

## *Louisiana's Management Measures: Forestry*

### ***VB. LOUISIANA MANAGEMENT MEASURES FOR FORESTRY***

#### **Louisiana's Request for Exclusion of Forestry from Louisiana's Coastal Nonpoint Pollution Control Program.**

As spelled out in the NOAA/EPA Program Development and Approval Guidance (1993) a state may exclude some categories, subcategories or sources from the requirements of the 6217 coastal nonpoint program. An exclusion may occur under either of two scenarios: (1) if a nonpoint source category or subcategory is neither present nor reasonably anticipated in the 6217 management area, or (2) if a state can demonstrate that a category, subcategory or particular source of nonpoint pollution does not and is not reasonably expected to, individually or cumulatively, present **significant adverse** effects to living **coastal** resources or human health.

Comments on the proposed Coastal Nonpoint Program and threshold review meeting dated June 19, 1995 state that "based on the 305(b) data, limited land use data, harvest, and BMP compliance data, it appears to NOAA and EPA that forestry activities exist in Louisiana's coastal areas and may be significant." While forestry activities do indeed exist in Louisiana's coastal areas, it is the state's opinion that because this forest activity is limited and because forestry and silviculture is practiced using an increasingly effective voluntary BMP program, that it does not present **significant adverse** effects to living **coastal** resources or human health. This position is enforced by the failure of NOAA/EPA to provide a definitive answer in their threshold review comments addressing the presence and significance of forestry in Louisiana's coastal areas.

Louisiana respectively submits its request for an exclusion for the category of Forestry. As a basis for this request, the state's position is that scenario number two (2), above, is applicable to this category. Rationale for the exclusion request and a brief look at several studies supporting the state's contention are as follows:

1. Minimal forest presence as a **commercial** land base in the coastal zone/proposed 6217 management area.
2. Minimal forestry operations conducted in the coastal zone/proposed 6217 management area.
3. Documentation provided by the Louisiana Department of Environmental Quality's 305(b) water quality reports that indicate that forestry is **not a significant** source of nonpoint pollution **adversely** affecting living **coastal** resources or human health.
4. The existence of in-place, effective, voluntary programs through which Louisiana's forestry community and associated agencies have successfully sought and achieved **measured improvements** in the reduction of nonpoint source pollution attributed to silvicultural activities.
5. Repetitive use of on-the-site compliance checks and audits by state, private, and industry personnel to ensure implementation of best management practices in all phases of silvicultural activity.

Nationwide, considerable research has been accomplished on gauging the impacts of forestry activities on water quality. Generally, this research has found that while silvicultural activities can have some negative effects on surface and subsurface water quality, these effects tend to be

**moderate to slight in magnitude, localized, and of relatively short duration** compared to other nonpoint sources. This is primarily due to two factors. First, silvicultural activities, as presently practiced, tend to be much less intensive than other source categories. Secondly, silvicultural activities are spaced at much greater time intervals. For example, occasionally harvest and intensive site preparation operations have been shown to produce significant sediment yields; however, rapid revegetation reduces these rates to near preharvest levels within two or three years. Therefore, the greatest impacts on water quality from silviculture occur only at the **beginning or end** of a stand's rotation in even-aged management. Twenty to 40 or more years may pass between occurrences of these activities on a particular site. Intermediate operations, such as thinnings, cause much less disturbance and hence have little effect on water quality. Other studies have been conducted and support these premises (Farrish, 1994).

A literature review by Shephard (1993) on the effects of forest management on surface water quality in wetland forests in 5 southeastern states showed that **water quality criteria was rarely exceeded by silvicultural operations, and effects on water quality were transient**. Water quality parameters returned to undisturbed levels within a period ranging from months to several years. Gosselink et al. (1990) noted that timber harvesting in bottomland hardwood wetlands has **minimal impact** on long-term functions when conducted using best management practices.

A study by Farrish et al (1993) pertaining to soil conservation practices on clearcut forestlands in Louisiana showed that the rates of predicted soil loss from such lands were comparable to rates for clean-tilled agricultural land in the region. However, the period of accelerated erosion is shorter in duration on forestland and tapers off as vegetation reoccupies the site. The study indicated that soil erosion rates on harvested and site prepared forestlands in Louisiana are, **on the average, not severe**, and that proper implementation of BMPs on forestland will reduce soil loss and protect water quality in the state.

Research by Askew and Williams (1986) on water quality changes due to minor drainage and conversion from mixed hardwood forest to loblolly pine plantation in coastal South Carolina indicated that overall water quality was not significantly changed by the conversion process. In fact by taking certain precautions such as limiting the percentage of newly drained land as a percentage of the total being converted and directing drainage discharge away from critical aquatic habitats, water quality factors such as dissolved oxygen content and pH **may actually be improved**.

