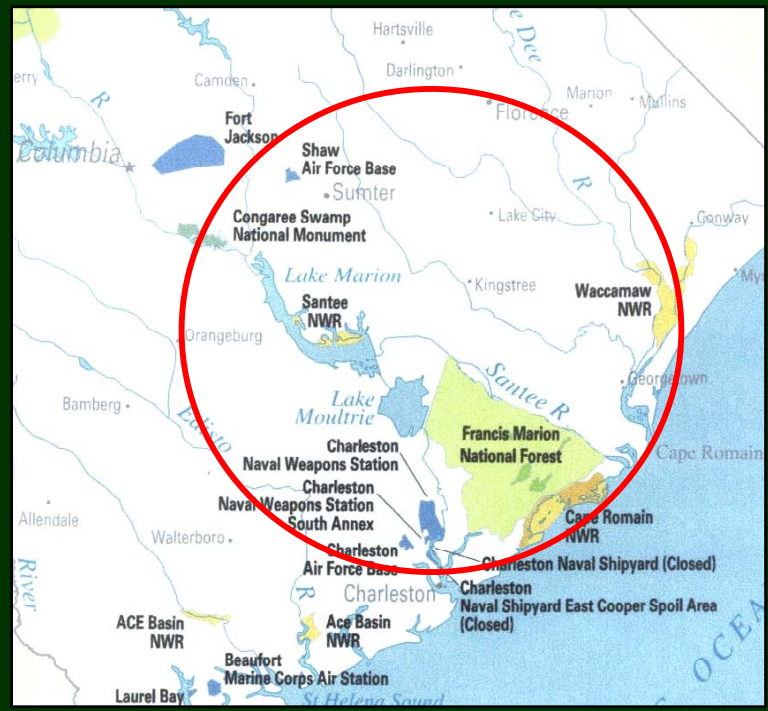
South Carolina 1 CROP:

Center Point: Foreston

50-mi. radius



- **1 National Forest – Francis Marion (no ranger districts)**
- **SC Forestry Commission**
- **Shaw Air Force Base**

What was asked for (5-yr. period):

- ***Volume:*** **(by mmbf; green/dry tons; ccf) w/conversions**
- ***Diameter sizes:*** **<4” >4”-7” >7”-9” >9”-12” >12”**
- ***Species:*** **(9 species evaluated for resource flow)**
- ***Harvest “type”:*** **timber sales, PCT, biomass**
- ***Location*** **of resource offering**
- ***NEPA phase*** **for each resource offering**
- ***Road accessibility*** **for each resource offering**

So, let's take a look at the final results . . .

Overall:

Year	Total Biomass (433,620.65 gT)	% of 5-yr volume
2006	103,293.21	24%
2007	104,143.17	24%
2008	77,848.23	18%
2009	74,941.17	17%
2010	73,394.85	17%

Total Small Log (56.22 mmbf)	% of 5-yr volume
10.202	18%
10.46	19%
11.775	21%
11.765	21%
12.019	21%

Total Large Log (38.083 mmbf)	% of 5-yr volume
5.403	14%
5.519	15%
8.914	23%
9.081	24%
9.166	24%

Biomass = 43%
(up to 7” dbh)

Small Logs = 34%
(>7” – 12” dbh)

Large Logs = 23%
(>12” dbh)

Who's providing what?

Agency	5-yr total *Biomass (gT)*	5-yr total *Small Log (mmbf)*	5-yr total *Large Log (mmbf)*	% of 5-yr total
Marion Francis NF	414,600	41.9	13.8	75%
SC Forestry Commission	15,466	13.011	24.015	24%
Shaw AFB	3,554	1.311	.268	1%

