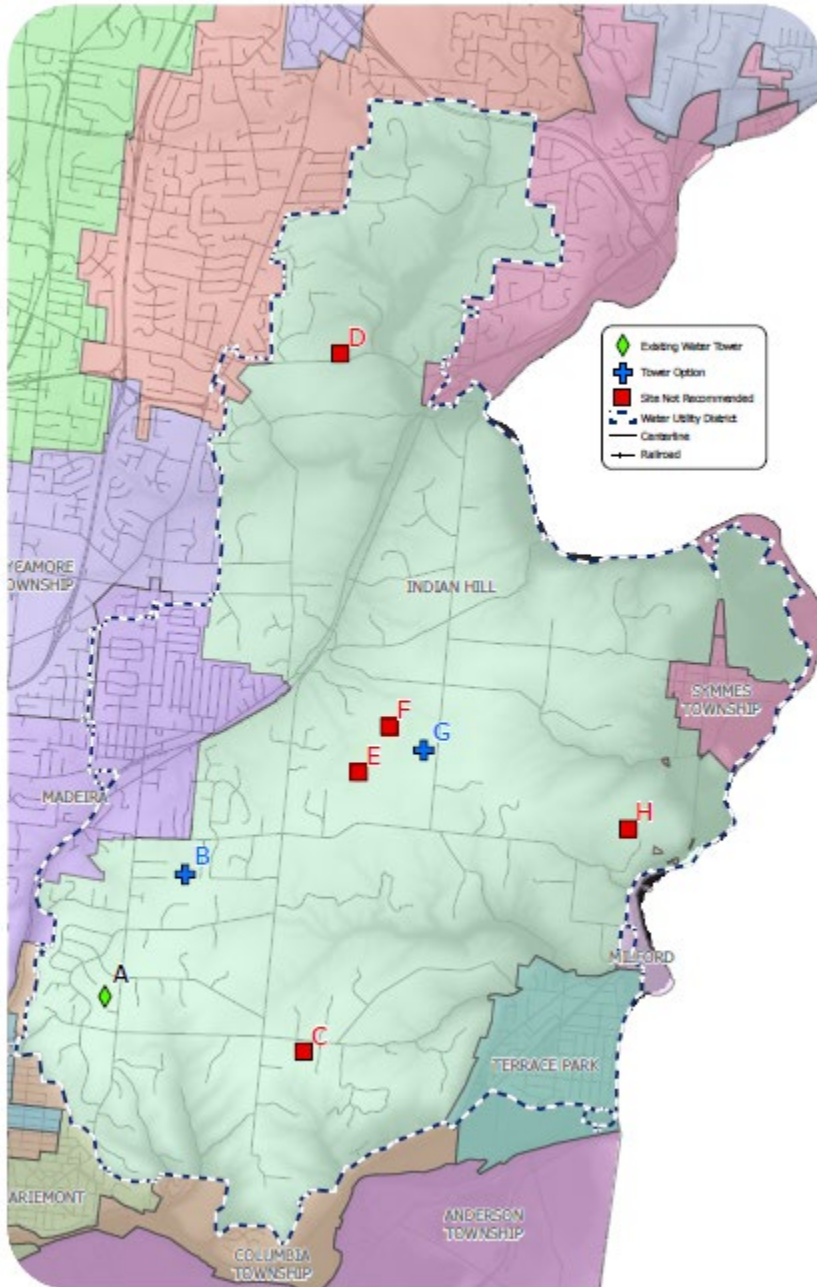


Overview of Sites Considered for the Proposed Water Tower

May 21, 2025



- A. Existing Tower Site
- B. Camp Jim B
- C. Radio Range Park
- D. Remington Rd.
- E. Camargo Club
- F. Grob Property
- G. Green Area South of Grob
- H. Clipping Field

Note:

1. Water tower construction cost estimates were not obtained for each site. Cost increases with the height of the tower structure. Cost is impacted by foundation type necessary (shallow or deep); no soil borings and testing have been performed on any site. Cost is also dependent on the amount of aesthetic upgrades, which will depend on the surroundings, and community input.
2. On-going maintenance costs were not obtained for each site. Cost increases primarily based on aesthetic upgrades of tower, as well as tower height (time needed to clean / repaint the surface area, and the reach capacity of equipment).
3. Duration of construction is dependent on the site prep work, foundation type, tower height, tower type, aesthetic upgrades, and seasonal timing of construction / weather delays.

