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EDMOND R. MCCARTHY, III

November 19, 2015

†Licensed in Texas and
Tennessee

Barton Springs Edwards Aquifer Conservation District
Attn: John Dupnik, General Manager
1124 Regal Row
Austin, Texas 78748

*via e-mail &
Regular US Mail*

Re: Needmore Water LLC/Needmore Ranch, LLC Applications for temporary and regular permits for domestic and agricultural purposes pursuant to HB 3405

Dear Mr. Dupnik:

I am writing to follow-up on requests for information associated with the Needmore Ranch Application for Temporary and Regular Permits pursuant to House Bill 3405. Specifically, I am writing to provide you with information related to (i) the surface estate owner's right to apply the groundwater estate, and production of groundwater contemplated to be produced pursuant to the above referenced permit, to beneficial use for domestic and agricultural purposes, the TPWD Wildlife Management Plan in place at Needmore River Ranch in Hays County.

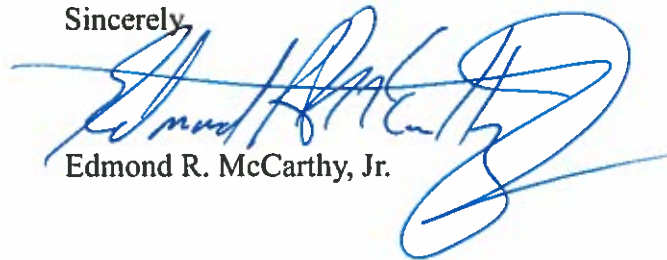
1. With respect to the surface estate owner's right to apply the groundwater estate, and production of groundwater contemplated to be produced pursuant to the above referenced permit, to beneficial use for domestic and agricultural purposes, Needmore Water LLC, which owns the groundwater estate and the right to produce and beneficially use the groundwater underlying the Needmore River Ranch, including the water sought to be permitted pursuant to the above referenced HB 3405 Applications, leased all of the groundwater rights and groundwater produced from beneath the 5000 acre Needmore River Ranch to the surface estate owner on August 1, 2013. That Lease has an initial term of ten (10) years. The Lease authorizes the surface estate owner to use all of the water for domestic and agriculture purposes on the Needmore River Ranch. The Lease prohibits industrial use, and/or any sales to third-parties. While the terms of the Lease are treated as confidential, the Parties to the Lease have executed a Memorandum of Lease reciting these key lease terms, which I am authorized to release to you. Accordingly, attached hereto as Appendix "A" is a copy of the executed Memorandum of Lease. After you and your Staff have

a chance to review the Memorandum of Lease, please let me know if there are any questions.

2. With respect to the TPWD Wildlife Management Plan in place at Needmore River Ranch in Hays County, by e-mail dated October 15, 2015, I provided your Staff with a copy of an e-mail from Kevin Schwausch, TPWD confirming that Needmore River Ranch had a Wildlife Management Plan in place since 8-1-11 (*See Appendix "B"*). In response to the RFI requesting a copy of the plan filed with TPWD, I am attaching a copy of the detailed Wildlife Management Plan as Appendix "C." After you and your Staff have a chance to review the Wildlife Management Plan, please let me know if there are any questions.

Best wishes.

Sincerely,

A handwritten signature in blue ink, appearing to read "Edmond R. McCarthy, Jr.", written over a horizontal line.

Edmond R. McCarthy, Jr.

ERM/tn

cc: Needmore Ranch LLC
Attn: Greg LaMantia
Needmore Water LLC
Attn: Greg LaMantia

Wet Rock Groundwater Services, LLC
Attn: Kaveh Khorzad

Appendix "A"

Memorandum of Lease related to the Needmore River Ranch Groundwater Estate

MEMORANDUM OF LEASE

STATE OF TEXAS §
 §
COUNTY OF HAYS §

This Memorandum of Lease is made and entered into by and between Needmore Water, LLC, a Texas limited liability company ("Lessor") and Needmore River Ranch, LLC, a Texas limited liability company ("Lessee"), and is as follows:

1. Pursuant to that certain Groundwater Lease with an effective date of August 1, 2013, executed by Lessor and Lessee (the "Lease"), Lessor has leased to Lessee and Lessee has leased from Lessor that certain real property which is described in Exhibit "A" attached hereto and incorporated herein by reference (the "Leased Premises"), for the purpose of exploring for, drilling for, producing, utilizing, saving, transporting, and treating and beneficially using all of the groundwater from beneath the surface of the land for purposes of domestic, agricultural and livestock watering uses, but not for any industrial or related commercial purpose, or for sale to any third-parties.