18 Counties: **All either do not own forest land or plan no removal during the next 5 years.**

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By Species		5-yr total (Biomass = gT)	5-yr total Small log (mmbf)	5-yr total Large log (mmbf)
Loblolly pine	(80% of 5-yr. total)	423,151	45.079	17.669
Slash pine	(5% of 5-yr. total)	8,976	3.337	3.901
Gum species	(5% of 5-yr. total)	0	2.385	6.053
Other hardwoods	(3% of 5-yr. total)	0	1.919	2.859
Red maple	(3% of 5-yr. total)	0	1.255	3.186
Oak species	(2% of 5-yr. total)	0	.878	2.23
Bald cypress	(2% of 5-yr. total)	0	.815	2.07
Longleaf pine	(1% of 5-yr. Total)	1,422	.524	.107
Scrub oak	(<1% of 5-yr. Total)	71.04	.026	.0054

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Not as good a picture for small log processing as almost 47% of volume will be 4”-7” material, and total annual volume of ~11 mmbf is low for investment in stand alone mill. (May be suited for adding small log line to existing mill).

(% of total volume)	4”-7”	>7”-9”	>9”-12”	<4”
Loblolly Pine	35%	19%	15%	17%
Slash Pine	17%	18%	20%	0%
Gum Species	0%	14%	14%	0%
Other Hardwoods	0%	20%	20%	0%
Red Maple	0%	14%	14%	0%
Oak Species	0%	14%	14%	0%
Bald Cypress	0%	14%	14%	0%
Longleaf Pine	27%	40%	21%	0%
Scrub Oak	27%	40%	21%	0%

Resource Offering Maps (ROMS):

Here's what you get ***for each species*** . . .

- ✓ ***Who*** will supply?
- ✓ ***When*** will supply be offered?
- ✓ ***How much*** will be offered?
- ✓ ***What diameter size*** will it be offered in?
- ✓ Will supply be consistent and ***levelized over time*** to invite purchase and investment?

For each species:

- ✓ ***Locator map*** **per specific supplier**
- ✓ ***Summary sheet***
- ✓ ***Detailed supply breakouts*** **by volume, diameter, and year per supplier**

Let's look at Loblolly Pine as an example . . .

South Carolina 1 CROP

South Carolina 1: ***<u>Loblolly Pine</u>*** **CROP offering/removal '06 – '10**
(gT = 423,150 / S = 45.08 mmbf / L = 17.669 mmbf)

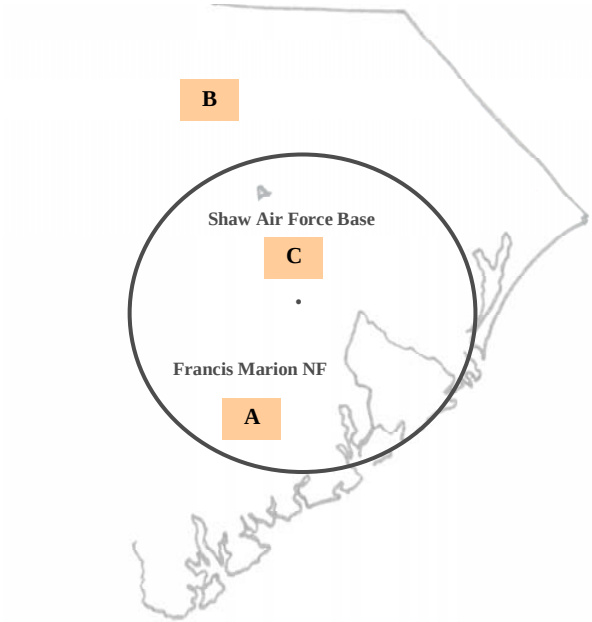
ROM # LPP 1.1

LPP = loblolly pine

<u>Francis Marion NF</u>:
A ***Francis Marion NF***

<u>South Carolina Commission</u>:
B ***SC Forestry Commission***

<u>Shaw AFB</u>:
C ***Shaw AFB***



Locator map

Summary Sheet

South Carolina 1 CROP

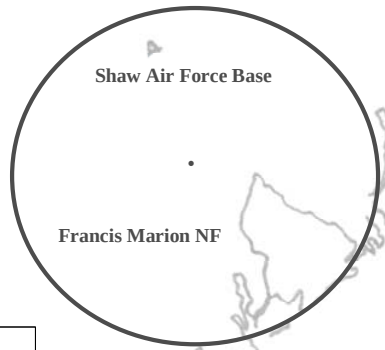
South Carolina 1: Loblolly Pine CROP offering/removal '06 – '10
(gT = 423,150 / S = 45.08 mmbf / L = 17.669 mmbf)

