STAFF REPORT

DATE: 8/12/2019
REGULAR
ITEM #:
Unfinished Business

TO: Planning Commission

FROM: Ken Roberts, Planning Director

AGENDA ITEM: **Conditional Use Permit – Carmelite Hermitage of the Blessed Virgin Mary**

REVIEWED BY: Ben Prchal, City Planner

BACKGROUND:

The City has received an application for a conditional use permit (CUP) to allow the construction of a place of worship (chapel) on the property of the Carmelite Hermitage at 8249 Demontreville Trail. This site within a Public and Quasi-Public Open Space zoning district. Places of worship (such as churches and chapels) are conditional uses in the Public and Quasi-Public Open Space zoning district.

On June 24, 2019, the Planning Commission held a public hearing about this request. The Commission reviewed the staff report and took testimony from several persons (for and against) the CUP for the chapel. The Planning Commission closed the public hearing for the CUP and took no action on the proposal to allow the applicant and the City to review the question and alternatives about access and direct access for the proposed chapel.

ISSUE(S) BEFORE PLANNING COMMISSION:

The Planning Commission is being asked to consider the request for the conditional use permit and the variance request about direct access and then make a recommendation to the City Council about these requests for the proposed chapel at the Carmelite Hermitage at 8249 Demontreville Trail.

PROPOSAL DETAILS/ANALYSIS:

Applicants: Carmelite Hermitage of the Blessed Virgin Mary, 8249 Demontreville Trail, Lake Elmo, MN 55042

Property Owners: Discalced Carmelite Nuns of St. Paul, 8251 Demontreville Trail, Lake Elmo, MN 55042

Location: ALL OF GOVERNMENT LOT 4, IN SECTION 9, TOWNSHIP 29 NORTH, RANGE 21 WEST, ACCORDING TO THE GOVERNMENT SURVEY CONTAINING 59.4 ACRES OF LAND. ALSO, THE SOUTH 30.6 ACRES

	OF GOVERNMENT LOT 4 IN SECTION 4, AND THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 4, ALL IN TOWNSHIP 029 RANGE 021, ACCORDING THE GOVERNMENT SURVEY, BEING THE SOUTH 688 FEET THEREOF. PID# 09.029.21.12.0002
Request:	Conditional Use Permit for a place of worship and religious institution
Existing Land Use:	Hermitage – A retreat for monks with a community building and garage, cloistered living area with courtyards
Existing Zoning:	PF – Public and Quasi-Public Open Space
Surrounding Land Use / Zoning:	North – Properties owned by Discalced Carmelite Nuns (8251 Demontreville Trail) and Jesuit Retreat House (8243 Demontreville Trail); South – Single-family homes (Rural Residential); East – Single-family homes (Rural Residential); West – Lake Demontreville
Comprehensive Plan Guidance:	2030 – Public/Park 2040 – Institutional. As noted the in the 2040 Comprehensive Plan, this land use category identifies land that is used for schools, religious institutions, City Hall, municipal buildings, libraries and other institutional uses.
History:	In December 1991, the City approved a variance (regarding code requirement for having frontage on a public road) and a master plan for the Carmelite Hermitage of the Blessed Virgin Mary. This master plan included a phasing plan showing four parts or phases and included a court, guest house /library, chapel, cloister, hermitage, community building and workshop. The variance noted that the applicant has a private recorded easement that allows access to the north from their site to Demontreville Trail North (across the adjoining properties). In October 2007, the City approved an amendment to the approved master plan to allow an additional accessory building (1,512 square feet) on their site.
Deadline(s) for Action:	Application Complete – 5-24-2019 60 Day Deadline – 7-23-2019 Extension Letter Mailed – No 120 Day Deadline – N/A
Applicable Regulations:	§154.210 – Off-Street Parking Article XIV: Public and Semi-Public Districts

Request. A place of worship in Lake Elmo is a conditional use in the Public and Quasi-Public Open Space district. The City approved the Master Plan for the Carmelite Hermitage in 1991 as previously mentioned in this report, but a conditional use permit was never obtained, as the use was considered permitted at that

time. The City adopted the Public and Quasi-Public Open Space ordinance in September of 2000, and this ordinance required conditional use permits for places of worship and set forth certain standards for such a use as well as other district requirements that are in place today.

Because the property does not have a conditional use permit as is required by the Zoning Code, the existing use is considered legal non-conforming. The City's ordinance states that the lawful use of a building or structure may continue, but that the continuation of the non-conforming use does not include expansion. Since the applicant is requesting expansion of the non-conforming use (by adding a chapel), the City must approve a conditional use permit for the entire property in order for the applicant to add the chapel and to bring the property in to compliance with current zoning requirements. (Note: Conditional use permits run with or are applicable to a specific property, not with a particular owner or person).

Use on Proposed Site. The proposed chapel would be to the west of the existing buildings and south of the existing driveway into the site. As shown on the plans, the chapel would be about 8,520 square feet in area with a height of 41 feet, four inches. The applicant noted in their project description that the chapel would be used for liturgical services and for personal prayer and would have seating for 42 guests in addition to the seating for the 12 members of their community.

They also state that since their community members live in a Hermitage and since their way of life is relatively secluded, they do not generate a significant amount of vehicle traffic. They are anticipating an average of 10-15 visitors a day to their site. They have two part-time employees to help maintain the grounds and buildings. The Hermitage is open to the public between 7:30 AM and 4:30 PM. They are not planning to hold regular church or public worship services in the chapel.

Setback and Impervious Surface Requirements. The following table outlines how the proposed use adheres to the setback and impervious surface requirements of the Public and Quasi-Public Open Space District.

Public and Quasi Public Open Space Zoning Standards		
Standard	**Required**	**Proposed**
Maximum Parcel Area	20 acres	90 acres
Lot Width – Minimum (at ROW)	100 feet	Approximately 1793 feet
Lot Depth – Minimum	150 feet	Approximately 2015 feet
Maximum Height	50 feet	Approximately 41 feet
Maximum Impervious Coverage	15%	1.2%
Front Yard Setback – Building	100 feet	Approximately 1000 feet
Interior Side Yard Setback – Building	100 feet	Approximately 900 feet
Rear Yard Setback - Building	100 feet	Approximately 1000 feet
Parking Lot Setback	100 foot	Approximately 200 feet

Standards for Places of Worship within the Public and Quasi-Public Zoning District. The following outlines standards for places of worship as outlined in the Public and Quasi-Public zoning district.

a. Direct access is provided to a public street classified by the Comprehensive Plan as major collector or arterial;
    - *Staff Comment.* The City approved a variance for the access to this site in 1991. There is an existing driveway that connects the property to Demontreville Trail that is in an access easement that has been in place since 1904. The City has classified Demontreville Trail as a major collector street.

b. No use may exceed 235 gallons wastewater generation per day per net acre of land;
    - *Staff Comment.* It is unknown how much wastewater is generated, but it is assumed there is no more than 235 gallons being generated per net acre on a 90 acre site.
c. No on-site sewer system shall be designed to handle more than 5,000 gallons per day;
    - *Staff Comment.* The proposed drainfield is 15,000 square feet in area and according to the SSTS design report dated May 8, 2019 is designed to handle 350 gallons of waste a day.
d. Exterior athletic fields shall not include spectator seating, public address facilities or lighting;
    - *Staff Comment.* There are no exterior athletic fields.
e. No freestanding broadcast or telecast antennas are permitted. No broadcast dish or antenna shall extend more than 6 feet above or beyond the principal structure.
    - *Staff Comment.* There are no broadcast or telecast antennas, existing or proposed.

Parking Lot Requirements.

The project plans show a new 18-vehicle parking lot to the west of the entrance driveway and to the northwest of the proposed chapel.

- *Maneuvering Area.* There is sufficient space in and around the parking lot so vehicles do not need to back in to the public street.

- *Surfacing and Drainage.* The majority of the parking lot would have curbing and would be paved with a durable surface. Stormwater drainage would be directed to the northeast to a new infiltration basin on the site.

- *Marking of Parking Spaces.* The Code requires parking areas with five or more spaces to be marked with painted lines at least four inches wide. The plans for the parking lot show striping to meet this requirement.

- *Curbing.* Open off-street parking areas designed to have head-in parking along the property line shall provide a bumper curb or barrier of normal height. The proposed parking lot meets this requirement.

- *Accessible Parking.* The proposed number of parking spaces is 18 and of these, one would be handicap –accessible, which meets the Americans with Disabilities Act (ADA) requirements.

- *Number of Parking Spaces.* The City's parking requirements requires one space per six seats. There are 54 seats within the chapel so the Code would only require 9 parking spaces for the chapel. The applicant has proposed 18 parking spaces thus meeting this requirement.

Parking Lot Landscaping and Screening Standards

- *Perimeter Parking Lot Landscaping.* The proposed parking lot is located in the center of the property – well away from the street right-of-way and from any property lines. The existing trees on the site provide adequate screening and landscaping around the proposed parking lot.

Landscape Plans. The applicant has submitted surveys and project plans showing the existing landscaping and wooded areas on the property. Since the site has extensive areas of trees and the since the proposed chapel would not be removing any existing trees, staff does not recommend that the City review or require additional landscaping on the property.

Septic Drainfield. The existing drainfield is to the south of the existing building and the proposed chapel will not affect the existing drainfield. The project plans show a new drainfield to the south of the proposed chapel. This new drainfield will require a permit from the Washington County Public Health and Environment Department before installation.

Architectural Standards within the Public and Quasi-Public Open Space. The exterior design of the chapel is subject to the Performance Standards set forth in Section 154.600(F) of the Zoning Code. The proposed chapel would be constructed with a mix of brick, limestone, marble and have a green shingled roof. These materials meet the requirements for exterior materials as listed in the zoning code and the overall design meets or exceeds all the design standards set in Section 156.600 of the Zoning Code.

Fire Chief Review. I have attached the Fire Chief's review comments (dated June 5, 2019) for your consideration. Staff is recommending that the applicant meet all the requirements of the Fire Chief before the City issues a building permit for the chapel.

City Engineer Review. The City Engineer's review memo (dated June 17, 2019) is attached to this report. His comments are primarily about stormwater management for the project. He noted:

- The project will require a Valley Branch Watershed District (VBWD).
- The storm water facilities for this development should remain privately owned and maintained.
- The storm water facility 100-year HWL must be fully contained within the subject property and easement must be provided to protect the 100-year HWL flood area.
- The applicant shall provide drainage and utility easement over storm water BMP including the 100-year HWL and pond maintenance access road and access bench.

Recommendation Findings. Staff recommends the following findings:

1. The proposed use will not be detrimental to or endanger the public health, safety, comfort, convenience or general welfare of the neighborhood or the city. ***The use of the property for religious facilities, including the proposed chapel, will not be detrimental or in any way endanger the public health, safety, comfort, convenience or welfare of the neighborhood or the City.***
2. The use or development conforms to the City of Lake Elmo Comprehensive Plan. ***The property is guided for Public/Park in the 2030 Comprehensive Plan and Institutional in the proposed 2040 Comprehensive Plan. A place of worship is a conditional use in these land use designations.***
3. The use or development is compatible with the existing neighborhood. ***The use is compatible with the existing neighborhood. The religious facilities in this area were established in the 1950's and Hermitage has been on this site since the 1980's.***
4. The proposed use meets all specific development standards for such use listed in Article 7 of this Chapter. ***The existing and proposed uses meet all specific development standards for such use as listed in Section 154.600 Public and Quasi-Public Open Space.***
5. If the proposed use is in a flood plain management or shoreland area, the proposed use meets all the specific standards for such use listed in Chapter 150, §150.250 through 150.257 (Shoreland Regulations) and Chapter 152 (Flood Plain Management). ***The existing structures and the proposed chapel would be located outside the 0.2% annual chance floodplain and meets shoreland setback requirements.***

6. The proposed use will be designed, constructed, operated and maintained so as to be compatible in appearance with the existing or intended character of the general vicinity and will not change the essential character of that area. ***The proposed chapel is compatible in appearance with the existing and intended character of the general vicinity and will not change the essential character of the area.***
7. The proposed use will not be hazardous or create a nuisance as defined under this Chapter to existing or future neighboring structures. ***The existing religious facilities and the proposed chapel are not nor will they will be hazardous or create a nuisance.***
8. The proposed use will be served adequately by essential public facilities and services, including streets, police and fire protection, drainage structures, refuse disposal, water and sewer systems and schools or will be served adequately by such facilities and services provided by the persons or agencies responsible for the establishment of the proposed use. ***The existing facilities and the proposed chapel are and will be adequately served by essential public facilities and services, including streets, police and fire protection, drainage structures, refuse disposal, water and sewer systems and schools.***
9. The proposed use will not create excessive additional requirements at public cost for public facilities and services and will not be detrimental to the economic welfare of the community. ***The existing facilities and the proposed chapel do not and will not create excessive additional requirements at public cost nor will the existing or proposed facilities on the property be detrimental to the economic welfare of the community.***
10. The proposed use will not involve uses, activities, processes, materials, equipment and conditions of operation that will be detrimental to any persons, property or the general welfare because of excessive production of traffic, noise, smoke, fumes, glare or odors. ***The existing and proposed uses will not excessively produce traffic, noise, smoke, fumes, glare or odors.***
11. Vehicular approaches to the property, where present, will not create traffic congestion or interfere with traffic on surrounding public thoroughfares. ***Vehicular approaches to the property do not and will not create and have not created traffic congestion or interfere with traffic. The number of additional vehicles expected on the property because of the new chapel is minimal and will be limited to certain times and days of the weeks.***
12. The proposed use will not result in the destruction, loss or damage of a natural or scenic feature of major importance. **N/A**

Recommended Conditions of Approval. If the Planning Commission wishes to recommend approval, staff recommends the following conditions:

1) The applicant must obtain all other necessary City, State, and other governing body permits and approvals before the commencement of any construction activity on the site. These include, but not limited to, a Valley Branch Watershed District permit, approval of revised plans by the City Engineer, a building permit and an on-site wastewater (septic) permit.
2) All items and changes outlined by the City Engineer in the memorandum addressing the Carmelite Chapel Conditional Use Permit and Site Improvements dated June 17, 2019 shall be incorporated into the project plans.
3) All items outlined by the Fire Chief in his memo dated June 5, 2019, shall be incorporated into the project plans and before the City issues a building permit for the project.

4) The applicant must provide written documentation demonstrating adequate wastewater management facilities exist or are proposed to serve the proposed chapel. This should include either a Washington County inspection compliance report for the existing on-site wastewater system or a wastewater management plan and permit approved by Washington County to serve the proposed chapel.
5) The applicant or owner receive a building permit from the City for chapel within 12 months of City Council approval of the conditional use permit.
6) If the applicant or owner has not taken action toward starting the chapel or if substantial construction of the chapel has not taken place within 12 months of the City's approval of conditional use permit, the CUP approval shall become void. The applicant or owner may request City Council approval of a time extension to start or implement the conditional use permit.

FISCAL IMPACT:

None

OPTIONS:

The Planning Commission may:

- Recommend approval of the Conditional Use Permit with recommended findings and conditions of approval.
- Recommend approval of the Conditional Use Permit with amended findings and conditions of approval.
- Recommend denial of the Conditional Use Permit, citing findings for denial.

RECOMMENDATION:

Staff is recommending approval of the Conditional Use Permit for the Carmelite Hermitage of the Blessed Virgin Mary including the proposed chapel for the property located 8249 Demontreville Road:

"Move to recommend approval of the conditional use permit for the Carmelite Hermitage including the proposed chapel for the property located at 8249 Demontreville Road with recommended findings and conditions of approval as drafted by Staff."

ATTACHMENTS:

- Application Narrative dated May 24, 2019
- 4 City Maps
- Site Survey
- Certificate of Survey
- Engineering Project Plans (2 sheets)
- Architectural Plans (5 sheets)
- May 8, 2019 SSTS Design Report
- City Engineer Review Memo dated June 17, 2019
- Fire Chief Review memo dated June 5, 2019
- Neighbor comments (Falzone) dated June 16, 2019

Land Use Application – 5-24- 2019

Property Location
All of Government Lot 4 in Section 9, Township 29 north, Range 21 west, City of Lake Elmo, Washington County, Minnesota, according to government survey containing 59.4 acres of land. Also the south 30.6 acres of Government Lot 4 in Section 4, and of the southwest quarter of the southeast quarter of said Section 4, all in Township 29 north, Range 21 west, according to government survey, being the south 688 feet thereof.

Detailed Reason for the Request
In December of 1991, the City of Lake Elmo approved the master plan of the Carmelite Hermitage of the Blessed Virgin Mary (aka Carmel of the Blessed Virgin Mary). The master plan included a phasing plan of four parts. Phase 1, consisting of a community building and garage was constructed in 1991/92. Phase 2, consisting of a central court yard with covered walkways (cloister) was constructed in 2001/2002. Phase 3 consists of a chapel and is the building we would now like to construct. Phase 4 will consist of a guest building and library. We hope to commence Phase 4 around 2022. We request City approval of a conditional use permit to construct our chapel because it is an essential building of every monastery and will provide needed worship space for the members of the Hermitage and their guests.

Variance Requests
No variances requested.

2a. Contact Information

Owner of Record
Discalced Carmelite Nuns of Saint Paul
8251 Demontreville Trail
Lake Elmo, MN 55042
651-777-3882

Authorized Agent
Reverend John Burns
Carmelite Hermitage of the Blessed Virgin Mary
8249 Demontreville Trail
Lake Elmo, MN 55042
651-779-7351
carmelbvm@gmail.com

Architect
Duncan Stroik
218 West Washington Avenue
Suite 1200
South Bend, IN 46601
574-232-1783
stroik@stroik.com

Civil Engineer
Paul Cherne, P.E.
Pioneer Engineering

2422 Enterprise Drive
Mendota Heights, MN 55120
651-251-0630
pcherne@pioneereng.com

Surveyor
Joel Anez
Landmark Surveying, Inc.
21070 Olinda Trail North
Box 65
Scandia, MN 55073
651-433-3421
inthefield@frontiernet.net

Septic System
Jesse Kloeppner
Steinbrecher Companies, Inc.
Zimmerman, MN 55398
763-843-4114
septic@IssiMN.com

2b. Property Information

Addresses
Discalced Carmelite Nuns of St. Paul
8251 Demontreville Trail
Lake Elmo, MN 55042

Carmelite Hermitage of the Blessed Virgin Mary
8249 DeMontreville Trail
Lake Elmo, MN 55042

Current Zoning
Public Facility (PF)

Parcel Size
90.109 acres
3,924,760 square feet

PID
0902921120002

Current Legal Description
All of Government Lot 4 in Section 9, Township 29 north, Range 21 west, City of Lake Elmo, Washington County, Minnesota, according to government survey containing 59.4 acres of land. Also the south 30.6 acres of Government Lot 4 in Section 4, and of the southwest quarter of the southeast quarter of said section 4, all in Township 29 north, Range 21 west, according to government survey, being the south 688 feet thereof.

2c. History of the Property

The property under consideration was homesteaded in the 1800s and remained farm land until 1954. At one time William Jennings was owner of all of Lot 4, Section 9, Township 29, Range 21, and all of Lots 3 and 4 and the West one-half of the Southeast Quarter of Section 4, Township 29, Range 21, West in Washington County, Minnesota.

On 25 August 1904, William Jennings and his wife conveyed to Christian Figge by warranty deed dated that day, Government Lot 4, Section 9, Township 29, Range 21, and also the South 30.6 acres of Lot 4 in Section 4 and of the Southwest Quarter of the Southeast Quarter of Section 4, Township 29, Range 21. As part of said conveyance, William Jennings also granted to Christian Figge a right of way (easement) to Figge's property over Government Lots 3 and 4 in Section 4 as described in a deed recorded in Book 72 of the Book of Deeds, page 80, Washington County, Minnesota. This is the easement from Demontreville Trail across property now owned by the Jesuit Retreat House and to the property under consideration that has existed since 1904.

In 1954, the Discalced Carmelite Nuns of Saint Paul, a non-profit corporation under the laws of the State of Minnesota, were looking for property upon which to build a permanent monastery. They were advised of the property which they now own and entered into negotiations with the current owners.

On 2 February 1954, Phillip C. Mackey and his wife Bernadine R. Mackey conveyed their property, along with its easement, to the Discalced Carmelite Nuns of Saint Paul by warranty deed, dated that day, and filed for record in Washington County, Minnesota, on 4 February 1954. At the time of purchase, said property had been on the market for five years. The Carmelite Nuns built their monastery upon their newly acquired property in 1954/55. They moved into the new monastery in 1955 and have resided there since that time.

In 1983, Rev. John Burns, a Carmelite priest, became chaplain for the Carmelite Nuns in Lake Elmo. After several years, the Carmelite Nuns and Fr. Burns mutually agreed that it would be beneficial to the Carmelite nuns if the Carmelite Fathers and Brothers established their own monastery on the property. This would assure the nuns of future chaplains and allowed the Carmelite Fathers to have a presence in the Twin Cities. In 1987 Carmel of the Blessed Virgin Mary (aka Carmelite Hermitage, Carmelite Hermitage of the Blessed Virgin Mary) was incorporated in the State of Minnesota. Other priests and brothers joined the community over the years.

The Order of Carmelites was founded on Mount Carmel (present State of Israel) sometime before 1200 AD. From there it has spread to six continents. Currently there are about 900 monasteries of nuns with a total membership of 10,000, and 1,000 houses of Carmelite priests and brothers with about a total membership of 6,000. We are part of the Roman Catholic Church.

Our way of life consists of prayer, study, and labor to support ourselves. We also welcome visitors who wish to find a quiet place to refresh their minds and hearts, to reflect and pray, either by themselves or with us, and who may desire to seek guidance for their lives by talking with one of the members of our community. The chapel is the heart of our monastery buildings. Our day is punctuated by liturgical services and times of personal prayer. We live a simple way of life and support ourselves through arts and crafts, organic gardening, maple syrup production, woodworking and self-maintenance of our property and buildings.

2d, i.

The 90 acre tract upon which the new chapel will be built is approximately 60% woodland and 40% prairie and is situated on the east bank of Lake Demontreville. Wildlife is abundant in all areas of the property. We have a personal commitment to live in harmony with our natural surroundings and to employ horticultural practices which do not pollute but rather benefit the environment. We have spent many hours removing buckthorn and diseased trees from our property and planting species of trees and shrubs which are beneficial to wildlife.

The new chapel will be situated just west of the existing buildings of the Hermitage. The land there is almost flat, and construction of the chapel will not require any significant changes to the topography. The hermitage is situated in an open field surrounded by woodlands. The area in the immediate vicinity of the hermitage is planted with lawn, trees, shrubs, and flower beds. Access to the hermitage is provided by a private road from Demontreville Trail. The distance between the hermitage and Demontreville Trail is approximately ½ mile.