2. The initial term of the Lease commenced on the Effective Date, and continues for ten (10) years, unless extended (the "Term").

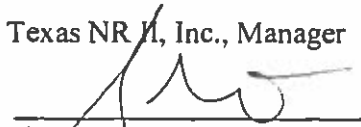
3. This Memorandum does not alter, amend or modify the terms of the Lease, but is executed solely for the purpose of giving notice of the existence of the Lease and the terms and conditions therein, which Lease is incorporated herein by reference for all purposes to the same extent and with the same effect as if set forth herein in full.

Executed by the undersigned effective as of August 1, 2013.

LESSOR:

Needmore Water, LLC,
a Texas limited liability company

By: Texas NR I, Inc., Manager

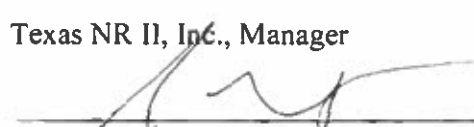
By: 

Greg LaMantia, Vice President

LESSEE:

Needmore River Ranch, LLC,
a Texas limited liability company

By: Texas NR II, Inc., Manager

By: 

Greg LaMantia, Vice President

STATE OF TEXAS §
COUNTY OF Texas §

This instrument was acknowledged before me by Greg LaMantia, acting in his capacity as Vice President of Texas NR II, Inc., Manager of Lessor, Needmore Water, LLC, a Texas limited liability company, on the 19 day of November, 2015, on behalf of said Company.



[Signature]
Notary Public, State of Texas

STATE OF TEXAS §
COUNTY OF Texas §

This instrument was acknowledged before me by Greg LaMantia, acting in his capacity as Vice President of Texas NR II, Inc., Manager of Lessee, Needmore River Ranch, LLC, a Texas limited liability company, on the 19 day of November, 2015, on behalf of said Company.



[Signature]
Notary Public, State of Texas
My Commission Expires _____

[SEAL]

After Recording Return To:

Texas NR II, Manager
Attn: Greg LaMantia, Vice President
3900 N. McColl Rd.
McAllen, Texas 78501

Appendix "B"

E-mail from TPWD confirming that Needmore River Ranch had a Wildlife Management Plan

Ed McCarthy

From: Ed McCarthy
Sent: Thursday, October 15, 2015 5:39 PM
To: 'Kendall Bell-Enders'; 'Kaveh Korzad'; 'Vanessa Escobar'
Cc: 'John Dupnik'; 'bdugat@bickerstaff.com'; 'greg.lamantia@lnfdist.com'
Subject: RE: Request for Information Relating to Temporary Permit Application (Needmore Water LLC)
Attachments: FW: TPWD Wildlife Management Plan; River Ranch _ count.xlsx; 2011 Handwritten Deer Spotlight Surveys.pdf

This time the reference attachments are included.

Ed

From: Ed McCarthy
Sent: Thursday, October 15, 2015 5:38 PM
To: 'Kendall Bell-Enders'; Kaveh Korzad; Vanessa Escobar
Cc: John Dupnik; bdugat@bickerstaff.com; greg.lamantia@lnfdist.com
Subject: RE: Request for Information Relating to Temporary Permit Application (Needmore Water LLC)

Kendall

Attached please find the following:

1. An e-mail dated today (10-15-15) from Kevin Schwausch, TPWD, confirming that there is a TPWD approved wildlife management plan in place at the Needmore River Ranch;
2. Copies of XL-spread sheets with annual deer counts at the Needmore Ranch (2011-2015); and
3. PDF file containing handwritten "Spotlight" surveys of deer identified at the Needmore Ranch from 2011.

Please let me know if you have any questions.

Best wishes.

Ed

From: Kendall Bell-Enders [<mailto:kbellenders@bseacd.org>]
Sent: Tuesday, October 13, 2015 2:12 PM
To: Ed McCarthy
Subject: RE: Request for Information Relating to Temporary Permit Application (Needmore Water LLC)

Hi Ed,

Sorry to keep bothering you, but would you be able to get me the management plan before our inspection tomorrow at 2:30 pm? If not, can you send it over by the end of the week?