ROM # LLP 1

gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)

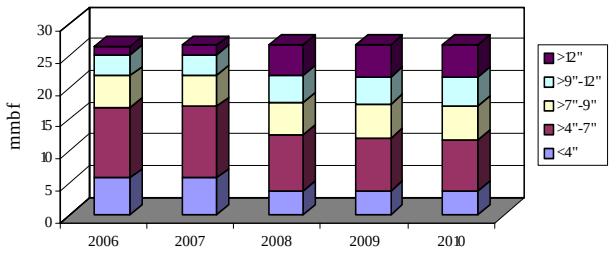
Francis Marion NF: 94%
(gT = 414,600 / S = 41.9 / L = 13.8)

SC Forestry Commission: 6%
(gT = 7,733 / S = 2.88 / L = 3.81)



Shaw AFB: <1%
(gT = 817.6 / S = .302 / L = .062)

South Carolina 1 - All Agencies: Loblolly Pine
(5-yr total = 133.274 mmbf)
40.525 mmbf is <7" = 423,150 gT of biomass
45.08 mmbf is >7"-12" = small logs
17.669 mmbf is >12" = large logs



	gT	mmbf	
	Biomass	Small Log	Large Log
2006	101746.6071	8.175625	1.3615
2007	101942.0871	8.235045	1.38822
2008	75104.26714	9.384455	4.86403
2009	73049.62714	9.536155	4.97948
2010	71308.00714	9.748625	5.0761
Totals	423150.5957	45.079905	17.66933
%	53%	34%	13%
mmbf	70.52509929		

133.2743343

South Carolina 1: Loblolly Pine CROP offering/removal '06 – '10 (by agency)

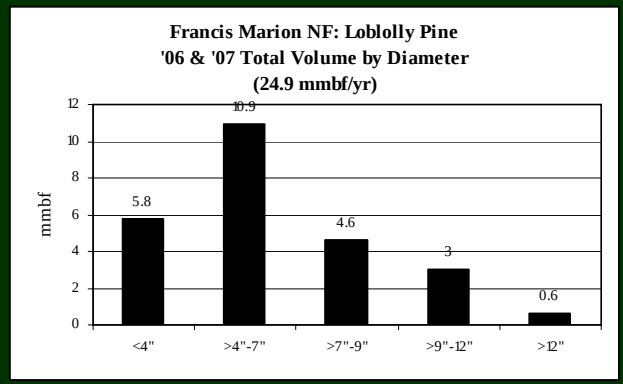
ROM # LPP 1.3

gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)

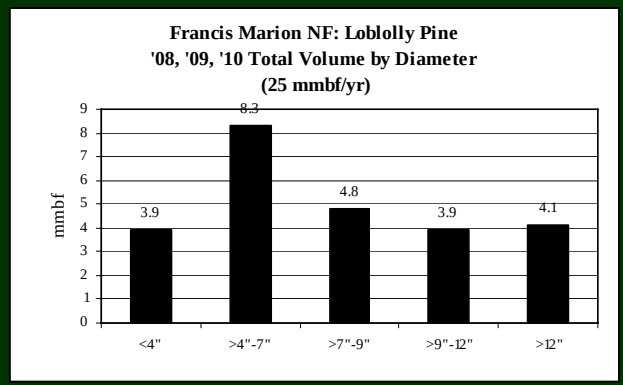
Detailed Breakout by Supplier

Francis Marion NF	*5-yr = 124.8 mmbf*
	• Fairly level supply from year to year
gT = 414,600	• <4" = 19% (23.3 mmbf) • >4"-7" = 37% (45.8 mmbf)
S = 41.9	• >7"-9" = 19% (23.9 mmbf) • >9"-12" = 14% (18 mmbf)
L = 13.8	• >12" = 11% (13.8 mmbf)

