Comments and Response Matrix

Wind Event EA Scoping

NFGT

Commenter Name	Comment	Response
Texas Conservation Alliance (TCA)	1. The FS must segregate the treatment of genuine emergency situations from those that pose no imminent threat to public health and safety or to sensitive resources such as the red-cockaded woodpecker (RCW).	The NFT plans to incorporate all actions into one EA.
Texas Conservation Alliance (TCA)	2. This proposal cannot possibly meet the intent of NEPA to reduce and prevent environmental impacts as well as fully disclose environmental impacts that are inevitable.	The EA will disclose all the environmental impacts of the proposed action.
Texas Conservation Alliance (TCA)	3. TCA feels strongly that all areas of the Forest which are classified as "unsuitable" for timber management should not be subjected to expedited salvage logging. In fact, TCA opposes any logging within areas classified as "unsuitable" for timber management unless a verifiable emergency situation exists.	Under Alternative 2, treatments in areas classified as unsuitable for timber management could include streamside zones, major aquatic ecosystems, special management areas, recreation areas, and administrative sites, and SFA Experimental Forest. Under Alternative 3, areas that are classified as unsuitable for timber management would only be salvaged logged for safety purposes or to reduce fuel loads. Treatments could occur in administrative and recreation sites which are classified as unsuitable for timber production. Under Alternative 4, fuel reduction treatments would occur in administrative sites, recreation areas, along boundary lines, in RCW clusters, in MA2, MA6, and MA 1.
Texas Conservation Alliance (TCA)	4. TCA is concerned that under the expedited logging proposal, the FS would be unable to enforce mandated resource protection at a Forest wide level. TCA is very concerned that the expedited salvage logging that this EA would authorize will result in even greater number of resource protection infractions on the ground.	The EA will have project design criteria that are aimed at protecting these sensitive areas. Problems that occurred during past salvage logging were implementation problems that will be corrected. The NFT held SMZ training for timber markers, sale administrators, and dozer operators in November, 2012 to correct issues related to implementation.
Texas Conservation Alliance (TCA)	5. The FS should develop protocols for integrating the sensitive areas database into any logging event to avoid unnecessary resource damage.	Sensitive areas will be mapped before any work begins.
Texas Conservation Alliance (TCA)	6. Stream and other sensitive areas protection is often left up to the discretion of loggers rather than being clearly delineated with marking paint.	Stream delineation will be done by FS employees and not logging contractors. Stream delineation has never been left to discretion of logging contractors. NOTE: Our stream and sensitive area delineation is based on Forest Plan and specialist direction/guidance.
Texas Conservation Alliance (TCA)	7. TCA can only support treatments which can genuinely be demonstrated to reduce wildfire hazard. These efforts should focus on removing or bucking logs within 150' of FS boundaries so that dozers won't have to do that work when constructing emergency firelines along boundaries.	Along with the increased hazard from wildfire is the issue of smoke management from the fuels on the ground. This issue occurs in more places than adjacent to private lands.
Texas Conservation Alliance (TCA)	8. TCA requests that a revised proposal be drafted for public review that addresses only high	Alternative 3 was developed to address this concern.

	priority treatments of roads, administrative and recreational areas, boundary lines and within RCW managed areas.	
Texas Conservation Alliance (TCA)	9. The opening of roads that access interior forest areas for salvage logging often result in increases in illegal ORV use (TCA)	No new roads would be constructed for any treatments. Roads would be seeded, fertilized and waterbarred after use. A Transportation Analysis was not completed for this project. The decision key (Exhibit 3) was used which determined that a TAP was not needed.
Texas Conservation Alliance (TCA)	10. TCA has proposed several areas for Special Management Area (SMA) status. TCA asks that the FS refrain from any timber harvest within these areas.	The FS would work with TCA before any treatments are planned to consider areas of concern.
Sierra Club (SC)	11. The Sierra Club believes that an EIS needs to be prepared.	The preparation of an EA would determine whether there is a need to prepare an EIS.
Sierra Club (SC)	12. The Forest is more at risk of burning after salvage logging than before salvage logging. The FS wants to commercially log the NFGT so that it can make money.	Not all the treatments that are being proposed would make money. Some treatments like mulching and non-commercial removal would cost the NFT money to have completed. Timber sales, both green and salvage, are sold on the open market, ie., sealed bids, which in turn leads to stumpage prices based on actual market conditions. The FS sets the minimum and the market controls the actual price. It's not about making money, but a way to remove material which has a commercial value and not pay someone to remove in order to meet desired condition.
Sierra Club (SC)	13.The safety considerations mentioned and that are used to keep the public out of the forest are real but vastly overblown. The FS never shows any statistics which document how much as a problem this is. How many people have been killed or injured after each storm event or natural event that kills trees in each national forest in Texas each year for the last 20 years?	No one has been killed or injured after a wind event because precautions are taken to close the forest for this purpose. Some damage has occurred to Forest Service facilities and personal property.
Sierra Club (SC)	14. Nothing is stated in the public notice about how adaptive management (AM) will be implemented.	Adaptive management will be described in Chapter 1 of the EA.
Sierra Club (SC)	15. The five maps included with the July 18, 2012 public notice do not indicate how sensitive areas will be protected from the environmental impacts of salvage logging.	Maps will be produced that show sensitive areas and how they will be protected.
Sierra Club (SC)	16. The FS fails to establish coarse woody debris (CWD) standards.	Coarse woody debris is discussed in the EA. There are no standards or guidelines in the Forest Plan or even FS policy that states the amount of large CWD that should be left on every acre that is logged. All the literature provided by the Sierra Club was reviewed by the IDT. The literature did not provide a standard for Southeastern forests. Research conducted in upland loblolly pine forests in South Carolina showed that dependence on cwd by reptiles and amphibian is negligible where sufficient litter cover is available (Owens et al 2008).
Sierra Club (SC)	17. The proposed snag project design criteria of "A minimum of 2 snags per acre would be left within any areas treated within MA-1 and MA-2" is sadly deficient. Snag criteria are needed for all management areas.	The current Forest Plan only provides a snag requirement for MAs 1 and 2. The biologists on NFT did not feel like snags were limited on the NFT. Previous wind events and the drought have left many snags on the landscape.
Sierra Club (SC)	18. The FS should state what insect and disease infestations may result from windstorm events in Texas.	Areas may be subject to *Ips* beetles initially and possibly southern pine beetles. This is discussed on page 44 of the EA.
Sierra Club (SC)	19. The FS should provide the public with a chart that shows for	See Table 3-13 in the EA.