Boschung and O'Neil (1980) studied the effects of forest clearcutting on the warmwater macroinvertebrates and fishes in the Talladega National Forest, Clay County, Alabama. The study concluded that a small forest clearcut properly conducted according to appropriate guidelines in a southern Appalachian forest has **no discernable affects** on fishes and macroinvertebrates in a small permanent upland stream.

Watershed research study areas in the Ouachita mountains of Oklahoma and Arkansas were established in the late 1970's. These study areas were used to determine the rates of natural erosion and nutrient movement in the undisturbed forest and to measure the effects of forestry practices on soils, nutrients, and waters. Some conclusions reached in these studies indicated that: (1) Erosion from the harvest site, projected over the entire harvest cycle indicated little

difference in average annual soil loss between clearcut or selection harvesting and the undisturbed control watersheds. This was because soil loss associated with harvesting was **low and short-lived**. Two of the five factors in the Universal Soil Loss Equation (USLE) are slope steepness and length of slope. Louisiana's coastal area is typified by relatively flat topography. As an example, the forest tract in lower Livingston Parish that was used for demonstration purposes during the February threshold review exhibited a "slope" of only 0.08% or a drop of 1 foot per 1200 feet of distance. Such topography is typical of the coastal areas and serves to drastically reduce erosion effects by reducing runoff from these areas. (2) Forest road erosion occurred on "new" forest roads more readily than "established" roads but **downstream water quality could be protected from degradation** by road erosion by dispersing road ditch water onto the forest floor. Controlling this forest road erosion is a focus of BMPs in forestry. (3) Forest nutrient level increase occurred during the first few years after a harvest but then there follow **a rapid decline back** to pre-harvest levels. It should be noted that when the total amount of nutrients in stormflow rises after harvesting, water quality may not always be affected. This is because the higher stormflow after harvesting often dilutes the additional nutrients.

Specifically, in Louisiana, all or parts of 19 parishes make up the Louisiana coastal zone/proposed 6217 management area. The total size of this area is approximately 5.3 million acres. Of this acreage, only 16.3% or 862,700 acres are supportive of some type of forest cover. This includes cypress forest (328,250 acres or 38%), bottomland forest (318,140 acres or 37%), and upland forest (215,800 acres or 25%).

Timber harvesting occurs most often in the bottomland and upland forest areas of the coastal zone. There is negligible harvest in the second growth cypress belts in this area. Generally cypress harvest is limited to isolated pockets of trees that are located on bottomland and occasionally upland timber tracts. Because timber harvest is confined mainly to these two areas this serves to reduce silvicultural activity in the coastal zone/proposed 6217 management area to an area of approximately 550,000 acres or about 10% of the coastal zone. The periodicity of the timber harvest cycle also serves to limit the acreage of timber harvested per year in the coastal area. This cycle is not a predetermined set period of time but hinges on the final product a company or a landowner wishes his forestland to produce. A landowner may use a longer rotation period because he opts for quality sawlogs as a final timber product. Shorter rotation periods may be desirable for pulpwood harvests or small pole harvests. In many cases a landowner may manage his forest not for a final timber product but rather for more intangible timber assests such as esthetics and wildlife habitat. In cases such as these, the forest can be subject to even longer rotations or the timber may not be harvested at all. With an average harvest rotation of 25 years used by industry for upland pine forest and a rotation of 50-60 years used for bottomland hardwood forests, the forestland that is subject to harvest, per year, in the coastal zone/proposed 6217 management area is reduced even further.

Table 1. is a breakdown by parish showing total land area, forested area, and average timber harvested from each parish for the years 1992 and 1993 in the coastal zone/proposed 6217 management area. Calcasieu, St. Martin, and Assumption Parishes have been omitted from the totals because only a small portion of each parish is included in the coastal zone and timber reports show that timber production in these areas is negligible (Attachment # 1).