'06 & '07



'08 – '10



SO . . . with CROP, we're able to look at:

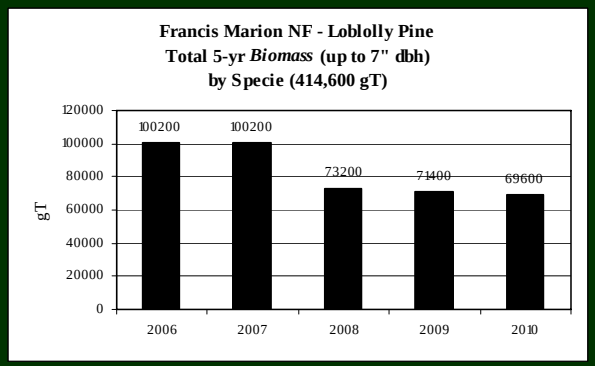
- ***performance between ranger districts in a single NF*** **(where they exist) to see where coordination of supply offering might be needed; and**

- ***performance between different public agencies*** **to identify needed coordination of supply**

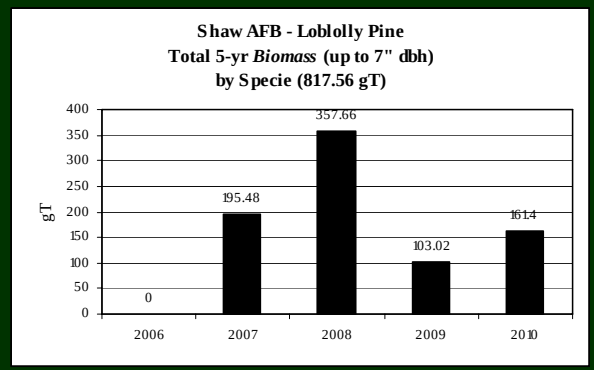
Let's take a look …

Loblolly Pine: All Agencies – *biomass offerings*

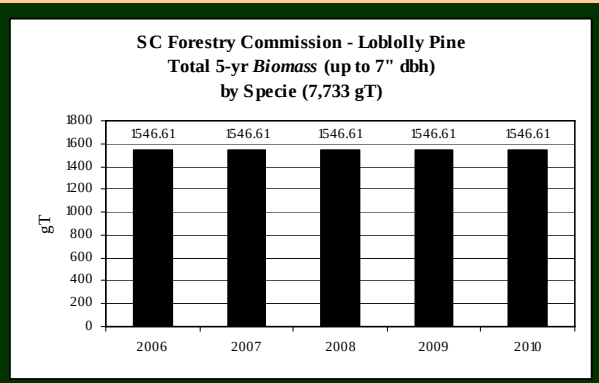
Francis Marion NF - 98%



Shaw AFB – <1%



