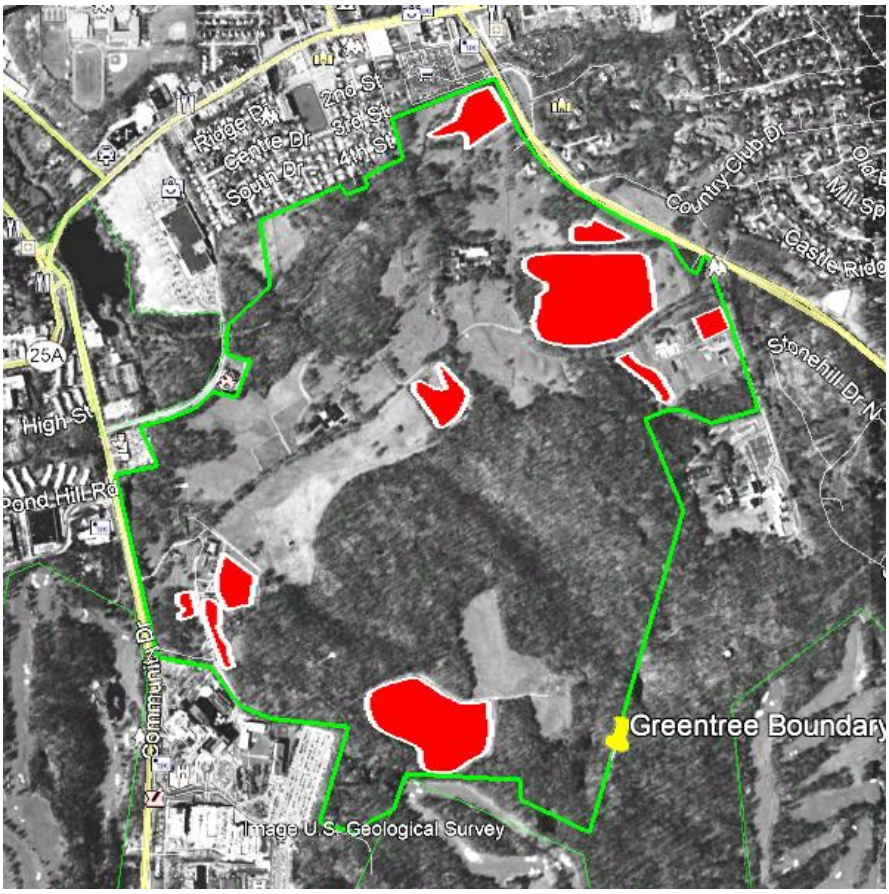
Prescribed Fire Plan
Jan 01, 2020 – Dec31, 2024

Greentree Foundation
220 Community Drive
Manhasset, New York

Prepared for Greentree Foundation by:
Robert A. Panko
Risky Business Incident Management LLC



Greentree Foundation

Prescribed Fire Plan – Spring 2020-Winter 2024

Executive Summary

The prescribed burns described in this single landscape burn plan are to be conducted on private lands of the Greentree Foundation. The Greentree Foundation is located at 220 Community Drive, Manhasset, NY. It is a continuous 408 acre tract. Manhasset, NY is an unincorporated hamlet that is a part of the Town of North Hempstead, NY.

This submission is an update of plans submitted to NYDEC and approved for 2013-2015 as well as 2017-2019. The latter plan was amended in 2017 to widen the prescription parameters on one unit, then amended in 2018 to expand 1 unit and include an additional 3 units. Two prescribed burns were very successfully completed in 2017. One unit had a five acre wildfire in April 2014. One of the goals of this plan is to reduce the probability of future wildfires on this landscape.

Part 194 of the New York State Department of Environmental Conservation Regulations require twelve elements be included in a prescribed burn plan for prescribed burns to be conducted on private lands. This Plan not only includes these twelve required minimum elements but includes additional elements that help to describe this project in a more comprehensive sense. These additional elements include some of the elements required in Burn Plans prepared by NY State Agencies for projects on state owned and managed lands. It also includes some of the elements that are by policy included in Prescribed Burn Plans prepared by federal agencies managed under the umbrella of the National Wildfire Coordinating Group.

As such, this plan meets and exceeds the requirements stipulated in Part 194 for private land owners.

Instead of changing the private burn plan format, these additional elements will be incorporated into the framework of the twelve required elements or addressed in Appendices listed below:

a. *Landowner or prescribed burn manager qualifications*	Page 4
b. *Prescribed burn unit description*	Page 4
c. *Goals and objectives*	Page 5
d. *Cover and fuel loads*	Page 6
e. *Timing and weather conditions*	Page 10
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i. *Notification*	Page 17
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l. *Required signatures and approvals*	Page 24

Appendices to the Plan will include additional support information: They include necessary support documents to support applicable elements of the prescribed fire plan.

APPENDIX I: Prescribed Fire Complexity Rating System Guide Worksheet (NWCG)

APPENDIX II: Specific Descriptions and Prescriptions

APPENDIX III: Equipment and personnel: a list of equipment and personnel, including personnel duty titles, needed on site and on standby.

APPENDIX IV: Historic Weather Data

APPENDIX V: "Go" or "No Go" checklists; Briefing Guide and Test Fire.

These checklists:

- Provide for both corporate and burn manager authorities to issue the "go" or "no go" decision. The checklists must be completed prior to each prescribed burn implementation and will describe the conditions beyond which the prescribed fire must not be ignited.
- Provide a description of the project procedures which should be reviewed with those conducting the prescribed fire to make sure all involved personnel are familiar with them prior to implementation.
- Provide a list of procedures for conducting a test fire to determine whether the ground and atmospheric conditions meet the requirements established in the prescribed fire plan.

APPENDIX VI: Maps. Electronic file. Digital map products useful for planning and implementation.

This Plan is written for a shelf life of five years; 2020, 2021, 2022, 2023 and 2024. The plan is a “landscape” burn plan, written to cover the expected prescribed fire needs for Greentree Foundation for all “grass” units anticipated for burning during that time period. For any changes in the Plan within that five year period Greentree Foundation would provide updates to the NY DEC to amend the Plan.

a. *Landowner or prescribed burn manager qualifications:* a description of the landowner's or prescribed burn manager's training and expertise in conducting prescribed burn activities.

Robert Panko (hereafter referred to as Bob), sole member of Risky Business Incident Management LLC, has been contracted by Greentree Foundation to write the Prescribed Burn Plan and will lead implementation of the prescribed burn(s) in the future once this Plan is approved. If Bob is not available for burn implementation a Burn Manager who has been qualified as a National Wildfire Coordinating Group Burn Boss Type 2 may be substituted. In that event notification would be made to NY DEC Region 1 Forest Protection Captain and NY DEC Regional Forester at least two days prior to the planned unit ignition.

Bob has been fully qualified under the National Wildfire Coordinating Group (NWCG) standards as a Prescribed Burn Boss Type 2 (RXB2) since 1994. Bob is currently employed as the part time Fire Management Specialist of the Central Pine Barrens Commission.

b. *Prescribed burn unit description:* a map at the appropriate scale and a narrative description identifying the area or areas on which prescribed burn activities will be undertaken.