	the past 20 years each windstorm event and the number of acres initially estimated as affected, the final number of acres estimated affected and the number of acres actually logged.	
Sierra Club (SC)	20. The Sierra Club is concerned about scenic areas, research natural areas, black land prairies, seepage areas, ephemeral streams, other streamside zones, barren areas, Lone Star hiking Trail, other hiking trails.	The following Forest Plan standard and guideline applies to sensitive areas: 8a Research Natural Areas **MA-8a-111: The area is classified as unsuitable for timber production.** 8b Protected River and Stream Corridors **MA-8b-101: The area is classified as unsuitable for timber production.** *Unregulated timber harvest may be utilized to accomplish non-timber related goals as determined through site-specific environmental analysis.* 8c, 8d Scenic Areas, Natural Heritage Areas **MA-8c-123, MA-8d-23: Vegetation management activities can be used to restore or maintain the botanically significant character of the site.** *Specific activities include fire, vegetation removal, planting, or other cultural techniques that are determined to be appropriate through a site-specific environmental analysis.* 8e Special Bottomland Areas **MA-8e-81 The area is classified as unsuitable for timber production.** *Unregulated timber harvest may be utilized to accomplish non-timber related goals as determined through site-specific environmental analysis.* *No harvest shall occur within the primary zone unless for forest health, safety, or to provide habitat for threatened or endangered species.* *Harvest and silvicultural management may occur within the secondary zone to achieve the desired future condition.* 8f Cultural Heritage Areas **MA-8f-101: These areas are classified as unsuitable for timber production.** 9a Developed Recreation Sites **MA-9a-131: The area is classified as unsuitable for timber production.** **MA-9a-132: Vegetation removal shall be strictly limited to maintain to enhance the visual quality, recreational experience, reduce fire or safety hazard, or to maintain tall forest cover.** *Unregulated harvest may be utilized to accomplish these tasks.* 9b Minimally Developed Recreation Sites **MA-9b-131: The area is classified as unsuitable for timber production.** **MA-9b-132: Vegetation removal shall be strictly limited to maintain to enhance the visual quality, recreational experience, reduce fire or safety hazard, or to maintain tall forest cover.** *Unregulated harvest may be utilized to accomplish these tasks.*
Sierra Club (SC)	21. The FS should explain what the phrase "trees likely to survive" means. The definition of severe crown damage cannot be found in the scoping letter. The public must have this information so that it can review, comment on and understand all environmental impacts of the proposal.	All terms used in the EA will be defined. See the Glossary of Terms.
Sierra Club (SC)	22. The FS does not protect the secondary zone of streamside management zones, The secondary zone can include wetlands and other vegetation that is as important as the vegetation found in the primary	The secondary zone is designated in accordance with direction found in the Forest Plan. The secondary zone would be included with the primary zone when designating the boundary (ie., one boundary). **MA-4-101 The area is classified as unsuitable for timber production.** *Unregulated timber harvest may be utilized to accomplish non-timber*