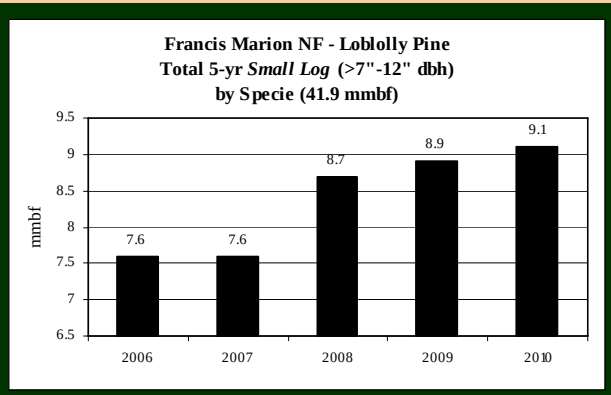
SC Forestry Commission – 2%



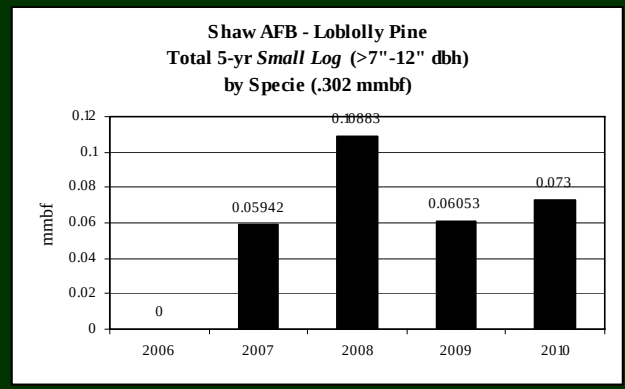
Declining volume from largest biomass supplier affecting 98% of entire biomass volume in the CROP landscape.

Loblolly Pine: All Agencies -- small log offerings

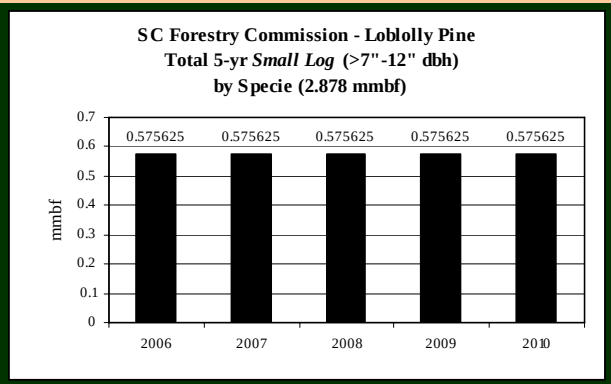
Francis Marion NF - 93%



Shaw AFB – <1%



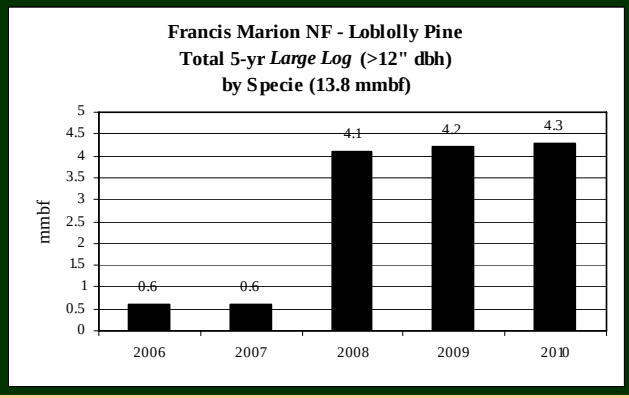
SC Forestry Commission – 6%



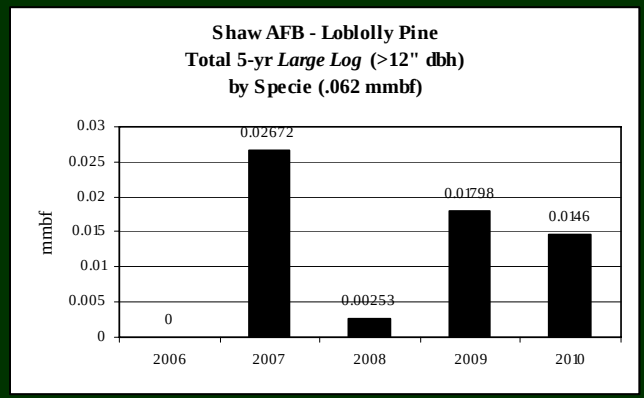
Unlevel, but growing volume from largest supplier affecting 93% of entire small log volume in CROP landscape.