Summary of Water Tower Site Considerations

The four primary components of water tower site selection are:

1. Land rights (ownership and deed restrictions) which allow opportunity for the tower installation,
2. Central location in the water system to provide uniform fire flows,
3. Sufficient water main sizing in the distribution system, and
4. High ground elevation to keep the overall tower height as short as possible for cost and visibility reasons.

All sites will require some level of clearing and grading, installation or maintenance of an access driveway. These are not deemed to be physical site constraints. Physical site constraints were deemed prohibitive at Site A (current tower site on Miami Rd.) due to the potential risk and impact of damage during the 18-to-24-month construction of a new water tower to the sole source of elevated storage and/or any of the three underground water storage vaults on-site. The availability of this water storage is critical to the health and safety of the general public until at least the new water tower is in service.

Should the existing water tower be taken out of service prior to the new tower being operational, Indian Hill Water Works (IHWW) would be dependent on booster pumps running in constant operation to pressurize the water system for not only fire flows, but general domestic use as well. The sole use of pumps to supply system pressure requires a closed-loop operation, increasing the chance of water main breaks, as the water tower also acts like an open relief for the system, to absorb water hammer. A failure of these pumps would result in system-wide boil water advisories.

Pumps rely not only on their mechanical components to function, but also require a steady supply of electricity. Although a back-up generator is on-site in the event of a power outage, it is also mechanical equipment susceptible to failure. Water towers supply system pressure by using gravity rather than electricity. While electric service may be unreliable at times, gravity always works.

Further, a chance of having the underground water storage vaults out of service would leave the system with insignificant water storage and increase the potential for use of the emergency water system interconnection with Greater Cincinnati Water Works (GCWW) to meet the demand and avoid water outages. However, GCWW reserves the right to deny emergency water service to IHWW and any other wholesale or retail customer outside their corporation limits in order to prioritize serving the customers within their jurisdiction. Risk potential for long term water outages, water main breaks from operating a closed system, boil water advisories, and reduced fire protection for Site A are too high to consider the site as feasible.

Soil strength of a site and aesthetic upgrades to fit the surroundings affect the design and cost of a water tower, not necessarily the feasibility of the site. The number of solutions available for these items provides more flexibility in the feasibility of a site as compared to the above components (land rights, location, distribution system, ground elevation). Due to the cost and time delay to investigate this for every potential property considered, this information is not available.

Sufficiency of existing water mains is another cost factor to consider, but is required to varying levels of degree for nearly every water tower site. The need and cost for water main improvements needed for a water tower depend on existing pipe diameters nearby, pipe age, presence of redundancy of a second feeder line, pipe replacement / extension length(s) needed, roadway impacts and restoration needs.

Potential Water Tower Site (Ranked in Order of Feasibility)	Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
B. Camp Jim B	✓	✓	✓	✓	X	117'
G. Green Area South of Grob	✓	X	✓	✓	✓	117'
E. Camargo Club	X	✓	✓	✓	✓	123'
F. Grob Property	X	X	✓	✓	X	115' - 127'
H. Clippinger Field	✓	X	✓	X	X	187' - 197'
D. Remington Rd.	X	✓	✓	X	X	247' - 267'
A. Existing Tower Site	✓	✓	X	X	X	83'
C. Radio Range Park	✓	X	X	X	X	95'

*HGL is the Hydraulic Grade Line, or maximum water elevation in the proposed water tower, which is proposed to be designed at 967' above Mean Sea Level (MSL). The heights to the HGL were approximated by subtracting the ground elevation in feet above Mean Sea Level per a County topography map for each site from the design HGL of 967'. The higher the number is in the table, the more expensive and potentially visible the proposed tower will be. The actual top of tower will be above the HGL, but depends on the tank style and aesthetic features of the tower.

Site A
Existing Water Tower Site on Miami Rd.