Since we live at the Hermitage, and since our way of life is relatively secluded, we leave the Hermitage infrequently, and therefore we do not generate a significant amount of traffic. Visitors to our Hermitage now average 1-2 per day. Additionally, we have regular mail delivery and occasional deliveries by UPS or FedEx. Our new chapel will be open to the public during the day and may generate an increased number of visitors. Because of the remoteness of our property and the fact that we do not advertise, we do not anticipate an increase of visitors beyond an average of 10-15 per day. We do not operate any programs for the public, although we may have a special celebration a few times per year to which guests are invited. We do not anticipate any adverse effects upon the natural areas of our property during or after the construction of the chapel.

2d, ii.

We currently have seven members in our community, and we may eventually grow to a maximum of twelve members. We have two part-time employees who help to maintain our grounds and buildings. The Hermitage opens to the public at 7:30 AM and closes at 4:30 PM. We have a gate which prevents access to the hermitage after-hours.

Our community building provides living and work spaces for the members of the community, including a kitchen, dining room, laundry, shower room, library, infirmary, and mechanical room. To the west of the community building and attached to it lies the cloister. This consists of a quadrangle surrounded by covered walkways which allow passage from one building to another under a roof. The open interior of the cloister is landscaped with flowerbeds and a pool. Off the north and south sides of the cloister are found the bedrooms of the members of the community. The new chapel will be situated just west of the cloister. The chapel will be used for liturgical services and for personal prayer. It has a planned seating capacity of 42 guests, in addition to the members of our community (12 maximum).

2e, i.

Since the parcel of land upon which the chapel will be built is very large and since the chapel will be located in the middle of the parcel, we do not foresee that the chapel will cause any inconvenience or disturbance to the neighborhood or to the City. Our community greatly values silence as an appropriate atmosphere for prayer and personal reflection. None of the activities carried on in the new chapel will create noise. The chapel will be built of durable and noble materials which will enhance the beauty of the neighborhood. The safety of our grounds and buildings is important to us. No toxins or harmful waste products are produced as a result of activities at our monastery, and we are committed to recycling and energy conservation.

2e, ii.

Our parcel of land has always been and continues to be zoned as Public Facility. No change in land use is envisioned in our plans. Since our parcel of land is heavily wooded and borders Lake Demontreville on its west side, we in no way interfere with the development plans of the City of Lake Elmo. The comprehensive plan is for public/park. The rural character of the area will not be changed by the addition of the new chapel building.

2e, iii.

Our property is bordered on the south and east by low density private housing, on the north by the Jesuit Retreat House, and on the west by Lake Demontreville. Woodland separates our buildings from the single-family neighborhoods which border our property to the east and to the south. Woodlands also separate us from the Jesuit Retreat House. There is no direct view of our buildings from any neighboring property. There is no incompatibility between our hermitage and the existing neighborhood. We have excellent relations with our neighbors. Many have told us that they are very grateful to live next to our hermitage both because of the prayerful and religious nature of our life and also because of our extensive woodlands.

The Jesuit Retreat House shares the same prayerful and religious activities as we do. Far from being incompatible, our institutions belong to the same church and share a common way of life. The one priest who is resident at the Jesuit Retreat House opposes our new chapel because of a fear that it will increase traffic on the roadway which passes through Jesuit property to reach our hermitage. We have told him that we will work with him to minimize any disturbance to the retreats which take place from Thursday evening through Sunday evening most weeks. Since we do not advertise in any way nor offer programs for the public, we do not anticipate large crowds coming to our hermitage. Visitors will be intermittent and will usually arrive in a single car. By contrast, there may be fifty or more cars which come to and leave from the Jesuit Retreat House at the beginning or end of the weekly retreat. Trucks make food deliveries during the week and a laundry truck comes each week to replace sheets and towels. The Retreat House employs far more people than our Hermitage, and this also adds to the traffic in the area.

2e, iv.

Our project conforms to Article 7 of the Zoning Code, including general requirements for parking as regards dimensions and number of parking spaces.

2e, v.

The project is not in a flood plain. The project is in a shoreland district. The project meets the setback and lot area requirements of the ordinance. Demontreville Lake is a recreational development lake. The project is a permitted use in the shoreland district

	Ordinance	Proposed
Setback County Road	50	2750’
Setback Public Street	20	1025’
Setback OHW	200	980’
Setback top of bluff	30	220’
Setback OHW- Septic	75	810’
Maximum impervious coverage	15%	1.2%

2e, vi.

The new chapel will be constructed of the same materials as the existing buildings of the hermitage (brick and stone). The monastery of the Carmelite nuns is also a brick structure. The main building complex of the Jesuit Retreat House is a limestone structure. No change in the character of the area will result from the construction of our chapel. The nearest land uses are also religious.

2e, vii.

The chapel will be isolated from neighbors and will not create a hazard or nuisance to existing or future neighboring structures.

2e, viii.

The project will be served adequately by existing public services and will not create any additional demand for public services. The site utilizes an onsite well and onsite septic system. In 1991 officials from the Lake Elmo Fire Department visited our Hermitage to determine whether our site presented any difficulties of access for the fire department. Fire Chief Dick Sachs stated in writing that our site did not pose any problems to his department. (See attached letter.)

2e, xi.

The project will not create a need for additional public services or facilities. No detriment to the economic welfare of the community will result from the construction of our chapel.

2e, x.

The chapel will be used for religious purposes by the residents of the Hermitage. Guests and visitors will have access to the chapel at suitable hours of the day. The chapel has a planned seating of 42 persons, but we do not anticipate having nearly this many people at our services on a daily basis. At the present time, we have no more than 0 to 10 visitors a day. Most days the number is 0 to 2. The new chapel will not produce noise, smoke, fumes, glare, or odors, and the increase of traffic on account of the chapel will be minimal.

2e, xi.

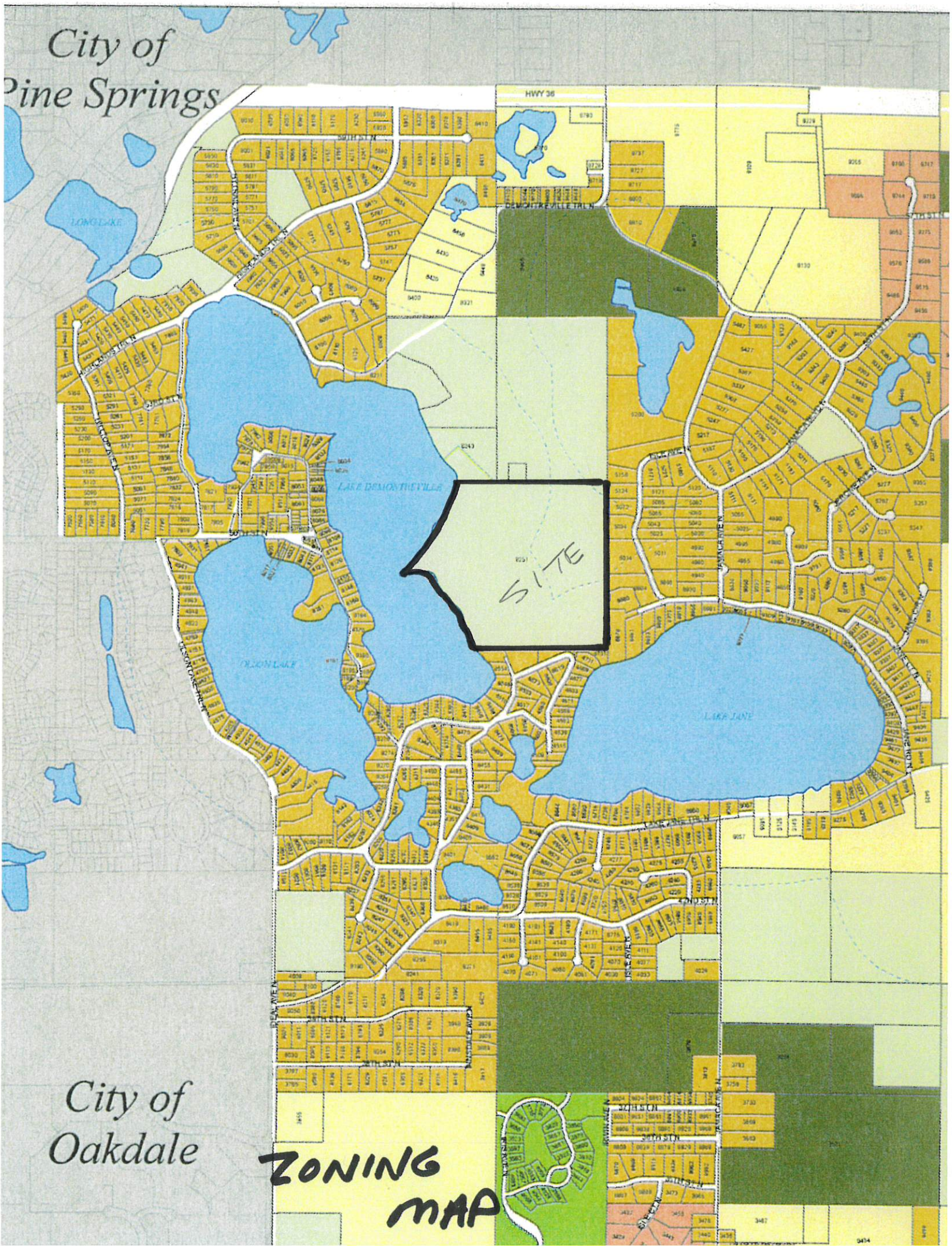
The site is accessed via a collector street (Demontreville Trail) and a private drive. The additional traffic generated by the chapel is estimated to be 8 average daily trips on most days of the year and 30 average daily trips on a few occasions in a calendar year. Most trips will occur during non-peak hours.

2e, xii.

The new chapel will be built in an open field and will result in very minimal tree removal (8-10 evergreens which we ourselves had planted). No wetlands will be impacted. The chapel will be located 980' feet from Lake Demontreville. The final phase of our monastery building program will consist of a building for visitors and guests as well as some rooms for community workshops and library.

Landscaping Plan

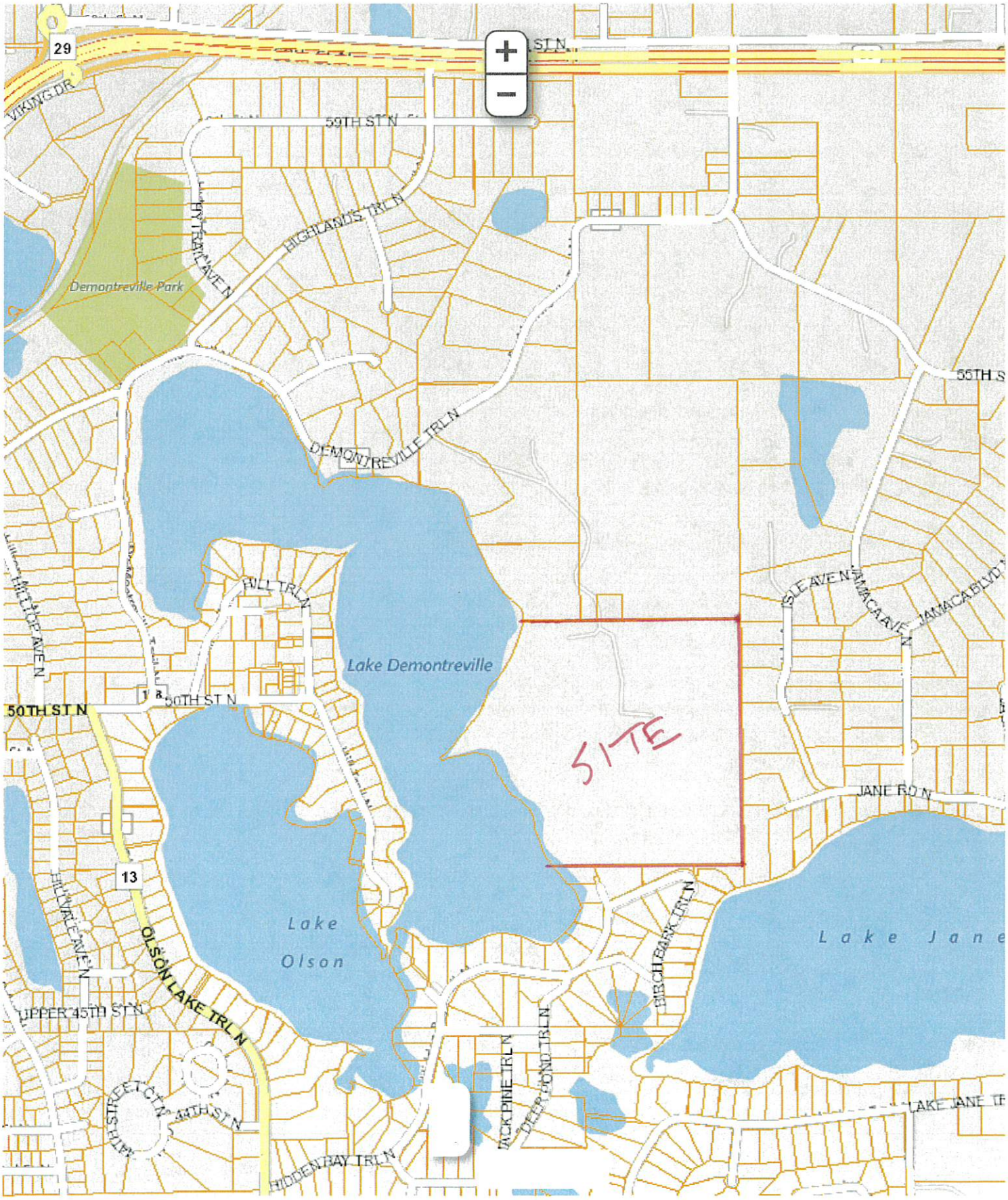
Because the area around the chapel will be further developed with a guest building, workshops and a small library, we do not plan extensive landscaping around the chapel. Lawn grasses, some foundations shrubs, and a few flower beds will be planted and mulched with wood chips. Mr. Ken Roberts thought that, under these circumstances, it would not be necessary to submit a separate landscaping plan.


City of
Pine Springs
HWY 36
LONG LAKE
LAKE DEMONTREVILLE
OLSON LAKE
LAKE JANE
SITE
City of
Oakdale
ZONING
MAP

Washington County

Property Viewer

Sign in



Washington County

Property Viewer

Sign in

Washington County

Property Viewer

Sign in

PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER
AND PART OF GOVERNMENT LOT 4, SECTION 4
AND GOVERNMENT LOT 4, SECTION 9,
ALL IN TOWNSHIP 29 NORTH, RANGE 21 WEST,
CITY OF LAKE ELMO, WASHINGTON COUNTY, MINNESOTA

8249 Demontreville Trail North
Lake Elmo, MN 55042

LEGEND

Orientation of the bearing system is the Washington County Coordinate System, NAD 83, 1986 Adjustment.

Distances are in feet and decimals of a foot.

- Denotes a 1/2 inch inside diameter iron pipe monument set, marked by a plastic cap inscribed with AMEC RLS 13775.
- Denotes a 1/2 inch inside diameter iron pipe monument found, marked by a plastic cap inscribed with RLS 9232 unless otherwise described.
- Denotes a set 7 inch spike.
- Denotes a set masonry nail.
- Denotes location of underground gas line.
- Denotes location of underground electric line.
- Denotes location of underground telephone line.

DETAIL

Not to scale

S89°47'08"W
0.02
S89°29'21"W
N00°43'24"W

NOTE

Refer to the engineers Carmelite Hermitage Chapel site plan for additional information on proposed parking, sidewalks, drainage, etc.

Book 187 of Deeds, pages 491-492

All of Government Lot Four (4), in Section Nine (9), Township twenty-nine (29) north of Range Twenty-one (21) west, according to the government survey thereof, containing fifty-nine and four tenths (59.4) acres of land.

Also the south thirty and six-tenths (30.6) acres of Lot four (4) in Section Four (4), and of the northwest quarter of the southeast quarter of said Section Four (4), all in Township Twenty-nine (29) north of Range Twenty-one (21) west, according to the government survey thereof, being the south six hundred and eighty-eight (688) feet, more or less, thereof.

Together with a right of way to said ninety acre tract of land over Government Lots three (3) and four (4) in said Section Four (4), as more particularly described in Deed recorded in Book 72 of Deeds, Page 90, Washington County records.

Book 301 of Deeds, page 736

The East Two Hundred Ten (210) feet of the West Three Hundred Fifty (350) feet of the North Two Hundred Ten (210) feet of the South Eight Hundred Ninety-eight (898) feet of the S.E. 1/4 of Section Four (4), Township Twenty-nine (29), Range Twenty-one (21).

Book 72 of Deeds, page 90

All of Government Lot Four (4), in Section Nine (9), Township Twenty-nine (29) north of Range Twenty one (21) west, according to the government survey thereof, containing fifty-nine and four tenths (59.4) acres of land.

Also the south thirty and six-tenths (30.6) acres of Lot Four (4) in Section Four (4) and of the southwest quarter of the southeast quarter of said Section Four (4), all in Township Twenty-nine (29) north of Range twenty-one (21) west, according to the government survey thereof, being the south six hundred and eighty-eight (688) feet, more or less, thereof.

Together with a right of way to said ninety acre tract of land over Government Lots Three (3) and Four (4) in said Section Four (4) over the roadway as now located along the east bank of Lake De Montreville, running in a southeasterly and northeasterly direction from the main road which runs east and west along the northerly line of said Government Lots Three (3) and Four (4), reserving, however, to the parties of the first part, their heirs and assigns, the right at any time to change the course of such roadway to a course easterly and approximately parallel with the roadway as now located along the east bank of said lake, the course of such road way to be thus changed easterly not more than two hundred (200) feet from such roadway as now located; and the condition of such roadway, if changed, to be made by the parties of the first part, their heirs and assigns, as good as the present roadway; and the title to such roadway to be free and clear of all incumbrances affecting the land over which it runs.

SCALE IN FEET
0 50 100 200

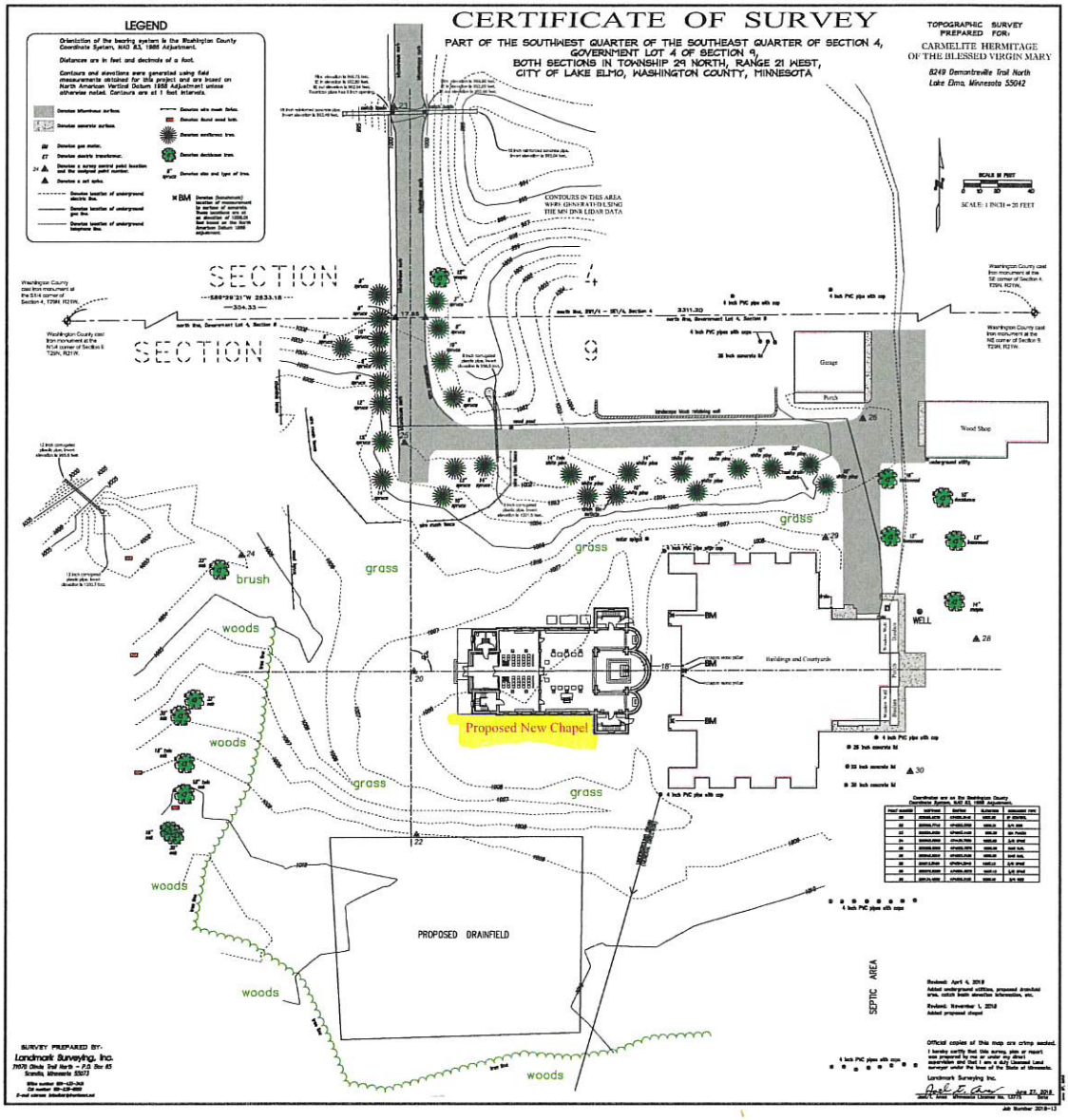
SCALE: 1 INCH = 100 FEET

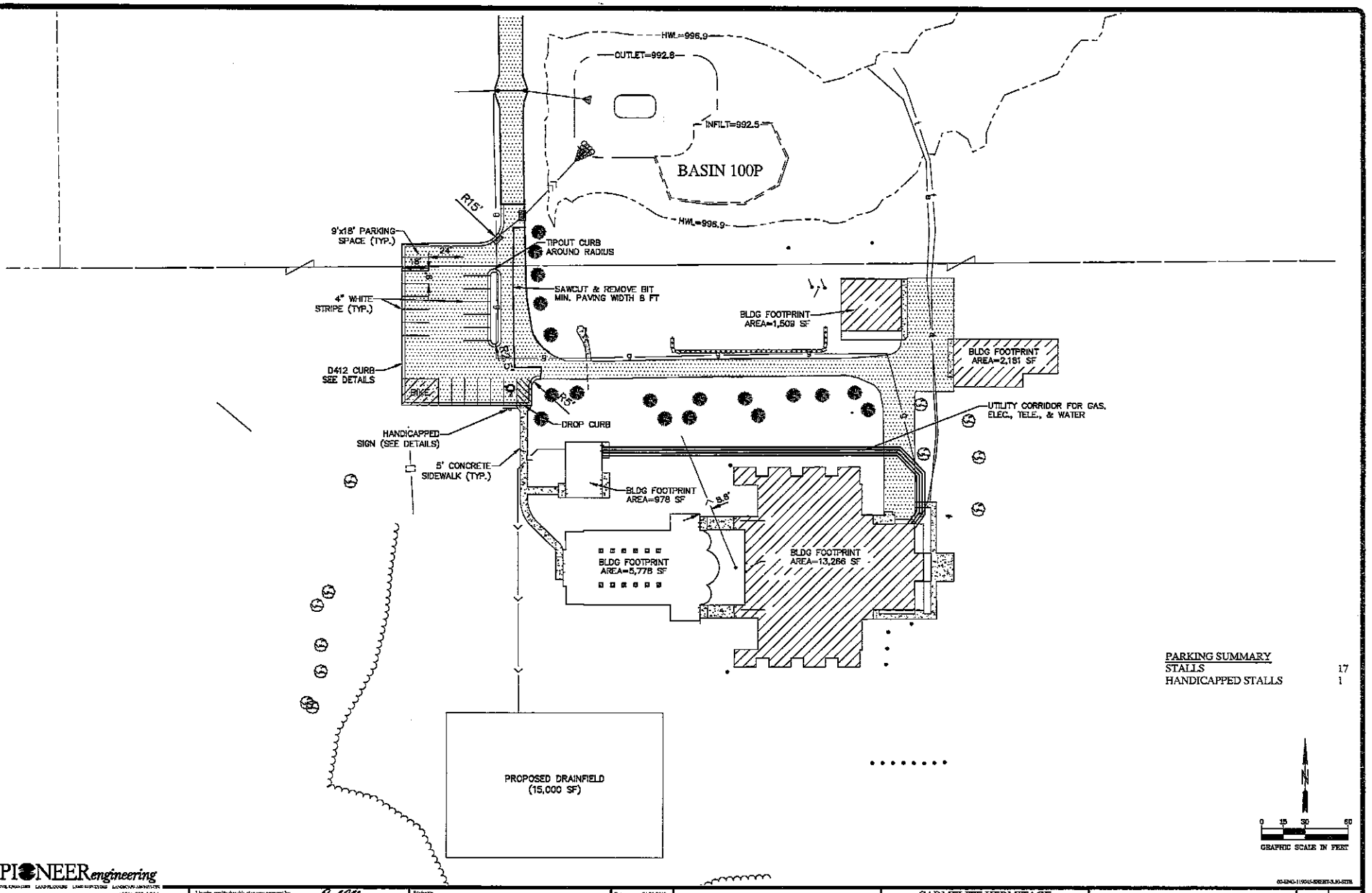
TOTAL AREA
90.109 ACRES±

Official copies of this map are crimp sealed.