Loblolly Pine: All Agencies – large log offerings

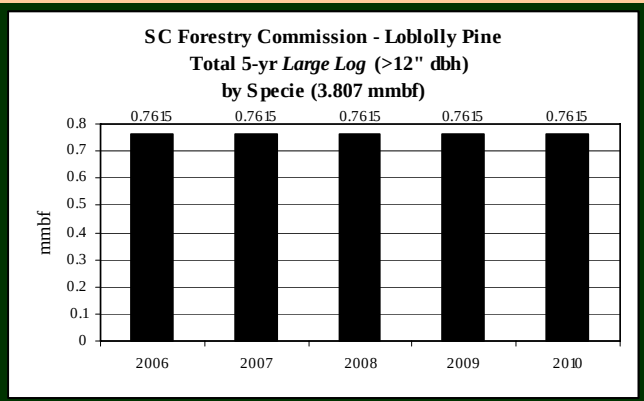
Francis Marion NF - 78%



Shaw AFB – <1%



SC Forestry Commission – 21%



Unlevel volume from largest supplier in ’06 & ’07, but supply becomes levelized in last 3 years.

Let's look at species Summary Sheets for the other top South Carolina 1 CROP species . . .

South Carolina 1 CROP

South Carolina 1: Slash Pine CROP offering/removal '06 – '10
(gT = 8,976 / S = 3.33 mmbf / L = 3.9 mmbf)

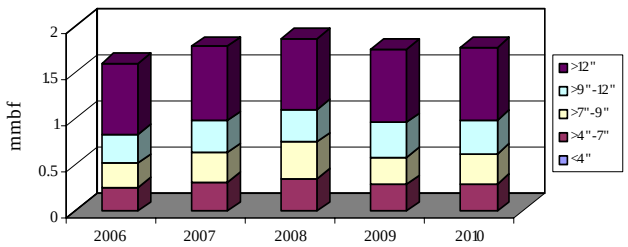
ROM # Slash P 1

gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)

Shaw AFB: 9%
(gT = 1,243.9 / S = .459 / L = .094)

SC Forestry Commission: 91%
(gT = 7,733 / S = 2.88 / L = 3.81)

South Carolina 1 - All Agencies: Slash Pine
(5-yr total = 8.735 mmbf)
1.496 mmbf is <7" = 8,977 gT of biomass
3.337 mmbf is >7"-12" = small logs
3.901 mmbf is >12" = large logs



	gT	mmbf	
	Biomass	Small Log	Large Log
2006	1546.607143	0.575625	0.7615
2007	1844.087143	0.666045	0.80216
2008	2090.867143	0.741235	0.76535
2009	1703.387143	0.667735	0.78886
2010	1792.007143	0.686625	0.7837
Totals	8976.955714	3.337265	3.90157
%	17%	38%	45%
mmbf	1.496159286		