Overall Assessment: Not Feasible

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
✓	✓	X	X	X	83'

Property Status:

- + Village-owned
- + Utility structures not restricted by deed
- Will not meet zoning code for yard setback requirements
- Not a central location to the water system, impacts fire flows

Approximate Ground Elevation: 884' MSL **Desired HGL Elevation:** 967' MSL
Approximate Proposed Tower Height to HGL: 83'

Site Work Considerations & Water Transmission Main Needs:

- + Only intermittent interruptions to traffic on Miami Rd. are expected for construction vehicle ingress/egress and water main tie-in.
- A 16" transmission main already exists, but will need to be replaced due to age and condition. (The water main along Miami Rd. was built in 1922, and the water main within the tower site is from 1936.) A small extension to the new tower site will also be needed within the parcel.
- Three underground water storage tanks may not be driven over by vehicles or equipment as they would be at risk of damage and being put temporarily out of service.
- Considering booster pump stations, existing tower (needed to remain in service during construction), and underground storage, there is not enough physical space for construction personnel vehicles, equipment (crane operation, concrete trucks, etc.), and materials (metal tank panels, fill pipe, etc.).
- Excavation in close proximity to underground vaults could compromise the integrity of the walls of the underground tanks. This is particularly true if a deep foundation is needed to support the weight of a tower and the weight of 1 MG of water. Similar to in-ground swimming pools, underground tanks are designed to withstand the water pressure considering the help of counter-acting surrounding soil pressure. Removing soil near the underground tanks puts the tanks at risk for damage and being put temporarily out of service.
- Safety risk of construction on this site is highest as it is the sole location of the Village's water storage, and puts the system at the most risk for water outage and fire-fighting impacts.
- Rehabilitation of the water tower in lieu of replacement is not recommended as current repair needs are expensive, the structure is already at the end of its useful life at 89 years old, it is under-capacity, and is so short that it may only effectively use 70,000 gallons of storage. It has already had numerous rehabilitation attempts. The tower will need to continue to operate until a new tower is built (estimated construction duration is 18-24 months) in order to have water pressure provided by gravity instead of relying on electricity and continued pump operation.

Number of Residences Abutting Tower Property: 6
Number of Residences within 1,000' Radius of Tower: 56

Site B

Camp Jim B Property on Shawnee Run Rd.

Overall Assessment: **Feasible**

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
✓	✓	✓	✓	X	117'

Property Status:

- + Village-owned
- + Utility structures not restricted by deed or lease to Scouts
- + Scouts may continue to utilize the property with a water tower located on-site
- + Will meet zoning code for yard setback requirements
- + A more central location to the water system than the existing water tower

Approximate Ground Elevation: 850' MSL **Desired HGL Elevation:** 967' MSL
Approximate Proposed Tower Height to HGL: 117'

Site Work Considerations & Water Transmission Main Needs:

- Replacement and upsize of the dual water mains to a single 20" transmission main along Shawnee Run Rd. west of Drake Rd. will be necessary. (Approx. length: 4,600'). Replacement of the 12" transmission main from the 1940's and the 8" distribution water main installed in 1924 is an upcoming project due to pipe age and condition, but will need to move ahead in the capital planning schedule if facilitating a water tower.
- Traffic on Shawnee Run Rd. west of Drake Rd. will be impacted by construction of the water main.
- Tree removals on-site, and repaving of the driveway to Camp Jim B will be necessary.

Number of Residences Abutting Tower Property: 6
Number of Residences within 1,000' Radius of Tower: 43



Site B

Camp Jim B Property on Shawnee Run Rd.
The blue circle shown has 1,000' radius.

Site C
Radio Range Park on Indian Hill Rd.