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

SURVEY PREPARED BY:


CERTIFICATE OF SURVEY
PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4, GOVERNMENT LOT 4 OF SECTION 9, BOTH SECTIONS IN TOWNSHIP 29 NORTH, RANGE 21 WEST, CITY OF LAKE ELMO, WASHINGTON COUNTY, MINNESOTA
TOPOGRAPHIC SURVEY PREPARED FOR:
CARMELITE HERMITAGE OF THE BLESSED VIRGIN MARY
8249 Demontreville Trail North
Lake Elmo, Minnesota 55042
LEGEND
SECTION 4
SECTION 9
CONTOURS IN THIS AREA WERE GENERATED USING THE MN DNR LIDAR DATA
Garage
Porch
Wood Shed
WELL
Buildings and Courtyards
Proposed New Chapel
PROPOSED DRAINFIELD
SEPTIC AREA
grass
brush
woods
SURVEY PREPARED BY:
Landmark Surveying, Inc.



PIONEER engineering

2422 Enterprise Drive
Mendota Heights, MN 55120
(651) 681-1914
Fax: 681-9488
www.pioneereng.com

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Name: [signature] Reg. No. 19810 Date: 04-26-2019

Revisions

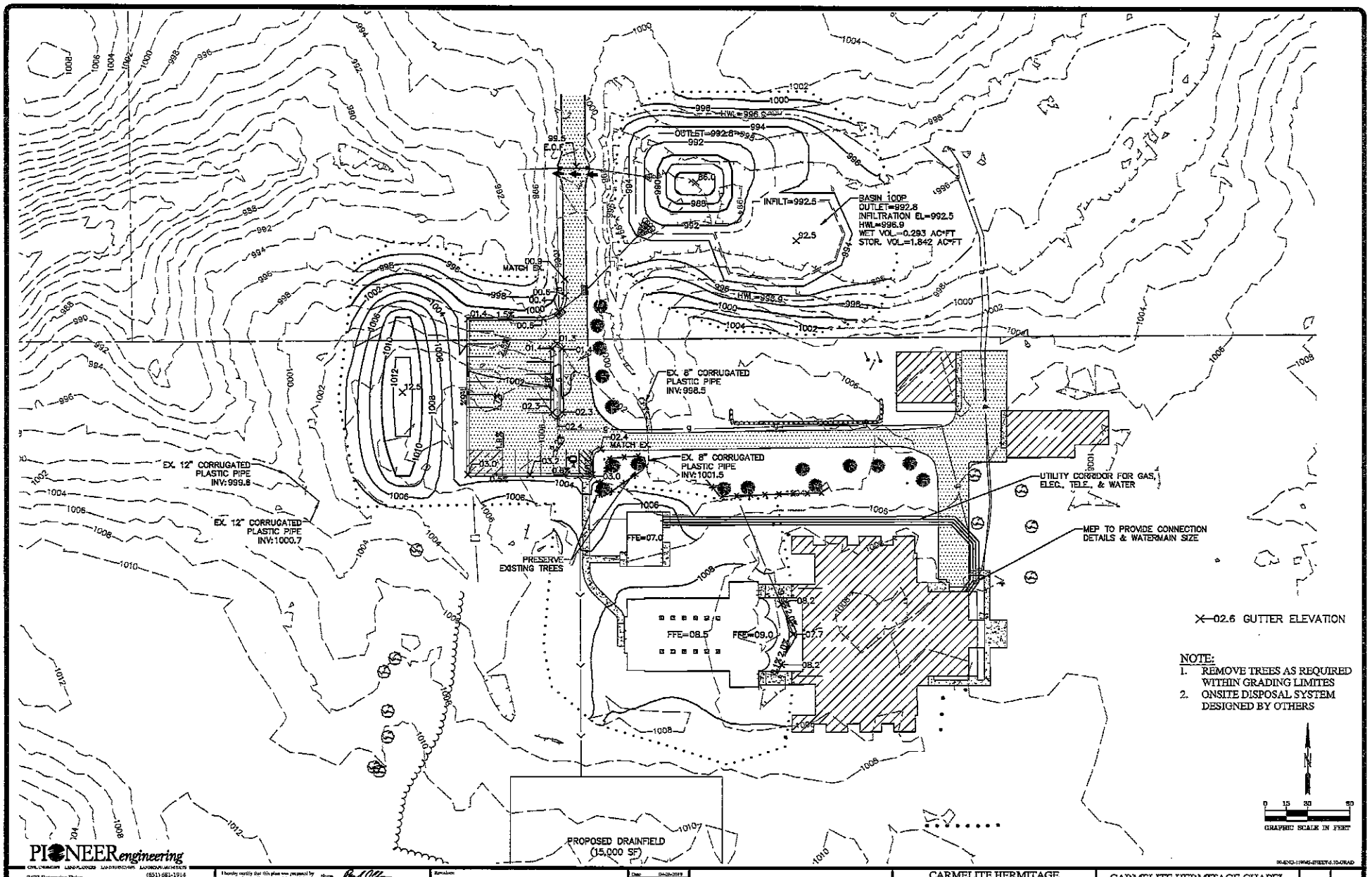
Date 04-26-2019
Designed JSC
Drawn NCK

SITE PLAN

CARMELITE HERMITAGE
8249 DEMONTREVILLE TRAIL NORTH
LAKE ELMO, MN 55042

CARMELITE HERMITAGE CHAPEL
LAKE ELMO, MINNESOTA

3.20 OF 13



PIONEERengineering

2422 Enterprise Drive
Mendota Heights, MN 55120
(651) 681-1914
Fax: 681-8488
www.pioneereng.com

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Name: Brad J. Olson
Reg. No. 19810 Date: 04-26-2019

Revision

Date: 04-26-2019
Designed: PJC
Drawn: NDK

GRADING PLAN

CARMELITE HERMITAGE
8349 DEMONTREVILLE TRAIL NORTH
LAKE ELMO, MN 55042

CARMELITE HERMITAGE CHAPEL
LAKE ELMO, MINNESOTA

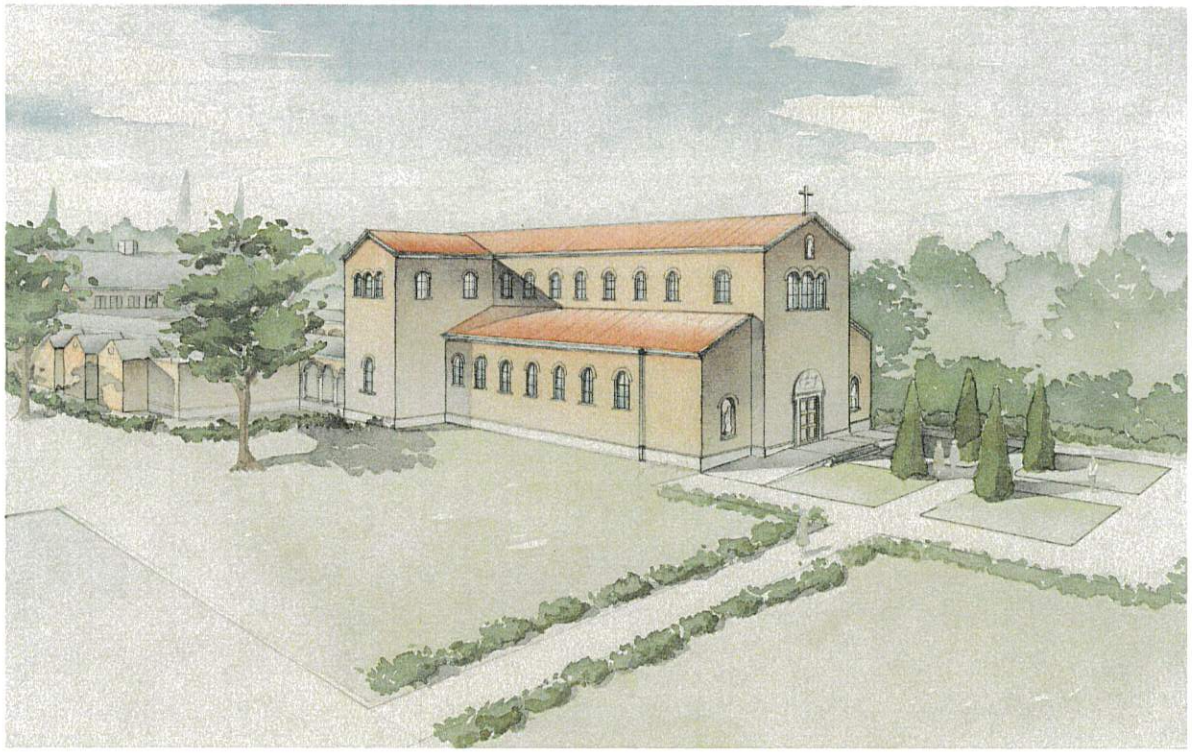
5.10 OF 13

CARMELITE CHAPEL

CARMELITE HERMITAGE
OF THE BLESSED VIRGIN MARY

8249 DE MONTREVILLE TRAIL

LAKE ELMO, MINNESOTA 55042-9545



OWNER

CARMELITE HERMITAGE OF THE BLESSED VIRGIN MARY
CONTACT: REV JOHN BURNS, O CARM.
8249 DEMONTREVILLE TRAIL
LAKE ELMO, MN 55042
PHONE: 651/779-7351

STRUCTURAL ENGINEER

LKL ENGINEERS
CONTACT: MARK R. KENNEDY
2735 NORTH HOLLAND-SYLVANIA ROAD
SUITE A-2
TOLEDO, OH 43615
PHONE: 419/578-0195

M.E.P. ENGINEER

ASSOCIATED CONSULTING ENGINEERING, INC.
CONTACT: KELLY LOUDENSLAGER
340 SOUTH PHILIPS AVENUE
SIOUX FALLS, SOUTH DAKOTA 57104-6319
PHONE: 605/335-3726

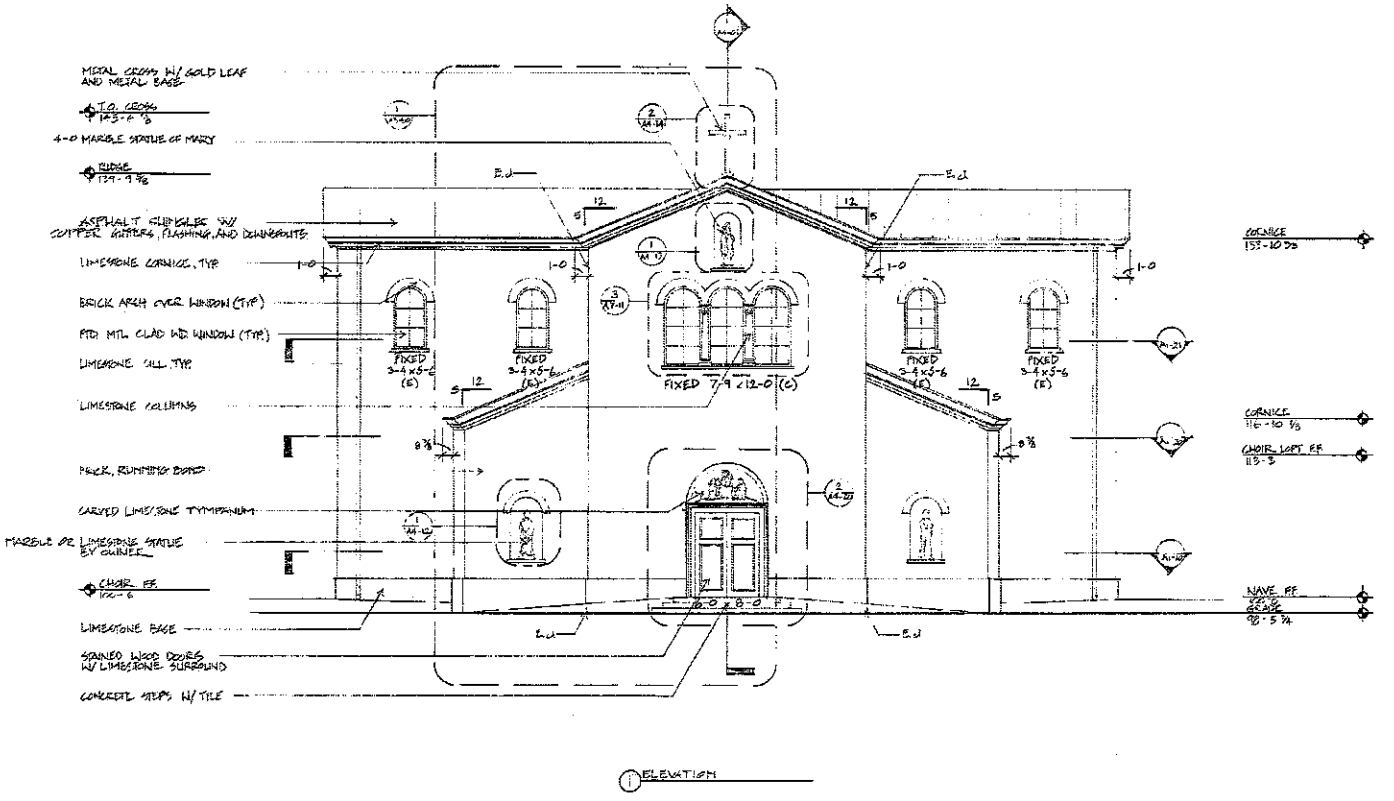
CIVIL ENGINEER, P.A.

PIONEER ENGINEERING
CONTACT: PAUL CHERNE
2422 ENTERPRISE DRIVE
MENDOTA HEIGHTS, MN 55120
PHONE: 651/681-1914

DUNCAN G. STROIK ARCHITECT LLC
218 WEST WASHINGTON STREET, SUITE 1200
SOUTH BEND, INDIANA 46601
574/232-1783; FAX: 574/232-1792

EXTERIOR PERSPECTIVE

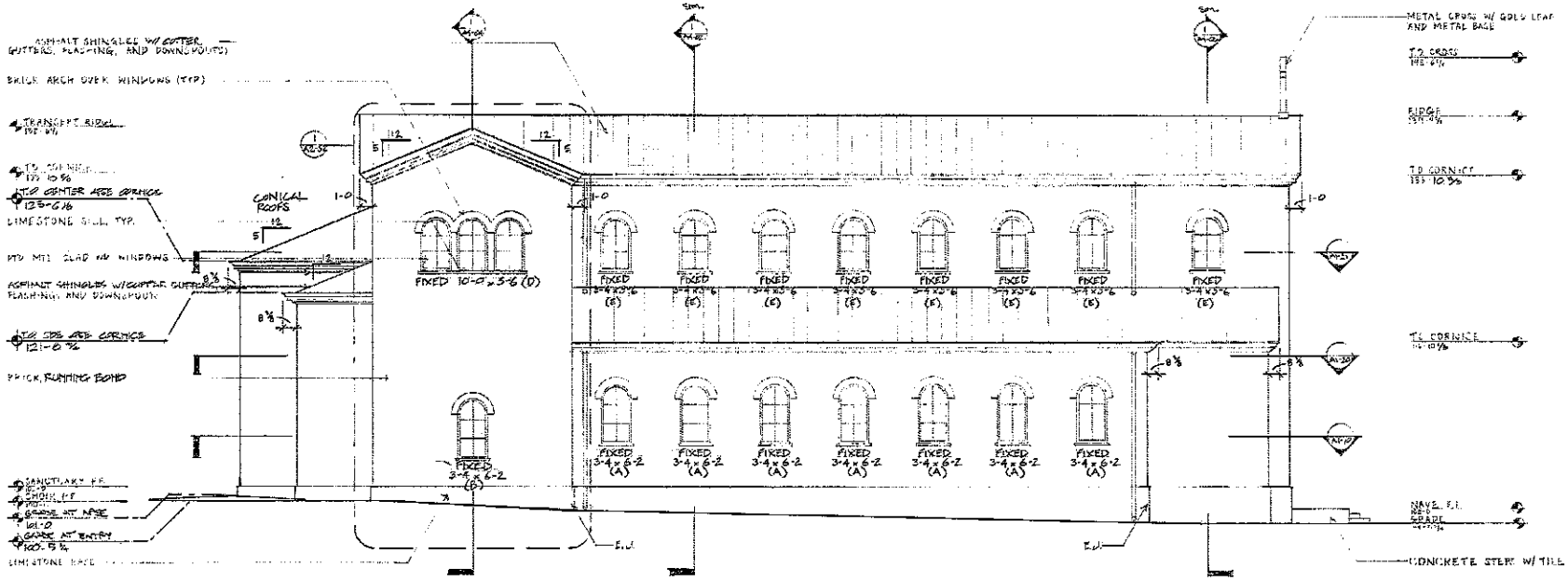
SCALE: NA	CARMELITE CHAPEL LAKE ELMO, MINNESOTA	DRAWN: FW
DATE: 15 JUNE 2018	DUNCAN G. STROIK, ARCHITECT 218 W. WASHINGTON ST., SUITE 1200 SOUTH BEND, IN 46601 574/232-1783; 574/232-1792 FAX	CHECKED:
REVISION:		SHEET NO: T0-001



1 ELEVATION

WEST ELLVATION

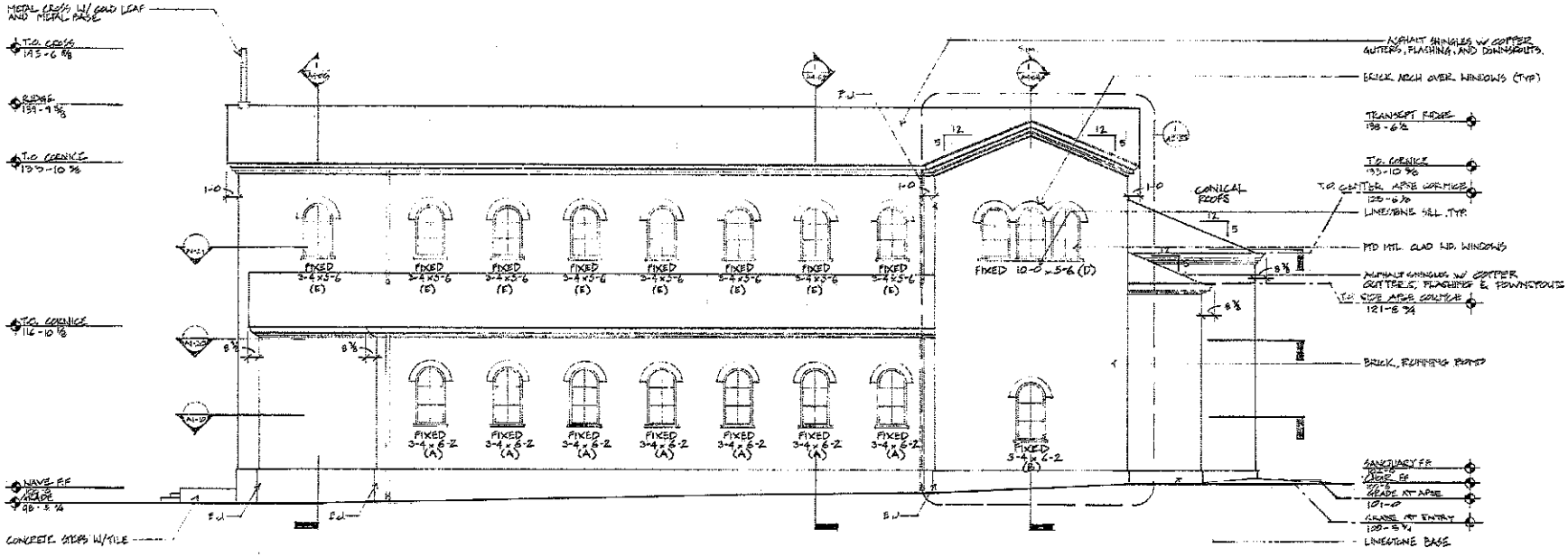
SCALE 3/16" = 1'-0"	CARMELITE CHAPEL LAKE ELMO, MINNESOTA	DRAWN: FW
DATE 12 APR - 2018	DUNCAN G. STROIK, ARCHITECT 218 W. WASHINGTON ST., SUITE 1200 SOUTH BEND, IN 46601 574/232-1788 574/232-1792 FAX	CHECKED:
REVISION		SHEET NO. A3.01



