



To: Michael Sparkman – REES Architects

From: Carland G. Holstead – Kimley-Horn and Associates, Inc.

Date: July 3, 2024

Subject: **Mitigation Measures to Minimize Environmental Impacts
McKinney Temple – Fairview, Collin County, Texas**

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by REES Architects to provide a summary of the measures undertaken by the Church of Jesus Christ of Latter-day Saints (Client) to minimize environmental impacts by the proposed McKinney Temple project in Fairview, Collin County, Texas. The study area is comprised of approximately 8.6 acres of mostly undeveloped land (site or study area) (see Figure 1 attached). According to a review of a recent aerial photograph (2024), the study area appears to be a maintained field (see Figure 2 attached).

Project Description

The proposed McKinney Temple project is located to the north of Stacy Road and west of Meandering Way in Fairview, Collin County, Texas. It will be the third of four religious facilities to occupy the adjacent area within a largely developed area. The proposed project will include a main temple building, a parking lot, landscaped grounds, and a remote grounds building. The exterior grounds and parking areas will be fully landscaped to provide a park-like setting for temple patrons. The highest point of the building will reach approximately 173'-6" with the steeple and the lightning rod.

Nighttime Lighting Concerns

The general public has voiced concerns about the impact of the proposed temple upon the nighttime migration of bird and bat species. This memorandum has been prepared to address these concerns and detail the measures and minimization efforts that have and will be implemented to avoid impacts to migratory birds and bat species.

Nighttime Lighting Recommendations

The United States Fish and Wildlife Service (USFWS) has published the article: *Threats to Birds: Collisions – Nighttime Lighting* which details minimization efforts to avoid impacts on migratory birds during nighttime. According to the USFWS, recommendations include, but are not limited to:

- Turning off lights completely at night
- Limiting light to necessary times only*
- Turn off lights that face up into the sky or lights that illuminate surrounding landscape
- Avoid upward light scatter by shielding, selecting, or positioning lights where light is not emitted above the horizontal plane*

- Keep lighting as low to the ground as possible, only illuminating necessary structures
- Closing blinds, shades, or curtains to avoid light spill
- Use lights that are less than 3,000 Kelvin degrees
- Keeping light as dim as possible

**Recommendations of USFWS or TPWD that the Client is conforming with*

It is important to note that these are USFWS recommendations, not requirements. **It is our analysis that the Client has implemented these measures to the most practicable extent possible for this project.**

Based on previous and ongoing informal consultation with the Texas Parks and Wildlife Department (TPWD), the agency has provided recommendations pertaining to sky glow and minimizing impacts to migratory birds. According TPWD, sky glow because of light pollution can have negative impacts on wildlife and ecosystems by disrupting natural diurnal and nocturnal behaviors such as migration, reproduction, nourishment, rest, and cover from predators. TPWD recommends avoiding the use of outdoor lighting. However, if outdoor lighting is required, minimization to sky glow is recommended by focusing lighting downward with shields or cutoff luminaries to avoid light emitting above the horizontal. In addition, TPWD recommends using dark-sky friendly lighting that is illuminated only when needed, as brightly as needed, and minimizes blue light emissions. **It is our analysis that the Client has implemented these measures to the most practicable extent possible for this project.** These are recommendations, not requirements, from TPWD.

Lights Out Texas, a program facilitated by Former First Lady Laura Bush, was founded in 2020 and is a campaign of education, awareness, and action that focuses on turning off lights at night during the spring and fall migrations. The spring migratory bird migration is from March 1 to June 15, and the fall migratory bird migration is from August 15 to November 30. This program encourages commercial buildings under three stories to do the following:

- Turn off non-essential lights at night from 11 p.m. to 6 a.m. during the spring and fall migration periods
- Do not use landscape lighting to light up trees or gardens where birds may be resting
- For essential lights, use dark skies friendly lighting practices such as:
 - Aim lights down
 - Use lighting shields*
 - Use motion detectors and sensors so lights are only on when in use*
 - Close blinds at night to reduce lighting from windows

**Recommendations of USFWS or TPWD that the Client is conforming with*

These recommendations are not requirements, nor does Lights Out Texas have jurisdictional authority over migratory birds. **It is our analysis that the Client has implemented these measures to the most practicable extent possible for this project.**

Mitigation and Minimization Efforts – Nighttime Lighting

The Client has agreed to comply with the Town of Fairview's lighting ordinance and restrictions at all times by implementing the following measures:

- The project will not exceed a maximum of 5 footcandles on the Temple's vertical surfaces – complying with the Town ordinance
- 3,000 Kelvin lighting fixtures will be used to as opposed to the maximum of 4,000 Kelvin lighting fixtures allowed by the Town*
- Building lighting will be turned off from 11:00 p.m. to 5:00 a.m., as opposed to no requirement by the Town lighting ordinance*
- Building lighting will be shielded and directed at the building surfaces for full capture and will not scatter into the surrounding areas or beyond the temple surfaces being lit *
- Parking lot lighting will be shielded to avoid light trespass to neighboring properties
- Parking lot lighting will be dimmed to 50% of the allowable lighting levels from 11:00 p.m. to 5:00 a.m., as opposed to no requirement by the Town lighting ordinance*
- Fully shielded fixtures will be utilized to maintain light on the surface of the building*

**Recommendations of USFWS or TPWD that the Client is conforming with*

These measures satisfy most of the voluntary recommendations from both USFWS and TPWD to minimize impacts to migratory birds and other species.