Overall Assessment: **Not Feasible**

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
✓	X	X	X	X	95'

Property Status:

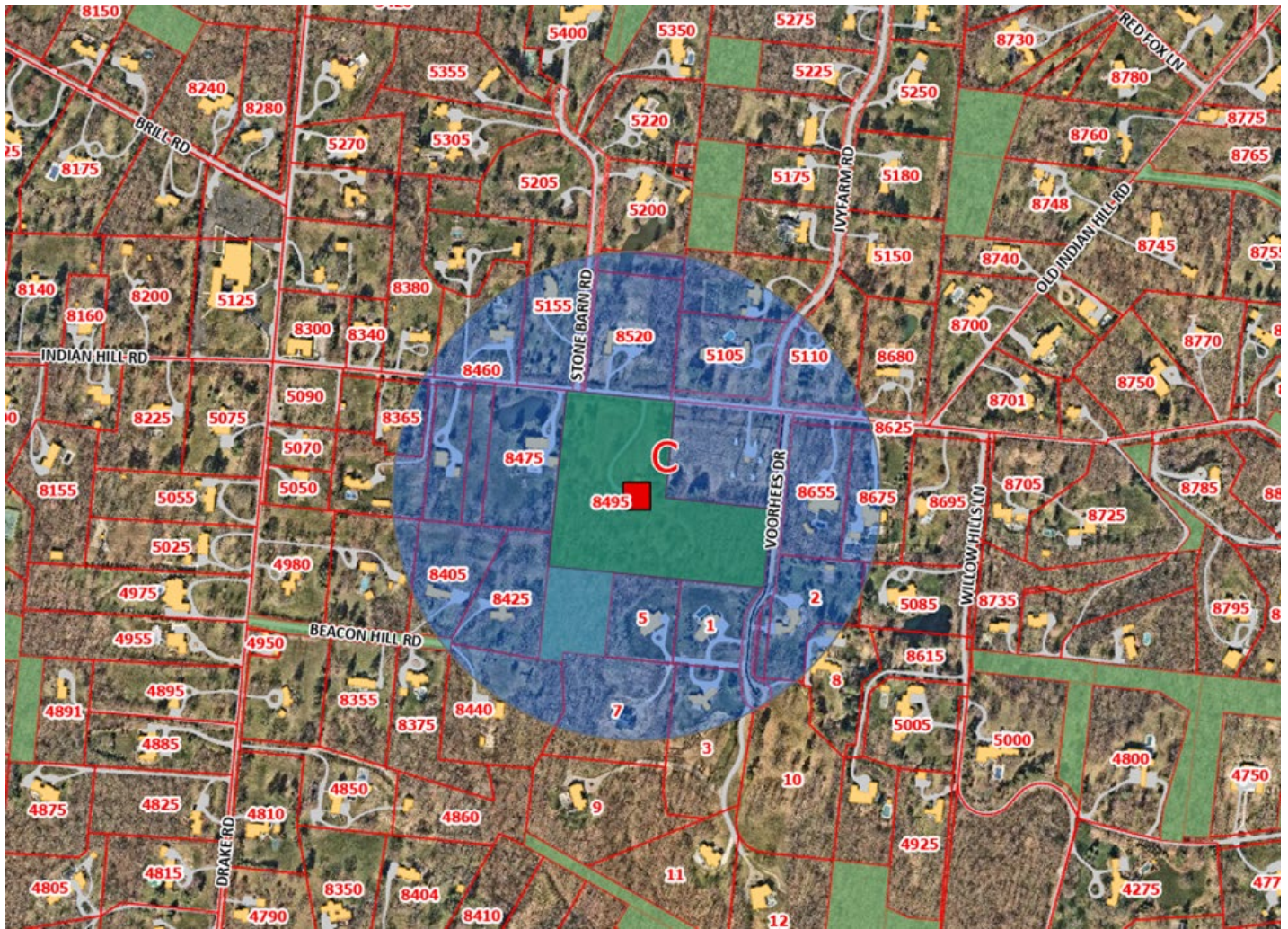
- + Village-owned
- + May meet zoning code for yard setback requirements
- Not a central location to the water system, impacts fire flows
- Utility structures not permitted by property deed, land transferred to the Village from Federal Government for recreation only
- Physical constraints of the adjacent radio towers cannot be overcome- metal structures, even metal roofs on residences are not permitted in the vicinity due to radio interference

Approximate Ground Elevation: 872' MSL **Desired HGL Elevation:** 967' MSL
Approximate Proposed Tower Height to HGL: 95'