	zone.	*related goals and desired future conditions of the Ecological Classification System (ECS) and as approved through site-specific environmental analysis.* *No harvest shall occur within the primary zone unless for forest health, safety, or to provide habitat for threatened or endangered species.* *Harvest and silvicultural management may occur within the secondary zone to achieve the desired future condition.*
Sierra Club (SC)	23. Removal could be commercial or non-commercial. The FS should explain what non-commercial removal means.	Material to be removed has no commercial value, ie. the Forest Service must pay a contractor to remove material to achieve the desired result.
Sierra Club (SC)	24. The Sierra Club is concerned that use of fuel loading estimates that the FS has derived from past hurricanes are biased because the trunks of trees, which are the least flammable part of the tree make up the greatest portion of fuel loading. Many large trunks of trees do not of themselves constitute a fire hazard. It is the smaller fuels (tree tops, branches, twigs, and needles) with the greater resin content that create the greatest part of the fire hazard.	The fuel Loading estimates that were referenced in the scoping letter came from the USDA Forest Fire Science lab research *Photo Series for Estimating Post-Hurricane Fuels in Forest Types of the Southeast United State*s described at http://www.fs.fed.us/pnw/fera/research/fuels/photo_series/index.shtml. Fuel loadings discussed in the EA by the fuels specialist are based on Anderson 1982. See the Fuels Assessment by the Forest Fire Ecologist.
Sierra Club (SC)	25. The FS shows its bias for commercial logging when it includes logging (removal) for all damage estimate categories (less than 30%, 30-60%, and greater than 60%.	The NFT developed Alternatives 3 and 4 in response to concerns about treating areas with less than 30% damage.
Sierra Club (SC)	26. The FS must state what the on-site biological survey, on-site damage evaluation and on-site cultural resource survey consists of.	After a wind event occurs, damage assessments would occur by field personnel who would categorize the damage into the following damage classes: less than 30%, 30-60% or greater than 60%. A biologist would conduct surveys on-site to assess damage to RCW clusters or TES plant sites. An archeologist would also survey areas to assess damage to any known archeological sites.
Sierra Club (SC)	27. It is important to emphasize that salvage logging has almost no claim to positive effects for ecological health. Its strongest claim is the economic that result in the sale of trees to make money for the FS and the federal government. This cannot necessarily be equated to benefitting the public interest.	Recovering the economic value of timber is a side benefit of restoring the ecosystem after a wind event.
Sierra Club (SC)	28. Salvage logging programs generate so much timber that they disrupt markets by flooding them with wood.	Economics is discussed in Chapter 3 of the EA.
Sierra Club (SC)	29. The percent that salvaged trees are of the annual wood harvested from the NFGT.	NOTE: Harvested volumes are dependent on weather, markets, contractor availability, etc. See Exhibit #1
Sierra Club (SC)	30. Salvage logging and the reasons for it must be made clear.	Salvage logging is a tool used by the FS for vegetation management. It can't be used in every situation, but it is a valuable tool where it can be used.
Sierra Club (SC)	31. Natural disturbances are critically important ecosystem processes and help create habitats and resources for biological diversity.	Coarse woody debris is discussed in Chapter 3 of the EA.
Sierra Club (SC)	32. Biological legacies in stands include large living and dead trees, large logs, thickets of	Coarse woody debris is discussed in Chapter 3 of the EA.

	understory vegetation, other vascular vegetation (in the form of seeds, rhizomes and rootstocks), well-developed top soils and duff layers, and residual population of animals.	
Sierra Club (SC)	33. Logging can inadvertently result in the introduction of invasive plant species.	NNIS are discussed in the EA. There are provisions in the timber sale contract aimed at reducing the spread of invasive species from logging equipment. Also, the Forest Botanist has an active program to monitor for invasive plant species.
Sierra Club (SC)	34. Transportation networks constructed for moving logs can provide access to previously remote regions, encouraging the expansion of human population and associated agricultural practices as well as increasing pressure on species that are hunted.	No new roads would be constructed for a wind event. Only existing or temporary roads would be used for treatments prescribed. There would only be minor reconstruction (spot surfacing) done to make the roads useable. Roads would be seeded and waterbarred after use to prevent unauthorized access.
Sierra Club (SC)	35. Soils are more vulnerable to impacts associated with salvage logging.	The impacts to soils are discussed in Chapter 3 of the EA.
Sierra Club (SC)	36. Salvage logging is generally not appropriate where the primary management objectives of an area are the maintenance of key ecological processes.	Salvage logging is a tool used by the FS for vegetation management. It can't be used in every situation, but it is a valuable tool where it can be used.
Sierra Club (SC)	37. Ensure adequate riparian buffers are in place to protect aquatic ecosystems and provide source areas for recruitment of large woody debris; otherwise salvage logging can lead to stream-bank collapse, significant in-stream erosion with negative consequence of sedimentation on aquatic ecosystems and increased water temperatures in aquatic ecosystems.	The secondary zone is designated in accordance with direction found in the Forest Plan. The secondary zone would be included with the primary zone when designating the boundary (ie., one boundary). **MA-4-101 The area is classified as unsuitable for timber production.** *Unregulated timber harvest may be utilized to accomplish non-timber related goals and desired future conditions of the Ecological Classification System (ECS) and as approved through site-specific environmental analysis.* *No harvest shall occur within the primary zone unless for forest health, safety, or to provide habitat for threatened or endangered species.* *Harvest and silvicultural management may occur within the secondary zone to achieve the desired future condition.*
Sierra Club (SC)	38. What portion of the naturally disturbed area will be subject to salvage.	As shown in Table 3-13, the acres salvaged after a wind event are less than the acres that were actually impacted.
Sierra Club (SC)	39. What is the type of logging system (ground-based tractor harvesting, cable harvesting, helicopter logging) and what are its impacts on soil compaction, soil disturbance, and other attributes of forest ecosystems.	Most logging operations in East Texas are done with ground-based tractor harvesting. Helicopter and cable logging are not used here.
Sierra Club (SC)	40. What are the protocols for post-logging site regeneration.	Regeneration of impacted stands will not be considered in this EA.
Sierra Club (SC)	41. It is better to anticipate extreme events and prepare contingency plans before they occur, rather than allow events to drive management responses. In some cases it will be appropriate to recognize that large-scale disturbances are inevitable and to adjust sustain-yield calculations accordingly.	The Adaptive Management Wind Event EA is an attempt to better plan for extreme events.
Sierra Club (SC)	42. Pre-disturbance planning should include (1) identifying the types and locations of areas that	(1) All of the action alternatives specify which areas would be treated after a wind event and which areas would not be treated.