**Table IVB-1.**

Parish	Total Acres (1000 acres)	Forested Acres	Percent Forested	Sawtimber Cut (Mbf)	Pulpwood Cut (cords)
Cameron	906.8	0	0	0	0
Iberia	377.0	115.4	31	49.3	5.0
Jefferson*	222.7	0	0	5.3	34.1
Lafourche	730.0	114.1	16	56.2	2859.4
Livingston*	169.2	130.9	77	13,126.7	78,773.1
Orleans*	127.4	0	0	0	7.0
Plaquemines*	662.4	0	0	16.3	24.9
St. Bernard*	311.0	0	0	0	0
St. Charles*	183.2	53.5	29	280.8	23.5
St. James*	158.8	79.1	50	0	1029.9
St. John*	136.3	76.9	56	8.3	58.3
St. Mary	392.1	124.4	32	6.2	0
St. Tammany*	83.9	54.2	65	5,243.4	10,858.7
Tangipahoa*	75.2	46.1	61	5,468.6	15,591.1
Terrebonne	875.1	71.3	8	20.0	23.6
Vermilion	771.3	25.7	3	20.0	5.6
<b>Totals</b>	<b>6,182.4</b>	<b>891.6</b>	<b>14</b>	<b>24,301.1</b>	<b>109,294.2</b>
<b>Statewide</b>	<b>26,265.1</b>	<b>13,782.6</b>	<b>52</b>	<b>1,562,035.9</b>	<b>5,275,877.3</b>

Source: Forest Statistics for Louisiana Parishes--1991.

## Louisiana Timber and Pulpwood Production Reports--1992 & 1993.

\*: denotes only land acreage present in the 361 coastal zone.

The figures included in Table IVB-1. illustrate the insignificance of forestry/silviculture in the coastal zone area by pointing out that only **1.5%** of the sawtimber harvest and only **2.1%** of the pulpwood harvest in Louisiana is conducted in this area. Forest land located within the coastal zone boundary is about 6.2 percent of the state's total forest acreage. The forestland area within the coastal zone boundary is 16.3 percent of the total land area of the coastal zone.

Table 1. also indicates that **ten** parishes in the coastal zone/proposed 6217 management area had **little or no** timber production for the 1992-1993 harvest period. Also reinforcing this position, the 1991 U.S. Forest Survey (US Forest Service) omitted **five** coastal parishes from the survey because there is **little or no commercial forest land** located within their boundaries. These parishes are Cameron, Jefferson, Orleans, Plaquemines, and St. Bernard. (Vissage, 1991).

The preceding data indicates that silvicultural operations make up only a small percentage of the suspected causes of nonpoint source pollution affecting water quality in the coastal waters of the state. Analysis of information included in the Louisiana Department of Environmental Quality's (LDEQ) 305(b) and 319 reports adds support to this idea.

Louisiana has twelve water quality management basins delineated on the basis of the natural drainage patterns of the state's major river basins. Each water quality management basin is subdivided into stream subsegments in which the hydraulic and water quality characteristics are fairly constant. Parts of ten of these management basins are located in the coastal zone/proposed 6217 management area. Table 2. (attached) shows water quality impairment that may be attributed to silviculture, harvesting, and reforestation practices in the coastal zone portions of these management basins.

It must be stressed that the great majority of the waters possibly affected by forestry activities in these management basin areas still either **fully or partially support their designated uses**. Fully supporting indicates that all designated uses, i.e., primary contact recreation, secondary contact recreation, and fish and wildlife propagation, assigned to that water body are fully supported. Partially supporting indicates that one or more uses are partially supporting and the remaining uses are fully supported. Ninety-nine (99) percent of river waters possibly impaired by forestry activities still **fully or partially** support their designated activities. Ninety-six (96) percent of these river waters still offer **full** support to these activities. From the table it can be seen that of the management basin areas that are reported to have had some water quality impairment by silvicultural activities only a small portion (59 miles or 6.6%) is in the coastal zone/proposed 6217 management area.

LDEQ currently monitors twenty five (25) water parameters under its monthly ambient surface water quality network. Two of the leading nonpoint source pollutants for silviculture and forestry activities, nutrients and sediment, are not monitored. In fact, at the federal level, there are currently no nationally recommended criteria for either nutrients or sediment. To demonstrate how this may effect accurate identification of a cause of waterbody impairment, waterbody

segment 040501 (the Tickfaw River-from the Mississippi state line to LA Hwy 42), a 68 mile river segment with only approximately 10 miles of its assessed length in the coastal zone, is listed in the 1994 305 (b) report as presently not meeting its designated uses. Silviculture is listed as a cause of this nonpoint source impairment as it is included **with twelve (12) other possible sources of impairment**. Many of these sources exhibit the same identifying characteristics as silviculture, namely organic enrichment/low DO, nutrients, and suspended solids. Currently there is no accurate method by which each source listed can be correctly isolated and identified as to point of origin, linked to the cause of impairment, and quantified from random samples taken from the water column. This casts some doubt as to whether silviculture is really a major or even a minor contributing source to the Tickfaw River's water quality impairment.