Thanks!

Kendall Bell-Enders

Ed McCarthy

From: Greg Lamantia <greg.lamantia@Infdist.com>
Sent: Thursday, October 15, 2015 9:55 AM
To: Ed McCarthy; k.khorzad@wetrockgs.com
Subject: FW: TPWD Wildlife Management Plan

From: Kevin Schwausch [<mailto:Kevin.Schwausch@tpwd.texas.gov>]
Sent: Thursday, October 15, 2015 9:51 AM
To: Greg Lamantia
Subject: TPWD Wildlife Management Plan

Greg,

It was good to talk to you yesterday. I have a few answers concerning your questions about the Needmore River Ranch management plan. Yes you do have an active wildlife management plan for the Needmore River Ranch. The plan went into effect on 8/1/2011. This plan is required in order to receive Managed Land Deer Permits. The Needmore River Ranch has been in the MLD program since 2011 and is currently active. You asked about a plan number but our plans are not given numbers so I can't help there.

If you have any other questions or need anything from me please let me know.

Kevin Schwausch
TPWD – Technical Guidance Biologist
PO Box 1394
Burnet, TX 78611
512-944-0107

Appendix "C"

Copy of the detailed Wildlife Management Plan for Needmore River Ranch



**TEXAS PARKS AND WILDLIFE DEPARTMENT
WILDLIFE MANAGEMENT PLAN**

Tract Name:	<u>Needmore River Ranch</u>	County:	<u>Hays</u>
Owner:	<u>Needmore River Ranch, LTD</u>	Manager:	<u>Greg LaMantia</u>
Address:	<u></u>	Address:	<u>McAllen, TX 78501</u>
Phone:	<u></u>	Phone:	<u>956-605-0292</u>

Objective: To maintain a healthy and diverse wildlife habitat which will provide for a productive and healthy white-tailed deer population and other native wildlife species. White-tailed deer goals include the following: (1) Maintain the deer population within the estimated carrying capacity of the range which is approximately 10 acres per deer; (2) Achieve and maintain a sex ratio of 1-2 does per buck; (3) Maintain production of .75 fawns per doe.

Is property leased for hunting? Yes(X) No()

Consultation is with: Owner() Lessee() Manager(X)

Location of Property: approximately 5 miles southeast of Wimberley, TX.

Is acreage under high fence? Yes(X) No() : 2 High Fenced Pastures (3500 ac & 1600 ac) and 400 ac outside the high fence.

Acreage:	Cropland:	Non-native Pasture:
	Native Range/Brush:	Food Plots:

Total Acres: 5000

Current Habitat Description:

Live oak and Ashe juniper associated with Texas persimmon, agarita, post oak, blackjack oak, Texas oak, shin oak, cedar elm, hackberry, woollybucket bumelia, redbud, walnut, poison ivy, flameleaf sumac, fragrant mimosa, prickly pear, grape, and greenbriar. Common grasses in this vegetation type include Texas wintergrass, little bluestem, sideoats grama, curly mesquite, Texas grama, and purple three-awn. There is a wide variety of winter and summer forbs.

Past History of Land Use and Wildlife:

This ranch was purchased in 2011. Previous deer harvest and livestock use are unknown.

Livestock:

The ranch will be rested from grazing for approximately 1 year to allow the range to recover from overgrazing and a shortage of rainfall during the last year. This will allow an increased production of grasses and forbs, which will benefit both wildlife and livestock. The ranch will then be moderately stocked with stocker calves at approximately 25-30 acres per animal unit. Calves will be stocked and rotated through the 2 high fenced pastures and then removed annually.

Watering Facilities:

Ample wildlife water is provided by Sycamore Creek, Blanco River, 2 springs, 2 stock tanks, and 3 windmill/water troughs.

General Habitat Management Recommendations:

Fundamental requirements that must be considered when managing wildlife habitat include food, cover, water and the proper distribution of these elements. Although landmanagers may have specific goals, which are different for the agricultural operation and the wildlife management program, emphasis must be placed on habitat/range management for both.