Greentree is a 408 acre portion of the former Whitney estate in Manhasset, New York. It represents 1/5th of the landmass of Manhasset. It is on the western edge of Nassau County. The estate was larger during Whitney family occupancy. Portions of the estate were divided in or around 1998, and gifts of land were made to various organizations including the North Shore Unitarian Universalist Society, North Shore Manhasset Hospital and others. Greentree is run by the Greentree Foundation as a conference center dedicated to international justice and human rights issues.

Greentree location

Under family management as an estate, much of the grounds were used as horse pasture and even included an onsite private golf course. The Whitney family raised thoroughbred horses and had large stables. This traditional management helped shape the landscape of Greentree seen today, to wit, open grassy meadows surrounded by hardwood forest and interspersed with strands of timber/shrub hedgerows.

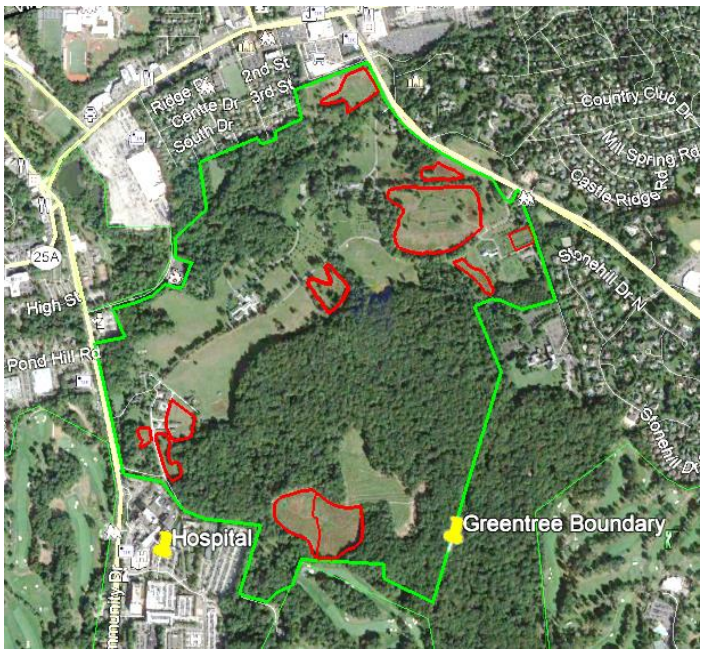
Greentree Foundation is internally staffed with operational and support personnel for the conference center and has its own professional and grounds keeping staff.

Professional positions on the staff include Forester, Landscape Architect, Horticurturalist and Superintendent of Grounds. Starting in about 2006, Greentree made a commitment to managing

the landscape of the Foundation in a manner that would encourage the restoration and return of native flora and fauna. This has included the reintroduction of native grasses and forbs in grassy areas. They have planted native grass and forb seeds in various areas of former pasture lands and have been using various techniques to improve native plant production.

The intent of management is to combine the use of prescribed fire to maintain meadow habitats of native plant species suitable to the re-introduction and maintenance of Quail and other native species.

Greentree is restoring what are now very rare habitats in Long Island. It is located within the boundary of the Long Island Grasslands Habitat Complex, a zone identified by the US Fish & Wildlife Service as a Significant Habitat in need of protection. It is within the original zone of the Hempstead Plain which is recognized as a globally threatened habitat. Fire, both naturally occurring and created by humans is identified as an important component of maintaining the Long Island Grasslands. The success of the Greentree program is apparent with 100 different species of birds recorded on site in September 2016 and this abundance of bird species continues in counts conducted on site. The restoration areas on Greentree have become an important breeding, nesting, roosting and migration pathway stopover area in an otherwise densely populated urban area.



Greentree also hosts a number of research projects regarding both native and culturally significant plants and wildlife in conjunction with various universities. The Greentree Foundation is also a benefactor, and has made multiple financial grants over the years to benefit needs and organizations of the community.

c. *Goals and objectives:* a description of the ecological purposes and objectives of the prescribed burn, including an identification of the specific species or natural communities that are intended to be affected by the burn.

1) Conduct the prescribed burn(s) in a manner that ensures firefighter, public and community safety by following the approved prescribed fire plan, utilizing an adequate number of trained personnel and burning under weather conditions that minimize smoke impacts to stakeholders and the public.
2) Reduce fine dead fuels in burn units 80-100% while minimizing soil scorch to encourage new growth of desirable native plants. This will minimize damage to perennial root

systems during the burn(s). Fire effects post burn(s) would increase nutrient availability and increase overall soil temperatures by reducing shade cover permitting more abundant growth.

3) Provide a prescribed burn / wildland fire management training opportunity for Greentree Foundation staff and surrounding government first responders and emergency service providers.
4) Ensure surrounding landowners, commercial property owners, community emergency responders, commuters, Greentree users and staff, and other stakeholders are notified of the prescribed burn(s) in a timely manner to address concerns and to maintain an accurate flow of information.
5) Reduce fuel accumulations that can result in unwanted wildfires.

d. *Cover and fuel loads:* a description of the vegetative cover and fuel loads on each area to be subjected to prescribed burning.

Although there are nine separate units to be treated, all the units share a common characteristic. The areas to be burned, those areas with emerging native grasses, are on the interior of the grassy fields. The perimeter edges of all the units are mowed and primarily consist of cool season pasture grass that is not likely to burn.

The composition of the native grassy areas to burn includes Little Bluestem, Broomsedge, Switchgrass, Astor, Goldenrod, Butterfly Weed, Common Milkweed, Daisy Fleabane and Horseweed. There are patches of Mugwort, a non-native plant that may be reduced by prescribed fire treatments. There are also mixed cool season pasture grasses mixed in with the natives, and it is hoped these might also be reduced by prescribed fire treatments. The burnable areas of the fields are past pasture lands replanted with native grasses and flowering herbaceous perennials, and perhaps some remnants of native grasses on steeper slopes that were not as heavily grazed.

Unit G9 Prescribed Burn April 2017

The percentages of these species vary by site. Some of the units have a primary component of grasses, some areas have more of a mix of grasses and forbs.

Most areas do not have shrubs invading into the fields. All of the fields except one (that one surrounded by pasture grasses) are surrounded by timber or hedgerows of shrub and hardwood timber. Some of the units have mature trees embedded in the grassy areas.

From a traditional fuels perspective the fields would be primarily classified as a Fuel Model 1 Short Grass and Fuel Model 3 Tall Grass, using the original standard Rothermel 13 fuel models.

Instead this Plan uses the newer "Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model" (Joe H. Scott/Robert E. Burgan; US Forest Service, General Technical Report RMRS-GTR-153, June 2005). Using this modeling system the fuels would include GR3 (low load, very coarse, humid climate grass), GR5(low load, humid climate grass), GR6 (moderate load, humid climate grass), GR8 (high load, very coarse, humid climate grass),and NB3 (Non-Burnable Agricultural land).

The advantage of using these newer fuel models is that they include a live herbaceous component unlike the original Rothermel models. Including the live herbaceous materials moderates the predicted fire behavior in accordance with the amount of live green materials. This makes these predictive models "dynamic". This should more accurately reflect the predicted flame lengths and rates of spread.