1 ELEVATION

NORTH ELEVATION

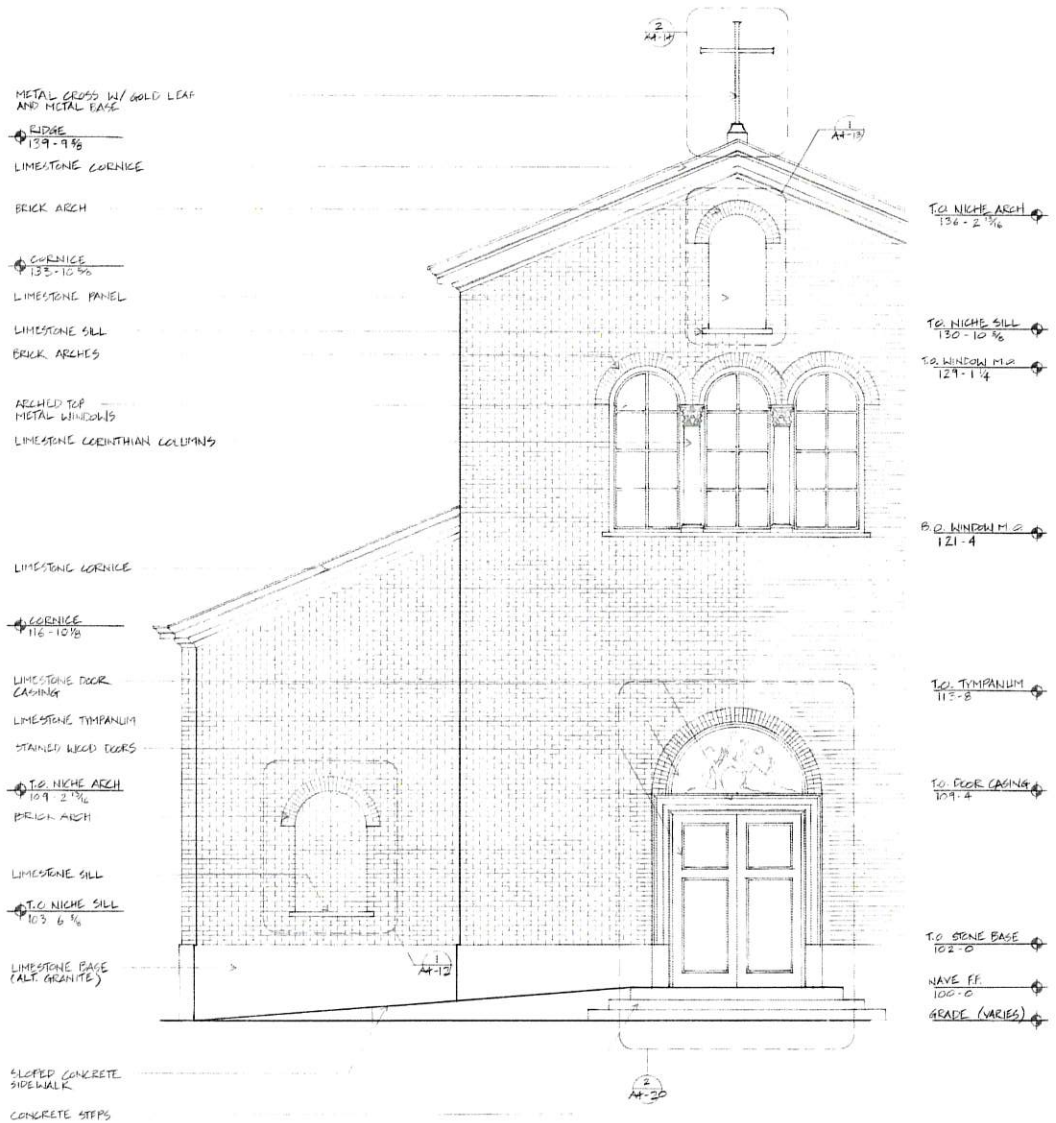
SCALE: 3/16" = 1'-0"	CARMELITE CHAPEL LAKE ELMO, MINNESOTA	DRAWN: MZ
DATE: 12 APR. 2019	DUNCAN G. STROIK, ARCHITECT 218 W. WASHINGTON ST. SUITE 1200 SOUTH BEND, IN 46601 574/232-1783 574/232-1792 FAX	CHECKED:
DIVISION:		SHEET NO. A2-02



1 ELEVATION

SOUTH ELEVATION

SCALE 1/4"-1'-0"	CARMELITE CHAPEL LAKE ELMO, MINNESOTA DUNCAN G. STROIK, ARCHITECT 215 W. WASHINGTON ST. SUITE 1200 SOUTH BEND, IN 46601 574/232-1793 574/232-1792 FAX © 2018 DUNCAN G. STROIK ARCHITECT, LLC	DRAWN FW
DATE 12 APR. 2019		CHECKED
REVISION		SHEET NO. A2.04



LIMESTONE CORNICES

PAINTED METAL CLAD WOOD WINDOWS, WITH SILLS AND BRICK ARCHES

STAINED WOOD DOORS, LIMESTONE SURROUND AND LIMESTONE TYMPANUM

GAF SLATELINE SHINGLE ROOF EMERALD GREEN

BELDEN BRICK ST. SIMON BLEND

RUSTIC BUFF LIMESTONE BASE

COPPER GUTTERS, FLASHING AND DOWNSPOUTS

PHOTO REFERENCE BOARD

SCALE	NA
DATE	10 MAY 2019
REVISION	
DRAWN	FW
CHECKED	
SHEET NO.	R-1

CARMELITE CHAPEL
LAKE ELMO, MINNESOTA

DUNCAN G. STROIK, ARCHITECT
218 W. WASHINGTON ST. SUITE 1200
SOUTH BEND, IN 46601
574/232-1783; 574/232-1792 FAX

5/8/19

Steinbrecher Companies, Inc.
13792 247th Avenue – Zimmerman, MN 55398
Phone (763) 274-0925 Fax (763) 274-0928
ROLL-OFFS ◆ SEPTIC SYSTEMS ◆ EXCAVATING
LANDSCAPING ◆ DEMOLITION

Carmelite Monastery
8249 Demontreville Trail N
Lake Elmo MN 55042

SSTS Design Summary Report

On April 19th, 2019, a site evaluation was conducted at 8249 Demontreville Trail N, MN 55082 in Washington County. The PID number is 09.029.21.12.0002

Scope of Report
The purpose of the design report is to create a plan for a new sub-surface treatment system to treat wastewater from the new chapel to be built at the address above. This design details the plan for the re quired tanks and soil treatment dispersal areas per Washington County Development Code, Chapter Four Subsurface Sewage Treatment System Regulations, Ordinance 206. The system is designed for an Assembly Hall w/ no kitchen plus two (2) full-time employees which will be at the Chapel during day. The system components will be a Type I designed Mound and a total of three Septic & Pump Tanks (1,000-gal; 1,000-gal & 1,000-gal).**See Site Plan**.

Preliminary & Field Evaluation Work
The Washington County Maps GIS data (https://maps.co.washington.mn.us/WCGIS/) was used to determine all property lines, utility Right of Ways, roads and other necessary features required by Ordinance 206, Section 9, Subparts 9.2 thru 9.3 prior to and during site evaluation. See Site Plan for details.

The information available at MN Well Index (https://mnwellindex.web.health.state.mn.us/) does not indicate the location of any wells within 100 feet of the proposed area. Section MN Well Index – Research.

The Web Soil Survey data (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx), which is provided by the USDA, was gathered to determine the soil characteristics of the area prior to a field evaluation. See Section Web Soil Survey – Research for more details.

The field evaluation included staking a 50’ x 26’ soil absorption area, measurements from all setbacks and property line, elevations for absorption area, tanks and soil observations and a minimum of four (4) soil observations within or on the edge of the proposed absorption area for the Soil Treatment Area (STA) and an additional four (4) soil observations were conducted in second Soil Treatment Area identified for future use located to the South of the new Mound.

Soil Observations
The soil borings and pits were conducted, classified and recorded to meet the Washington County Ordinance 206, Section 9, 9.5 thru 9.7. Redox was observed in all Borings & Soil Pits. The limiting layer was observed at 14” at SB1. **See attached Soil Observation Logs.**

Wastewater Sources & Flows

The new Chapel is expected to have a seat capacity for 80 guests with 2 employees on staff full-time. The estimated Peak Flow rate is 350 gallons per day (gpd) was calculated using values provided by Chapter 7081.0130, Table I: Estimate design sewage flow from other establishments. A safety factor of 20% was applied to calculate the final Design Peak Flow of 400 gpd.

The Organic Load was calculated using the Estimate of Waste Strengths from Other Establishments chart provided with the University of Minnesota – SSTS Design Forms Worksheet (**see U of MN Design Forms**).The total Organic Loading Rate for 400 gpd for 80 guests (.01 #s / seat) & 2 full-time employees (.05 #s /employee) is **.90 pounds of BOD per day** which will need to be treated each day. This equals **269 mg/L of BOD per day**. If the system was used to max capacity each day, this level of effluent would be considered At-Risk Effluent and might need to be sampled regularly to ensure treatment level C prior to dispersal to the Mound. However, the Septic Tanks, the Dose Tank & Soil Treatment Area have been designed to handle the worst-case scenario flow-rate & waste-strength from this building

The septic tanks & dose tank are sized to provide a retention time of 5 days (typical is 3-days retention) & a **storage capacity of 2 x Peak Flow** in the event of unexpected pump failure.

The total size of the **Soil Absorption Area was increased 25%** to account for a potential of At-Risk Organic Loading rates of BOD & TSS. The Peak Design Flow rate of 400 gpd for a typical Type I system receiving Residential Strength Waste (170 mg/L BOD) would require 1,040 sqft of absorption in Silt Loam soil. The increased size was calculated using the University of Minnesota Chart (Table 5.1; Manual for Septic System Professionals in Minnesota) for determining Organic Loading Rate. The equivalent loading rate for Silt Loam is 0.0007 #/sqft. The required absorption for .90 #s/day BOD @ 400 gpd with an Organic Loading rate of .0007 #/sqft is **1,280 sqft**.

Type I Mound

The total area for the STA will impact 3,837 sqft (45.3’ x 84.7’) located to the South of the new Chapel. The newly constructed mound will have an **Absorption Area of 1,300 sqft (26’ x 50’).** The observations found redoximorphic soil conditions at 14 inches from the surface and will require 22” of **washed-mound sand** to achieve the necessary vertical separation from the most limiting layer.

The required materials for the sewer line, distribution network, pumps, piping, sand, rock, fill and cover are detailed in the design worksheets included with this design. Please note, all calculations for materials and pumps are estimates. Actual values may change slightly and will need to field verified for correctness. **See U of MN Worksheets for more details**.

The pump used for dosing the pressure bed must deliver a minimum of **22 gallons per minute** and overcome a total dynamic head pressure of **16 feet**. All supply pipes and laterals shall be built to specifications and drain-out completely after each dose to prevent freezing.

A second 1,300 sqft area was identified and staked-off **for future use**. No structures or vehicle traffic can occur over this area. Precautions should be taken in the years to come to avoid damaging, compacting or disturbing this area.

Special Conditions

1. Due to the large flat area, drainage should be maintained throughout the area to avoid ponding around the tanks or at the edges of the Mound.
2. No final sewer elevation was provided by the builder. Elevation and locations are subject to change. No tank can be buried deeper than 4’ below grade.

3. Drainback for Supply Line & Freezing - The slope from the Pressure Bed Supply Line must drain back to the dose tank. Additional depth or insulation may be necessary to keep line from freezing if the supply line is buried too shallow.
4. Setbacks to Easements & Property Lines –There was no survey performed prior to site evaluation, so all measures are estimates. The owner and Installer will need to make sure all construction is within required setbacks.

Other Considerations

6.1 Building Permit requirements.

No construction shall be allowed by any local unit of government until the permit required for the subsurface sewage treatment system has been issued.9.11 Site Protection

9.11 Site Protection

Prior to and during construction or lot improvements, the proposed initial and replacement soil treatment and dispersal areas shall be protected from disturbance, compaction, or other damage by use of stakes and silt fence or snow fence.

As-Built Drawing

The Licensed Installer must provide an As-built of the final location of all components. The attached Site Plan is only for reference and should not be considered as final survey

End of Report

Disclaimer

As property owner, I agree to use the system within the parameters described above and in the design worksheets. I also agree hold Steinbrecher Companies, Inc and the named designer harmless for any future issues regarding this system.

Owner Signature **Date**

Note – This design is not recommended to be permitted until the following areas, included with this design, are signed by property owner.

- Design Summary Report, Preliminary Evaluation Worksheet (section 2) and Homeowner Maintenance Log

Materials & Specifications

8249 DeMontreville Trail N, Lake Elmo

Tanks – Minnesota Precast

- 1,000-gallon Septic Tank
- 1,000-gallon Septic Tank
- 1,000-gallon Dose Tank

Effluent Filter & Alarm

- Polylok 525 w/ Reed Switch for Alarm
- Dual-Alarm Box located in or near house (or Installer equivalent)
- Electrical wire & Junction Box (~100' from building)
- Dedicated 120V circuit for alarm (10 Amp min.)

Sewer Line

- 4" Sch 40 dia. pipe @ ~ 20'
- Fittings, as necessary

Pump – Gould PE41 (or similar model)

- 23 GPM
- 16 TDH
- Mechanical (120V rated) Float for Pump On/Off
- Electrical wire & Junction Box, as necessary (~100')
- Dedicated 20 amp, 120V circuit from building to pump

Supply Line to Pressure Laterals

- 2" sch 40 pipe @ ~ 100'
- Fittings, as necessary

Pressure Laterals

- 3 – 50' long w/ 1 ½" sch 40 pipe
- 3' spacing (orifices)
- 3/16" diameter orifices (drilled holes)
- Clean-outs at end of each lateral
- 1 ½" Bends, couplings, sweeps and fittings, as necessary

Inspection pipes

- 4" Sch 40 pipe built to spec in Mound design

Mound Sand

- Min. Height – 22"
- Absorption Area – 26' x 50'

Rock Bed

- Dispersal Area – 10' x 50'
- Rock depth – 6" + min 3.5" to cover pipe

Back Fill & Black Dirt for cover

- See calculations on Mound Materials Worksheet

*****Note: All materials quantities for pipe, sand, rock, etc. are only estimates.
**Tonnage calculations for materials may differ from actual volume used onsite.

Washington County, MN

April 20, 2019

1:4,000

0 187.5 375 750 ft

0 55 110 220 m

CERTIFICATE OF SURVEY

PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER.
SECTION 4, TOWNSHIP 29 NORTH, RANGE 21 WEST,
AND GOVERNMENT LOT 4 SECTION 9, TOWNSHIP 29 NORTH, RANGE 21 WEST,
CITY OF LAKE ELMO, WASHINGTON COUNTY, MINNESOTA

TOPOGRAPHIC SURVEY
PREPARED FOR:
CARMELITE HERMITAGE
OF THE BLESSED VIRGIN MARY
8249 Demontreville Trail North
Lake Elmo, Minnesota 55042

LEGEND

Orientation of the bearing system is the Washington County Coordinate System, NAD 83, 1986 Adjustment.

Distances are in feet and decimals of a foot.

Contours and elevations were generated using field measurements obtained for this project and are based on North American Vertical Datum 1988 Adjustment unless otherwise noted. Contours are at 1 foot intervals.

- Denotes bituminous surface.
- Denotes concrete surface.
- GM Denotes gas meter.
- ET Denotes electric transformer.
- 24 Denotes a survey control point location and the assigned point number.
- Denotes wire mesh fence.
- Denotes found wood lath.
- Denotes coniferous tree.
- Denotes deciduous tree.
- 8" spruce Denotes size and type of tree.
- BM Denotes (benchmark) location of measurement to surface of concrete. These locations are at an elevation of 1009.01 feet based on the North American Datum 1988 adjustment.

Coordinates are on the Washington County Coordinate System, NAD 83, 1986 Adjustment.

POINT NUMBER	NORTHING	EASTING	ELEVATION	MONUMENT TYPE
20	200193.4270	474261.5140	1007.62	IP CONTROL
22	200096.7710	474263.3700	1009.21	3/4 ROD
23	200524.8150	474247.4430	999.69	MH PUNCH
24	200262.0820	474159.7950	1003.88	3/8 SPIKE
25	200328.5860	474255.7570	1003.00	MAG NAIL
26	200342.8510	474527.2430	1005.66	MAG NAIL
28	200212.5100	474594.5940	1007.12	3/8 SPIKE
29	200272.6200	474504.9570	1007.12	3/8 SPIKE
30	200134.4280	474555.6120	1008.16	3/4 ROD

SCALE IN FEET
0 10 20 40
SCALE: 1 INCH = 20 FEET

Washington County cast iron monument at the S1/4 corner of Section 4, T29N, R21W.
S89°29'21"W 2633.18
north line, Government Lot 4, Section 9
Washington County cast iron monument at the N1/4 corner of Section 9, T29N, R21W.
south line, SW1/4 – SE1/4, Section 4
north line, Government Lot 4, Section 9
Washington County cast iron monument at the SE corner of Section 4, T29N, R21W.
Washington County cast iron monument at the NE corner of Section 9, T29N, R21W.

18 inch reinforced concrete pipe. Invert elevation is 992.4 feet.
catch basin 23
catch basin
18 inch reinforced concrete pipe. Invert elevation is 993.0 feet.
bituminous curb
CONTOURS IN THIS AREA WERE GENERATED USING THE MN DNR LIDAR DATA
8 inch corrugated plastic pipe. Invert elevation is 998.5 feet.
chainlink fence
wire mesh fence
landscape block retaining wall
Garage
Porch
Wood Shop
underground utility
12 inch corrugated plastic pipe. Invert elevation is 999.6 feet.
12 inch corrugated plastic pipe. Invert elevation is 1000.7 feet.
8 inch corrugated plastic pipe. Invert elevation is 1001.5 feet.
drain tile outlets
drain tile outlet
water spigot
4 inch PVC pipe with cap
wood fence
CONSTRUCTION ACCESS
PUMPING ACCESS
grass
brush
woods
tree line
Buildings and Courtyards
Proposed New Chapel
octagon stone pillar
BM
WELL
Window Well
Bushes
50 ft
APPROX IE - 1006.0' Per Floor Plan from Associated Consulting Engineering, Inc, - Page M2.4
FFE - 1008.5' Per Site Plan from Pioneer Engineering
IF THE DRAIN LINE IS IMPACTED, THEN IT MUST BE RESTORED TO ALLOW FROM PROPER DRAINAGE
BENCHMARK - BOTTOM OF APRON AT CORNER OF BUILDING
UNDERGROUND DRAIN (GENERAL DIRECTION)
4 inch PVC pipe with cap
26 inch concrete lid
4 inch PVC pipes with caps
ABSORPTION AREA
SEPTIC AREA
FUTURE SITE (SECONDARY STA)
PROPOSED SEPTIC TANKS LOCATION
3 - 1,000 GALLON TANKS
Min. IE - 1st SEPTIC TANK - 1005.5'
Max IE - 1st SEPTIC TANK- 1003.0'
NO TANK CAN BE BURIED > 4 FT DEEP
THE AREA AROUND TANKS MAY NEED TO BE MODIFIED TO MAINTAIN PROPER BURY DEPTH
THIS IS ONLY A SITE PLAN
ALL SEPTIC LOCATIONS AND MEASUREMENTS ARE ONLY ESTIMATES
AS-BUILT WILL NEED TO PROVIDED BY INSTALLER AFTER CONSTRUCTION
DOWNHILL

ELEVATIONS
Benchmark - 100' (see map)
CHAPEL Sewer Outlet Invert – 30" Below grade
Tank Inlet Invert – 98.6' (3' bury)
Dose Tank Invert – 97.8'
STA
NW - 101.15'
NE - 100.9'
SW - 101.4'
SE - 101.4'
Soil Boring w/ Limiting Layer - SB1
Limiting Layer Depth - 14"
Soil Texture - Sandy Clay Loam

MOUND DIMENSIONS
Rockbed - 50' x 10' (500 sqft)
Absorption Bed - 50' x 26' (1,300 sqft)
Total Mound - 45.3' x 84.7' (3,837' sqft)
Upslope Elev. - 101.4'
Min. Sand Height - 23"' @ 103.3'
Rockbed Laterals Elev. - 103.8'
LATERALS
3 - Laterals @ 50' of 1-1/2" SCH40
Spacing - 3'
Drilled Holes - 3/16"
SUPPLY LINE
95' of 2" SCH40

Revised: November 1, 2018
Added proposed chapel

SURVEY PREPARED BY:
Landmark Surveying, Inc.
21070 Olinda Trail North – P.O. Box 65
Scandia, Minnesota 55073
Office number: 651-433-3421
Cell number: 651-235-8880
E-mail address: inthefield@frontiernet.net

Official copies of this map are crimp sealed.

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Licensed Land surveyor under the laws of the State of Minnesota.

Landmark Surveying Inc.

Joel T. Anez Minnesota License No. 13775 June 27, 2018
Date

June 27, 2018

Job Number 2018-13

University of Minnesota Onsite Sewage Treatment Program

Preliminary Evaluation Worksheet

Minnesota Pollution Control Agency

1. Contact Information

v 04.02.2019

Property Owner/Client:	Carmelite Monastery	Date Completed:	4/20/2019
Site Address:	8249 Demontreville Trail N, Lake Elmo	Project ID:	
Email:		Phone:	
Mailing Address:	8249 Demontreville Trail N, Lake Elmo, MN 55402		
Legal Description:			
Parcel ID:	09.029.21.12.0002	TWP:	SEC: RNG:

2. Flow and General System Information

A. Client-Provided Information

Project Type: ☑ New Construction ☐ Replacement ☐ Expansion ☐ Repair

Project Use: ☐ Residential ☑ Other Establishment: Assembly hall

Residential use: # Bedrooms: Dwelling Sq.ft.: Unfinished Sq. Ft.:

Adults: # Children: # Teenagers:

In-home business (Y/N): If yes, describe:

Water-using devices: *(check all that apply)*

☐ Garbage Disposal/Grinder ☐ Dishwasher ☐ Hot Tub*
☐ Sewage pump in basement ☐ Water Softener* ☐ Sump Pump*
☐ Large Bathtub >40 gallons ☐ Iron Filter* ☐ Self-Cleaning Humidifier*
☐ Clothes Washing Machine ☐ High Eff. Furnace* ☐ Other:

* Clear water source - should not go into system

Additional current or future uses:

Anticipated non-domestic waste: Only domestic waste anticipated.