Wildlife and habitat management practices must be directed at maintaining a productive and healthy ecosystem. The ecosystem consists of the plant and animal communities found in an area along with soil, air, water, and sunlight. All management activities should be aimed at conserving and improving the quantity and quality of soils, water, and vegetation.

Livestock Management Recommendations:

The class of livestock (cattle, sheep, and goats), the stocking rate, and the use of a deferred rotation system of grazing are very important factors to consider for improving the range or habitat for wildlife. The livestock program can be utilized to preserve and increase the quantity, quality and diversity of range plants utilized by deer and other wildlife species. Excessive or very high domestic animal numbers will reduce the carrying capacity for all wildlife species. Continuous grazing of livestock is detrimental to wildlife; it results in over use of preferred vegetation. Rotation systems provide for more uniform use of all range plants as well as rest periods for regrowth.

Because forbs (broadleafed herbaceous plants) compete with grasses for growing space, nutrients, and moisture, their presence in rangeland plant communities is usually considered to be undesirable by most range managers, but they are important for wildlife. A well-planned livestock grazing system allows for greater plant diversity, including a good variety of forbs.

A range that has not been grazed for a long period of time, and is otherwise not periodically disturbed, can stagnate by becoming dominated by relatively few species of plants and exhibit limited variety and diversity. Therefore, total long-term deferment from livestock grazing is not normally recommended for optimum range and wildlife habitat management. Several growing seasons of deferment may be needed to allow an abused range to recover, but grazing should again be implemented after sufficient recovery is made.

A well-planned cattle grazing system is compatible with wildlife habitat management. Since cattle primarily consume grass, they do not normally compete with most wildlife for the same food sources, unless forced to due to excessive stocking rates or continuous grazing pressure. Goats and sheep, however, compete directly with wildlife. Goats prefer browse (foliage of trees, shrubs, and vines), and sheep prefer forbs. The foliage, seeds, and fruit of forbs and woody plants are important

food sources for deer. Excessive goat browsing reduces the amount of low growing woody brush needed for cover and food for deer and other wildlife species and can limit the reproduction of woody plants.

Vegetation Management Recommendations:

All wildlife species have a certain requirement for cover. Cover provides a sense of security from disturbance and protection from inclement weather and predators. The amount and kind of cover vary with the species. A stand of herbaceous plants may provide adequate cover for some bird species and small mammals, while other species require woody cover (trees and shrubs) in lieu of or in addition to herbaceous cover. The best cover for a large species such as white-tailed deer is a pattern or mosaic of woody brush and trees interspersed within open areas. Clumps or strips of brush should be wide enough so that an observer cannot see through them from one side to the other during the winter months when deciduous species are bare of leaves. Cover strips should be as continuous as possible to provide travel lanes. A habitat that provides several different types and arrays of cover benefits more species of wildlife than a habitat that has limited types, amounts, and distribution of cover. Management of vegetation, whether deciduous post oak woodlands, Ashe juniper woodlands, mesquite woods, or open grasslands, requires long-term planning.

Any vegetation manipulation practice will have an impact on resident wildlife species, either good or bad, depending on the type of treatment used, the degree of use, and location. Before implementing vegetation control techniques, determine what the long-term effects will be for each wildlife species that occurs in the area and minimize the negative impacts. Consider the location and size of sensitive wildlife habitats that provide important nesting or roosting sites, feeding areas, desirable wildlife food producing plants, cover, water, and space needs. Wildlife can be displaced by disturbance from an area without adequate escape or security cover.

The amount and distribution of cover on adjacent lands need to be taken into consideration when assessing the cover needs of wide-ranging wildlife species such as deer and turkey. A small ranch would need a larger amount of security cover on a percentage basis than would a larger ranch where the vastness of the area provides security. The need for security cover is not as great for a deer herd that is enclosed by a high fence since the fence prevents deer from moving to areas with denser cover to avoid disturbances. However, having some cover available for an enclosed deer herd to retreat into when disturbed may keep the animals calmer and less stressed, and ultimately more productive.

With the exception of cedar, most of the trees, shrubs, and vines occurring on the ranch are used by deer as a summer or winter food source. Young cedar will need to be controlled. The long-term goal should be to maintain a very wide variety of browse plants (trees, shrubs, and vines). They are important food sources for white-tailed deer, and a source of cover for many species of wildlife.