8.734994286

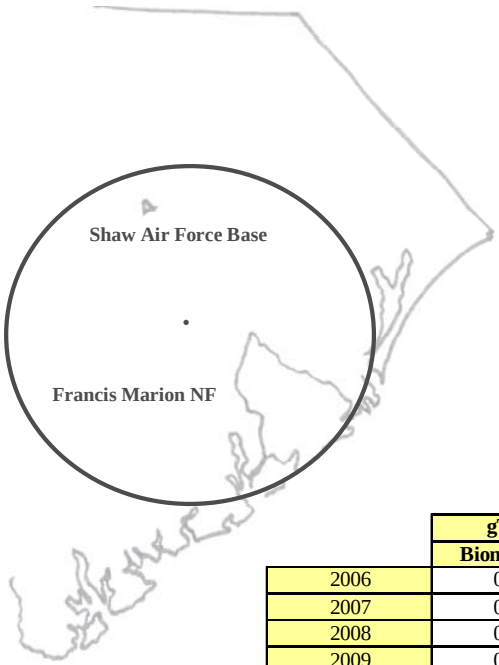
South Carolina 1 CROP

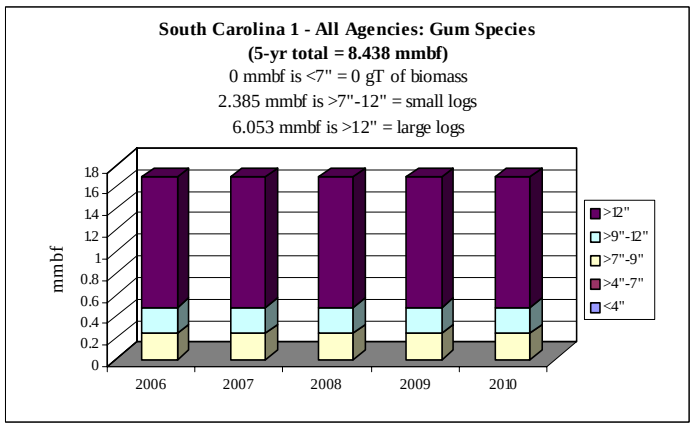
South Carolina 1: Gum Species CROP offering/removal '06 – '10
(gT = 0 / S = 2.385 mmbf / L = 6.053 mmbf)

ROM # GS 1

gT = green tons (up to 7" dbh)
S = small log mmbf (>7"-12" dbh)
L = large log mmbf (>12" dbh)

SC Forestry Commission: 100%
(gT = 0 / S = 2.385 / L = 6.053)





	gT	mmbf	
	Biomass	Small Log	Large Log
2006	0	0.477026667	1.21068
2007	0	0.477026667	1.21068
2008	0	0.477026667	1.21068
2009	0	0.477026667	1.21068
2010	0	0.477026667	1.21068
Totals	0	2.385133333	6.0534
%	0%	28%	72%
mmbf	0		
			8.438533333

How levelized will the supply be for all species?

Let's take a look . . .

Levelized supply for five years?

(R = relatively; NA = Not applicable)

	gT Biomass		Small Logs		Large Logs	
	yes	*no*	*yes*	*no*	*yes*	*no*
Loblolly Pine		✓	R			✓
Slash Pine		✓	R		✓	
Gum Species	NA		✓		✓	
Other Hardwoods	NA		✓		✓	
Red Maple	NA		✓		✓	
Oak Species	NA		✓		✓	
Bald Cypress	NA		✓		✓	
Longleaf Pine		✓	R			✓
Scrub Oak		✓	R			✓

Looking at the *Loblolly Pine* . . .

- ✓ There will be a *fluctuating, unlevel supply of green tonnage biomass* that will impact almost 98% of the total biomass volume in the CROP landscape over the next 5 years.

- ✓ There will be a *relatively levelized supply of small logs in this specie* that will impact ~80% of the total CROP small log supply. However, total CROP volume of ~11 mmbf/yr is too small to construct a new small log mill. May be sufficient to add small log line to existing mill.

- ✓ There will be an *unlevelized supply of large logs in this specie* but that will impact less than 50% of the total 5-yr CROP volume for all species. Even so, overall annual CROP volume for all species is only ~ 4.5 mmbf: too small to consider new investment in the region based on large log processing.

Here's how it looks on an agency-by-agency basis . . .

Levelized Annual Supply?

(Total 5-yr volume)

Not a good picture as unlevilized supply pattern in the Francis Marion NF drives overall performance.

Y = yes
N = no
R = relatively

		Loblolly Pine (133.27 mmbf; includes gT)		
		Biomass	***Small log***	***Large log***
Francis Marion NF	(94% of 5-yr vol.)	N	R	N
SC Forestry Commission	(6% of 5-yr vol.)	Y	Y	Y
Shaw AFB	(<1% of 5-yr vol.)	N	N	N

Overall . . . *better levelization* of resource offering in *loblolly pine* within the Francis Marion NF likely preferred to help:

- **Reduce investor risk**
- **Increase purchaser confidence**
- **Achieve fuel load reduction goals**
- **Achieve forest restoration goals**