To view the published document guide to these models please refer to the following link:

https://www.fs.fed.us/rm/pubs/rmrs_gtr153.pdf

The grass burning units covered under this plan are as follows:

Unit ID	Fuel Model	Fuel Load	Acreage	Description
G1	Gr3 low load, very coarse humid climate grass	1.6 tons/acre Gr3 fuels	1.9 acres	Relatively flat narrow unit on southwest corner of Greentree. This is a unit with high visibility to the North Shore Hospital complex. There are some old locust trees embedded within the grassy meadow that will need to be protected from scorch. The unit is also adjacent to the Greentree fueling depot which will be simple to protect. The administrative facilities of Greentree, consisting of several buildings, are also nearby, but their proximity is not an issue in doing this burn. ½ acre was added to this unit across the paved road to the NW in 2018.
G2	Gr6 moderate load humid climate grass (50%) Gr5 low load humid climate grass (50%)	3.5 tons/acre Gr6 fuels 2.9 tons/acre Gr5 Fuels	3.25 acres	This Unit is 3.25 acres, but the burnable fuel acreage is actually 2.5 acres. The reason for this is that there are wide mowed buffers surrounding the interior area where native grasses and forbs have been planted for restoration. The unit basically runs uphill from a timbered wet drainage to the south and climbs on an 11% slope to the Greentree boundary line to the north. The heavier grasses are primarily in the center of the unit. There are 2 spruce trees in the interior and 1 more spruce on the eastern edge that will require either pre-treatment or careful burnout/holding with backpack pumps during ignition. The top of the slope has a wide mowed buffer between the grass fuels and the 60-100'. This Unit abuts the Greentree boundary with a shopping center and Shelter Road Road adjacent.

G3	NB3-20% Gr3-40% Low Load, Very Coarse, Humid Climate Grass Gr6-40% moderate load, humid climate grass	0 burnable tons/acre NB3 1.6 tons/acre Gr3 fuels 3.5 tons/acre Gr6 fuels	14 acres	A relatively circular unit abutting the northern edge of the Greentree property. It consists of a drumlin dome surrounded by roads. It is broken by a hardwood/shrub hedgerow into 14 acre (south) In the south portion, the primary continuous native grass areas are on the steeper slopes (up to 25%) on the southern, western and southwestern aspects of domelike drumlin ridgeline, but the top of the hill now hosts a large volume of native grasses. There are native shrubs embedded into portions of this grassland. The grass prairies are subdivided by roads and burns will be rotated among these patches. Also at the summit is a Quail pen structure and adjacent field. There are also two pole mounted birdhouses embedded in this unit that need to be protected during ignition.
G4	Gr6-40% moderate load, humid climate grass	3.5 tons/acre Gr6 fuels	1.3 acres	The northern field is relatively flat, dipping to the west toward the Main House of Greentree. The northeast corner of this field is covered with mowed pasture grasses and drops steeply to the NE to Shelter Rock Road. This steep slope will not be burned. The northern portion to burn is primarily a field of native grasses inside hardwood/shrub hedgerows.
G5	Gr6-50% moderate load, humid climate grass Gr5-50% low load humid climate grass	3.5 tons/acre 2.9 tons/acre	1.1 acres	Narrow elongated unit on a SW aspect of short slope in upper east area of Greentree. There are no special values at risk to be protected embedded in this small unit. This unit was successfully burned in April 12, 2017 by Risky Business Incident Management LLC on NW wind.

G6	Gr8 high load, very coarse, humid climate grass (Un-mowed condition) Gr2 Low Load Dry Climate Grass (Mowed condition)	7.8 tons/acre 2 tons / acre	0.7 acres	Former manicured garden inside a walled compound against the NE boundary of Greentree Foundation. The garden has been replanted with native grasses and forbs which now dominate the interior. The garden is broken into two halves divided by an active grape arbor, is transected by mowed lawn grass trails and surrounded within the walled perimeter by ornamental hardwood plantings. Treatment of this unit will be accomplished by a mixture of mowing and burning.
G7	Gr3, Low Load Very Course Humid Climate Grass Occasional patches of Gr5 Low Load Humid Climate grass.	1.6 tons/acre Gr3 Fuels 2.9 tons/acre Gr5 Fuels	2.5 acres	This unit sits at the toe of the slope rising from the grasslands of central Greentree to the summit of the forested hillside eastern half of Greentree. The unit slopes from the SE to the NW with a maximum of 6% SLOPE, however the unit itself has gently rolling terrain throughout. While there places of fuel bed continuity it can generally be said the fuels are patchy throughout the unit. There are mature hardwoods and juvenile planted Chestnut trees in the throughout the interior The unit is bounded by green grasses to the NW that are adjacent to a paved Greentree road, a hardwood timbered hedgerow to the W, a strand of hardwoods to the east and continuous hardwood forest to the S. The unit is surrounded by mowed fuel breaks, and there are cinder surfaced trails that run through the unit. This unit is in the center of the Greentree property and smoke management issues are minimal. Due to its small size, relatively light fuels and distance from the Greentree boundary line in all directions, this burn can be conducted with winds from any vector. It is recommended, however, that this unit not be burned on an E wind to reduce any impact of light drift smoke on the Greentree Conference Center that is located about 600’ west of the burn perimeter.

G9	Gr6 moderate load, humid climate grass	3.5 tons/acre	10.4 acres	This unit is in the SE corner of the Greentree property. It abuts the Deepdale Golf Club immediately to the South and the Northwell Hospital to the west. It is a relatively rectangular unit, running east to west. The west and east sides are the highest ground of the unit with a swale running from south to north through the middle. Outside the NW corner of the unit in the adjacent forest is a Chestnut tree plantation that would need to be protected in event of a spot fire into the forest in that location. There is a Greentree house about 100 yards from the SW corner of the unit. This unit had a wildfire in April 2014 which burned the north and east portion of the unit and extended slightly into the hardwoods to the north and into Grass Unit 8 to the NE. This unit was successfully burned on April 13, 2017 by Risky Business Incident Manaagement LLC on a NNW wind.
T5	Gr3, Low Load Very Course Humid Climate Grass Gr5 Low Load Humid Climate grass.	1.6 tons/acre Gr3 Fuels 2.9 tons/acre Gr5 Fuels	1.1 acres	This new unit for the Greentree Burn Plan is 1.1 acre. In 2017 this flat previous pasture area was plowed and drill seeded with native grasses and forbs. These grass fuels have good continuity as the planting was successful. Adjacent fuels are mostly old fields of pasture grass, but the SE corner of the unit is against a hardwood forest, albeit separated by a mowed fire break.
			37.35 total treatment acres	

Detailed information of each burn unit is found in Appendix II.

e. *Timing and weather conditions:* a description of physical conditions, such as time of year, wind speed and direction, and air temperature and humidity, which must be met before a prescribed burn is initiated.

The prescriptions for the various units have some commonalities. Overall the ideal season for doing these prescribed burns, to achieve the maximum resource benefits, would be spring time burning between March 01 and May 15. The burns can also be done in the fall of the year (September, October, November) but desirable fire effects for native grass stimulation might be less likely to achieve using fall burning.