Cedar has invaded large areas of the Cross Timbers and Edwards Plateau regions of central Texas and it dominates many range sites with shallow limestone soils. The suppression of fire and long-term overgrazing by livestock has contributed to the spread and invasion of this evergreen woody species. If not controlled or managed, cedar will eventually form a closed canopy that prevents sunlight from reaching the ground, limiting the growth of grasses, forbs, and other woody plants. The massive shallow root system of cedar allows it to successfully compete with more desirable plants for available

soil moisture. The foliage of cedar intercepts rainfall and prevents moisture from reaching the ground. Soil erosion is enhanced under cedar stands due to the limited amounts of herbaceous plants.

Cedar has minimal food value to both livestock and wildlife. Its foliage is not preferred by browsing species. Deer only utilize it to a small extent, typically during the late winter when the availability of other foods is low. The fruit (berries) that it sporadically produces are eaten by some bird species and occasionally by deer, but they are not normally important components of wildlife diets. The most common species of cedar in central Texas, ashe juniper or blueberry cedar, does not resprout from roots, as do most other woody species, if all above-ground green material is removed or killed.

Ashe juniper can be controlled with a variety of control methods including mechanical (dozing, chaining, grubbing, hydraulic shears), fire, herbicides, biological, and hand cutting. Selective, single-stem removal (hand cutting, grubbing, hydraulic shears) of cedar where it is growing in stands mixed with other desirable woody plants is preferred over broad-scale removal to prevent damage to the desirable species. When it is removed from these areas, care must be taken to avoid reducing the amount of cover in the stands below minimum levels needed for wildlife. Because of its evergreen growth form, cedar can add structural density to stands of deciduous woody plants during the winter months. Where it is growing in dense stands and broad-scale "mass removal" (dozing, chaining) is a viable option, care should be taken to minimize removing or damaging excessive amounts of preferred woody species.

Properly applied fire (prescribed burning) can be used to economically kill small Ashe juniper up to about 3 feet tall. Other control methods are necessary to initially remove larger cedars that are not affected by fire. Prescribed burns at no more than 8 to 10 year intervals can be used to maintain control of cedar seedlings that are continuously being established throughout central Texas from undigested seeds that are widely dispersed by birds and other animals.

The biological control of cedar with goats is not recommended because excessive browsing on other more preferred species of woody plants will precede utilization of the cedar, resulting in the degradation of wildlife habitat. Control of cedar with certain specific herbicides can be effective on low densities of cedars less than three feet tall.

When cedar control is used as a form of habitat management, the cut cedar can be placed in brushpiles to serve as supplemental wildlife shelter for birds and small animals. The brushpiles can also serve as protection for seedlings of desirable plants (especially trees, shrubs, and vines).

Prescribed burning is an effective, low cost habitat management tool that can be used to enhance plant diversity by stimulating the production of a variety of forb and grass species, and to maintain woody plants at the low heights most beneficial to wildlife. Livestock, as well as wildlife, can benefit from a properly planned and conducted prescribed burn. To properly use fire, a range manager should receive training from persons knowledgeable in its use. Personnel from the Natural Resource Conservation Service, the Texas Agricultural Extension Service, and the Texas Parks and Wildlife Department can advise and provide assistance to range managers about prescribed burning. There are legal constraints and liabilities in the use of fire; therefore, burning should be used with caution. Qualified personnel should be contacted before a land manager initiates a burn program.

Supplemental Feeding / Food Plots:

Managing the habitat for proper nutrition should be the primary management goal. To be most beneficial, supplemental feeding in particular needs to be integrated into an overall habitat/deer population management program that maintains the range in good condition. Feeding programs, which provide sufficient additional nutrients to be of value to deer, are expensive and take a long-term commitment.

Planting food plots can be an effective method to supplement well-managed native habitats, but its cost effectiveness needs to be taken into account, considering factors such as climate, soil type, slope and drainage, labor, material, and equipment costs, and fencing from domestic livestock. To provide optimum nutritional benefits to deer, the Texas Agricultural Extension Service recommends that 1) food plots comprise between 2% to 5% of the total land acreage, 2) one-half the plots be planted in cool season species (planted in early fall with forage available during winter stress periods) and one-half be planted in warm season species (planted in spring with forage available during the summer stress period), and 3) the plots be between 1/2 to 5 acres in size, long and narrow, and well distributed over the entire area adjacent to escape cover. Deer may prevent supplemental plantings from reaching optimum production due to overgrazing unless sufficiently large areas are planted so deer grazing pressure can be distributed. Food plots should be planted on the deepest soils available. They should also be fenced to control livestock grazing so that the maximum amount of production is available for wildlife.