	will not be salvage logged, (2) the level of legacy retention in areas where salvage logging will take place, and (3) protocols for other kinds of treatments following salvage operations.	(2) There are no specific requirements or standards in the Forest Plan for leaving coarse woody debris or biological legacies. (3) The EA discusses other treatment options. The Design Criteria specify how these actions are to be implemented.
Sierra Club (SC)	43. How can we ensure that the recovery of disturbed ecosystems in not impaired.	The impacts to natural resources will be discussed in the EA.
Sierra Club (SC)	44. NEPA requires site specific environmental analysis, assessment and evaluation. Taken to its ultimate conclusion there is little or no site specific environmental analysis in an Adaptive Management EA because it would "allow restoration work to begin soon after a wind event occurs".	This EA will lay out exactly where and when treatments would occur. So even though the NFT does not know exactly what areas would be impacted by a wind event, the treatments for each management area would already be prescribed. This will be discussed in the EA.
Sierra Club (SC)	45. Dead trees in a forest are not a waste but are ecological residuals that should be protected and not logged from public forests. The FS has provided no definition for the word "restoration" that is used as justification for the logging sought. The FS must state what it believes is restorative about logging after a wind disturbance.	Coarse woody debris is discussed in Chapter 3 of the EA. Restoration is the return of something to a former, original, normal, or unimpaired condition.
Sierra Club (SC)	46. Speeding up the process will make it harder for the public to participate.	The Forest is committed to allowing public involvement after an event but before any treatments occur.
Sierra Club (SC)	47. Past estimates of damage due to wind disturbance have been vastly overstated. There is a built-in bias by those who work on a forest to overestimate the damage in places they are familiar with.	Having been through three major wind events in the last 15 years (1998 blowdown, 2005 Hurricane Rita and 2008 Hurricane Ike) the NFGT employees are experienced at estimating damage. Forest Service employees were instructed in making damage assessments according to the guidelines in Exhibit #2.
Sierra Club (SC)	48. Large numbers of trees are wounded by logging activities during windstorm salvage logging. These wounds leave these trees vulnerable to future disease and insects.	There are contract provisions that prevent trees from being damaged by logging activities. Purchasers can be fined for excessive residual tree damage.
Sierra Club (SC)	49. The FS does not know where all sensitive areas are located on each forest. In past wind storm disturbances this has led to damage of these areas because they are not known, listed, and GPSed.	Sensitive areas from the Forest Plan are located in a GIS database. This information is available and will be discussed in the EA. The EA will have project design criteria that are aimed at protecting these sensitive areas. Problems that occurred during salvage logging were implementation problems that will be corrected.
Sierra Club (SC)	50. The FS has not stated whether it has done an Adaptive Management EA anywhere else in the national forests. The FS must find out and tell the public what the CEQ thinks about an Adaptive Management EA.	The NFT has done two previous Adaptive Management EA is the past. One was the Invasive species EA that was completed in 2008. The other EA was a Southern Pine Beetle EA that was completed in 1999. CEQ has encouraged Adaptive Management.
Sierra Club (SC)	51. The FS should require that the experiment station work with it to review literature and determine what benefits dead wood has in the NFGT .	A literature search has been conducted as part of the analysis process.
Sierra Club (SC)	52. Known archeological sites must be protected.	All known archeological sites will be protected. This is part of the design criteria of the EA.
Sierra Club (SC)	53. RCW clusters, recruitment stands, replacement stands and	All known RCW clusters, recruitment stands, replacement stands and active and inactive cavity trees in active and inactive clusters will be