Tree Clearing

The study area appears to exhibit a tree line along the northern boundary. This tree line will not be cleared as part of this project and this area, which can be considered the highest quality migratory bird nesting habitat, will be maintained by the project. Underbrush within the tree line will be removed and the existing trees retained. The Town of Fairview requires the incorporation of 13 parking lot trees and 16 screening trees which will be planted for this project. In addition, the Client proposes to add approximately 78 (42 large canopy trees and 36 ornamental trees) additional trees to the property plus additional shrubs and ground cover. The additional trees and shrubs will provide potential habitat for migratory birds and other wildlife. **Therefore, the project will not result in a net loss of high quality migratory bird nesting habitat.**

Blackland Prairie and Wildlife Corridors

The study area is located within the Blackland Prairie Ecoregion according to TPWD. The Blackland Prairies region is named for its deep, fertile black soils that characterize the area. These soils once supported a tallgrass prairie dominated by tall-growing grasses such as big bluestem (*Andropogon gerardi*), little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). Based on a review of the recent aerial photograph (2024), the study area does not contain tall grass prairie and instead contains a maintained field which is mowed regularly. According to the Vegetation Types of Texas map, the entirety of the study area is located within an area designated as "Crops" (Code 44 (see Figure 3 attached)).

In addition, based on a review of the USGS National Land Cover Database (NLCD), the study area is depicted as Grasslands/Herbaceous (NLCD Code 71). The surrounding areas are depicted as Developed, Medium Intensity (NLCD Code 23) and Developed High, Intensity (NLCD Code 24) (see Figure 4 attached).

The study area is located within a highly urbanized area with two chapels to the west, a housing development to the north and east, and commercial and residential properties to the south. **Therefore, it is our analysis that the project is not impacting an undisturbed Blackland Prairie area.**

Wildlife corridors serve as a natural habitat connecting populations of wildlife otherwise separated by cultivated land, roads, or development. The study area is surrounded on all sides by development and Stacy Road which are not conducive to wildlife movement. **In addition, the study area consists of a maintained field which is mowed regularly and does not appear to be appropriate hunting grounds for nocturnal species.**

Conclusions

It is Kimley-Horn’s analysis that the Client is taking many precautions to avoid and minimize the take of migratory birds and bats during nighttime due to their adherence to the requirements from the Town of Fairview’s Lighting Ordinance. In addition, the Client is implementing many of the voluntary recommendations from USFWS and TPWD. It is also our analysis that the Client is not disturbing migratory bird habitat through their proposed landscape plan. The study area does not appear to be impacting undisturbed Blackland Prairie, wildlife corridors, or nocturnal hunting species. Therefore, it is our analysis that the project has been designed to minimize and avoid environmental impacts.

If you have questions regarding this report or its findings, please do not hesitate to contact us by phone at (439) 914-8717 or by email at carland.holstead@kimley-horn.com.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.