If food plots are considered, cool season plantings are generally more successful than warm season plantings because rainfall is somewhat more dependable during the fall and winter and there is less competition from weeds. To provide a safeguard against complete failure, it is recommended that a mixture of species be planted rather than planting a single species. A recommended cool season mixture is a combination of at least two of the following cereal grains: wheat, oats, and rye. All are annuals and will have to be replanted annually. Adding a cool season legume (clovers, bean and pea species, vetches) to the seed mixture would increase the protein content. However, there are very few legumes that can be incorporated into supplemental plantings that are well adapted to this region. The Texas Agricultural Extension Service or Natural Resources Conservation Service (NRCS) could possibly recommend some legumes to experiment with.

As discussed above, warm season supplemental plantings are generally less successful than cool season plantings. Typically, during droughty conditions when native vegetation is in poor condition and supplemental plantings are most needed, there is not enough moisture for production of food plots. There is no one species that can be recommended for a warm season planting to supplement the diets of deer. Several annual small grains (milo, millet, etc.) and warm season legumes (cowpeas, clovers, etc.) can be experimented with to determine productivity and utilization by deer.

Seed mixtures used to reseed rangelands should include some species of native perennial forbs in addition to grasses. The mixture should include some of the following species that are utilized by wildlife, as well as being good livestock forages: bush sunflower, Engelmann daisy, maximillian sunflower, and Illinois bundleflower. All are native to central Texas ranges but are essentially absent in areas where livestock grazing has not been properly managed and/or deer populations are high. They

can also be used to create "permanent" food plots in lieu of or in addition to the annual food plots discussed above. Consult the NRCS for advice on the planting and management of these species.

Deer Management Recommendations:

Harvest is the key method to manage a deer population. It is utilized to maintain deer numbers within the carrying capacity or food supply produced by the range; also, harvest is used to obtain a desired adult sex ratio and to achieve a desired age structure. Maintaining a deer population level within the food supply is very important. This will prevent a die-off during a drought. Also, maintaining deer within the carrying capacity of the range will improve fawn production and survival, increase body size of deer harvested, improve antler development, and prevent habitat deterioration from overuse.

Rangeland that is overpopulated with deer or overstocked with domestic animals on a long-term basis will have a decline in the carrying capacity. This results from overuse of preferred vegetation which can kill individual plants and prevent seedlings from being established. A combination of deer population management and livestock management is essential to produce a productive range with a wide diversity and volume of vegetation.

By adjusting both the buck and doe kill, a desirable sex ratio can be attained. A wide sex ratio with a large number of female deer results in a limited number of bucks available for harvest. Also, the surplus of does can contribute to a rapid increase in deer numbers with the population exceeding the carrying capacity of the range. The recommended sex ratio for your ranch is 1-2 does per buck.

Food is the key to producing a productive and healthy white-tailed deer population. This involves the quantity, quality, and variety of food plants produced by the habitat or range. Food availability can be improved by the following methods: (1) Harvest does to control total number of deer; (2) Harvest of exotic big game is necessary since most exotics compete with white-tailed deer for browse and forbs; (3) Stock the range moderately with domestic animals and utilize some form of a deferred-rotation system of grazing. Cattle are less competitive with deer than either sheep or goats; (4) Removal of young, invading cedar will increase the production of grasses for cattle and the production and availability of browse plants and forbs preferred by deer and other wildlife for food and cover.

Understanding food habits of deer is fundamental to management. Studies have shown that deer prefer forbs (weeds) and browse, which includes leaves and twigs from trees or shrubs. Grasses make up a very small portion of a deer's diet and they are utilized only when tender and green. Deer cannot digest mature grasses. Forbs are generally high in protein and important to deer size, antler development, and fawn production. However, forbs are seasonal and available only when rainfall is adequate. Browse plants are staples in the diet of deer, and are much more drought resistant than forbs. Browse plants are utilized throughout the year and become very important during the winter or summer stress periods when forbs are absent. Also, many of the browse plants produce fruit, acorns, or beans, which are highly utilized by deer. This would include acorns produced by the various species of oaks, fruit produced by persimmon and grapevine, and mesquite beans.