Overall Landscape Prescription:

Factor	Minimum	Maximum	Comments
Season			Burn in any season, Mar/April or Sept/Oct ideal
Wind Direction	Constrained by individual unit prescription	Constrained by individual unit prescription	Refer to Appendix II, Specific Prescriptions for Individual Burn Units
Wind Speed Mid-flame	0	9	Note this is mid-flame windspeed, not 20'. Predicted 20' windspeed is what is shown in NWS Fire Weather Forecasts (mid-flame windspeed=0.44X20'windspeed in grass fuels)
Wind Gust Mid-flame		12	
Fine Fuel Moisture	6%	16%	FFM below 6% was constrained in prescription to prevent Probability of Ignition of flaming brands to exceed 60%
Mixing Height	1000'	No max	
Transport Winds	Constrained by individual unit prescription	Constrained by individual unit prescription	Refer to Appendix II, Specific Prescriptions for Individual Burn Units
Relative Humidity	30%	80%	
Temperature	37	100	Mid 60's ideal temp.
*Days since wetting rain	1	6	*note this is recommended not REQUIRED prescription parameter

Detailed unit specific prescription information is found in Appendix II.

f. *Intensity and duration of burn:* a description of the anticipated intensity and duration of the prescribed burn, such as flame length and rate of spread, given the fuel loads and physical prescriptions described.

Prescribed fire intensity predictive modeling was performed the Behave Plus 5.0.5 version software. All the fuel models identified in the individual units were modeled. As mentioned earlier these models were chosen over the traditional Rothermel Fuel Model 1 or 3 because they are "state of the art" and include the live herbaceous fuel moisture component. The live fuel moisture is truly a component of these warm season grasses. The old Fuel Model 3 was notorious for "over-predicting" fire behavior, in part, due to its omission of live herbaceous fuel moisture in its modeling. For those steeped in tradition suffice to say that these new fuel models

are deeply based in the Rothermel science and fundamentals. They are more an expansion and refinement than a substantive change.

Use of these new fuel models enables predicting for the "dynamic" seasonal changes that are in these herbaceous fuels; to wit, the progressive increase in percentage of moisture in the growing live fuels among the old, dead organic materials of the previous growing season that actually carry the fire.

The following assumptions were used in the BehavePlus fire behavior model runs performed for this Plan:

1. Generally totally dormant live fuels are as low as 30% and this would be the condition of these fuels during the late fall, winter and spring thru March 31.
2. During April live grasses and other perennial herbaceous plants will begin to green up and can be estimated to be at 60% live fuel moisture.
3. New herbaceous growth in May and early June would have live fuel moistures to 100-120% moisture content and higher.
4. In the fall live herbaceous fuels begin to transition to dormancy and their fuel moistures mimic April conditions with 60% fuel moisture.

- Details of predicted flame lengths for each burn unit within this landscape scale plan can be found in *Appendix II, Specific Prescriptions for Individual Burn Units*. These values vary as there are four different grass fuel models within the six burn units and each table of predicted flame length values varies by seasonal timing of the burn.
- The computer modeled predicted flame lengths for head fires with all these variables spanned from 3.5 feet to 36 feet! Using these same variables in predicting rates of spread head fires varied from a minimum of 12 chains per hour to a maximum of 305 chains per hour. Those modeling figures are all based upon minimal or extreme conditions and a point source of fire running into a continuous available fuel bed with no management actions.
- Backing fires were predicted with minimal values of 0.1 chains per hour and 0.1 feet flame length and maximums of 7.6 chains per hour and 6.7 feet flame length. These are also based upon the same assumptions in the modeling program of point source, continuous fuel bed and no management actions.
- **In reality ignition firing and holding techniques will mitigate the extremes shown in the modeling outputs.**
- At the start of each burn unit ignition, backing fires ignited at the downwind end of units will be ignited against non-flammable fuel breaks. Backing and flanking fires against non-flammable breaks will establish a wider black line of burnt grass fuels. Once established strip head fires will be lighted windward of these black lines. The width of the strip heads will be selected to minimize intense flame lengths that could threaten jumping the black lines. Narrow head strips will moderate the amount of fuels for the head fires to burn into and the flame lengths will not be able to reach their maximum length potential predicted prior to running out of available fuels and burning into the black line ahead of

them. Eventually as the black line is widened by subsequent strip heads burning into it, the width of strip heads can be widened depending upon the desired and actual level of smoke generated per strip head. Wider strips produce more smoke and larger smoke columns, narrower strips produce less of both.

- **This is a progressive burn process that mitigates both risk of escape and smoke production and dispersion. The intent is not to produce a sustained smoke column.**
- It is estimated that burning in Units G1, G4, G5 and T5 will be completed within 2 hours of initial ignition. Units G2 and G7 may require a half day each to complete the unit, with 2-3 hours of smoke production. Unit G6 (the Walled Garden) is very small acreage wise but will require a lot of work and will take most of a full day to burn. Units G3 and G9 (Tower Field) will both each require a full day of operations, but smoke production would most likely be limited to a period of 4 hours per unit.

g. *Logistics:* a description of the logistics of the prescribed burn operation, number of personnel and description of duties, and fire management equipment that will be deployed to assure that the burn is restricted to the area or areas identified for prescribed burn management. This will include but not be limited to a description of the method of ignition, ignition pattern, containment, mop-up and patrol procedures.

The fireline overhead for this burn consists of the following three positions: Prescribed Burn Boss T2 (RXB2 / Burn Manager) and two FFT2 trained personnel to directly assist the Burn Manager. The Burn Manager and these two subordinates will coordinate ignition and holding actions with 2 Type 7 Engines provided by and staffed by Greentree Foundation personnel. In addition Greentree Foundation will provide a minimum of one 2 passenger UTV and operator as a support vehicle. Greentree Foundation will also provide one additional staff member to assist with ignition actions and one additional staff member to serve as relief for other personnel. Additionally Greentree will provide a street vehicle and staff member with a digital camera who would be used to patrol roadways outside of the Greentree property boundary to document the presence or absence of burn caused smoke and to relay to the Burn Manager the current smoke impact situation external to Greentree property. This will be the minimal staffing plan for all burn units. See Appendix III, Equipment and Personnel for additional staffing details, Engine and UTV tool and equipment specifications.

Ignition Operations: Ignition would be conducted by two personnel serving as "lighters" working directly under the supervision of the Burn Manager. One of the FFT2 trained personnel would be the lead lighter. All ignition will be done by hand ignition. Ignition tools would be drip torches or fusee flares.

The figures below show the general plan of ignition operations for each of the units or patches of fuels within a unit.

Dependent upon wind direction the ignitions would commence on the leeward corner of a unit. A test burn would be ignited to validate that actual fire behavior will achieve burn objectives. If the test burn is successful, ignitions would continue along the leeward flanks of the unit (Figure

1 below). The fire will be allowed to back and flank against the wind. This will anchor the ignition operations. Once this anchor point is established firing will continue along the flanks to corners of the unit (Figure 2). The fire will be allowed to continue backing / flanking into the unit against the wind thereby widening "the black" along the control lines.

Firing would then continue within the unit by igniting strip heads that burn as head / flank fires with the wind into the black (Figure 3). The strip head spacing would increase as progress is made through the interior as more burned black is created (Figure 4). Eventually the final strip ignition would be made off the windward edge control line (Figure 5).