	active and inactive cavity trees in active and inactive clusters must be protected from the impacts of salvage logging.	protected. This is part of the design criteria of the EA.
Sierra Club (SC)	54. Protect all Bald Eagle tree zones so that helicopter flights are not too close.	All Bald Eagle nests and the 660 foot buffer zones would be protected as part of the EA design criteria. At this time there are no plans to conduct helicopter logging.
Sierra Club (SC)	55. Salvage logging will impact future old growth areas.	Old Growth is discussed in the EA. Future old growth is limited to stands within Management Area (MA) 4. Impacts to MA 4 will be discussed in the EA.
Sierra Club (SC)	56. To protect public safety the Sierra Club agrees that imminent hazard trees that endanger the public must be removed from roads, damaged facilities, downed power lines, trails and similar situations.	Public Health and Safety is discussed in Chapter 3 of the EA.
Sierra Club (SC)	57. The FS should not remove trees along hiking trails. Just cut, leave and move the part of the tree that blocks the trail out of the way.	Comment noted.
Sierra Club (SC)	58. When the FS says that 75% of clusters received damage what does this mean.	Of the clusters on any particular Forest, 75% of the total number received some form of damage to cavity trees.
Sierra Club (SC)	59. The FS must not log hardwood trees that are killed or damaged by the windstorm.	There are no plans to salvage any hardwood trees. Hardwoods may be mulched, lopped and scattered or prescribed burned as part of a fuel reduction treatment. After Hurricanes Rita and Ike, hardwoods were removed in sensitive/specific places such as recreation areas, road corridors, administration sites, etc. Particularly where safety was an issue. Some hardwoods were also removed for personal use, generally firewood.
Sierra Club (SC)	60. Salvage logging creates areas with more briars and other vegetative growth which makes it harder to hike, creates a hotter climate for recreation and increases the habitat for ticks, chiggers, fire ants and other recreations pests.	There is no scientific evidence that salvage logging contributes to these conditions.
Sierra Club (SC)	61. The FS must state what procedure is used to determine light, moderate, or severe damage, what the definition is, and what criteria is used to determine these categories of damage.	Forest Service employees were instructed in making damage assessments according to the guidelines in Exhibit #2.
Sierra Club (SC)	62. The FS must not shorten the scoping period from 30 days to 15 days.	The initial scoping period was 30 days. The public will also have the opportunity to comment during the 30 day comment period.
Sierra Club (SC)	63. The FS must state where smoke complaint sites are and where “sensitive to smoke” areas are.	Smoke management issues are discussed in Section 3.4 of the EA.
Sierra Club (SC)	64. The mitigation for loss of large CWD requires that some amount of large CWD be left on each acre that is logged. The FS does not appear to want to do this or even answer the question of why this is or is not appropriate and why this is representative of ecosystem management.	There are no provisions in the Forest Plan or even FS policy that states the amount of large CWD that should be left on every acre that is logged. Coarse woody debris is discussed in Chapter 3 of the EA.
Sierra Club (SC)	65. The FS should state what is the risk, in percent, of extremely severe fires occurring on the NFGT.	The risk of wildfires would depend on the weather and fuel conditions on the Forest.

Sierra Club (SC)	66. The Sierra Club urges the FS to carefully implement the discussion and recommendation from "Salvage logging and its Ecological Consequences".	The FS will implement recommendations from this book where they are appropriate.
Stine Timber Management (STM).	67. Use of a helicopter logging option should be included as an exception to allow for the removal of pine sawtimber from Streamside Management Zones.	The EA does not discuss the use of helicopter logging for commercial removal.
Stine Timber Management (STM).	68. Snag counts within MA-4 that are adjacent to MA-1 and MA-2 areas need to be included in meeting the 2 snag/acre requirement.	Snag counts within MA-4 that lie adjacent to MA-1 and MA-2 are not counted toward the number of snags per acre standard required by the Forest Plan. Coarse woody debris is discussed in Chapter 3 of the EA.
Stine Timber Management (STM).	69. Topwood should not be an included product in the Timber Sale Contract. Leave topwood on-site. This contributes to residual coarse woody debris.	Topwood has not been included timber in our contracts. Removal was only required where there is a specific/sensitive area. This is the exception not the rule.
Stine Timber Management (STM).	70. SMZ boundaries need to be designated with paint.	SMZ boundaries were designated with paint in both Rita and Ike restoration projects. SMZ boundaries will be delineated for all future wind events.

Exhibit 1

Issue #12

Timber Sold (from "Fingertip Facts")

Year	Green	Salvage	Total
FY06	3,322 MBF	60,232 MBF	63,554 MBF
FY07	32,246 MBF	1,429 MBF	33,675 MBF
FY08	38,326 MBF	1,093 MBF	39,419 MBF
FY09	8,556 MBF	25,832 MBF	34,388 MBF
FY10	36,453 MBF	1,164 MBF	37,617 MBF
FY11	31,314 MBF	6,402 MBF	37,716 MBF
FY12	23,288 MBF	11,323 MBF	34,611 MBF

Issue #29

Timber Harvested (from "Fingertip Facts")

Year	Amount	Value
FY06	58,733 MBF	$6,102,450
FY07	10,517 MBF	$1,105,580
FY08	30,182 MBF	$2,685,840
FY09	55,756 MBF	$5,021,406
FY10	19,458 MBF	$2,380,913
FY11	33,315 MBF	$3,046,917
FY12	30,957 MBF	$2,152,997

Timber Value Harvested – Hurricanes Rita and Ike (weight scaled sales only)

Hurricane Rita: $2,571,466 (FY06)

Hurricane Ike: $1,923,673 (FY09)

NOTE: Info on timber sold and harvested table obtained from annual cut and sold reports.

Prepared by P. Dufour
01-14-13

Exhibit 2

Definitions for Damage Categories

Facilities/Infrastructure

Buildings

Severe: Major foundation or structural damage to the building has occurred

Moderate**:** Building envelope has been penetrated, resulting in water damage to the interior, including damage to power, lighting and telecom systems, HVAC systems and building finishes; but no major foundation or structural damage has occurred. Also includes cases where buildings have been flooded, but which have not been moved from the foundation.

Light: Building envelope has not been penetrated, but exterior claddings and/or appurtenances – roofing, siding, gutters, etc. have blown off.