Antler development, which includes the main beam length, antler spread, basal circumference, and points, is dependent upon the quantity of food available, the quality of food, age, and genetics. The quality and quantity of food can be increased by controlling the deer population, moderately stocking

cattle, and the use of a deferred rotation system of grazing. Also, the removal of young, invading cedar is important to increase food availability. Bucks have the potential of producing large antlers at 4 years of age. Maximum antler development is attained at 5 and 6 years of age. Consequently, limiting the harvest of bucks will permit more animals to reach their potential. Spike antlered bucks are the result of poor nutrition, genetics, or a combination of these two factors. Spikes are generally found in the yearling or 1 1/2 year old age class. However, yearling bucks will produce from 4 to 8 points with their first set of antlers if nutrition or food is abundant. Additionally, research has shown that spike antlered yearling bucks will remain inferior to forked antlered yearling bucks when these two groups reach maturity. Consequently, spike antlered bucks should be considered as part of the harvest.

Method(s) Used to Determine Population Density and Composition:

The spotlight deer survey technique will be utilized to estimate population density and level as well as determine the composition of the population. The survey should be conducted on an annual basis during the fall. Also, 3 to 4 replicate counts per survey route improve the census results.

Incidental daylight observations of deer should be used to improve herd composition estimates and for rating the quality of antlered deer. Daylight observations should be recorded by sex, age (adult or fawn), and antler quality (number of points, spread, etc.). Daylight observations can be made by slowly driving pasture roads during early morning and late evening hours and by sitting in blinds located near feeders and in other areas. A minimum of 100 daylight observations (may include replicate observations of the same deer during different observation periods) should be recorded during the census period. Simple math can be used to estimate herd composition (does per buck = total number of does recorded divided by total number of antlered bucks recorded; fawns per doe = fawns recorded divided by does recorded). Spending a lot of time observing deer (incidental observations) may be the best way to make population estimates in smaller areas.

All surveys should be conducted on an annual basis during the late summer and early fall (August 1-October 1), during the time of the year when bucks have identifiable antlers and fawns are old enough to be up and moving around yet still small enough to be recognized as fawns. Binoculars should always be used to aid in identifying deer.

Recommendations for Harvest:

Bucks: The harvest rate of bucks will be dependent on the objectives of the land manager. One of the concerns that the Texas Parks and Wildlife Department has about the deer populations in many areas of central Texas is the young age structure of the buck segment of the population. Typically, 50% of the annual buck harvest in many areas is composed of 1 1/2 year old bucks, an indication of heavy hunting pressure. If one of the deer management objectives is to produce bucks with larger antlers, they must be allowed to reach older ages, which means that the harvest of young, immature bucks should be restricted. Restricting hunters to mature bucks only (in addition to spikes) is a good management strategy. Deer body characteristics, in addition to antler characteristics, should be used to determine the relative age of bucks "on-the-hoof".

To produce mature quality bucks that are 4 years old or older the buck kill rate must be restricted to 20% or less of the estimated buck population. Spike antlered bucks should be considered as part of the harvest quota. This will permit the removal of poor quality bucks at an early age. Also, if spike

antlered bucks comprise a portion of the harvest quota, it will reduce hunting pressure on better quality bucks.

Does: The recommended doe kill will depend upon the deer density, the estimated carrying capacity, the observed sex ratio, and fawn production and survival.

Note: Harvest recommendations will be made annually after the fall deer survey.

Records Management:

Records should be kept to monitor the status of the deer herd and measure the success of the management program. As a minimum, record keeping should include:

- 1.) annual deer population data (census data).
- 2.) number of deer harvested annually.
- 3.) biological data from deer harvested, to include:
 - a.) field dressed weight.
 - b.) antler measurements: inside spread, number of points, main beam lengths, circumference of antler bases. The Boone and Crockett antler scoring system can be used to measure overall antler quality.
 - c.) age: the manager can age the deer at the time they are harvested or the lower jaws can be removed from deer and stored for later aging by a biologist until the manager is proficient at aging.
 - d.) presence or absence of lactation (milk production) of does (to supplement fawn production estimates).