Ignition sequence:

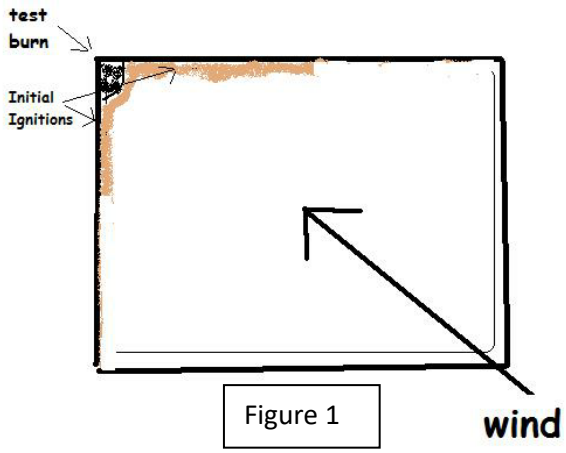


Figure 1

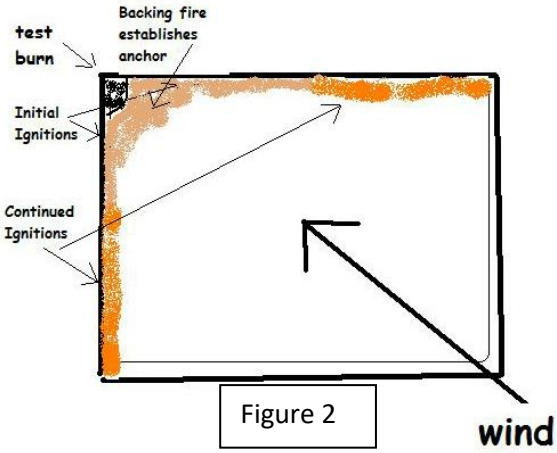


Figure 2

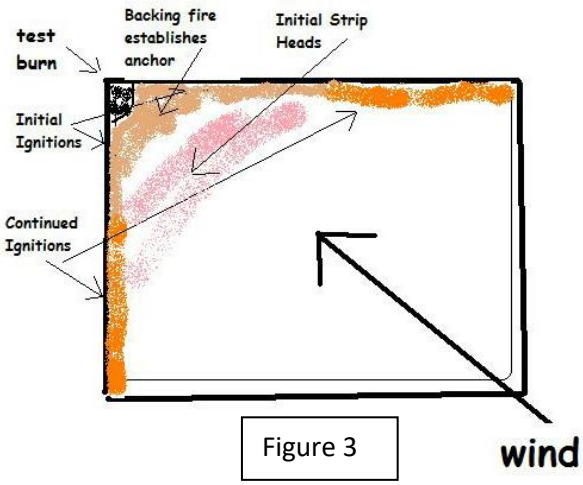


Figure 3

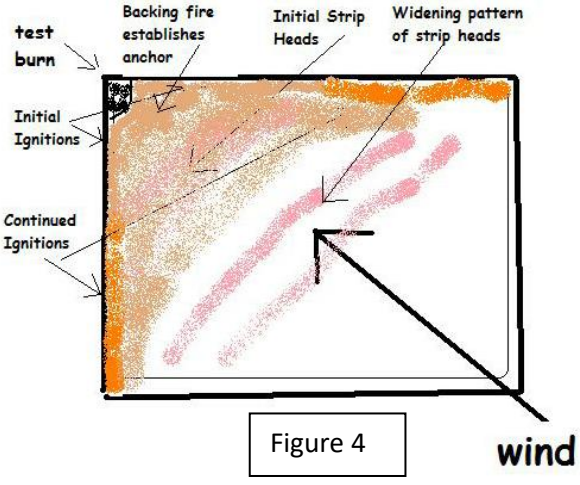


Figure 4

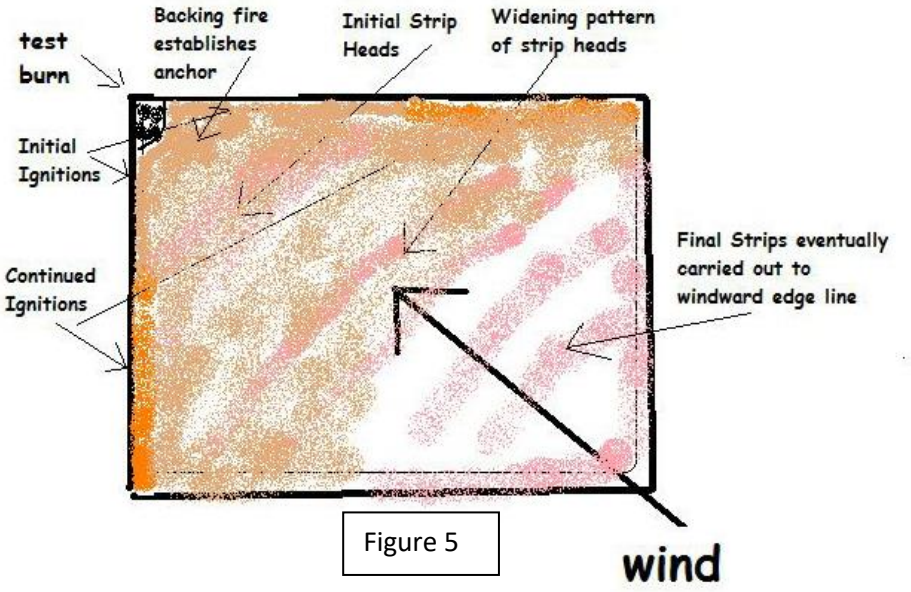


Figure 5

Holding Operations: As mentioned above there are multiple methods and staffing that may be used to "hold" / contain the fire within the prescribed perimeter. The Burn Manager will supervise holding operations and will have one trained FFT2 to assist. Holding forces will consist of 2 Type 7 wildland fire engines and one UTV. The engines will trail the firing operations to suppress spot fires and patrol the containment line. The UTV will assist the Burn Manager and FFT2 in support and may be used for patrolling lines or monitoring for spot fires. A third Type 7 engine would be available if needed.

There will also be pre-burn preparation work that will mitigate holding issues and concerns.

Pre burn Preparation:

The current mowed perimeters will be inspected within one week prior to the burn. If deemed necessary to ensure a patent fuel break, the perimeters will be mowed and raked prior to ignition. For units being broken into smaller compartments (G3 and G9) interior lines will be mowed and raked as needed at least one week prior to the burn.

Additional Fire Line Resources:

There is no requirement for additional fire suppression or management resources to be on scene to implement a burn unit of this plan.

Manhasset/Lakeville Fire Department (and other Nassau County Fire Departments) will be invited to participate in the prescribed burns. If they choose to, and are available to participate,

their engines / tenders and personnel will be assigned to augment already planned levels of personnel and equipment resources identified above. The Fire Departments are also invited to be on site to monitor the prescribed fire activities if they are not able to directly participate in burn operations.