Carland G. Holstead, Associate

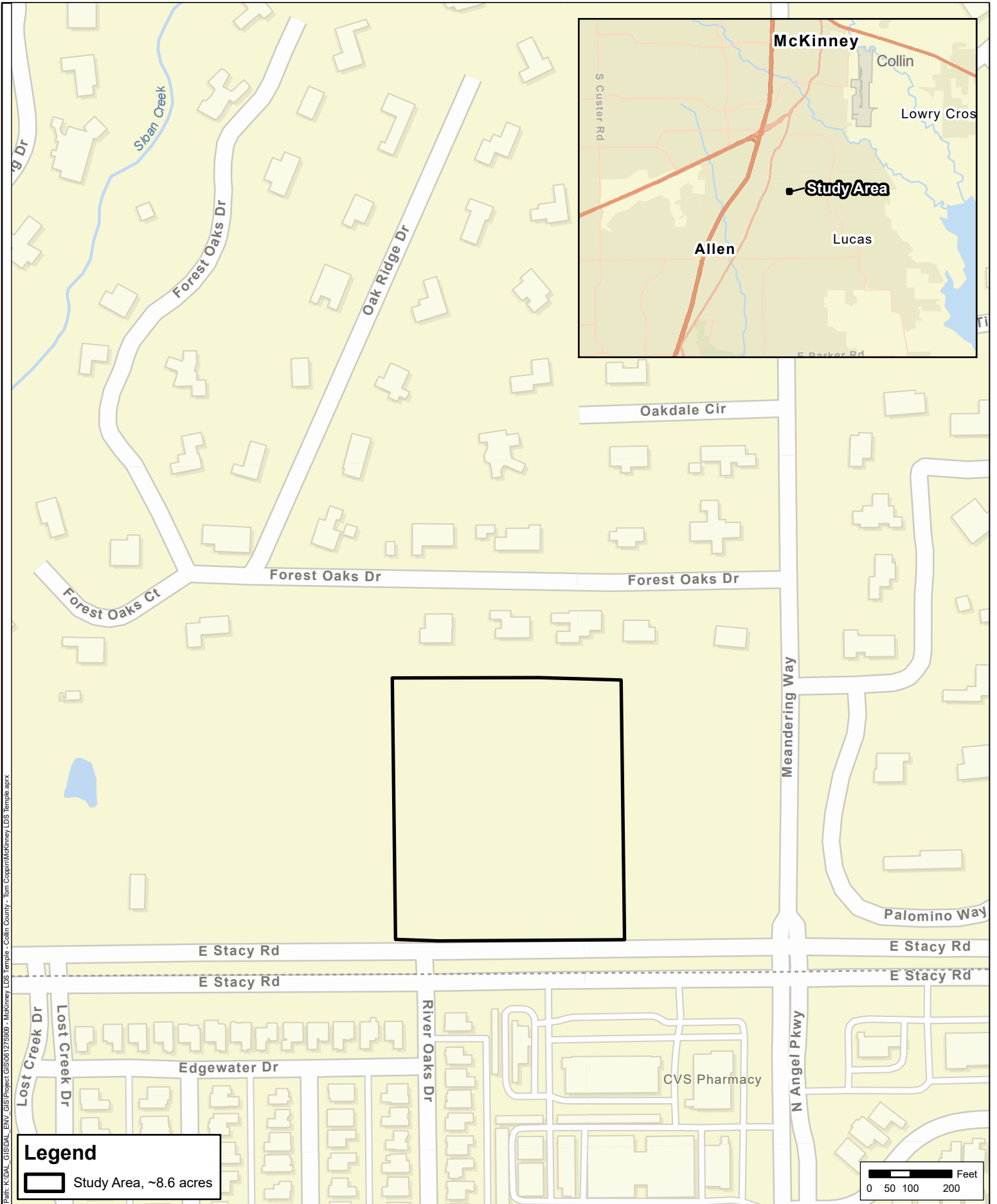
Attachments: Figures

DISCLAIMER

Kimley-Horn has prepared this document based on limited recent aerial reivev and our interpretation, as scientists, of applicable regulations and agency guidance. While Kimley-Horn believes our interpretation to be accurate, final authority to interpret the regulations lies with the appropriate regulatory agencies. Regulatory agencies occasionally


issue guidance that changes the interpretation of published regulations. Guidance issued after the date of this report has the potential to invalidate our conclusions and/or recommendations and may cause a need to reevaluate our conclusions and/or recommendations. Because Kimley-Horn has no regulatory authority, the Client understands that proceeding based solely upon this document does not protect the Client from potential sanction or fines from the applicable regulatory agencies. The Client acknowledges that they have the opportunity to submit documentation to the regulatory agencies for concurrence prior to proceeding with any work. If the Client elects not to do so, then the Client proceeds at their sole risk.

Figures



Path: K:\DAL_GIS\DAL_ENV_GIS\Project\GIS\061275909 - McKinney LDS Temple - Collin County - Tom Coppin\McKinney LDS Temple.aprx

Legend

 Study Area, ~8.6 acres

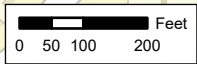


FIGURE 1	DATE: 06/11/2024
	DRAWN: TMB
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	KHA NO.: 061275909

Vicinity Map

Source: ESRI Basemap

McKinney Temple

Fairview, Collin County, Texas



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This product is for informational purposes and may not have been prepared for or be suitable for, legal, engineering, or survey purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.