Roads

Severe: Roadway is impassable to motor vehicles due to one or more of the following conditions: Loss of bridge or major culvert; bridge or major culvert in unsafe condition for vehicle use (eg. loss of fill around culvert); large deposits of cobble material in streambed blocking or threatening bridge or major culvert; landslide or debris slide into travelway; damaged or missing road signs; major tree blow down across roadway (1 tree per 25 feet of road length or less); or loss of road template.

Moderate: Damaged road sections are rough, and only passable by high clearance vehicles. Types of damage include significant loss of road surfacing or scoured roadbed; numerous culverts blocked or damaged; landslides or debris slides have occurred on road cut/fill sections; damaged or missing road signs; or moderate tree blow down across roadway (1 tree per 26 feet to 199 feet of road length).

Light: Roads are rough, but generally passable by motor vehicles. Types of damage include minor loss of road surfacing; scoured or filled ditches; culverts blocked or damaged; or occasional trees blown down across roadway (1 tree per 200 feet of road length or greater).

Trails

Severe: Throughout the trail, limbs and debris are significant. Large diameter debris is constant. Travel is impossible and the existing trail is difficult to follow. Blow down is stacked and intertwined requiring highly skilled sawyers. Portions of the tread are obliterated with total reconstruction or relocation necessary. Drainage and support structures are damaged or missing. Major bridges, boardwalks, etc. are significantly damaged and will require major reconstruction or complete replacement. Signage is missing or damaged.

Moderate: Throughout the trail, limbs and debris are constant and of medium to large diameter. Some highly skilled sawyers may be required. Travel is very difficult but the trail is still visible. The tread may have areas with washouts but the base is still present along the major length of the trail. Culverts and drainage structures may have minor damage and need re-setting. Small drainage structures (water bars, etc) may require total reconstruction. Major bridges,

boardwalks, etc. may have damage but the damage is fairly easy to repair. The bridge itself is sound.

Light: Throughout the trail, limbs and debris are intermittent. Travel is difficult but possible. Trees of small to medium diameter are down across the trail with some larger diameter trees. Chainsaws are necessary. Tread surface may have wash outs but is basically in tact. Culverts and drainage structures need cleaning out but are also basically intact. Damage to major structures is minor, however some minor structures may be damaged and need replacing. Signage is still in place with minimal damage.

Wilderness Trails receiving damage will either be categorized as Moderate or Severe depending on the extent of the damage.

Boundary Management

Severe: Extensive wind damage to over 40 percent of the marked property line. Visibility is limited or destroyed and access along the line has been severely blocked by fallen trees and debris. Location of the property line has been obliterated.

Moderate: Significant wind damage that affects 20-40 percent of the marked property line. Visibility has been hindered and access along portions of the property line has been blocked, but is re-locatable using recovered boundary evidence along the line.

Light: Minimal wind damage effecting 20 percent or less of the property line, loss of visibility is similar to the normal 10 year maintenance cycle.

Recreation Areas

Severe: More than 65% of the campsites, picnic sites, swimming beach, etc, sustained damage; site furnishings and site components, walkways, retaining walls are lost or damaged beyond repair.

Moderate: 25% to 65% of the campsites, picnic sites, swimming beach, etc, sustained damage; site furnishings are lost or damaged beyond repair.

Light: 10% to 25% of the campsites, picnic sites, swimming beach, etc, sustained damage; site furnishings and components remain and only need clean-up.

Interior roads, parking lots and camp spurs are covered by "Road Criteria"
Restrooms, entrance stations, shelters, etc, are covered by "Buildings Criteria"

Cultural Resources

Severe: More than 50% of the inventoried sites likely damaged due to uprooting of trees or flood. Priority Heritage Assets, National Historic landmarks, National Historic Trails, historic structures or known sacred sites are affected.

Moderate: 25% to 50% of the inventoried sites likely damaged due to uprooting of trees or flood. Priority Heritage Assets are affected.

Light: Less than 25% of the inventoried sites likely damaged due to uprooting of trees or flood

Vegetation

Severe: roughly 60% of volume or area has received some type of disturbance

20-50% of original total inventory volume is lost due to **mortality** of sound wood

Dead or alive, trees won't be able to retain sound wood.
In rare cases, this can be slightly higher.
This is the core number that is presented for volume damage loss for each zone.

33-75% of original total inventory volume has some type of **form damage**

There is some current and future volume loss in the merchantable bole of live trees, which is not enumerated within the above mortality value.
In rare cases, this can be slightly higher.
This is a secondary number that will boost the volume impacted by the storm by presenting this volume as an amount of live volume affected. This value for each zone can be 50-100% of the mortality volume, and can be described as associated damage.
Note that the sum of mortality and form damage cannot be greater than 100%.

50-99% **canopy disturbance**

Wind-stripped of leaves, twigs, and small limbs
Easily visible from aerial observation

Moderate: roughly 45% of volume or area has received some type of disturbance

5-20% volume mortality
25-67% form damage
25-75% canopy disturbance

Light: roughly 15% of volume or area has received some type of disturbance

1-5% volume mortality
1-25% form damage
1-33% canopy disturbance

Fire Management

Beyond the general **Vegetation Damage Categories** description, use the following impacts to help classify damage categories.