The above is complete & accurate: *Client signature & date*

B. Designer-determined flow Information

Attach additional information as necessary.

Design Flow: 400 GPD Anticipated Waste Type: Other Est. - At-Risk

BOD: 269 mg/L TSS 70 mg/L Oil & Grease 20 mg/L

#	Description	Mn. ID#	Well Depth (ft.)	Casing Depth (ft.)	Confining Layer	STA Setback	Source
1	Monestary Well	Unknown				50	MN Well Index
2							
3							
4							

Additional Well Information: Well is located at NE corner of existing building.

University of Minnesota Onsite Sewage Treatment Program

Preliminary Evaluation Worksheet

Minnesota Pollution Control Agency

Site within 200' of noncommunity transient well (Y/N)	No	Yes, source:	
Site within a drinking water supply management area (Y/N)	No	Yes, source:	
Site in a Well Head Protection inner wellhead management zone (Y/N)	No	Yes, source:	
Buried water supply pipes within 50 ft of proposed system (Y/N)	No		
B. Site located in a shoreland district/area?	No	Yes, name:	
Elevation of ordinary high water level:	ft	Source:	
Classification:	Tank Setback: ft.	STA Setbk: ft.	
C. Site located in a floodplain?	No	Yes, Type(s):	
Floodplain designation/elevation (10 Year):	ft	Source:	
Floodplain designation/elevation (100 Year):	ft	Source:	

D. Property Line Id / Source: ☐ Owner ☑ Survey ☑ County GIS ☐ Plat Map ☐ Other:

E. ID distance of relevant setbacks on map: ☑ Water ☑ Easements ☑ Well(s) ☑ Building(s) ☑ Property Lines ☑ OHWL ☐ Other:

4. Preliminary Soil Profile Information From Web Soil Survey (attach map & description)

Map Units:	49—Antigo silt loam	Slope Range:	0-2 %
List landforms:	Flats, terraces		
Landform position(s):	Plain		
Parent materials:	Loess and/or silty glaciofluvial deposits		
Depth to Bedrock/Restrictive Feature:	80 in	Depth to Watertable:	80 in

Map Unit Ratings

Septic Tank Absorption Field- At-grade:	Very Limited
Septic Tank Absorption Field- Mound:	Not Limited
Septic Tank Absorption Field- Trench:	Very Limited

5. Local Government Unit Information

Name of LGU:	Washington County
LGU Contact:	
LGU-specific setbacks:	N/A for this site
LGU-specific design requirements:	Contour Late rate for Mound is <= 10
LGU-specific installation requirements:	
Notes:	

Field Evaluation Worksheet

1. Project Information

v 04.02.2019

Property Owner/Client:	Carmelite Monastery	Project ID:	
Site Address:	8249 Demontreville Trail N, Lake Elmo	Date Completed:	4/19/2019

2. Utility and Structure Information

Utility Locations Identified ☑ Gopher State One Call # ☐ Any Private Utilities:

Locate and Verify (*see Site Evaluation map*) ☑ Existing Buildings ☑ Improvements ☑ Easements ☑ Setbacks

3. Site Information

Vegetation type(s):	Grass	Landscape position:	Plain		
Percent slope:	2 %	Slope shape:	Convex, Linear	Slope direction:	north

Describe the flooding or run-on potential of site:

Describe the need for Type III or Type IV system:

Note:

Elevations and Benchmarks identified on map? (Y/N):	Yes	If yes, describe:	BM = Bottom of Apron
Proposed soil treatment area protected? (Y/N):	Yes	If yes, describe:	See Site Plan

4. General Soils Information

Filled, Compacted, Disturbed areas (Y/N): No

If yes, describe:

Soil observations were conducted in the proposed system location (Y/N):	Yes
A soil observation in the most limiting area of the proposed system (Y/N):	Yes
Number of soil observations: 8	Soil observation logs attached (Y/N): Yes
Percolation tests performed & attached (Y/N):	No

5. Phase I. Reporting Information

	Depth		Elevation				
Periodically saturated soil:	14	in	100.2	ft	Soil Texture:	silt loam	
Standing water:		in		ft	Percolation Rate:		min/inch
Bedrock:		in		ft	Soil Hyd Loading Rate:	0.5	gpd/ft^2
Benchmark:			100	ft			

Benchmarck Location: Bottom of Apron @ SW Corner of Existing building. - See Map

Differences between soil survey and field evaluation: There was no observed loam below silt loam. Depth of layers

Site evaluation issues / comments: Access for construction from NW corner of site.

Anticipated construction issues:

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 04.02.2019

Client:	**Carmelite Monastery**	Location / Address:	8249 Demontreville Trail N, Lake Elmo

Soil parent material(s): (Check all that apply) ☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter

Landscape Position: (check one) ☑ Summit ☐ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope — Slope shape: Convex, Linear

Vegetation:	Grass	Soil survey map units:	49	Slope %:	2.0	Elevation:	101.4

Weather Conditions/Time of Day:	Sunny / 1:15 pm	Date	04/19/19
Observation #/Location:	SB1 - Mound - See Map	Observation Type:	Auger

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	I-------- Structure----------I		
							Shape	Grade	Consistence
0-9	Silt Loam	<35%	10YR 3/4				Blocky	Weak	Friable
9-14	Silt Loam	<35%	10YR 6/6				Blocky	Strong	Firm
14-20	Clay Loam	<35%	10YR 6/8	10YR 6/2	Depletions	S1	Blocky	Strong	Firm
				10YR 5/8	Concentrations	S1			

Comments: LL= 14" - 100.2'

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Jesse Kloeppner		**L4043**	**4/19/2019**
(Designer/Inspector)	(Signature)	(License #)	(Date)

Additional Soil Observation Logs

Project ID:

University of Minnesota Onsite Sewage Treatment Program

Client:	Carmelite Monastery			Location / Address:	8249 Demontreville Trail N, Lake Elmo		
Soil parent material(s): (Check all that apply)	☐ Outwash	☐ Lacustrine	☑ Loess	☐ Till	☐ Alluvium	☐ Bedrock	☐ Organic Matter
Landscape Position: (check one)	☑ Summit	☐ Shoulder	☐ Back/Side Slope	☐ Foot Slope	☐ Toe Slope	Slope shape	Convex, Linear
Vegetation:	Grass	Soil survey map units:	49	Slope %:	2.0	Elevation:	101.4
Weather Conditions/Time of Day:	Sunny / 2:45 pm				Date:	04/19/19	
Observation #/Location:	SB2 - Mound - See Map				Observation Type:	Auger	

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	I-------- Structure----------I		
							Shape	Grade	Consistence
0-8	Silt Loam	<35%	10YR 3/3				Blocky	Weak	Friable
8-15	Silt Loam	<35%	10YR 5/6				Blocky	Strong	Firm
			10YR 4/6						
15-20	Sandy Clay Loam	<35%	10YR 4/6	10YR 6/4	Depletions	S1	Blocky	Strong	Firm
				10YR 5/8	Concentrations	S1			

Comments	LL = 15" - 100.15'

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 04.02.2019

Client:	**Carmelite Monastery**	Location / Address:	8249 Demontreville Trail N, Lake Elmo

Soil parent material(s): (Check all that apply) ☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter

Landscape Position: (check one) ☑ Summit ☐ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope		Slope shape	Convex, Linear
Vegetation: Grass	Soil survey map units: 49	Slope %: 2.0	Elevation (ft): 101.5
Weather Conditions/Time of Day: Sunny / 1:00 pm		Date:	04/19/19
Observation #/Location: SP1 - Mound - See Map		Observation Type:	Soil Pit

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	I-------- Structure----------I		
							Shape	Grade	Consistence
0-8	Silt Loam	<35%	10YR 3/4				Granular	Weak	Friable
8-15	Silt Loam	<35%	10YR 3/6				Blocky	Strong	Firm
15-20	Clay Loam	<35%	10YR 5/6	10YR 6/4	Depletions	S1	Blocky	Strong	Extremely Firm
				7.5YR 5/8	Concentrations	S1			
20-25	Clay Loam	<35%	10YR 6/8				Blocky	Strong	Extremely Firm
25-27	Sandy Clay	~45%	10YR 6/8	5YR 5/8	Concentrations	S1	Blocky	Strong	Firm

Comments LL = 15" - 99.75'

Additional Soil Observation Logs

Project ID:

University of Minnesota Onsite Sewage Treatment Program

Client:	**Carmelite Monastery**	Location / Address:	8249 Demontreville Trail N, Lake Elmo

Soil parent material(s): (Check all that apply) ☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter

Landscape Position: (check one) ☑ Summit ☐ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope — Slope shape: Convex, Linear

Vegetation:	Grass	Soil survey map units:	49	Slope %: 1.0	Elevation (ft): 101.2

Weather Conditions/Time of Day:	Sunny / 2:55 pm	Date:	04/19/19
Observation #/Location:	SP2 - Mound - See Map	Observation Type:	Soil Pit

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-10	Silt Loam	<35%	10YR 3/3				Granular	Weak	Friable
10-15	Silt Loam	<35%	10YR 3/6				Blocky	Strong	Firm
15-21	Clay Loam	<35%	10YR 6/8	10YR 7/2	Depletions	S1	Blocky	Strong	Extremely Firm
				10YR 5/8	Concentrations	S1			
21-25	Clay Loam	<35%	10YR 6/8	10YR 7/2	Depletions	S1	Blocky	Strong	Extremely Firm

Comments LL = 15" - 100.0'

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 04.02.2019

Client:	**Carmelite Monastery**	Location / Address:	8249 Demontreville Trail N, Lake Elmo

Soil parent material(s): (Check all that apply) ☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter

Landscape Position: (check one) ☐ Summit ☑ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope

Slope shape: Convex, Linear

Vegetation:	Grass	Soil survey map units: 49	Slope %: 2.0
Elevation (ft):	101.2		

Weather Conditions/Time of Day:	Sunny / 2:30 pm	Date:	04/19/19

Observation #/Location:	SP3 - Secondary - See Map	Observation Type:	Soil Pit

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	I-------- Structure----------I Shape	Grade	Consistence
0-8	Silt Loam	<35%	10YR 3/4				Blocky	Weak	Friable
8-15	Silt Loam	<35%	10YR 3/6				Blocky	Strong	Firm
15-20	Clay Loam	<35%	10YR 5/6	10YR 6/4	Depletions	S1	Blocky	Strong	Extremely Firm
				7.5YR 5/8	Concentrations	S1			
20-25	Clay Loam	<35%	10YR 6/8				Blocky	Strong	Firm

Comments LL = 16" - 99.9'

Additional Soil Observation Logs

Project ID:

University of Minnesota Onsite Sewage Treatment Program

Client:	**Carmelite Monastery**	Location / Address:	8249 Demontreville Trail N, Lake Elmo
Soil parent material(s): (Check all that apply)	☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter		
Landscape Position: (check one)	☐ Summit ☑ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope	Slope shape	Convex, Linear
Vegetation: Grass	Soil survey map units: 49	Slope %: 2.0	Elevation (ft): 101.3
Weather Conditions/Time of Day:	Sunny / 1:45 pm	Date:	04/19/19
Observation #/Location:	SB3 - Secondary - See Map	Observation Type:	Auger

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	I-------- Structure----------I		
							Shape	Grade	Consistence
0-6	Silt Loam	<35%	10YR 3/4				Blocky	Weak	Friable
6-12	Silt Loam	<35%	10YR 4/4				Blocky	Moderate	Firm
12-15	Clay Loam	<35%	10YR 4/6	10YR 6/8	Concentrations	S1	Blocky	Moderate	Firm
				10YR 7/8	Concentrations	S1			
15-20	Clay Loam	<35%	10YR 5/6				Blocky	Strong	Extremely Firm

Comments LL = 12" - 100.3'

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 04.02.2019

Client:	**Carmelite Monastery**	Location / Address:	8249 Demontreville Trail N, Lake Elmo

Soil parent material(s): (Check all that apply) ☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter

Landscape Position: (check one) ☐ Summit ☑ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope

Slope shape: Convex, Linear

Vegetation:	Grass	Soil survey map units: 49	Slope %: 2.0
Elevation (ft):	100.3		

Weather Conditions/Time of Day:	Sunny / 3:00 pm	Date:	04/19/19

Observation #/Location:	SB4 - Secondary - See Map	Observation Type:	Auger

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	Structure		
							Shape	Grade	Consistence
0-5	Silt Loam	<35%	10YR 3/3				Blocky	Weak	Friable
5-11	Silt Loam	<35%	10YR 6/6				Blocky	Moderate	Firm
11-15	Clay Loam	<35%	10YR 5/6 10YR 4/4				Blocky	Strong	Extremely Firm
15-20	Clay Loam	<35%	10YR 5/8	10YR 3/6	Concentrations	S1	Blocky	Moderate	Friable
				10YR 6/8	Concentrations	S1			

Comments LL = 15" - 99.0'

Additional Soil Observation Logs

Project ID:

University of Minnesota Onsite Sewage Treatment Program

Client:	**Carmelite Monastery**			Location / Address:	8249 Demontreville Trail N, Lake Elmo
Soil parent material(s): (Check all that apply)	☐ Outwash ☐ Lacustrine ☑ Loess ☐ Till ☐ Alluvium ☐ Bedrock ☐ Organic Matter				
Landscape Position: (check one)	☐ Summit ☑ Shoulder ☐ Back/Side Slope ☐ Foot Slope ☐ Toe Slope			Slope shape	Convex, Linear
Vegetation:	Grass	Soil survey map units:	49	Slope %: 2.0	Elevation (ft): 101
Weather Conditions/Time of Day:	Sunny / 3:15 pm			Date:	04/19/19
Observation #/Location:	SB5 - Secondary - See Map			Observation Type:	Auger

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)	Mottle Color(s)	Redox Kind(s)	Indicator(s)	I-------- Structure----------I		
							Shape	Grade	Consistence
0-8	Silt Loam	<35%	10YR 3/3				Blocky	Weak	Friable
8-11	Silt Loam	<35%	10YR 6/6				Blocky	Moderate	Firm
			10YR 5/4						
11-14	Sandy Clay Loam	<35%	10YR 5/6				Blocky	Strong	Extremely Firm
14-20	Sandy Clay	<35%	10YR 5/8	10YR 6/2	Depletions	S1	Blocky	Strong	Extremely Firm
				7.5YR 5/8	Concentrations	S1			

Comments LL = 14" - 99.8'

University of Minnesota Onsite Sewage Treatment Program

Design Summary Page

MINNESOTA POLLUTION CONTROL AGENCY

1. PROJECT INFORMATION

v 04.02.2019

Property Owner/Client:	Carmelite Monastery	Project ID:	
Site Address:	8249 Demontreville Trail N, Lake Elmo	Date:	04/23/19
Email Address:		Phone:	

2. DESIGN FLOW & WASTE STRENGTH

Attach data / estimate basis for Other Establishments

Design Flow: 400 GPD — Anticipated Waste Type: Other Est. - At-Risk

BOD: 269 mg/L — TSS: 70 mg/L — Oil & Grease: 20 mg/L

Treatment Level: C — *Select Treatment Level C for residential septic tank effluent*

3. HOLDING TANK SIZING

Minimum Capacity: Residential =400 gal/bedroom, Other Establishment = Design Flow x 5.0, Minimum size 1000 gallons

Code Minimum **Holding Tank** Capacity: ____ Gallons in ____ Tanks or Compartments

Recommended **Holding Tank** Capacity: ____ Gallons in ____ Tanks or Compartments

Type of High Level Alarm: ____ (Set @ 75% tank capacity)

Comments: ____

4. SEPTIC TANK SIZING

A. Residential dwellings:

Number of Bedrooms (Residential): ____

Code Minimum **Septic Tank** Capacity: ____ Gallons in ____ Tanks or Compartments

Recommended **Septic Tank** Capacity: ____ Gallons in ____ Tanks or Compartments

Effluent Screen & Alarm (Y/N): ____ Model/Type: ____

B. Other Establishments:

Waste received by: Gravity — 400 GPD x 3 Days Hyd. Retention Time

Code Minimum **Septic Tank** Capacity: 1200 Gallons In 2 Tanks or Compartments

Recommended **Septic Tank** Capacity: 2000 Gallons In 2 Tanks or Compartments

Effluent Screen & Alarm (Y/N): Yes — Model/Type: Polylok 525

5. PUMP TANK SIZING

Pump Tank 1 Capacity (Minimum):	500 Gal	Pump Tank 2 Capacity (Minimum):	Gal
Pump Tank 1 Capacity (Recommended):	1000 Gal	Pump Tank 2 Capacity (Recommended):	Gal
Pump 1: 22.0 GPM Total Head	15.6 ft	Pump 2: GPM Total Head	ft
Supply Pipe Dia.: 2.00 in Dose Vol:	80.0 gal	Supply Pipe Dia.: Dose Vol:	Gal

University of Minnesota Onsite Sewage Treatment Program

Design Summary Page

MINNESOTA POLLUTION CONTROL AGENCY

6. SYSTEM AND DISTRIBUTION TYPE

Project ID:

Soil Treatment Type:	Mound	Distribution Type:	Pressure Distribution-Level
Elevation Benchmark:	100 ft	Benchmark Location:	Bottom of Apron @ SW corner
MPCA System Type:		Distribution Media:	Rock
Type III/IV Details:			

7. SITE EVALUATION SUMMARY:

Describe Limiting Condition: Redoximorphic Features/Saturated Soils

Layers with >35% Rock Fragments? (yes/no) No If yes, describe below: % rock and layer thickness, amount of soil credit and any additional information for addressing the rock fragments in this design.

Note:

	Depth		Depth		Elevation	
Limiting Condition:	14	inches	1.2	ft	100.2	ft
Minimum Req'd Separation:	36	inches	3.0	ft		
					Elevation	
Code Max System Depth:	Mound	inches	-1.8	ft	102.0	ft

Critical for system compliance

This is the maximum depth to the bottom of the distribution media. Negative Depth (ft) means it must be a mound.

Soil Texture:	Silt Loam		
Soil Hyd. Loading Rate:	0.50 GPD/ft^2	Percolation Rate:	MPI
Contour Loading Rate:	10	Note:	
Measured Land Slope:	2.0 %	Note:	
Comments:			

8. SOIL TREATMENT AREA DESIGN SUMMARY

Trench:

Dispersal Area	ft^2	Sidewall Depth	in	Trench Width	ft
Total Lineal Feet	ft	No. of Trenches		Code Max. Trench Depth	in
Contour Loading Rate	ft	Min. Length	ft	Designed Trench Depth	in

Bed:

Dispersal Area	ft^2	Sidewall Depth	in	Maximum Bed Depth	in
Bed Width	ft	Bed Length	ft	Designed Bed Depth	in

Mound:

Dispersal Area	500.0 ft^2	Bed Length	50.0 ft	Bed Width	10.0 ft
Absorption Width	26.0 ft	Clean Sand Lift	1.8 ft	Berm Width (0-1%)	ft
Upslope Berm Width	15.3 ft	Downslope Berm	20.0 ft	Endslope Berm Width	17.3 ft
Total System Length	84.7 ft	System Width	45.3 ft	Contour Loading Rate	10.0 gal/ft

University of Minnesota Onsite Sewage Treatment Program

Design Summary Page

MINNESOTA POLLUTION CONTROL AGENCY

Project ID:

At-Grade:

Bed Width		ft	Bed Length		ft	Finished Height		ft
Contour Loading Rate		gal/ft	Upslope Berm		ft	Downslope Berm		ft
Endslope Berm		ft	System Length		ft	System Width		ft

Level & Equal Pressure Distribution

No. of Laterals	3		Perforation Spacing	3	ft	Perforation Diameter	3/16	in
Lateral Diameter	1.50	in	Min Dose Volume	63	gal	Max Dose Volume	100	gal

Non-Level and Unequal Pressure Distribution

	Elevation (ft)	Pipe Size (in)	Pipe Volume (gal/ft)	Pipe Length (ft)	Perf Size (in)	Spacing (ft)	Spacing (in)
Lateral 1							
Lateral 2							
Lateral 3							
Lateral 4							
Lateral 5							
Lateral 6							

Minimum Dose Volume: _____ gal

Maximum Dose Volume: _____ gal

9. Additional Info for At-Risk, HSW or Type IV Design

A. Starting BOD Concentration = Design Flow X Starting BOD (mg/L) X 8.35 ÷ 1,000,000

400 gpd X 269 mg/L X 8.35 ÷ 1,000,00 = 0.90 lbs. BOD/day

B. Target BOD Concentration = Design Flow X Target BOD (mg/L) X 8.35 ÷ 1,000,000

400 gpd X 269 mg/L X 8.35 ÷ 1,000,00 = 0.90 lbs. BOD/day

Lbs. BOD To Be Removed: 0.00

PreTreatment Technology: _____ *Must Meet or Exceed Target

Disinfection Technology: _____ *Required for Levels A & B

C. Organic Loading to Soil Treatment Area:

269 mg/L X 400 gpd x 8.35 ÷ 1,000,000 ÷ 1300 ft^2 = 0.00069 $lbs./day/ft^2$

10. Comments/Special Design Considerations:

The Soil Treatment Area is designed to handle potential <u>At-risk Organic Loading Rate of BOD</u> (269 mg/L).

- 0.90 [#/day] /.0007 [BOD Organic Loading #/sqft for Silt Loam] = 1,286 sqft required.

- Mound Absorption Area = 50' x 26' = 1,300 sqft

All Mound Materials Calculations are only estimates. Actual material amounts & weights may vary.

I hereby certify that I have completed this work in accordance with all applicable ordinances, rules and laws.