It is interesting to note that water body segment 040502 (the Tickfaw River-from LA Hwy 42 to Lake Maurepas, or that segment directly below 040501) is listed in the report as being **fully** supportive of its designated uses. Dredging, land development, and waste water are again listed, among others, as sources of impairment but silviculture is not specifically mentioned while only a few miles upstream silviculture is named as a source of nonpoint pollution.

In another example, water quality segments 040701 and 040702 (the Tangipahoa River from the Mississippi state line to I-12 (not in the CZ) and from I-12 to Lake Pontchartrain (in CZ) list Forest Management as a contributing source of nonpoint pollution for these river segments. Again forest management is included with **fourteen (14) other possible sources of pollution**, many of which exhibit the same identifying characteristics as nonpoint pollution attributed to improper forest management.

However, results from water quality assessments in the 1990, 1992, and 1994 305(b) reports show the quality of surface waters adjacent to silvicultural activities to have improved over time. In 1990, of the 8,665 river miles assessed in the state, 1339 miles or 15.5% were found to have some type of impact from silvicultural activities. In 1992 silvicultural impairment of these waters was reported to be 1167 miles, a 13% reduction in impairment from the previous year's figure. In 1994 impairment attributed to silvicultural activities was stated to be 758 miles. This last figure reflects the elimination of the "threatened" classification as a degree of support category. Allowing for this procedural change, the 1994 figures indicate a 9.1% reduction in impairment from the 1992 figures and a 20.8% reduction from the 1990 figures. A graph illustrating this data is included on page 15 of the text. This is a significant reduction in nonpoint source pollution attributed to silviculture in a four year time period. A similar decreasing trend over time for silvicultural impairment holds true for lakes, reservoirs, estuaries, and bays.

Major contributors to this upgrading are Louisiana's successes in implementing its Section 319 programs. Measured improvements in forestry BMP implementation (p.10) were quite remarkable and contributed to the positive impact on overall state water quality improvement. EPA (1992) linked silviculture to approximately 3% of the nation's nonpoint source pollution problem. Based on this figure, even a large reduction in the water quality impairment attributed to silviculture would result in only a correspondingly small increase in overall surface water quality (p.15). The graph pictured illustrates that point. It shows that an increase of 70% in the BMP compliance rate resulted in only a 3.5% increase in overall water quality (1994). Recalling the same EPA source (EPA, 1992), it can be seen that the **non-silviculture nonpoint pollution**

**sources** have more significant overall nonpoint source roles and equivalent improvements in these categories may be expected to more greatly contribute to Louisiana's overall water quality **improvement** than a greater improvement in the silviculture source.

At first evaluation, the correlation between forestry BMP compliance and overall water quality improvement in Louisiana appears to be statistically significant. However, it must be mentioned that without additional data from all other categories it is difficult to describe the exact statistical response surface between forestry and Louisiana's overall water quality. It should be correct, however, to assume that the relatively large improvements in Forestry BMP compliance will not give correspondingly large improvements in water quality.

Education and outreach programs conducted by state and Federal agencies working together with forest industry have also contributed greatly to the increase in surface water quality in those waters adjacent to silvicultural activities. The Louisiana Department of Environmental Quality (LDEQ), together with the Louisiana Department of Agriculture and Forestry (LDAF), the Louisiana Cooperative Extension Service (LCES), the U.S. Forest Service, the Natural Resources Conservation Service (NRCS), and the Louisiana Forestry Association (LFA) have taken the lead in these efforts to date. In the past these efforts have included a program for conducting BMP training sessions statewide and also the production of two videos promoting the use of best management practices in forestry activities.

The Louisiana Office of Forestry (LOF) regularly conducts standardized forestry BMP compliance surveys. The past several years has seen a significant increase in the use of these best management practices in all phases of silviculture. The BMP compliance or implementation rate during forestry activities has increased from a rate of less than 10 % in a Soil Conservation Service (now Natural Resources Conservation Service) survey conducted in 1985 to a 51% implementation rate in a survey conducted by the Louisiana Office of Forestry in the fall of 1991. Noteworthy in this survey was the increase in adoption of BMPs on nearly 80% of the sites that included or were adjacent to a waterbody. The 1994 LOF survey results are even more favorable. The survey was expanded to include a total of 400 individual forestry operations (survey sites) statewide. The number of sites sampled per parish was based on the amount of sawtimber harvested in that parish as listed in the 1993 Timber and Pulpwood Production Report. The survey has been completed and shows an 80 % implementation rate for BMPs statewide. St Tammany, Livingston, and Tangipahoa, the three parishes in which the greatest forestry activity in the coastal zone/proposed 6217 management area occurs, show an average BMP implementation rate of 85%.