Severe: In this area, more than 25% to 40% of timber may be laid on the ground by the storm or all the tops broken. In areas where the pre-hurricane fuel model present was a FBPS fuel model 8 or 9, expect a fuel model 12 or 13. There is very little live fuel left in the fuel bed in the short term. A tremendous change in the fuel bed structure has taken place. 1hr, 10hr, 100hr, and 1000hr fuel loadings have all increased dramatically, especially the 1000hr. The forests could be considered "jack-strawed." The completely open canopy will drastically increase the amount of solar radiation to the fuel bed. This will cause dead fuels to rapidly dry out. This will also cause an increase in the mid flame wind speeds. The increase in available fuel will increase the source for spotting and therefore increase the spotting potential. Smaller dozers (450's) will be ineffective due to the increase in large diameter fuels on the ground. Large dozers (650's) combined with engines and aerial resources will be needed to suppress fires.

Moderate: has significant changes to the fuel models represented. In areas where a timber model was present (fuel model 8 and fuel model 9) expect more of a fuel model 11 (light slash) or fuel model 12 (moderate slash) to be represented after the storm. This area will see a wide diversity of fire behavior characteristics. The canopy of the forest is fragmented. The fuel bed depth for each fuel model has increased dramatically. Fuels are arranged more horizontally than vertically. The more open canopy will allow for an increase in solar radiation to reach the surface fuels, as well as, exposure to more winds. These effects will tend to exacerbate fire behavior beyond what would be accounted for by just adding more fuel. The resistance to control will also increase. The heavy fuel loading will make suppression more difficult. Control lines will need to be wider to have the same effect prior to the storms. Line construction rates will be slower and in some areas direct control lines will not be possible due to heavy loadings of larger material. Multiple kinds and types of resources will be needed for fire suppression. Aerial resources, combined with dozers and engines will be needed. Commitment of resources will be longer for each fire start due to longer mop up times, caused by the increase in heavy fuels on the ground.

Light: can be generally characterized by starting with the same loading for each fuel model in the FBPS. However, there will likely be some additional fuel loading in the 1hr, 10hr, and 100hr fuel classes. The increase in fine fuels may be large from leaf and needle deposition. Fuel bed depth will increase moderately in most timber stands. The canopy is slightly broken. Fire behavior and potential will increase in the short term in these areas. Expect slightly higher flame lengths and fire line intensities in the next few weeks as smaller diameter fuel classes dry out. Include consideration of that area characterized by scattered light damage to account for a transition from no damage areas, as well as the occurrence of fuel jackpots during prescribed burning or suppression operations.

Forest Health Protection

National Forest Lands*

Severe: Forest resource damage and pest proximity/activity in these areas are such that there is a high probability (>50%) of insects and/or diseases exploiting the disturbance and creating infestations.

Moderate: Forest resource damage and pest proximity/activity in these areas are such that there is a moderate probability (25 - 50%) of insects and/or diseases exploiting the disturbance and creating infestations.

Light: Forest resource damage and pest proximity/activity in these areas are such that there is a low probability (<25%) of insects and/or diseases exploiting the disturbance and creating infestations.

** note that FHP does not prevent or suppress invasive plants on NFS lands; BPR/Range is responsible for these activities on NFS lands*

State and Private Lands

Severe: Forest resource damage and pest proximity/activity in these areas are such that there is a high probability (>50%) of insects, diseases, and/or invasive plants exploiting the disturbance and creating infestations.

Moderate: Forest resource damage and pest proximity/activity in these areas are such that there is a moderate probability (25 - 50%) of insects, diseases, and/or invasive plants exploiting the disturbance and creating infestations.

Light: Forest resource damage and pest proximity/activity in these areas are such that there is a low probability (<25%) of insects, diseases, and/or invasive plants exploiting the disturbance and creating infestations.

Urban & Community Forestry

Severe: means more than 50% of the urban forest was damaged or destroyed.

Moderate: (moderate to heavy) means upwards of 25-50% of the urban forest was damaged or destroyed.

Light: less than 25% of the urban forest was damaged.

Exhibit 2 (Issue #61)

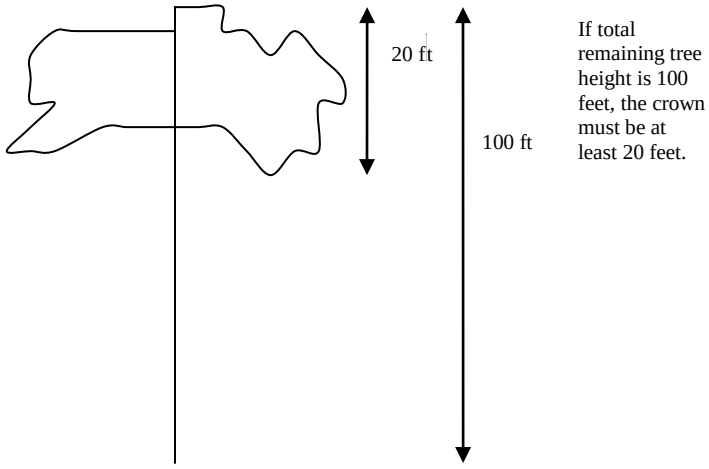
Ike Sale Preparation
Tree Designation and Removal Information
Hurricane Ike Restoration Project EA (Section 2.2)
10/20/08

Retain all Longleaf pine regardless of damage, unless the tree is horizontal to the ground or presents a safety hazard to the public.