Jesse Kloeppner		L4043	4/23/2019
(Designer)	(Signature)	(License #)	(Date)

University of Minnesota Onsite Sewage Treatment Program

Mound Design Worksheet
≥1% Slope

MINNESOTA POLLUTION CONTROL AGENCY

1. SYSTEM SIZING: Project ID: v 04.02.2019

A. Design Flow:	400	GPD
B. Soil Loading Rate:	0.50	GPD/ft^2
C. Depth to Limiting Condition	1.2	ft
D. Percent Land Slope:	2.0	%
E. Design Media Loading Rate:	1.0	GPD/ft^2
F. Mound Absorption Ratio:	2.60	

Table I
MOUND CONTOUR LOADING RATES:

Measured Perc Rate	← OR →	Texture - derived mound absorption ratio		Contour Loading Rate:
≤ 60mpi		1.0, 1.3, 2.0, 2.4, 2.6	→	≤12
61-120 mpi	← OR →	5.0	→	≤12
≥ 120 mpi*		>5.0*	→	≤6*

TABLE IXa
LOADING RATES FOR DETERMINING BOTTOM ABSORPTION AREA AND ABSORPTION RATIOS USING PERCOLATION TESTS

Percolation Rate (MPI)	Treatment Level C		Treatment Level A, A-2, B,	
	Absorption Area Loading Rate (gpd/ft^2)	Mound Absorption Ratio	Absorption Area Loading Rate (gpd/ft^2)	Mound Absorption Ratio
<0.1	-	1	-	1
0.1 to 5	1.2	1	1.6	1
0.1 to 5 (fine sand and loamy fine sand)	0.6	2	1	1.6
6 to 15	0.78	1.5	1	1.6
16 to 30	0.6	2	0.78	2
31 to 45	0.5	2.4	0.78	2
46 to 60	0.45	2.6	0.6	2.6
61 to 120	-	5	0.3	5.3
>120	-	-	-	-

*Systems with these values are not Type I systems. Contour Loading Rate (linear loading rate) is a recommended value.

2. DISPERSAL MEDIA SIZING

A. Calculate Dispersal Bed Area: Design Flow ÷ Design Media Loading Rate = ft^2

400 GPD ÷ 1.0 GPD/ft^2 = 400 ft^2

If a larger dispersal media area is desired, enter size: 500 ft^2

B. Enter Dispersal Bed Width: 10.0 ft *Can not exceed 10 feet*

C. Calculate Contour Loading Rate: Bed Width X Design Media Loading Rate

10 ft^2 X 1.0 GPD/ft^2 = 10.0 gal/ft *Can not exceed Table 1*

D. Calculate Minimum Dispersal Bed Length: Dispersal Bed Area ÷ Bed Width = Bed Length

500 ft^2 ÷ 10.0 ft = 50.0 ft

3. ABSORPTION AREA SIZING

A. Calculate Absorption Width: Bed Width X Mound Absorption Ratio = Absorption Width

10.0 ft X 2.6 = 26.0 ft

B. For slopes >1%, the Absorption Width is measured downhill from the upslope edge of the Bed.

Calculate Downslope Absorption Width: Absorption Width - Bed Width

26.0 ft - 10.0 ft = 16.0 ft

4. DISTRIBUTION MEDIA: ROCK Project ID:

A. Rock Depth Below Distribution Pipe

6 in 0.50 ft

5. DISTRIBUTION MEDIA: REGISTERED TREATMENT PRODUCTS: CHAMBERS AND EZFLOW

A. Enter Dispersal Media:

B. Enter the Component: Length: ft Width: ft Depth: ft

C. Number of Components per Row = Bed Length divided by Component Length (Round up)

ft ÷ ft = components/row

Check registered product information for specific application details and design

D. Actual Bed Length = Number of Components/row X Component Length:

components **X** ft =

E. Number of Rows = Bed Width divided by Component Width (Round up)

ft ÷ ft = rows *Adjust width so this is a whole number.*

F. Total Number of Components = Number of Components per Row X Number of Rows

X = components

6. MOUND SIZING

A. Calculate Minimum Clean Sand Lift: 3 feet minus Depth to Limiting Condition = Clean Sand Lift

3.0 ft - 1.2 ft = 1.8 ft Design Sand Lift (optional): ft

B. Upslope Height: Clean Sand Lift + Depth of Media + Depth of Cover cover (1 ft.)

1.8 ft + 0.8 ft + 1.5 ft = 4.1 ft

Land Slope %		0	1	2	3	4	5	6	7	8	9	10	11	12
Upslope Berm Ratio	3:1	3.00	2.91	2.83	2.75	2.68	2.61	2.54	2.48	2.42	2.36	2.31	2.26	2.21
	4:1	4.00	3.85	3.70	3.57	3.45	3.33	3.23	3.12	3.03	2.94	2.86	2.78	2.70

C. Select Upslope Berm Multiplier (based on land slope): 3.70

D. Calculate Upslope Berm Width: Multiplier X Upslope Mound Height = Upslope Berm Width

3.70 ft X 4.1 ft = 15.3 ft

E. Calculate Drop in Elevation Under Bed: Bed Width X Land Slope ÷ 100 = Drop (ft)

10.0 ft X 2.0 % ÷ 100 = 0.20 ft

F. Calculate Downslope Mound Height: Upslope Height + Drop in Elevation = Downslope Height

4.1 ft + 0.20 ft = 4.3 ft

Land Slope %		0	1	2	3	4	5	6	7	8	9	10	11	12
Downslope Berm Ratio	3:1	3.00	3.09	3.19	3.30	3.41	3.53	3.66	3.80	3.95	4.11	4.29	4.48	4.69
	4:1	4.00	4.17	4.35	4.54	4.76	5.00	5.26	5.56	5.88	6.25	6.67	7.14	7.69

G. Select Downslope Berm Multiplier (based on land slope): 4.35

H. Calculate Downslope Berm Width: Multiplier X Downslope Height = Downslope Berm Width

4.35 x 4.3 ft = 18.9 ft

I. Calculate Minimum Berm to Cover Absorption Area: Downslope Absorption Width + 4 feet

16.0 ft + 4 ft = 20.0 ft

J. Design Downslope Berm = greater of 4H and 4I: 20.0 ft

K. Select Endslope Berm Multiplier: 4.00 *(usually 3.0 or 4.0)*

L. Calculate Endslope Berm X Downslope Mound Height = Endslope Berm Width

4.00 ft X 4.3 ft = 17.3 ft

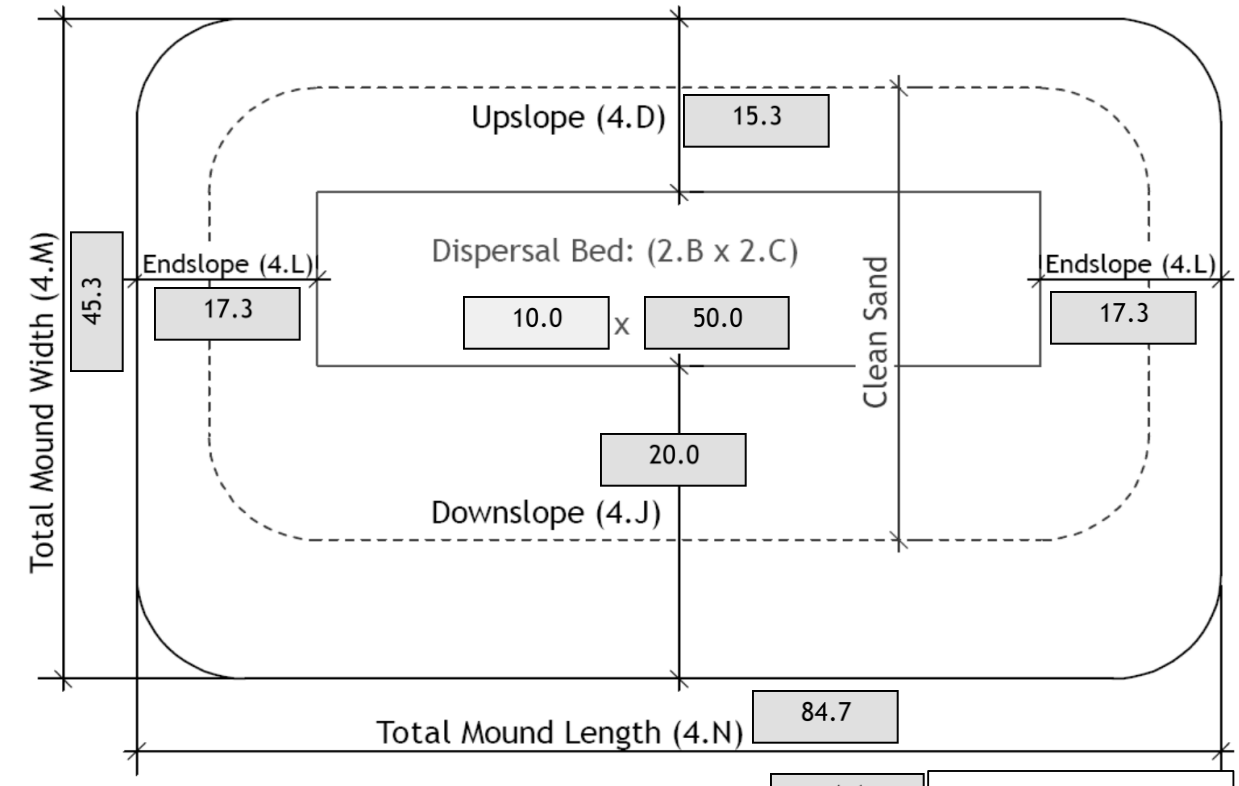
M. Calculate Mound Width: Upslope Berm Width + Bed Width + Downslope Berm Width

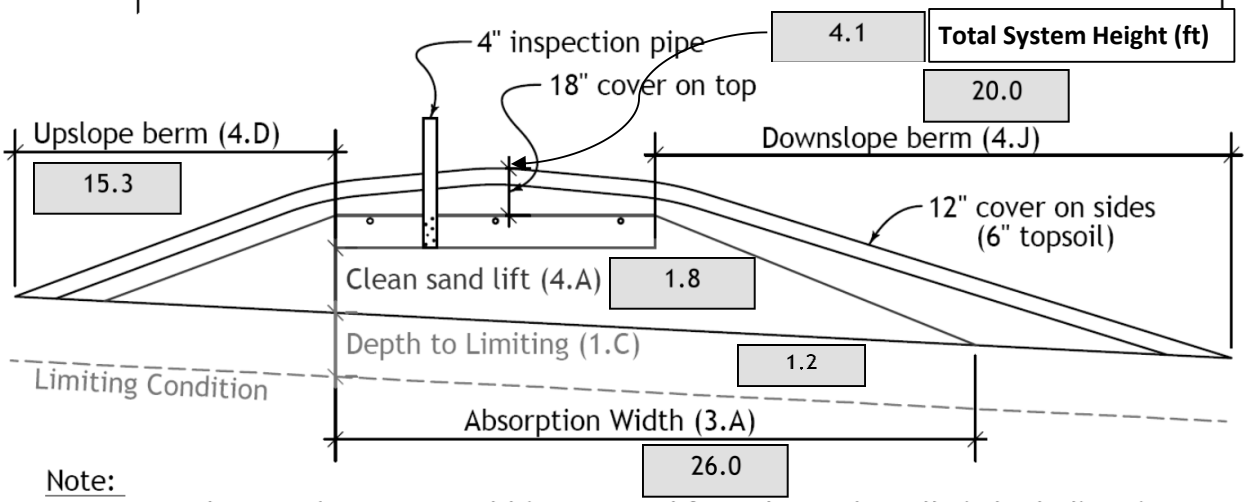
15.3 ft + 10.0 ft + 20.0 ft = 45.3 ft

N. Calculate Mound Length: Endslope Berm Width + Bed Length + Endslope Berm Width

17.3 ft + 50.0 ft + 17.3 ft = 84.7 ft

7. MOUND DIMENSIONS Project ID:





Note:
For 0 to 1% slopes, *Absorption Width* is measured from the *Bed* equally in both directions.
For slopes >1%, *Absorption Width* is measured downhill from the upslope edge of the *Bed*.

Comments:

All berms calculated at 4:1 ratio. Additional material may be needed on downslope to properly grade with hillside.

University of Minnesota Onsite Sewage Treatment Program

Mound Materials Worksheet

Minnesota Pollution Control Agency

Project ID:

v 04.02.2019

A. Rock *Volume* : (Rock Below Pipe + Rock to cover pipe (*pipe outside dia + ~2 inch)*) X *Bed Length* X *Bed Width* = *Volume*

(6 in + 3.5 in) ÷ 12 | 50.0 ft X 10.0 ft = 395.8 ft^3

Divide ft^3 by 27 ft^3/yd^3 to calculate cubic yards: 395.8 ft^3 ÷ 27 = 14.7 yd^3

Add 30% for constructability: 14.7 yd^3 X 1.3 = 19.1 yd^3

B. Calculate *Clean Sand Volume:*

Volume Under Rock bed : *Average Sand Depth* x *Media Width* x *Media Length* = cubic feet

2.2 ft X 10.0 ft X 50.0 ft = 1116.7 ft^3

For a Mound on a slope from 0-1%

Volume from Length = ((Upslope Mound Height - 1) X Absorption Width Beyond Bed X Media Bed Length)

(ft - 1) X X ft =

Volume from Width = ((Upslope Mound Height - 1) X Absorption Width Beyond Bed X Media Bed Width)

(ft - 1) X X ft =

Total Clean Sand Volume : *Volume from Length + Volume from Width + Volume Under Media*

ft^3 + ft^3 + ft^3 = ft^3

For a Mound on a slope greater than 1%

Upslope Volume : ((*Upslope Mound Height - 1*) x 3 x *Bed Length*) ÷ 2 = cubic feet

((4.1 ft - 1) X 3.0 ft X 50.0) ÷ 2 = 235.0 ft^3

Downslope Volume : ((*Downslope Height - 1)* x Downslope Absorption Width x *Media Length*) ÷ 2 = cubic feet

((4.3 ft - 1) X 16.0 ft X 50.0) ÷ 2 = 1333.3 ft^3

Endslope Volume : (*Downslope Mound Height - 1)* x 3 x *Media Width* = cubic feet

(4.3 ft - 1) X 3.0 ft X 10.0 ft = 100.0 ft^3

Total Clean Sand Volume : *Upslope Volume* + *Downslope Volume* + *Endslope Volume* + *Volume Under Media*

235.0 ft^3 + 1333.3 ft^3 + 100.0 ft^3 + 1116.7 ft^3 = 2785.0 ft^3

Divide ft^3 by 27 ft^3/yd^3 to calculate cubic yards: 2785.0 ft^3 ÷ 27 = 103.1 yd^3

Add 30% for constructability: 103.1 yd^3 X 1.3 = 134.1 yd^3

C. Calculate *Sandy Berm Volume:*

Total Berm Volume (approx) : ((Avg. Mound Height - 0.5 ft topsoil) x Mound Width x Mound Length) ÷ 2

(4.2 - 0.5)ft X 45.3 ft X 84.7) ÷ 2 = 7158.4 ft^3

Total Mound Volume - Clean Sand volume -Rock Volume = cubic feet

7158.4 ft^3 - 2785.0 ft^3 - 395.8 ft^3 = 3977.5 ft^3

Divide ft^3 by 27 ft^3/yd^3 to calculate cubic yards: 3977.5 ft^3 ÷ 27 = 147.3 yd^3

Add 30% for constructability: 147.3 yd^3 x 1.2 = 191.5 yd^3

D. Calculate *Topsoil Material Volume: Total Mound Width X Total Mound Length X .5 ft*

45.3 ft X 84.7 ft X 0.5 ft = 1917.4 ft^3

Divide ft^3 by 27 ft^3/yd^3 to calculate cubic yards: 1917.4 ft^3 ÷ 27 = 71.0 yd^3

Add 30% for constructability: 71.0 yd^3 x 1.3 = 54.6 yd^3

University of Minnesota Onsite Sewage Treatment Program

Pressure Distribution Design Worksheet

Minnesota Pollution Control Agency

Project ID: v 04.02.2019

1. Media Bed Width: 10 ft

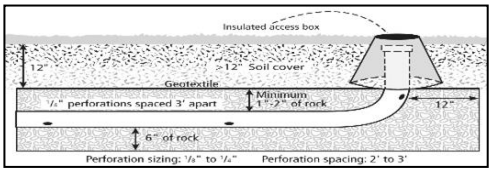
2. Minimum Number of Laterals in system/zone = Rounded up number of [(Media Bed Width - 4) ÷ 3] + 1.

   [(10 - 4) ÷ 3] + 1 = 3 laterals *Does not apply to at-grades*

3. Designer Selected *Number of Laterals*: 3 laterals
   Cannot be less than line 2 (Except in at-grades)

4. Select *Perforation Spacing*: 3.00 ft

5. Select *Perforation Diameter Size:* 3/16 in



6. *Length of Laterals* = Media Bed Length - 2 Feet.

   50.0 - 2ft = 48.0 ft *Perforation can not be closer then 1 foot from edge.*

7. Determine the *Number of Perforation Spaces*. Divide the *Length of Laterals* by the *Perforation Spacing* and round down to the nearest whole number.

   Number of Perforation Spaces = 48.0 ft ÷ 3.0 ft = 16 Spaces

8. *Number of Perforations per Lateral* is equal to 1.0 plus the *Number of Perforation Spaces*. Check table below to verify the number of perforations per lateral guarantees less than a 10% discharge variation. The value is double with a center manifold.

   Perforations Per Lateral = 16 Spaces + 1 = 17 Perfs. Per Lateral

Maximum Number of Perforations Per Lateral to Guarantee <10% Discharge Variation

1/4 Inch Perforations						7/32 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1¼	1½	2	3		1	1¼	1½	2	3
2	10	13	18	30	60	2	11	16	21	34	68
2½	8	12	16	28	54	2½	10	14	20	32	64
3	8	12	16	25	52	3	9	14	19	30	60
3/16 Inch Perforations						1/8 Inch Perforations					
Perforation Spacing (Feet)	Pipe Diameter (Inches)					Perforation Spacing (Feet)	Pipe Diameter (Inches)				
	1	1¼	1½	2	3		1	1¼	1½	2	3
2	12	18	26	46	87	2	21	33	44	74	149
2½	12	17	24	40	80	2½	20	30	41	69	135
3	12	16	22	37	75	3	20	29	38	64	128

9. *Total Number of Perforations* equals the *Number of Perforations per Lateral* multiplied by the *Number of Perforated Laterals.*

   17 Perf. Per Lat. X 3 Number of Perf. Lat. = 51 Total Number of Perf.

10. Spacing of laterals; Must be greater than 1 foot and no more than 3 feet: 3.0 ft

10. Select *Type of Manifold Connection* (End or Center): End

11. *Select Lateral Diameter (See Table)*: 1.50 in

University of Minnesota Onsite Sewage Treatment Program

Pressure Distribution Design Worksheet

Minnesota Pollution Control Agency

12. Calculate the *Square Feet per Perforation. Recommended value is 4-11 ft² per perforation.*
Does not apply to At-Grades

a. *Bed Area* = Bed Width (ft) X Bed Length (ft)

10	ft	X	50	ft	=	500 ft²

b. *Square Foot per Perforation* = *Bed Area* divided by the *Total Number of Perforations*.

500	ft²	÷	51	perforations	=	9.8 ft²/perforations

13. Select *Minimum Average Head*: 1.0 ft

14. Select *Perforation Discharge* (GPM) based on Table: 0.41 GPM per Perforation

15. Determine required *Flow Rate* by multiplying the *Total Number of Perfs.* by the *Perforation Discharge.*

51	Perfs	X	0.41	GPM per Perforation =		22 GPM

16. *Volume of Liquid Per Foot of Distribution Piping (Table II)*: 0.110 Gallons/ft

17. *Volume of Distribution Piping* =

= [*Number of Perforated Laterals* X *Length of Laterals* X (Volume of Liquid Per Foot of Distribution Piping]

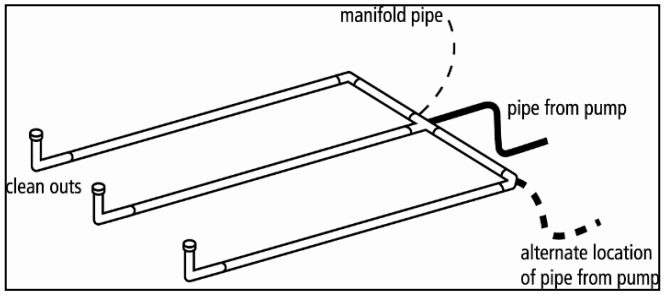
3	X	48	ft	X	0.110	gal/ft	=	15.8 Gallons

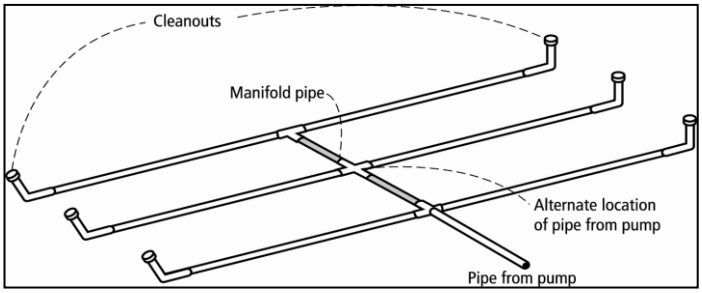
18. Minimum Delivered Volume = Volume of Distribution Piping X 4

15.8	gals	X	4	= 63.4 Gallons

Table II
Volume of Liquid in Pipe

Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661





Comments/Special Design Considerations:

Basic Pump Selection Design Worksheet

1. PUMP CAPACITY Project ID: v 04.02.2019

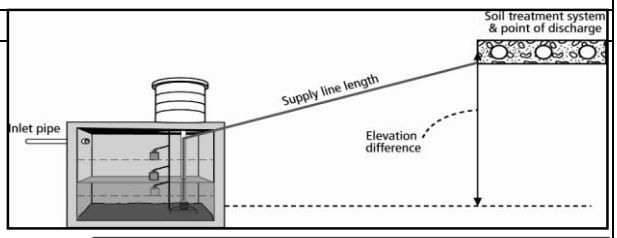
Pumping to Gravity or Pressure Distribution: Pressure

1. If pumping to gravity enter the gallon per minute of the pump: ____ GPM *(10 - 45 gpm)*

2. If pumping to a pressurized distribution system: 22.0 GPM

3. Enter pump description: Demand Dosing

2. HEAD REQUIREMENTS



A. Elevation Difference between pump and point of discharge: 9 ft

B. Distribution Head Loss: 5 ft

C. Additional Head Loss: 0.0 ft (due to special equipment, etc.)

Distribution Head Loss	
Gravity Distribution = 0ft	
Pressure Distribution based on Minimum Average Head Value on Pressure Distribution Worksheet:	
Minimum Average Head	**Distribution Head Loss**
1ft	5ft
2ft	6ft
5ft	10ft

D. 1. Supply Pipe Diameter: 2.0 in

2. Supply Pipe Length: 95 ft

E. **Friction Loss in Plastic Pipe per 100ft** from Table I:

Friction Loss = 1.34 ft per 100ft of pipe

Table I. Friction Loss in Plastic Pipe per 100ft

Flow Rate (GPM)	Pipe Diameter (inches)			
	1	1.25	1.5	2
10	9.1	3.1	1.3	0.3
12	12.8	4.3	1.8	0.4
14	17.0	5.7	2.4	0.6
16	21.8	7.3	3.0	0.7
18		9.1	3.8	0.9
20		11.1	4.6	1.1
25		16.8	6.9	1.7
30		23.5	9.7	2.4
35			12.9	3.2
40			16.5	4.1
45			20.5	5.0
50				6.1
55				7.3
60				8.6
65				10.0
70				11.4
75				13.0
85				16.4
95				20.1

F. Determine *Equivalent Pipe Length* from pump discharge to soil dispersal area discharge point. Estimate by adding 25% to supply pipe length for fitting loss. *Supply Pipe Length (D.2)* X 1.25 = *Equivalent Pipe Length*

95 ft X 1.25 = 118.8 ft

G. Calculate *Supply Friction Loss* by multiplying *Friction Loss Per 100ft* (Line E) by the *Equivalent Pipe Length* (Line F) and divide by 100.