Mop Up:

Fuels within the unit consist almost entirely of fine fuels (grasses, forbs, perennial stalks) that will not produce residual smoke after ignition and consumption. These light fuels will not smolder for extended periods creating a source of residual heat. During active ignition and holding the lines will be patrolled by the engines or ground resources to detect any residual heat or smoke sources that can threaten to escape the target perimeter and those will be extinguished. Once ignition of the unit is completed the fireground will be patrolled for openly burning or smoldering grass's, trees or shrubs and they will be fully extinguished a minimum of two hours prior to sunset.

Patrol:

Once mopped up with no visible smoke showing the lines will be patrolled by the Burn Manager and Greentree Foundation staff until sunset and the fire may be declared out or placed in controlled /monitor status. Regardless whether it is declared out or placed in controlled/monitor status, Greentree Foundation staff will continue to monitor the fire grounds daily for additional smokes or heat until a wetting rain (greater than 0.10") is received. After a wetting rain the fire will be declared out if it has not already been so designated.

h. *Suppression:* a description of fire suppression activities to be immediately implemented should the prescribed burn threaten to escape, or actually escape, beyond the boundaries identified for such burn.

Using the Behave model, the minimum fine fuel values were constrained to 6% fuel moisture to keep the probability of ignition (POI) of a firebrand at less than 60%. Keeping POI values at less than 60% significantly reduces spotting potential.

Ignition operations will cease any time there is a spot fire that escapes the control line. The Burn Manager will assign holding resources on site to suppress the spot fire, while other ignition and holding resources will be assigned to continue holding the lines of the prescribed burn.

If a spot fire has escaped the established grass unit perimeter and cannot be contained the Burn Manager would convert the prescribed fire to a wildfire. All assigned resources would attempt to suppress the spot fire and any active fire on the burn. The Greentree Foundation property is

within the jurisdiction of the Manhasset-Lakeville Volunteer Fire Department. The Burn Manager would immediately notify Manhasset-Lakeville Volunteer Fire Department Dispatcher (516) 466-4411) and provide a thorough size up to dispatch. Based on the size up provided the Manhasset-Lakeville Volunteer Fire Department Dispatch will activate the appropriate level of response.

The Burn Manager and on scene prescribed fire resources would be released or reassigned at the discretion of the Manhasset-Lakeville Volunteer Fire Department Incident Commander assigned to the wildfire.

*Note: an invitation has been extended to the Manhasset-Lakeville Volunteer Fire Department Chief to have some resources on scene on the day of the prescribed burn to be used as holding resources and/or as contingency resources. Such participation would further mitigate escape risks and also provide a wildland fire training opportunity for these local firefighters.

i. *Notification:* a description of the procedures for notifying appropriate department forest protection and fire management staff, local fire officials, law enforcement personnel and adjoining landowners of the actual date, time and estimated duration of any prescribed burn.

Prior to any burn activities the Greentree Foundation will coordinate a series of meetings with immediate neighbors and stakeholders to discuss the project and gain support. These meetings may be both formal and informal and some may be on-site at Greentree. These meetings may include, but not be limited to; the North Shore University Hospital staff, the Manhasset-Lakeville Volunteer Fire Department, the Town of North Hempstead and hamlet of Manhasset elected officials and/or government leaders, the Manhasset Chamber of Commerce, the Nassau County Fire Marshalls office, the Nassau County Police Department Sixth Precinct, the Manhasset School District of the Town of North Hempstead, Deepdale Golf Club, North Hills Country Club and Highland Gardens Care Center.

Notification list:

Name	Phone	Contacted Date/Time/By
Manhasset-Lakeville Volunteer Fire Department Dispatch	516-466-4411	
Town of North Hempstead-Thomas McDonough	516-263-8334/516-869-6311	
Nassau Fire Marshall – Mike Uttaro or Duty Desk	516-573-9911/516-573-9900/ext 3994 or 516-742-3191	
Nassau County Fire Marshall Public Affairs Unit (Media Relations / Safety Education)	516-573-9930	
Nassau County EOC	516-573-0636/516-573-9640	
Nassau County Police Sixth Precinct	516-573-6300	
NY State DEC Rangers –StonyBrook	631- 444-0290	
Highfield Gardens Care Center	516- 562-8444	
Northwell Health/ Shore University Hospital	516- 562-4125	
Manhasset School District	516-267-7705	
North Hills Country Club	516-627-9126	
Deepdale Golf Club	516-627-7880	
Unitarian/Universalist Church at Shelter Rock	516-627-6560	
Manhasset-Lakeville Volunteer Fire Department Member Brian Stone	516-644-6836	

*Note: A request will be made for the Town of North Hempstead EOC to notify adjacent jurisdictions fire and police departments of the prescribed burn occurring on that day. If that does not happen, notifications will be coordinated thru Nassau County EOC.

* Manhasset-Lakeville Volunteer Fire Department will also be requested to have Nassau County EOC make a reverse 911 call to all residences and commercial establishments within a one mile radius from the Greentree Foundation on burn day to advise residents and commercial establishments that a prescribe burn will be conducted that day on Greentree Foundation

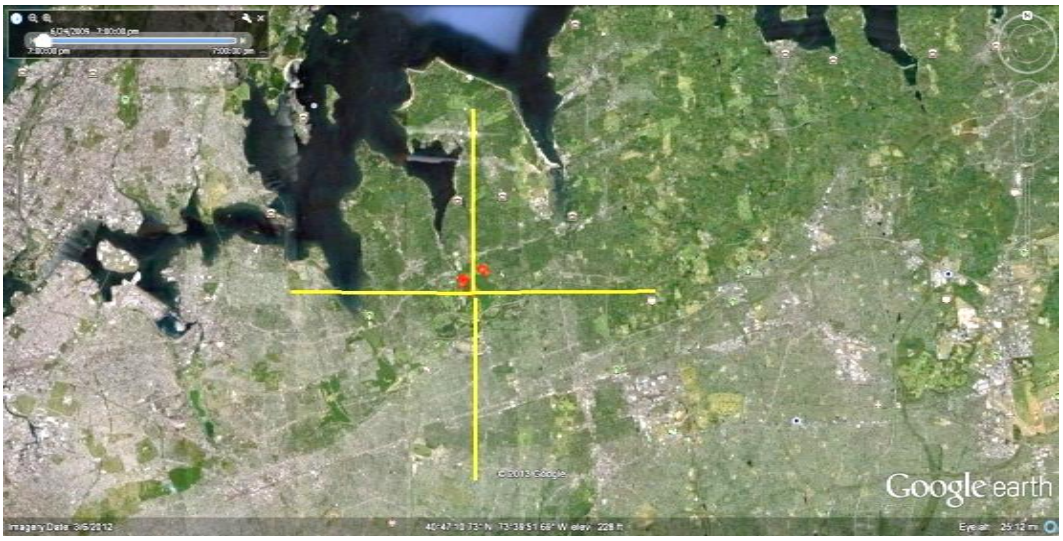
j. *Communications:* a list of key communication contacts and telephone numbers.