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Legend

Study Area, ~8.6 acres

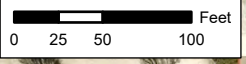


FIGURE 2	DATE: 06/11/2024
	DRAWN: TMB
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	KHA NO.: 061275909

Recent Aerial

Source: Nearmap Jan. 2024

McKinney Temple

Fairview, Collin County, Texas



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Legend

- Study Area, ~8.6 acres
- 44: Crops

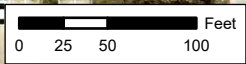


FIGURE 3	DATE: 06/11/2024
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Vegetation Types of Texas Map
Source: TPWD

McKinney Temple
Fairview, Collin County, Texas

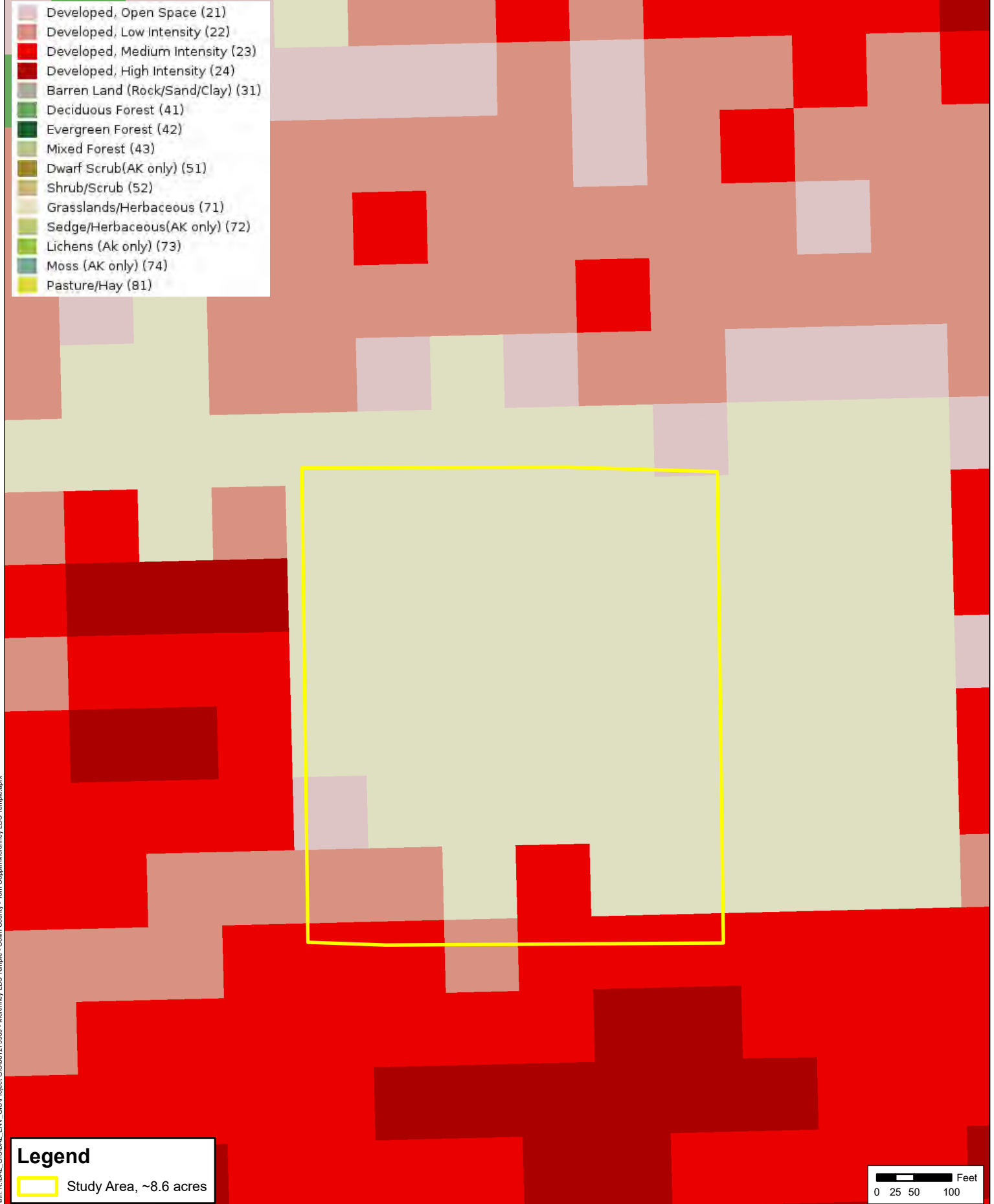


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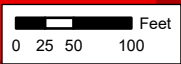
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- Developed, Open Space (21)
- Developed, Low Intensity (22)
- Developed, Medium Intensity (23)
- Developed, High Intensity (24)
- Barren Land (Rock/Sand/Clay) (31)
- Deciduous Forest (41)
- Evergreen Forest (42)
- Mixed Forest (43)
- Dwarf Scrub(AK only) (51)
- Shrub/Scrub (52)
- Grasslands/Herbaceous (71)
- Sedge/Herbaceous(AK only) (72)
- Lichens (Ak only) (73)
- Moss (AK only) (74)
- Pasture/Hay (81)



Legend

Study Area, ~8.6 acres



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FIGURE 4	DATE: 06/11/2024
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National Land Cover Dataset Map
Source: USGS 2021

McKinney Temple
Fairview, Collin County, Texas



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