Supply Friction Loss =

1.34 ft per 100ft X 118.8 ft ÷ 100 = 1.6 ft

H. *Total Head* requirement is the sum of the *Elevation Difference* (Line A), the Distribution Head Loss (Line B), Additional Head Loss (Line C), and the Supply Friction Loss (Line G)

9.0 ft + 5.0 ft + 0.0 ft + 1.6 ft = 15.6 ft

3. PUMP SELECTION

A pump must be selected to deliver at least **22.0** GPM (Line 1 or Line 2) with at least **15.6** feet of total head.

Comments:

Pump Tank Design Worksheet (Demand Dose)

DETERMINE TANK CAPACITY AND DIMENSIONS Project ID: v 04.02.2019

1. A. *Design Flow (Design Sum.1A)* : 400 GPD C. Tank Use: **Dosing**
   B. Min. required pump tank capacity: 500 Gal D. Recommended pump tank capacity: 1000 Gal

2. A. Tank Manufacturer: Minnesota Precast B. Tank Model: 1000 Pump Tank
   C. Capacity from manufacturer: 1000 Gallons
   D. Gallons per inch from manufacturer: 25.0 Gallons per inch
   E. Liquid depth of tank from manufacturer: 40.0 inches

Note: Design calculations are based on this specific tank. Substituting a different tank model will change the pump float or timer settings. Contact designer if changes are necessary.

DETERMINE DOSING VOLUME

3 Calculate *Volume to Cover Pump* (The inlet of the pump must be at least 4-inches from the bottom of the pump tank & 2 inches of water covering the pump is recommended)

(Pump and block height + 2 inches) X *Gallons Per Inch* (2C or 3E)

(10 in + 2 inches) X 25.0 Gallons Per Inch = 300 Gallons

4 ***Minimum** Delivered Volume* = 4 X Volume of Distribution Piping:

-Item 18 of the Pressure Distribution or Item 11 of Non-level 63 **Gallons (Minimum dose)** 2.5 inches/dose

5 Calculate ***Maximum** Pumpout Volume* (25% of Design Flow)

Design Flow: 400 GPD X 0.25 = 100 **Gallons (Maximum dose)** 4.0 inches/dose

6 *Select a pumpout volume that meets both Minimum and Maximum:* 80 Gallons

7 Calculate *Doses Per Day* = Design Flow ÷ *Delivered Volume*

400 gpd ÷ 80 gal = 5.00 *Doses*

8 Calculate Drainback:

A. *Diameter of Supply Pipe* = 2 inches

B. Length of Supply Pipe = 95 feet

C. *Volume of Liquid Per Lineal Foot of Pipe* = 0.170 Gallons/ft

D. *Drainback = Length of Supply Pipe* X *Volume of Liquid Per Lineal Foot of Pipe*

95 ft X 0.170 gal/ft = 16.2 Gallons

9. *Total Dosing Volume = Delivered Volume* plus *Drainback*

80 gal + 16.2 gal = 96 Gallons

10. Minimum Alarm Volume = Depth of alarm (2 or 3 inches) X gallons per inch of tank

3 in X 25.0 gal/in = 75.0 Gallons

Volume of Liquid in Pipe	
Pipe Diameter (inches)	Liquid Per Foot (Gallons)
1	0.045
1.25	0.078
1.5	0.110
2	0.170
3	0.380
4	0.661

DEMAND DOSE FLOAT SETTINGS

11. Calculate *Float Separation Distance* using *Dosing Volume* .

Total Dosing Volume /Gallons Per Inch

96 gal ÷ 25.0 gal/in = 3.8 Inches

12. Measuring from bottom of tank:

A. *Distance to set Pump Off Float* = Pump + block height + 2 inches

10 in + 2 in = 12 Inches

B. *Distance to set Pump On Float=Distance to Set Pump-Off Float + Float Separation Distance*

12 in + 3.8 in = 16 Inches

C. *Distance to set Alarm Float = Distance to set Pump-On Float + Alarm Depth* (2-3 inches)

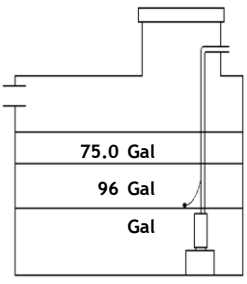
16 in + 3.0 in = 19 Inches

Inches for Dose: 3.8 in

Alarm Depth 18.8 in

Pump On 15.8 in

Pump Off 12.0 in



University of Minnesota Onsite Sewage Treatment Program

Flow Estimation: Other Establishments

Minnesota Pollution Control Agency

v 04.02.2019

Establishment	*7081* Specified Type of Establishment	Unit	# of Units	Design Flow per Unit (See Table I)	Total Avg Daily Flow
1	Assembly hall	seat	80	4.00	320
1	Assembly hall	employee	2	15.00	30
				Total Flow 7081 Establishments (gpd)	350
				Safety Factor (gpd)	50.00
				Total Flow 7081 Establishments (gpd)	400.00

Establishment	*7081* Specified Type of Establishment - *BOD*	Unit	# of Units	Design Pounds / Day	Total Avg Daily Flow
1	Assembly hall	seat	80	0.01	0.8
1	Assembly hall	employee	2	0.05	0.1
				Total Orangic Load 7081 Establishments BOD (lbs/unit/day)	0.90
				Total Orangic Load 7081 Establishments BOD (mg/L/day)	269

Estimate of Waste Strengths from Other Establishments

Type of Facility	BOD_5 (mg/L)	BOD_5 (lbs/unit/day)
Airports		
Per passenger	400 - 500	0.02
Per employee	400 - 500	0.05
Apartment houses	240 - 400	0.175/multiple family
Assembly hall (no kitchen)	240 - 400	0.01/seat
Boarding school	240 - 400	
Bowling alley (no kitchen)	240 - 400	0.15/lane
Camps		
Construction (Semi-permanent)	400 - 500	0.140
Country club (member)	400 - 500	0.052/member
Country club (resident)	240 - 400	0.208/resident
Day (no meals)	400 - 500	0.031
Luxury	400 - 500	0.208
Church (no kitchen)	240 - 400	0.02/seat
Country club	400 - 800	0.208/member
Personnel addition	240 - 400	0.04/employee
Day school	240 - 400	0.031/student
Add for showers	240 - 400	0.011/student
Add for cafeteria	500 - 700	0.031/meal
Factory		
No showers	240 - 400	0.073/employee
With showers	240 - 400	0.083/employee
Food service		
Ordinary restaurant	600 - 1500	0.35/seat
24-Hour restaurant	600 - 1500	0.50/seat
Freeway restaurant	600 - 1500	0.70/seat
Tavern (limited food)	400 - 800	0.10/seat
Carry-out (single service)	600 - 800	0.70/100 sqft
Carry-out	200 - 600	0.04/employee
Fast food chain	1000 - 2000	0.80/seat
Kitchen Waste	600 - 1500	0.015/meal
Toilet and Kitchen Waste	600 - 1500	0.021/customer
Additional for bars & cocktail lounges	600 - 1500	0.01/customer
Hospital (not including personnel)	400 - 600	0.518/bed
Laundromat	600 - 800	2.0/machine
Mobile home park	240 - 400	0.40/space
Mobile home park	240 - 400	0.140/person
Motel, Hotel	240 - 400	0.083/bed
Motel, Hotel	240 - 400	0.14/person
Nursing home (not including kitchen or laundry)	400 - 600	0.26/bed
Office building (per 8 hour shift)	240 - 400	0.05/employee
Park, toilets only	400 - 600	0.01/person
Park, bathhouse and flush toilets	240 - 400	0.021/person
Resort hotel, cottage	240 - 400	0.15/room
Add for self-service laundry	600 - 800	2.0/machine
Service station	240 - 400	0.50/toilet or urinal
Service station	240 - 400	0.021vehicle served
Shopping center (no food service or laundry)	400 - 600	0.30/1000 sqft
Shopping center (no food service or laundry)	400 - 600	0.050/employee
Sports Stadium	400 - 600	0.20/person
Swimming pool	300 - 500	0.021/person
Theaters		
Drive-in	400 - 500	0.010/car space
Indoor	240 - 400	0.010/seat
Travel trailer or RV park		
No water/sewer hook up	400 - 800	0.25/space
With water and sewer	400 - 800	0.35/space

UNIVERSITY OF MINNESOTA

Septic System Management Plan for Above Grade Systems

The goal of a septic system is to protect human health and the environment by properly treating wastewater before returning it to the environment. Your septic system is designed to kill harmful organisms and remove pollutants before the water is recycled back into our lakes, streams and groundwater.

This **management plan** will identify the operation and maintenance activities necessary to ensure long-term performance of your septic system. Some of these activities must be performed by you, the homeowner. Other tasks must be performed by a licensed septic maintainer or service provider. However, it is **YOUR** responsibility to make sure all tasks get accomplished in a timely manner.

The University of Minnesota's *Septic System Owner's Guide* contains additional tips and recommendations designed to extend the effective life of your system and save you money over time.

Proper septic system design, installation, operation and maintenance means safe and clean water!

Property Owner	Carmelite Monestary	Email	
Property Address	8249 DeMontreville Trail N, Lake Elmo, MN 55402	Property ID	
System Designer	Jesse Kloeppner	Contact Info	763-843-4114
System Installer	Capra's Utilities	Contact Info	651-762-2500
Service Provider/Maintainer		Contact Info	
Permitting Authority	Washington County	Contact Info	
Permit #		Date Inspected	

Keep this Management Plan with your Septic System Owner's Guide. The Septic System Owner's Guide includes a folder to hold maintenance records including pumping, inspection and evaluation reports. Ask your septic professional to also:

- Attach permit information, designer drawings and as-built of your system, if they are available.
- Keep copies of all pumping records and other maintenance and repair invoices with this document.
- Review this document with your maintenance professional at each visit; discuss any changes in product use, activities, or water-use appliances.

For a copy of the *Septic System Owner's Guide*, visit www.bookstores.umn.edu and search for the word "septic" or call 800-322-8642.

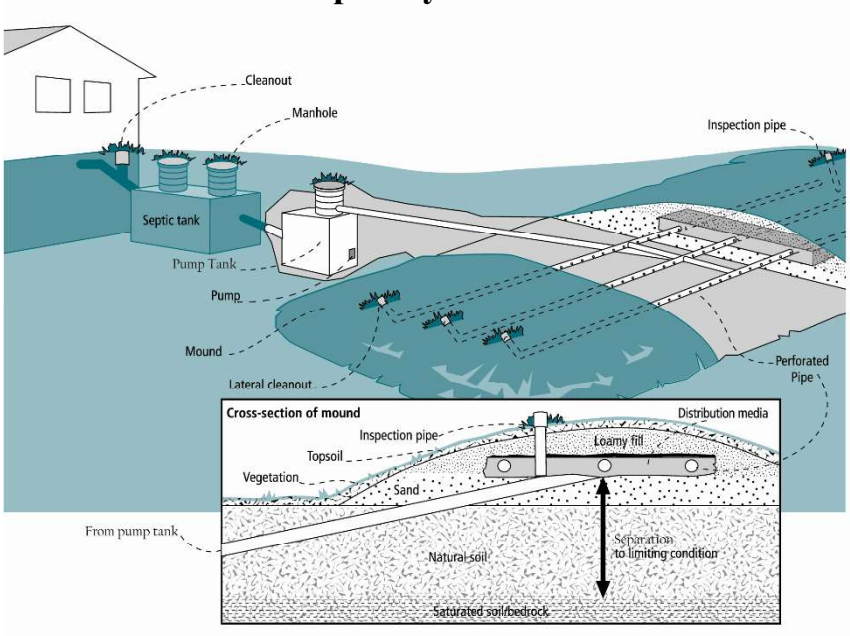
For more information see http://septic.umn.edu

Version: August 2015

UNIVERSITY OF MINNESOTA

Septic System Management Plan for Above Grade Systems

Your Septic System



Septic System Specifics

System Type: (●) I ( ) II ( ) III ( ) IV* ( ) V*

(*Based on MN Rules Chapter 7080.2200 – 2400)*

**Additional Management Plan required*

☐ System is subject to operating permit*

☐ System uses UV disinfection unit*

Type of advanced treatment unit _____

Dwelling Type

Number of bedrooms: Assembly Hall (no kitchen)

System capacity/ design flow (gpd): 400

Anticipated average daily flow (gpd): 280

Comments_____

Business? : (●) Y ( ) N What type? Church

Well Construction

Well depth (ft): _____

- ❑ Cased well Casing depth: _____
- ❑ Other (specify): _____

Distance from septic (ft): > 50

Is the well on the design drawing? (●) Y ( ) N

Septic Tank

- ❑ First tank *Tank volume:* 1000 *gallons*
  Does tank have two compartments? ( ) Y (●) N
- ❑ Second tank *Tank volume:* 1000 *gallons*
- ❑ Tank is constructed of Concrete
- ❑ Effluent screen: (●) Y ( ) N Alarm (●) Y ( ) N

- ❑ Pump Tank 1000 *gallons*
- ❑ Effluent Pump *make/model*: Installer Choice
  Pump capacity 22 GPM
  TDH 16 Feet of head
- ❑ Alarm location TBD

Soil Treatment Area (STA)

Mound/At-Grade area (width x length): 45.3 ft x 84.7 ft

Rock bed size (width x length): 10 ft x 50 ft

Location of additional STA: South of New Mound

Type of distribution media: Rock

☑ Inspection ports ☑ Cleanouts

☑ Surface water diversions

☐ Additional STA not available

Homeowner Management Tasks

These op*eration and maintenance ac*tivities are your responsibility. *Chart on page 6 can help track your activities.*

Your toilet is not a garbage can. Do not flush anything besides human waste and toilet paper. No wet wipes, cigarette butts, disposal diapers, used medicine, feminine products or other trash!

The system and septic tanks needs to be checked every 36 months

Your service provider or pumper/maintainer should evaluate if your tank needs to be pumped more or less often.

Seasonally or several times per year

- *Leaks.* Check (listen, look) for leaks in toilets and dripping faucets. Repair leaks promptly.
- *Soil treatment area.* Regularly check for wet or spongy soil around your soil treatment area. If surfaced sewage or strong odors are not corrected by pumping the tank or fixing broken caps and leaks, call your service professional. *Untreated sewage may make humans and animals sick.* Keep bikes, snowmobiles and other traffic off and control borrowing animals.
- *Alarms.* Alarms signal when there is a problem; contact your service professional any time the alarm signals.
- *Lint filter.* If you have a lint filter, check for lint buildup and clean when necessary. If you do not have one, consider adding one after washing machine.
- *Effluent screen.* If you do not have one, consider having one installed the next time the tank is cleaned along with an alarm.

Annually

- *Water usage rate.* A water meter or another device can be used to monitor your average daily water use. Compare your water usage rate to the design flow of your system (listed on the next page). Contact your septic professional if your average daily flow over the course of a month exceeds 70% of the design flow for your system.
- *Caps.* Make sure that all caps and lids are intact and in place. Inspect for damaged caps at least every fall. Fix or replace damaged caps before winter to help prevent freezing issues.
- *Water conditioning devices.* See Page 5 for a list of devices. When possible, program the recharge frequency based on *water demand (gallons)* rather than *time (days)*. Recharging too frequently may negatively impact your septic system. Consider updating to demand operation if your system currently uses time,
- *Review your water usage rate.* Review the Water Use Appliance chart on Page 5. Discuss any major changes with your service provider or pumper/maintainer.

During each visit by a service provider or pumper/maintainer

- Make sure that your service professional services the tank through the manhole. (NOT though a 4" or 6" diameter inspection port.)
- Ask how full your tank was with sludge and scum to determine if your service interval is appropriate.
- Ask your pumper/maintainer to accomplish the tasks listed on the Professional Tasks on Page 4.

Professional Management Tasks

These are the operation and maintenance activities that a pumper/maintainer performs to help ensure long-term performance of your system. At each visit a written report/record must be provided to homeowner.

Plumbing/Source of Wastewater

- Review the Water Use Appliance Chart on Page 5 with homeowner.
  Discuss any changes in water use and the impact those changes may have on the septic system.
- Review water usage rates (if available) with homeowner.

Septic Tank/Pump Tanks

- *Manhole lid*. A riser is recommended if the lid is not accessible from the ground surface. Insulate the riser cover for frost protection.
- *Liquid level*. Check to make sure the tank is not leaking. The liquid level should be level with the bottom of the outlet pipe. (If the water level is below the bottom of the outlet pipe, the tank may not be watertight. If the water level is higher than the bottom of the outlet pipe of the tank, the effluent screen may need cleaning, or there may be ponding in the soil treatment area.)
- *Inspection pipes*. Replace damaged or missing pipes and caps.
- *Baffles*. Check to make sure they are in place and attached, and that inlet/outlet baffles are clear of buildup or obstructions.
- *Effluent screen*. Check to make sure it is in place; clean per manufacturer recommendation. Recommend retrofitted installation if one is not present.
- *Alarm*. Verify that the alarm works.
- *Scum and sludge*. Measure scum and sludge in each compartment of each septic and pump tank, pump if needed.

Pump

- *Pump and controls.* Check to make sure the pump and controls are operating correctly.
- *Pump vault.* Check to make sure it is in place; clean per manufacturer recommendations.
- *Alarm*. Verify that the alarm works.
- *Drainback.* Check to make sure it is draining properly.
- *Event counter or elapsed time meter.* Check to see if there is an event counter or elapsed time meter for the pump. If there is one or both, calculate the water usage rate and compare to the anticipated use listed on Design and Page 2. Dose Volume: 80 gallons: Pump run time: On Demand Minutes

Soil Treatment Area

- *Inspection pipes*. Check to make sure they are properly capped. Replace caps and pipes that are damaged.
- *Surfacing of effluent*. Check for surfacing effluent or other signs of problems.
- *Lateral flushing.* Check lateral distribution; if cleanouts exist, flush and clean at recommended frequency.
- *Vegetation* - Check to see that a good growth of vegetation is covering the system.

All other components – evaluate as listed here:

Water-Use Appliances and Equipment in the Home

Appliance	Impacts on System	Management Tips
Garbage disposal	• Uses additional water. • Adds solids to the tank. • Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• Use of a garbage disposal is not recommended. • Minimize garbage disposal use. Compost instead. • To prevent solids from exiting the tank, have your tank pumped more frequently. • Add an effluent screen to your tank.
Washing machine	• Washing several loads on one day uses a lot of water and may overload your system. • Overloading your system may prevent solids from settling out in the tank. Unsettled solids can exit the tank and enter the soil treatment area.	• Choose a front-loader or water-saving top-loader, these units use less water than older models. • Limit the addition of extra solids to your tank by using liquid or easily biodegradable detergents. Limit use of bleach-based detergents and fabric softeners. • Install a lint filter after the washer and an effluent screen to your tank • Wash only full loads and think even – spread your laundry loads throughout the week.
Dishwasher	• Powdered and/or high-phosphorus detergents can negatively impact the performance of your tank and soil treatment area. • New models promote “no scraping”. They have a garbage disposal inside.	• Use gel detergents. Powdered detergents may add solids to the tank. • Use detergents that are low or no-phosphorus. • Wash only full loads. • Scrape your dishes anyways to keep undigested solids out of your septic system.
Grinder pump (in home)	• Finely-ground solids may not settle. Unsettled solids can exit the tank and enter the soil treatment area.	• Expand septic tank capacity by a factor of 1.5. • Include pump monitoring in your maintenance schedule to ensure that it is working properly. • Add an effluent screen.
Large bathtub (whirlpool)	• Large volume of water may overload your system. • Heavy use of bath oils and soaps can impact biological activity in your tank and soil treatment area.	• Avoid using other water-use appliances at the same time. For example, don’t wash clothes and take a bath at the same time. • Use oils, soaps, and cleaners in the bath or shower sparingly.
Clean Water Uses	**Impacts on System**	**Management Tips**
High-efficiency furnace	• Drip may result in frozen pipes during cold weather.	• Re-route water directly out of the house. Do not route furnace discharge to your septic system.
Water softener Iron filter Reverse osmosis	• Salt in recharge water may affect system performance. • Recharge water may hydraulically overload the system.	• These sources produce water that is not sewage and should not go into your septic system. • Reroute water from these sources to another outlet, such as a dry well, draintile or old drainfield. • When replacing, consider using a demand-based recharge vs. a time-based recharge. • Check valves to ensure proper operation; have unit serviced per manufacturer directions
Surface drainage Footing drains	• Water from these sources will overload the system and is prohibited from entering septic system.	

Homeowner Maintenance Log

Track maintenance activities here for easy reference. See list of management tasks on pages 3 and 4.

Activity	Date accomplished									
Check frequently:										
Leaks: check for plumbing leaks*										
Soil treatment area check for surfacing**										
Lint filter: check, clean if needed*										
Effluent screen (if owner-maintained)***										
Alarm**										
Check annually:										
Water usage rate (maximum gpd _____)										
Caps: inspect, replace if needed										
Water use appliances – review use										
Other:										

*Monthly

**Quarterly

***Bi-Annually

Notes:

"As the owner of this SSTS, I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in this Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective actions. If I have a new system, I agree to adequately protect the reserve area for future use as a soil treatment system."