Unlike the LOF survey, the Louisiana forest community BMP compliance surveys and audits are not periodic occurrences. They are instead, conducted as a routine forest management practice. An informal survey conducted by the Louisiana Forestry Association on behalf of the Louisiana forestry CZARA sub-committee of eight companies involved in forestry related work indicated that all eight companies monitored BMP compliance during and after logging or silviculture activities on their clients or of company land. Nearly 2.5 million acres of managed forest land statewide were covered in this survey. In addition 15 BMP training sessions were conducted by these companies either for their employees or other independent logging or silvicultural contractors.

The forestry community has also trained more than three thousand foresters, landowners, educators, and others in the last four years. In addition, a new initiative has recently been undertaken by the Louisiana Forestry Association, a part of which includes:

- Developing and measuring environmental progress associated with forestry and silviculture harvesting activities across Louisiana. This will include both industry owned lands as well as non-industrial lands.
- A commitment from forest industry to fund and implement eighty-six days of training for loggers including fifty days of BMP training within the next twenty-four months. This will be in addition to established and ongoing training efforts.
- Training ninety facilitators from the forestry community to ensure a continuous and dependable supply of persons qualified and committed to providing quality training for the forestry community.
- Completing the scripting and production of a new training video for BMP training. This will be used with a new interactive facilitator's guide to provide continued accessibility to training across the state.
- A continued dedication funding quality research through the National Council (of the Paper Industry) for Air and Stream Improvement. See attached summaries of current and ongoing research evaluating the impacts of silvi-culture/forestry on the environment.

In conclusion, Louisiana is respectfully requesting an exclusion for forestry as a category of nonpoint source pollution in the state's coastal waters. A recent technical bulletin from the National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI), concludes that the quality of water draining from forested watersheds is normally the best in the nation, relative to other land uses, whether the forests are left untouched or intensively managed. Nationwide forestry is a relatively small contributor to the nation's overall nonpoint source problem in terms of both quantity and quality of discharge. (NCASI, 1994). Louisiana presently has in place effective, voluntary forestry programs through which this "best water quality" is being achieved and in the long run will be maintained. The Louisiana Department of Environment Quality's 319 and 305 (b) reports show a continuing improvement in water quality for the state's coastal waters adjacent to silvicultural activities while periodic, statewide best management practice compliance audits by the Louisiana Office of Forestry indicate a parallel increase in compliance with recommended BMPs. Education and outreach programs are being expanded and improved upon, and preliminary discussions are now being held for the addition of new BMPs to a revised recommended forestry best management practice manual for Louisiana.

Louisiana believes that it is justified in asking for an exclusion for Forestry as a **significant** category of nonpoint pollution in the state's coastal zone/proposed 6217 management area and requests the same.

Table 2.

Management Basin	Subsegment Code	Type & Size (miles)	Degree of Support	Present in Coastal Zone
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Atchafalaya	010101	R 135.0	Full	No
Barataria	None	None	-----	-----
Calcasieu	030101	R 6.0	Full	No
	030102	R 49.0	Full	No
	030104	R 25.0	Full	No
	030201	R 26.0	Full	No
	030503	R 16.0	Full	No
	030508	R 19.0	Full	No
	030701	R 37.0	Full	No
	030801	R 17.0	Partial	No
	030802	R 45.0	Full	No
	030803	R 53.0	Full	No
	030804	R 12.0	Full	No
Lake				
Tickfaw R-from	040501	R 68.0	Not	Approx 10 mi
Miss state line to	040502	R 26.0	Threatened	Yes
Hwy 42	040701	R 56.0	Partial	No
Tangipahoa R-	040702	R 23.0	Partial	Yes
from I-12 to Lake				
Pontchartrain				

Mermentau	050101	R 54.0	Partial	No
	050302	R 4.0	Full	No
Vermilion-	060102	L 6099 acre	Full	No
Teche	060201	R 50.0	Full	No
	060203	L 1626 acre	Not	No
Mississippi	None	None	-----	-----
Pearl River	090104	R 10.0	Full	No
	090401	R 24.0	Partial	No
	090501	R 53.0	Not	No
	090502	R 19.0	Full	No
	090503	R 13.0	Full	No
	090504	R 16.0	Full	No
	090506	R 19.0	Full	No
Sabine	110507	R 15.0	Threatened	No
Terrebonne	None	None	-----	-----

Source: Louisiana Department of Environmental Quality, Section 305 (b) report, 1994.

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