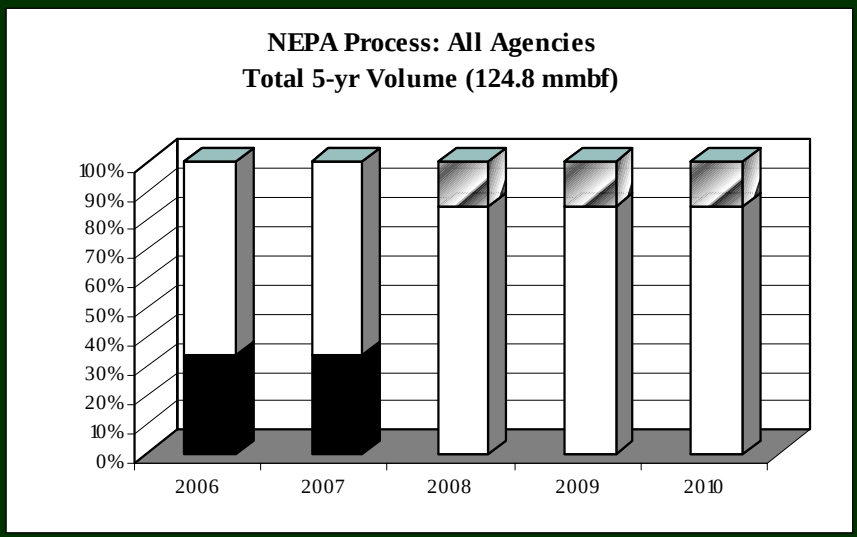
What about NEPA?
It's important to know!

. . . here's how it looks

NEPA Picture for CROP Landscape

***Only Francis Marion NF has NEPA lands*:**
100% of 5-yr total = (124.8 mmbf; includes gT as mmbf)

	mmbf	*% of total*
Approved	16.8	13%
In process	96.6	77%
Just started	11.4	9%
Not started	0	0%



90% of CROP resource offering either NEPA approved or in-process; but NEPA risk rating for the Francis Marion NF not low!

NEPA Risk Rating for Francis Marion NF

(medium rating)

1 Lowest	2 Low	3 Medium	4 *High*	5 *Highest*

<u>For low risk rating, 3 key desired attributes</u>:

- ✓ **Volume *approved* in first 2 years, followed by *in-process*.**
- ✓ **Consistency in supply; no dramatic gaps from year to year (eg: *approved/not started/in-process*).**
- ✓ **Overall – no major emphasis on *just started* or *not started*.**

What about road access to supply? ***No problem here . . .***

Agency	5-yr total volume	Affected by No Current Road Access
	mmbf	% of total volume with no road access
Francis Marion NF	124.8	0%
SC Forestry Commission	39.604	0%
Shaw AFB	2.173	0%
Total	166.577	0%

What about private lands?

Here's a snapshot:

- ✓ **Data received for 1986, 1993, & 2001**
- ✓ **Softwood species includes *loblolly*, *longleaf*, *shortleaf*, *ponderosa pine*, & *others***
- ✓ **Hardwood species includes *sweetgum*, *yellow poplar*, *red maple*, *water oak*, *water tupelo*, *laurel oak***
- ✓ **Average annual volume = ~936.77 mmbf with 77% softwoods & 23% hardwoods**
- ✓ **Annual volume appears fairly equally split between <12" & >12"**

Conclusions for South Carolina CROP (2) . . .

Not attractive to investors . . .

- ✓ Public forestlands to continue to offer traditional volume of supply in the CROP landscape during the next five years. Normally, volume from public lands is 20x less than that off private forestlands. Assuming average annual volume from private forestlands stays the same per year as in prior years within the CROP, volume from public lands will remain at 20x less than that off private lands.

- ✓ There is potential investment opportunity in new small log processing within existing infrastructure with ~11 mmbf/yr for small log supply coming on board on a levelized basis.

but . . .

- ✓ Biomass (7” and less) volume offering low compared to other CROP landscapes across the US, plus volume projected to decline during the next 5 years.

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