Name	Title/Role	Home/office	Cellular	Email
Nick Gabriel	President Greentree	516-684-2540		ngabriel@greentreefdn.org
Doug Ramey	Forester Greentree	516-684-2540	845-464-9976	dougramey2@yahoo.com
Steve Chumas	Superintendent Greentree	516-684-2540	516-924-7216	schumas@GREENTREEFDN.ORG
George Patterson	Grants Executive Greentree	516-684-2540		gpatterson@GREENTREEFDN.ORG
Darrel Morrison	Landscape Architect Greentree	516-684-2540		darrelmo@uga.edu
Captain Timothy P. Byrnes	District 1 Captain, Forest Protection Division New York State DEC	631- 444-0291	646-739-4170	tpbyrnes@gw.dec.state.ny.us
Manuel Afonso	Asst Supt Land Management		516-650-3803	mafonso@greentreefdn.org
John Wernet	NY DEC Supv. Forester Region 1		631-444-0285	john.wernet@dec.ny.gov
Bob Panko	Burn Manager(RxB2)	860-564-8310	305-323-1385	bob_panko@yahoo.com

k. *Smoke management:* identify potential smoke affected areas and smoke management strategies to avoid such areas, and to reduce and/or disperse emissions to minimize any adverse effect on the environment, including human health and welfare. Also note procedures for compliance with applicable State and local regulations.

Sensitive Smoke Receptor Sites:

If you look at the map below it is plain to see that the 408 acre Greentree Foundation lands combined with the surrounding golf courses represent a "green space island" in the midst of a sea of urban infrastructure. It is obvious that smoke mitigation actions must focus on use of proper wind vectors and prescribed fire atmospheric conditions combined with ignition techniques that will minimize smoke production and constrain smoke to the Greentree Foundation lands and adjacent "green space" lands to the maximum extent possible.



Greentree is center of 5 mile radius lines

Smoke Management Strategies:

- Overall Smoke management strategy- The principle smoke management strategy is to use ignition techniques that minimize duration and intensity of smoke production coupled with using wind directions that drive smoke that is generated into the core of the 408 acre Greentree Foundation property. Most of the burn units are along the perimeter of the Foundation property, leaving the bulk of the property to receive smoke and permit adequate dispersion prior to leaving property grounds.

- Wind Vectors- The permissible wind vectors appear in the specific prescriptions for each burn unit (see Appendix II). Some of the wind vectors are very restrictive to protect adjacent high concern smoke receptors (Hospital, Nursing Home, Community Drive, Shelter Rock Road,

et al). Some prescriptions allow for winds from any direction, but in those units most desirable wind vectors are identified.

- Ignition techniques- other than initially placing backing fires for anchoring the leeward edge of the burn units, most ignitions will be strip head ignitions. The strip head technique does a lot to reduce both the timing and volume of smoke production. Very narrow heads will produce brief pulses of smoke before hitting the burned out fuels downwind of them. The narrower the strips, the less volume of smoke. Strip head burning in grass fuels also creates good convective lift which helps smoke rise and disperse. Picture if you will the difference of smoke column produced by only burning strips say 10' wide at a time, versus lighting a ten acre field at the windward edge and letting the fire run across the field. The strip heads produce pulses of smoke within a limited area, while ten acres all under ignition produce a smoke COLUMN that would contain a large volume of smoke all at once. Strip head ignitions also allow to STOP burning easily if smoke production is creating undesirable impacts.

- Fuels- the fuels within the burn are entirely fine fuels. Fine fuels burn rapidly and completely with little or no smoke residual.

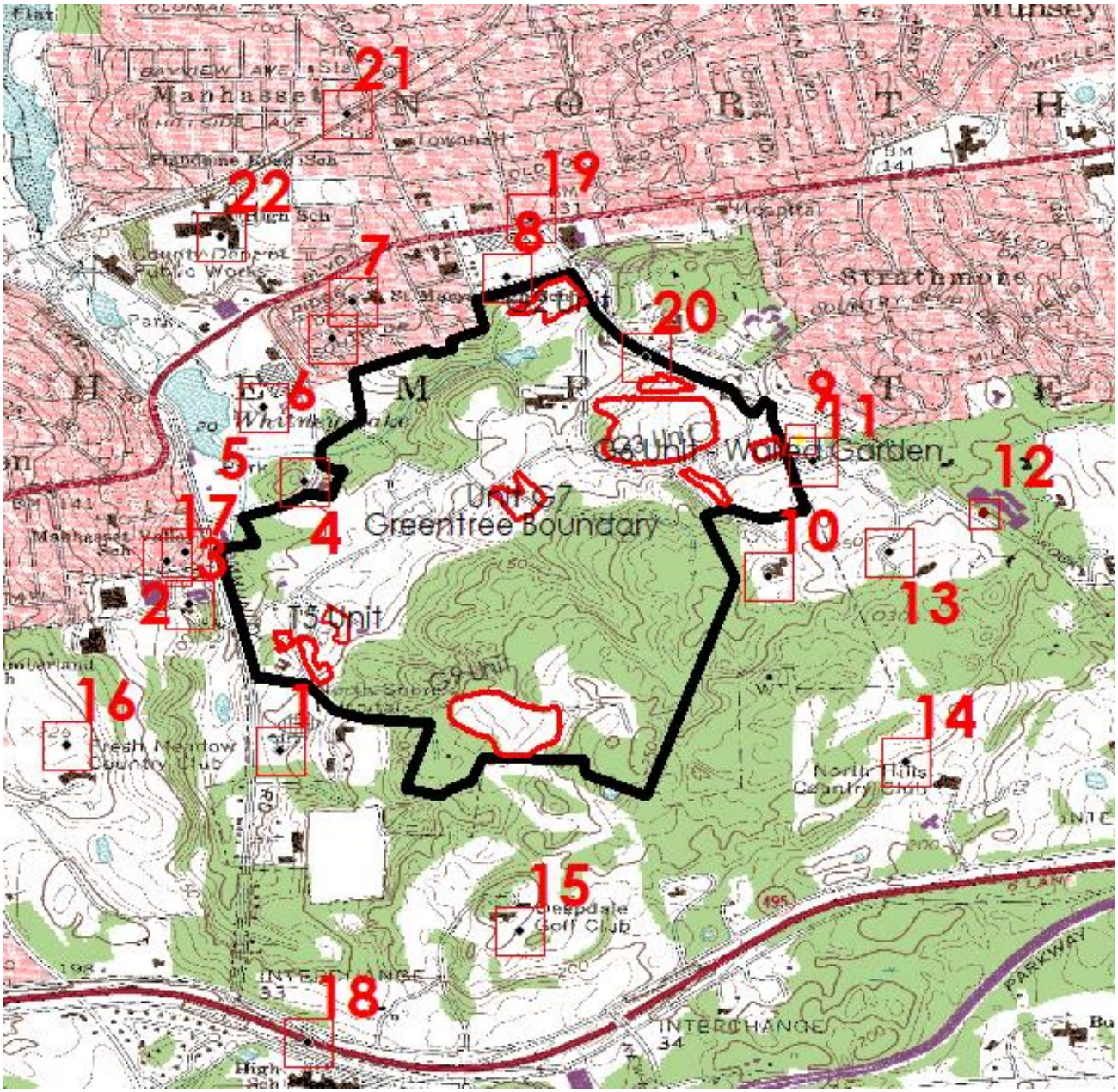
- Mixing Height / Transport Winds-The minimum mixing height of 1000' in the prescription combined with the transport wind directions of each specific burn unit prescription will also enhance lifting and dispersing the smoke column.