Site Work Considerations & Water Transmission Main Needs:

- Replacement and upsize of the 12" water mains to a 16" transmission main along Drake Rd. between Graves Rd. and Indian Hill Rd., and along Indian Hill Rd. from Drake Rd. to Voorhees Dr., and Voorhees Dr. to the tower will be necessary. (Approx. length: 7,400')
- There is not a looped transmission main system available for Indian Hill Rd., which is important for system reliability. Potential route for water transmission main is Indian Hill Rd – Old Indian Hill Rd. – US 50 – SR 126, extending outside the Village's jurisdiction. (Approx. length: 15,000') Obtaining permit approval for work within the ROW on US 50 and SR 126, in particular, will cause delay in the project start, and may be subject to timing limitations and additional requirements, such as repaving the non-Village roads.
- Traffic on several major thoroughfares will be impacted by construction of water mains.
- Tree removals on-site, and repaving of the driveway on the property will be necessary. Reforest the Hill tree donations and the John Bentley Memorial Tree Grove may also be at-risk.

Number of Residences Abutting Tower Property: 6
Number of Residences within 1,000' Radius of Tower: 18



Site C
Radio Range Park on Indian Hill Rd.
The blue circle shown has 1,000' radius.

Site D

Parcels of Twin Fences Subdivision on Remington Rd.

Overall Assessment: **Not Feasible**

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
X	✓	✓	X	X	247' - 267'

Property Status:

- + Privately-owned, but available for purchase
- + May meet zoning code for yard setback requirements
- Not a central location to the water system, impacts fire flows
- Purchase of property may impact and delay the developer's plans for Phase 3 of the subdivision

Approximate Ground Elevation: 700' - 720' MSL **Desired HGL Elevation:** 967' MSL
Approximate Proposed Tower Height to HGL: 247' – 267'

Site Work Considerations & Water Transmission Main Needs:

- Overall tower height would be extremely tall due to low ground elevation.
- Replacement and upsize of the 8" and 12" water mains to a 16" transmission main along Given Rd. north of Cunningham Rd., Spooky Hollow Rd. between Given Rd. and Loveland-Madeira Rd., Loveland-Madeira Rd. between Spooky Hollow Rd. and Remington Rd., and Remington Rd. to the tower site will be necessary. (Approx. length: 16,700')
- Construction of the above water main will include two major waterway crossings and a railroad crossing, which will delay and add expense to the project.
- There is not a looped transmission main system available for Remington Rd., which is important for system reliability. Potential route for water transmission main is Remington Rd. – Main St. – Cooper Rd. / Blome Rd. – Camargo Rd. – Drake Rd. to Shawnee Run Rd, extending outside the Village's jurisdiction. (Approx. length: 17,000')
- Construction of both above proposed water main alignments include some sections of water mains which were recently replaced, and roadways which were recently repaved.
- Traffic on several major thoroughfares will be impacted by construction of the water mains. The timing of Phase 3 of the Twin Fences subdivision may require the Village to build or repave the extension of Larking Dr. for the developer, or void the performance and warranty bond for the privately-installed street.

Number of Residences Abutting Tower Property: 3 Currently, TBD

Number of Residences within 1,000' Radius of Tower: 3 Currently, TBD



Site D
Parcels of Twin Fences Subdivision on Remington Rd.
The blue circle shown has 1,000' radius.

Site E

Camargo Club on Shawnee Run Rd.

Overall Assessment: Not Feasible

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
X	✓	✓	✓	✓	123'

Property Status:

- + Will meet zoning code for yard setback requirements
- + A central location to the water system
- Privately-owned and owner is not willing to sell land
- Pursuit of property acquisition would be through Eminent Domain, adding cost, delay and poor public relations

Approximate Ground Elevation: 844' MSL **Desired HGL Elevation:** 967' MSL
Approximate Proposed Tower Height to HGL: 123'

Site Work Considerations & Water Transmission Main Needs:

- + Adequately sized transmission mains already exist along Shawnee Run Rd. Only an extension off Shawnee Run Rd. to the tower site will be necessary. (Approx. length: 1,400')
- + Only intermittent interruptions to traffic on Shawnee Run Rd. are expected for construction vehicle ingress/egress.
- Tree removals on-site, and paving of the driveway to the tower site will be necessary.