The following instructions pertain to the removal and marking designation (TMP) of trees in the Ike Restoration Sales:

- Pine trees leaning at a 30 degree angle or greater. An attempt should be made to leave those trees likely to survive (TMP designation not required).
- Pine trees leaning greater than 45 degrees are designated for removal by contract provision (C2.53# *Designation by Damage Class, DxDAM*). If doubt exists on degree of lean, designate with TMP.
- Pine trees that are root sprung. If the tree is leaning less than 45 degrees, designated with TMP.
- Pine trees with severe crown damage or the crown is totally snapped off (see the definition of severe crown damage below). Designate with TMP if leaning less than 45 degrees.

Severe Crown Damage: When the top of a pine tree has broken off, the amount of crown left in relation to the remaining total tree height is less than 20% or there are less than three live branches left in the crown.



- Pine tree that have severe trunk damage i.e. major splits, cracks, breaks. Designate with TMP if leaning less than 45 degrees.

- Streamside Management Zones (SMZ) associated with Management Area 4 (MA4) - If a pine tree falls across the 50-foot edge of the zone, it will be cut off at the edge of the zone and only the portion of the tree outside of the zone may be removed regardless of where the tree originated. Leaners, snaps, root sprung, or dead trees that originate within the streamside zone would not be removed. Trees outside the zone and leaning into the zone should be removed.
- Within RCW clusters, the designation of trees leaning less than 45 degrees should be coordinated with District Wildlife Biologist.

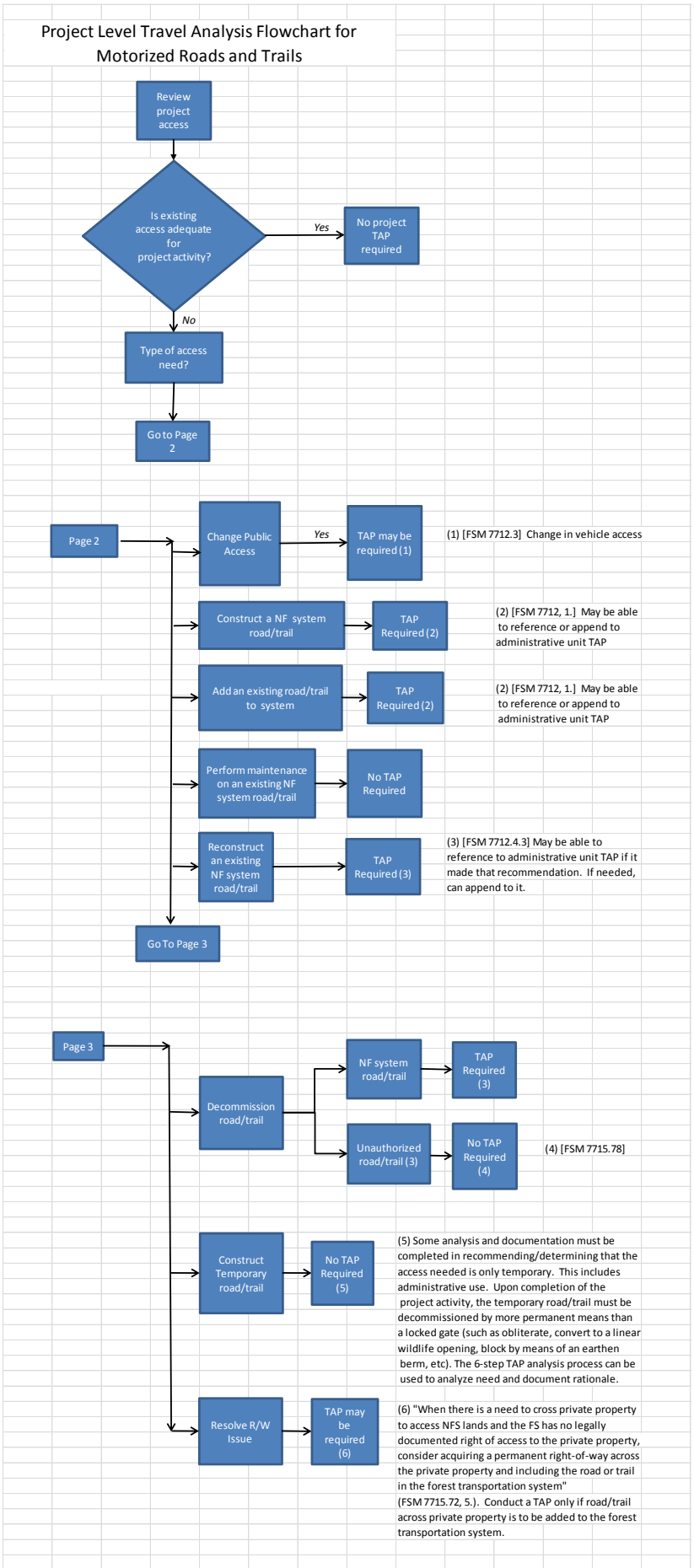


Exhibit 3. Travel Analysis Flowchart