- Multiple Units / Small Acreage- instead of one large burn the nine individual units planned will be lit individually using the techniques described. Three of the 9 units are 1.5 acres or less in size. The biggest unit, G3 (14 acres) is broken into four distinct fuel patches that will allow for burning smaller sections of this unit at a time. The G9 Tower Unit (10 acres) is also broken into two patches that can be burned on alternating years, alternating days or one the same day sequentially. This planned series of ignitions will create smaller, short lived pulses of smoke that should rapidly lift and disperse.

- Mop-up – All residual smokes will be extinguished no later than 2 hours before sunset. There are no ten hour or hundred hour fuels embedded in the units that will produce smoke residual.

Smoke Management Compliance: Approval of this prescribed burn plan by NY State Department of Environmental Conservation (NY DEC) essentially grants permit to conduct the burn and ensures requisite air shed compliance. Contact will be made with NY DEC Stony Brook Office on the day prior to when burning activities are planned to ensure go / no-go approval is obtained.

The following smoke sensitive receptor sites were identified immediately adjacent to the Greentree Foundation burn units:



Name	**Occupancy**	**Phone**	**Location**	**Distance from burn site**	**Map #**
Northwell Health Hospital	Class I Trauma Center and 788 beds hospital with multiple structures	516-562-0100 (general) 516-562-4125 (emergency)	300 Community Drive, Manhasset, NY 11030	Immediately adjacent to Greentree, 50 yards from G1 & 300 yards from G9	1
Nassau County Police Sixth District	NCPD 6th District HQ	516-573-6600	100 Community Drive, Manhasset, NY 11030	Along center western boundary of Greentree.	2
Highfield Gardens Care Center	200 bed adult nursing home	516- 365-9229	199 Community Drive, Great Neck, NY 11021	0.2 miles NW of G1 unit. Across street from Greentree main entrance.	3
Manhasset Lakefield Fire Department	Fire Station of Company#2 housing 3 large structural engines	516-627-9823	2 Community Dr Manhasset, NY 11030	Western side of Greentree across street from Whitney Pond Park	4
Macy's Plaza	Commercial Retail	516-869-0391	1100 Northern Blvd Manhasset, NY 11030	NW boundary of Greentree, approx. 0.5 miles from unit G1	5
Residential Area	Approximately 200 homes in 40 acre area. Acres include St. Mary's HS listed below		East of Macy's Plaza, West of Manhasset Center, South of Northern Blvd.	Northern Boundary of Greentree, 0.25 miles W of G2	6
St. Mary's High School	Private Roman Catholic college prep school, 700 students, grades 9-12	516-627-2711	51 Clapham Avenue, Manhasset, NY 11030	0.2 miles NW of Unit G2	7
Manhasset Center	Retail shopping center with 6 major stores		Northern Boulevard and Shelter Rock Rd	N boundary of Greentree, immediately adjacent to unit G2	8
Our Lady of Grace Montessori School	Private PreK, Kindergarden & Elementary School (unknown student volume)	516-365-9832	29 Shelter Rock Road,Manhasset, NY 11030	N of Greentree boundary, 100 yards NE of G6 unit	9
Unitarian Universalist Congregation at Shelter Rock	Church	516-627-6560	48 Shelter Rock Rd. Manhasset, NY 11030	Along NE Greentree boundary, 0.15 miles SSE G6 & G5	10
Beit Shalom Seventh-day Adventist Congregation	Church	773-818-7754	7 Shelter Rock Rd,Manhasset, NY, 11030-3222	N of Shelter Rock Rd, 0.2 miles E of G6	11

Shelter Rock Elementary School	775 students K-6	516-267-7450	27a Shelter Rock Rd Manhasset, NY 11030	0.33 miles ESE of units G5 & G6	12
Stone Hill at North Hills	Gated residential community, approx 50 acres, approx. 60 homes	516- 869-1442 (guardhouse)	83 Stone Hill Gate, Manhasset, NY 11030	East of Greentree boundary; closest homes 0.1 mile E of units G5 & G6 Furthest homes 0.5 mile SE	13
North Hills Country Club	Private; designed by Robert Trent Jones in 1961	516-627-9100	LIE North Service Road · Manhasset, NY 11030	Main facilities 0.6 miles E of G9 unit	14
Deepdale Golf Club	Private	516-627-7880	300 North Service Road, LIE Manhasset, NY 11030	Main facilities 0.3 mile S of unit G9. Northernmost fairway abuts G9	15
Fresh Meadow Country Club	Private	516-482-7300	255 Lakeville Rd, Great Neck, NY	0.3 miles W of G9	16
Manhasset High, Secondary and Middle Schools	1500 or more students G7-12, Three schools co-located in a campus	516-267-7705 Mr. Charles Cardillo, Superintendent	200 Memorial Pl, Manhasset, NY 11030	0.75 miles NW of G3 & G4	22

Transportation Corridors Near Greentree Foundation:

Name	Distance			Distance from burn site	
Community Drive	Major Roadway			0.1 mile W of G1	17
Long Island Expressway	Interstate Highway 495			0.5 mile SE of G9	18
Northern Blvd/Highway 25A	Major Roadway			0.3 N of G3/G4 and 0.2 miles N of G2	19
Shelter Rock Road	Major Roadway			Adjacent to N of G4 and 100 yards from G3 & G6	20
Long Island Railroad	Port Washington Branch line			Manhasset Station 0.75 miles NW units G3 & G4	21

l. *Required signatures and approvals:* the names and signature lines of the preparers of the prescribed fire plan, and for those who have the authority to review and approve the plan and modifications of the plan.

Prepared By:

_____ _____

Robert A. Panko – Prescribed Burn Boss T2(RXB2) Date

Reviewed By:

_____ _____

Doug Ramey – Forester, Greentree Foundation Date

Approved By:

_____ _____

Nick Gabriel – President, Greentree Foundation Date

Approved By:

_____ _____

John Wernet, Regional Forester, Region 1 NY DEC Date

Appendices

APPENDIX I: Prescribed Fire Complexity Rating System Guide Worksheets
APPENDIX II: Specific Descriptions and Prescriptions
APPENDIX III: Equipment and personnel
APPENDIX IV: Historic Weather Data
APPENDIX V: "Go" or "No Go" checklists; Briefing Guide and Test Fire.
APPENDIX VI: Maps (electronic only)

APPENDIX I: Prescribed Fire Complexity Rating System Guide Worksheet (NWCG)

APPENDIX II: Specific Descriptions and Prescriptions

APPENDIX III: Equipment and personnel: a list of equipment and personnel, including personnel duty titles, needed on site and on standby.

APPENDIX IV: Historic Weather Data

APPENDIX V: Briefing guidelines and "Go" or "No Go" checklist: a description of the project procedures which should be reviewed with those conducting the prescribed fire to make sure all involved personnel are familiar with them. The checklist must be completed prior to ignition and will describe the conditions beyond which the prescribed fire must not be ignited. Provide the name of the individual who has the authority to issue the "go" or "no go" command. Test fire: a list of procedures for conducting a test fire to determine whether the ground and atmospheric conditions meet the requirements established in the prescribed fire plan.