Number of Residences Abutting Tower Property: 1

Number of Residences within 1,000' Radius of Tower: 2

Site F

Grob Property on Given Rd.

Overall Assessment: Not Feasible

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
X	X	✓	✓	✓	115' - 127'

Property Status:

- + Will meet zoning code for yard setback requirements
- + A central location to the water system
- Privately-owned, purchased by Turner Farm
- The purchase of the property by Turner Farm Preservation Foundation Inc. was contractually limited on how the property can be used and the preservation easement with Cardinal Land Conservancy would not permit a water tower on the property.

Approximate Ground Elevation: 840'-852' MSL **Desired HGL Elevation:** 967' MSL

Approximate Proposed Tower Height to HGL: 115' - 127'

Site Work Considerations & Water Transmission Main Needs:

- + An adequately sized transmission main already exists along Given Rd. Only an extension off Given Rd. to the tower site will be necessary. (Approx. length: 200' – 2,000' depending on desired setback)
- + Only intermittent interruptions to traffic on Given Rd. are expected for construction vehicle ingress/egress and water main tie-in.
- + Tree removals on-site would be very limited.
- The majority of the property is wide open and highly visible.
- Construction of a driveway to the tower site will be necessary.

Number of Residences Abutting Tower Property: 1

Number of Residences within 1,000' Radius of Tower: 1

Site G

Green Area South of Grob Property on Given Rd.

Overall Assessment: **Feasible**

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
✓	X	✓	✓	✓	117'

Property Status:

- + May meet zoning code for yard setback requirements
- + A central location to the water system
- Village-owned, but deed restricted by green areas trust. The trust agreement states that for property that was purchased by the Village and place into the trust, the land may: “be conveyed only in exchange for property which, in the opinion of council, shall be of like or better quality, and more in keeping with the aforementioned goals and purposes of this trust.

Approximate Ground Elevation: 850' MSL

Desired HGL Elevation: 967' MSL

Approximate Proposed Tower Height to HGL: 117'

Site Work Considerations & Water Transmission Main Needs:

- + An adequately sized transmission main already exists along Given Rd. Only an extension off Given Rd. to the tower site will be necessary. (Approx. length: 200' – 2,000' depending on desired setback)
- + Only intermittent interruptions to traffic on Given Rd. are expected for construction vehicle ingress/egress and water main tie-in.
- + Tree removals on-site would be very limited.
- The majority of the property is wide open and highly visible.
- Construction of a driveway to the tower site will be necessary.

Number of Residences Abutting Tower Property: 4

Number of Residences within 1,000' Radius of Tower: 6

Green Area South of Grob Property on Given Rd.
The blue circle shown has 1,000' radius.

Site H
Clippinger Field on Shawnee Ridge Ln.

Overall Assessment: Not Feasible

Village-Owned Land	Allowed by Deed	Low Physical Constraints	Central Location	Existing Water Main Sufficient	Approx. Tower Height to HGL*
✓	X	✓	X	X	187' - 197'

Property Status:

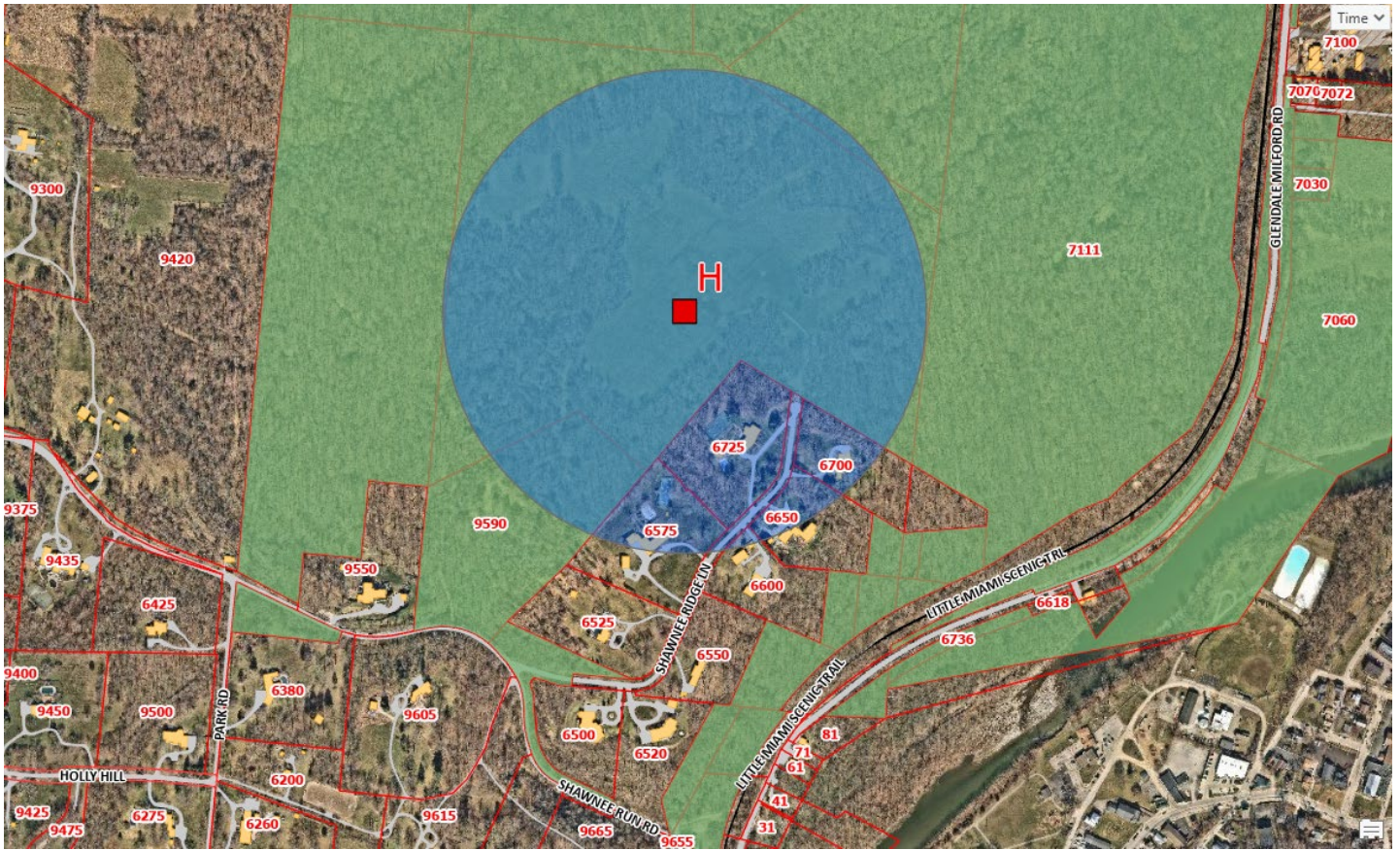
- + Will meet zoning code for yard setback requirements
- + A central location to the water system
- Village-owned, but deed restricted by green areas trust

Approximate Ground Elevation: 770'-780' MSL **Desired HGL Elevation:** 967' MSL
Approximate Proposed Tower Height in HGL: 187' - 197'

Site Work Considerations & Water Transmission Main Needs:

- + A transmission main would need to be extended along Shawnee Ridge Ln. to the tower site will be necessary. (Approx. length: 2,600'-3,500' depending on desired location)
- + Only intermittent interruptions to traffic on Shawnee Run Rd. are expected for construction vehicle ingress/egress and water main tie-in.
- + Tree removals on-site would be very limited.
- Overall tower height would be extremely tall due to low ground elevation.
- Traffic on Shawnee Ridge Ln. will be impacted by construction of the water main.
- Construction of a driveway to the tower site will be necessary.
- 1 to 2 Camargo Hunt events will be affected during construction.

Number of Residences Abutting Tower Property: 3
Number of Residences within 1,000' Radius of Tower: 3



Site H

Clippinger Field on Shawnee Ridge Ln.
The blue circle shown has 1,000' radius.