Note: Weight and antler data from a deer, without knowing the age of the deer, is of minimum value.

Turkey Management Recommendations:

Although turkeys are non-migratory resident species, they have large home ranges that change with the season of the year. Turkeys tend to be widely dispersed during the spring and summer nesting/brood-rearing period. Nesting and brood-rearing habitat is similar to that required for quail, but on a larger scale: scattered thickets of low growing brush, patchy residual herbaceous vegetation, and a moderately grazed, diverse grass/forb plant community that produces seeds and insects.

After the breeding season, numerous smaller flocks that were widely dispersed during the summer tend to congregate into large winter flocks. The ranges of winter flocks are centered around riparian areas (the floodplain of large creeks and rivers) that have moderately dense stands of tall, full canopied trees. These winter flocks will disperse several miles from their riparian area roost sites on daily feeding forays. Turkeys are attracted to feeders and supplemental food plantings provided for deer and quail. The nearness of a ranch to a winter roost site, and the availability of a food source, would determine to what extent turkeys are present during the winter months.

Habitat management for the wild turkey concerns the availability of water, food, and cover. The distribution of these key components of the range is of major importance. Water must be distributed throughout the area. Drinking water should be readily accessible at windmills or stock tanks for adults as well as poults. Food availability of the native range can be increased by the following activities: (1) Moderately stock the range with domestic animals. (2) Utilize a deferred rotation system of grazing. (3) Control total deer numbers by harvesting does. (4) Prescribed burns can be

utilized to control regrowth cedar as well as increase production of forbs, grasses and fruit or mast producing browse plants. In summary, range management activities that increase the diversity of grasses, forbs, shrubs, trees, and vines improve the habitat for the wild turkey.

Preservation of roosting sites is a key factor to maintain a turkey population on a sustained basis. Turkeys also need escape cover to travel to and from roosting sites. Preferred species of trees utilized as roosting sites include pecan, cypress, sycamore, live oak, elm, hackberry, western soapberry, and large mesquite. Dense brush thickets or solid block clearing both furnish poor habitat for the turkey. Clearing programs that leave brush strips between cleared areas are advantageous. Avoid removing hardwood trees such as the various species of oaks, hackberry, elm, or large mesquite. If clearing is needed to improve the range, irregular shaped cleared strips that follow topography are best.

Feeding high protein pelleted feed from January through March will help increase winter survival. Supplemental feeding will also increase the reproductive potential of the hens.

With regard to harvest, approximately 20% of the estimated turkey population can be harvested annually. Adjustments in the harvest can be made on an annual basis. These adjustments will depend upon the nesting success and range conditions.

Other Comments:

Managing for plant diversity is essential. A diverse habitat site will have a good mixture of various species of grasses, forbs, and browse plants (trees, shrubs, and vines). Many of these plants will be at various stages of growth, which adds an additional dimension. The diversity of vegetation increases the availability of food and cover for deer and all wildlife species. A greater diversity of range plants results in more food being made available during different periods of the year. The volume and diversity of plants protects the soil from erosion. Also, the decomposition of vegetation helps restore needed minerals to the soil to sustain plant life. An abundance of vegetation improves the water cycle by trapping water from rains, thereby preventing excessive runoff, which leads to the erosion of soils, and flooding of streams.

The plant community can be managed for diversity through manipulation of the livestock operation and, in many instances, through deer population control. This must be considered before other land management techniques, such as the use of fire or mechanical means, can be successfully used to improve the range.

Individual Preparing Plan:

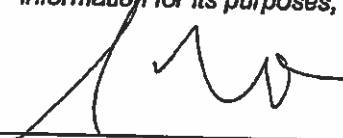


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Date: August 1, 2011

Landowner/Agent Affidavit

By my signature below, I certify that I am the landowner of the above described property or a specifically authorized agent for the landowner. Authorized agent is defined as any person with verbal or written authorization to make decisions on behalf of the landowner. I also certify that the above information is true and correct to the best of my knowledge. I authorize TPWD to use this information for its purposes, but not to release it to other parties or agencies without my approval.


Landowner/Agent Signature

Greg Lamm Auble
Printed Name

Date Signed