Property Owner Signature: Date

Management Plan Prepared By: Jesse Kloeppner Certification # C8188

Permitting Authority: Washington County

Soil Map—Washington County, Minnesota
(8249 Demontreville Trail N, Lake Elmo)

Map Scale: 1:728 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2013—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
49	Antigo silt loam, 0 to 2 percent slopes	2.5	100.0%
Totals for Area of Interest		**2.5**	**100.0%**

Washington County, Minnesota

49—Antigo silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tnz7
Elevation: 690 to 1,900 feet
Mean annual precipitation: 27 to 36 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 150 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Antigo and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Antigo

Setting

Landform: Flats, terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loess and/or silty glaciofluvial deposits over loamy glaciofluvial deposits over stratified sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 12 inches: silt loam
B/E - 12 to 19 inches: silt loam
Bt1 - 19 to 28 inches: silt loam
2Bt2 - 28 to 31 inches: loam
2Bt3 - 31 to 33 inches: very gravelly sandy loam
3C - 33 to 79 inches: stratified sand to very gravelly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Forage suitability group: Mod AWC, adequately drained (G090BY005WI)
Other vegetative classification: Acer saccharum/Hydrophyllum (AH), Acer saccharum/Viola-Osmorhiza (AViO)
Hydric soil rating: No

Minor Components

Billyboy

Percent of map unit: 8 percent
Landform: Flats, terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Acer saccharum/Caulophyllum-Circaea (ACaCi), Acer saccharum/Hydrophyllum (AH), Acer saccharum-Tsuga/Maianthemum (ATM), Acer saccharum/Viola-Osmorhiza (AViO)
Hydric soil rating: No

Sconsin

Percent of map unit: 5 percent
Landform: Flats, terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Acer saccharum/Caulophyllum-Circaea (ACaCi), Acer saccharum/Hydrophyllum (AH), Acer saccharum-Tsuga/Maianthemum (ATM), Acer saccharum/Viola-Osmorhiza (AViO)
Hydric soil rating: No

Rosholt

Percent of map unit: 3 percent
Landform: Flats, terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Other vegetative classification: Acer saccharum/Vaccinium-Desmodium (AVDe), Acer saccharum/Athyrium (AAt), Acer saccharum/Caulophyllum-Circaea (ACaCi), Acer saccharum-Quercus/Viburnum=(Vaccinium) (AQVb-V)
Hydric soil rating: No

Brill

Percent of map unit: 2 percent
Landform: Flats, terraces
Landform position (three-dimensional): Tread, rise
Down-slope shape: Linear

Across-slope shape: Linear
Other vegetative classification: Acer saccharum/Athyrium (AAt), Acer saccharum/Caulophyllum-Circaea (ACaCi)
Hydric soil rating: No

Ossmer

Percent of map unit: 2 percent
Landform: Flats, terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, concave
Across-slope shape: Linear
Other vegetative classification: Acer saccharum/Hydrophyllum (AH), Acer saccharum-Tsuga/Maianthemum (ATM), Acer saccharum/Viola-Osmorhiza (AViO), Tsuga/Maianthemum-Coptis (TMC)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018

Map Scale: 1:656 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Soil Rating Lines

- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Soil Rating Points

- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2013—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields — At-Grade (MN)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
49	Antigo silt loam, 0 to 2 percent slopes	Very limited	Antigo (80%)	>= 35% Rock Frags (0.90)	2.2	100.0%
Totals for Area of Interest					**2.2**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very limited	2.2	100.0%
Totals for Area of Interest	**2.2**	**100.0%**

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Septic Tank Absorption Fields -- Mound (MN)—Washington County, Minnesota
(8249 Demontreville Trail N, Lake Elmo)

Map Scale: 1:728 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Soil Rating Points
- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2013—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields — Mound (MN)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
49	Antigo silt loam, 0 to 2 percent slopes	Not limited	Antigo (80%)		2.5	100.0%
			Billyboy (8%)			
			Rosholt (3%)			
Totals for Area of Interest					**2.5**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Not limited	2.5	100.0%
Totals for Area of Interest	**2.5**	**100.0%**

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Map Scale: 1:656 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Soil Rating Points
- Extremely limited
- Very limited
- Moderately limited
- Slightly limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 14, Oct 9, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 1, 2013—Sep 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Septic Tank Absorption Fields — Trench (MN)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
49	Antigo silt loam, 0 to 2 percent slopes	Very limited	Antigo (80%)	>= 35% Rock Frags (0.90)	2.2	100.0%
				Excessive percolation (0.11)		
Totals for Area of Interest					**2.2**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very limited	2.2	100.0%
Totals for Area of Interest	**2.2**	**100.0%**

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Minnesota Department of Health

Minnesota Well Index

Version 2.0.56, 07/13/18 11:48AM

8249 Demo

Search by | Zoom to | Tools | Base Maps | Other Links | Help

Minnesota Department of Health

Minnesota Well Index

Version 2.0.56, 07/13/18 11:48AM

8249 Demontreville Trl N, Lake Elmo, MN, 55

Search by | Zoom to | Tools | Base Maps | Other Links | Help

Well List selected

Highlighted are Field Verified Wells. Click Unique Well ID to see detailed well infomation

Unique Number	Well Name	Address	City	County	Township	Range	Section	Depth(ft)	Elevation(ft)	Casing Depth(ft)	Casing Diameter
489214	CARMELITE MONASTERY	8251 DEMONTREVILLE TR N	LAKE ELMO	Washington	29	21	9	261	1008	201	6

Selected Wells
Public Wells
Domestic Wells
Irrigation Wells
Monitor Wells
Other Wells
Sealed Wells
Unverified Wells
Township Range Section
DWSMA
SWBCA

Zoom to see wells, TRS, DWSMA and SWBCA

DWSMA: The area managed by a public water supplier to protect their source water

SWBCA: Special Well and Boring Construction Area layer

MEMORANDUM

FOCUS ENGINEERING, inc.

Cara Geheren, P.E.	**651.300.4261**
Jack Griffin, P.E.	**651.300.4264**
Ryan Stempski, P.E.	**651.300.4267**
Chad Isakson, P.E.	**651.300.4283**

Date: June 17, 2019

To: Ken Roberts, Planning Director
Cc: Chad Isakson, Assistant City Engineer
From: Jack Griffin, P.E., City Engineer

Re: Carmelite Site Improvements
Engineering Site Plan Review

A Site Plan engineering review has been completed for the Carmelite Hermitage Chapel Conditional Use Construction Plan set. The site is located at 8249 DeMontreville Trail North in Lake Elmo. The submittal consisted of the following documentation received on May 28, 2019:

- Site Plans prepared by Pioneer Engineering, dated April 26, 2019.
- Stormwater Management Report prepared by Pioneer Engineering, dated April 26, 2019.
- Certificate of Survey prepared by Landmark Surveying, dated June 27, 2018.
- Wetland Delineation Report prepared by MNR, dated May 2, 2019.
- Septic System Plan prepared by Steinbrecher Companies, Inc., dated May 8, 2019.

Engineering review comments are as follows:

STORMWATER MANAGEMENT

- A Valley Branch Watershed District (VBWD) permit will be required. The site plan is subject to a storm water management plan (SWMP) meeting State, VBWD and City rules and regulations.
- The SWMP executive summary must be revised and resubmitted to clarify the required standards for this project (City and VBWD) and to demonstrate compliance with those applicable standards.
    - The total new and recreated impervious surface area must be identified in detail.
    - The applicable standards must reference the VBWD rules and Stormwater Rules for the City of Lake Elmo.
    - The report must state the soil types determined by the soil borings. Assumed infiltration rates must be identified in the report and the report must demonstrate drawdown in 48 hrs.
    - A soil boring location map must be provided and verified that sufficient borings have been taken in accordance with the City Engineering Design Standards Manual.
- Storm water facilities proposed for meeting State and VBWD permitting requirements must be designed and constructed in accordance with the City Engineering Design Standards Manual available on the City website, dated March 2017.
- Ownership. The storm water facilities constructed for this development should remain privately owned and maintained.
- Stormwater Maintenance and Easement Agreement. The applicant will be required to execute and record a Stormwater Maintenance and Easement Agreement in the City's standard form of agreement.
- Maintenance Access. Even as privately owned and maintained facilities, maintenance access roads meeting the City engineering design standards must be provided for all storm water facilities.
- Easements. The storm water facility 100-year HWL must be fully contained within the subject property and easements must be provided to protect the 100-year HWL flood area.

- Sheet 4.10. The sanitary sewer and water services must be identified as to size and material. A plan note should be added to indicate the sanitary sewer and water service lines per state plumbing code requirements.
- Sheet 5.10. Revise grading plan to revise storm water BMP site to meet City of Lake Elmo and MN Storm Water Manual standards and as follows:
    - Provide 10:1 aquatic bench and 10:1 maintenance bench around retention BMP.
    - Provide 3:1 length to width ratio for retention basin.
    - Provide defined rip rap overflow location between retention basin and infiltration basin and define overflow spot elevation.
    - Provide retention basin NWL and ensure minimum 3-feet depth. Show NWL level contour on the plan sheet.
    - Provide 100-year HWL contour for the 996.9 HWL. The 100-year HWL of 996.9 is not shown consistent between Sheets 5.10 and 5.30. Revise plans and use spot elevations has required to demonstrate extent of 100-year HWL.
- Sheet 5.10 Provide drainage and utility easement over storm water BMP including the 100-year HWL and pond maintenance access road and access bench. Access road grade must be less than or equal to 10% to the maintenance bench.
- Sheet 5.10. Remove plan note that states “Remove Trees as required within grading limits”. All trees to be removed must be surveyed and shown on the plans. Tree removal may be subject to replacement per City ordinances.
- Sheet 5.20. The rock construction entrance must be positioned for all grading activity on site; not just for basin 100P.
- The site plans must be updated to show the proposed on-site SSTS design. The Septic System Plan prepared by Steinbrecher Companies is not consistent with the site improvements plans.
- The plans must call out detailed site protection from construction activities for the proposed on-site wastewater treatment system and for the proposed storm water infiltration basin.
- No construction may begin until the applicant has received City Engineer approval for the Final Construction Plans; the applicant has obtained and submitted to the City all applicable permits, easements and permissions needed for the project; and a preconstruction meeting has been held by the City’s engineering department.

Station #1
3510 Laverne Ave. No.
Lake Elmo, MN 55042
651-770-5006

Station #2
4259 Jamaca Ave. No.
Lake Elmo, MN. 55042
651-779-8882

LAKE ELMO FIRE DEPARTMENT

June 5, 2019

Review of plans for a Conditional Use Permit for construction of the Carmelite Chapel. There was an initial review done in February of 2019, by our then Building Official Mike Bent with regard to the requirement of sprinklers. It was determined that none were required. If the building as presented then is consistent with the current proposal, that determination still stands.

The following items need to be addressed:

- Must meet all applicable codes in the 2015 MN State Fire Code. These requirements also include Appendix D, FIRE APPARATUS ACCESS ROADS.
- With this building not requiring sprinklers, special attention to the following:
    - 503.1.1 "……shall extend to within 150 feet of all portions of the facility…"
    - Appendix D, Section D105 must be addressed regarding the height of the building (couldn't determine on my plans) and if this section is applicable.
- Will there be any fire hydrants brought into the site?
- Location of Lockbox approved by Fire Chief
- Location of alarm annunciator panel approved by Fire Chief.
- Provide basic overhead view foot print plan of the building, non-architectural, showing rooms, access, utility locations, etc.

Greg Malmquist, Fire Chief

Tanya Nuss

From: falzonezone <falzonezone@gmail.com>
Sent: Sunday, June 16, 2019 9:11 PM
To: Ken Roberts
Subject: Lake Elmo Planning Commission

To the Planning Commission of the City of Lake Elmo:

Regarding the proposed "Chapel" at the Carmelite Hermitage of the Blessed Virgin Mary, I speak on behalf of my family at 5124 Isle Avenue North, Lake Elmo, to say that we absolutely support the construction of a new chapel. However, a few years ago, it was mentioned that this new building would require adding a roadway through our street for new access to the Chapel. I am writing to share that we vehemently oppose the construction of a roadway through Isle Avenue.

We have shared a property line with the Carmelites for just over 20 years, and they have been phenomenal neighbors. My family supports their devoted and faith-filled lifestyle, so we are completely in favor of building the Chapel. We want them to do that! However, we feel they should maintain access where it has always been – along DeMontreville Trail. Adding a roadway through Isle Avenue would disrupt the quiet, residential neighborhood that drew us here originally.

When adding a roadway through Isle Avenue was discussed a few years ago, I was informed by sources affiliated with the city that Isle Avenue was not constructed to withstand consistent vehicular traffic – its weight capacity simply is not enough. Even though the Chapel will not draw many visitors, its weight rating would still need to be adequate, and our street just was not built that way.

We love the city of Lake Elmo. It is where our kids grew up, it's where most of our family lives, and it's where we are blessed to call home. Our street has been the place where all of the neighborhood kids grew up playing with each other, where we have gone for countless family bike rides and walks, and where we can take a deep breath from the fast-paced reality of our professional lives.

Isle Avenue is a sanctuary for many of us – not just for my family. It is a safe place. It is a quiet place. It is a lightly-traveled dead end. Because of what this neighborhood means to us, we sincerely ask that you consider maintaining the existing access for the new Chapel.

That said, we wish the Carmelites all the best in the construction of their Chapel. It will be a great addition for their lives, and we are excited for them!

Thank you for considering!

Craig Falzone and family

5124 Isle Avenue North

Lake Elmo, MN 55042

STAFF REPORT

DATE: 8/12/2019
REGULAR
ITEM#: 4A – PUBLIC HEARING
MOTION

TO: Planning Commission

FROM: Ken Roberts, Planning Director

AGENDA ITEM: **Variance – Direct Access for a Place of Worship**

REVIEWED BY: Ben Prchal, City Planner

BACKGROUND:

The City has received a request from Rev. John Burns of the Carmelite Hermitage for a variance from the City Code requirement about direct access for a place of worship. He is making this request in order to add a chapel to the Carmelite's site located at 8249 Demontreville Trail.

On December 3, 1991, the City Council approved a variance from the section of the City Code about having frontage a public road for the Carmelite Monastery. The Carmelites made this request so they could construct a building on their parcel (which does not have frontage on a public road). (See attached City Council Resolution 91-40).

ISSUE BEFORE COMMISSION:

The Commission is being asked to hold a public hearing, review and make recommendation on the above mentioned variance request.

VARIANCE REQUEST DETAILS/ANALYSIS:

Deadline for Action:
Application Complete – 7/12/2019
60 Day Deadline – 9/11/2019
Extension Letter Mailed – N/A
120 Day Deadline – N/A

Applicable Regulations:
Article V - Zoning Administration and Enforcement

Article XIV – Public and Semi-Public Districts

Variance Request: The Carmelite Hermitage of the Blessed Virgin Mary requests a variance from the direct access requirement for places of worship as outlined in Section 154.600(B)(2) of the City Code.

Reason for Request. The reason for the variance request is to facilitate the construction of a chapel on their site. The City Code requires places of worship (such as chapels and churches) to have "direct access" to a public street classified by the Comprehensive Plan as a major collector or arterial. The Carmelites property does not have frontage on Demontreville Trail but there is an existing easement across the neighboring property to the north that provides their property with access to Demontreville Trail. The Comprehensive Plan classifies Demontreville Trail as a major collector street.

The applicant believes their existing access to Demontreville Trail (with the easement) meets the direct access requirement of the City Code. If the City Code said that places of worship are required to have access to a major collector or arterial street, then the Carmelites site would meet that access requirement.

REVIEW AND ANALYSIS/DRAFT FINDINGS

An applicant must establish and demonstrate compliance with the variance criteria set forth in Lake Elmo City Code Section 154.109 before the City may grant an exception or modification to city code requirements. These criteria are listed below, along with comments from Staff about the applicability of these criteria to the applicant's request.

1) **Practical Difficulties**. A variance to the provision of this chapter may be granted by the Board of Adjustment upon the application by the owner of the affected property where the strict enforcement of this chapter would cause practical difficulties because of circumstances unique to the individual property under consideration and then only when it is demonstrated that such actions will be in keeping with the spirit and intent of this chapter. Definition of practical difficulties - "Practical difficulties" as used in connection with the granting of a variance, means that the property owner proposes to use the property in a reasonable manner not permitted by an official control.

FINDINGS*: The addition of a chapel to Carmelites site has been planned since at least 1991 when the City first approved a Master Plan for their site. The Carmelites have been using the easement to Demontreville Trail for access to the site since that time. Adding another driveway or access to the Carmelites property would be a practical difficulty as the only public street their property has frontage on is Hidden Bay Trail to south. A new driveway would be about 1,500 feet in length, would require extensive tree removal and grading and would be an access onto a local street – not a collector or arterial street as the City Code requires for places of worship.*

The use of the existing driveway for access to Demontreville Trail for the addition of a chapel to site is a reasonable use of the property and the existing access.

2) **Unique Circumstances**. The plight of the landowner is due to circumstances unique to the property not created by the landowner.

FINDINGS*: According to the applicant, the existing lot layout with the access easement to Demontreville Trail has been in place since 1904. This is a unique situation with circumstances not created by the landowner or the current land users – the Carmelite Monks.*

3) **Character of Locality**. The proposed variance will not alter the essential character of the locality in which the property in question is located.

FINDINGS*: The proposed variance will allow the Carmelites to use the existing driveway (that currently provides access to their site) for access for the proposed chapel. By using the existing*

driveway that has been in place for many years, the Carmelites will not be altering the essential character of the locality (or area) in which their property is located.

Conversely, adding another driveway to their site that would have access onto a local, neighborhood street would change the character of that locality and area of the City.

4) **Adjacent Properties and Traffic**. The proposed variance will not impair an adequate supply of light and air to properties adjacent to the property in question or substantially increase the congestion of the public streets or substantially diminish or impair property values within the neighborhood.

FINDINGS. *The proposed variance to allow the use of the existing driveway and easement for access for the proposed chapel will not impair an adequate supply of light and air to properties adjacent to the subject property, increase congestion of public streets or substantially diminish or impair property values within the neighborhood.*

Conversely, as I noted above, if the applicant added another driveway to access the streets to the south of their site that would increase the congestion on the local public streets near their property.

FISCAL IMPACT:

Staff has not found that the proposed variance will have any impact to the City.

OPTIONS:

The Planning Commission may:

- Recommend approval of the proposed variance.
- Recommend approval of the proposed variance with recommended conditions.
- Recommend denial of the variance, citing recommended findings of fact for denial.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend approval of the request from Rev. John Burns of the Carmelite Hermitage for a variance from the City's requirement for direct access to a major collector or arterial street for a place of worship for the property located at 8249 Demontreville Trail.

"Move to recommend approval of the request from Rev. John Burns of the Carmelite Hermitage for a variance from the City's requirement for direct access to a major collector or arterial street for a place of worship for the property located at 8249 Demontreville Trail."

ATTACHMENTS:

1) Variance request narrative dated July 12, 2019 (4 pages)
2) Proposed Site Plan
3) Resolution 91-40 - Variance resolution

Land Use Application – Variance

12 July 2019

Property Location

All of Government Lot 4 in Section 9, Township 29 north, Range 21 west, City of Lake Elmo, Washington County, Minnesota, according to government survey containing 59.4 acres of land. Also the south 30.6 acres of Government Lot 4 in Section 4, and of the southwest quarter of the southeast quarter of said Section 4, all in Township 29 north, Range 21 west, according to government survey, being the south 688 feet thereof.

Detailed Reason for the Request

In 1954, the Discalced Carmelite Nuns of Saint Paul, a non-profit corporation under the laws of the State of Minnesota, were looking for property upon which to build a permanent monastery. They were advised of the property which they now own and entered into negotiations with the owners of the property.

On 2 February 1954, Phillip C. Mackey and his wife Bernadine R. Mackey conveyed their property, along with its easement, to the Discalced Carmelite Nuns of Saint Paul by warranty deed, dated that day, and filed for record in Washington County, Minnesota, on 4 February 1954. As part of their deed of purchase, they obtained a right of way across the neighboring property to the north (owned by the Jesuit Retreat House) which gave them access to Demontreville Trail. This right of way has existed since 1904. At the time that the Carmelite Nuns purchased their property, the right of way across the Jesuit property was the only access from a public road to the Carmelite property, and it remains the only access today. The Carmelite Nuns have used this right of way continuously for 64 years.

In 1987 Carmel of the Blessed Virgin Mary (aka Carmelite Hermitage, Carmelite Hermitage of the Blessed Virgin Mary) was incorporated in the State of Minnesota as a community of Carmelite Priests and Brothers. In December of 1991, the City of Lake Elmo approved a master plan for the Carmelite Hermitage consisting of four phases: Phase 1, consisting of a community building and garage was constructed in 1991/92. Phase 2, consisting of a central courtyard with covered walkways (cloister) was constructed in 2001/2002. Phase 3 consists of a chapel and is the building we would now like to construct. Phase 4 will consist of a guest building and library. We hope to commence Phase 4 around 2022. Additionally, in 1991 the City of Lake Elmo granted a variance to the Carmelite Hermitage because the Hermitage also uses the easement over Jesuit land to access Demontreville Trail. The Jesuit Retreat House made no objection to the variance. The Carmelite Fathers and Brothers have used the easement continuously for 32 years.

In the intervening years, the Carmelite Hermitage has built four new buildings. In 2007, it requested and received an amendment to its master plan to add an additional building. This building was built in 2008. In none of the four construction projects did the City of Lake Elmo require the Carmelite Hermitage to obtain an additional variance. We maintain that our variance is valid for all buildings shown on the master plan which was approved by the City Council in 1991. City practice towards our Hermitage is evidence of our interpretation.

The Carmelite Hermitage wishes to construct its chapel, shown as phase three on its master plan. An objection has been raised by the Jesuit Retreat House that the Carmelite Hermitage needs a new variance to proceed with its chapel project because it does not meet the CUP requirements established by the City in 2000 and amended in 2006. Since there is doubt about the scope and language of the original variance as well as doubt about the meaning of the word *direct* in the City's CUP requirements, City staff have suggested that we apply for a new variance that will clarify all issues related to access to our property. In a spirit of cooperation, we have agreed to apply for a new variance.

Variance Request, Practical Difficulties:

The Carmelite Hermitage of the Blessed Virgin Mary requests a variance from the direct access requirement of Section 154.600(B)(2) of the City Code. It further requests that the variance apply to all 90 acres of the property owned by the Discalced Carmelite Nuns of St. Paul and that the variance apply to all buildings currently existing on the property as well as all buildings shown on its approved master plan which remain to be built.

Strict enforcement of the City Code requiring direct access creates not only a practical difficulty but a serious hardship in that we would be unable to complete our monastery as planned and approved in 1991 by the City of Lake Elmo. In 1991, The City Council recognized the hardship that existed with regard to access to our property, and the Council granted us a variance at that time.

2. a.

Owner of Record

Discalced Carmelite Nuns of Saint Paul
8251 Demontreville Trail
Lake Elmo, MN 55042
651-777-3882

Officers of the Corporation

Sr. Angela Barrett
Sr. Maravillas Schwab
Sr. Rose Zaleski

Applicant

Carmelite Hermitage of the Blessed Virgin Mary
8249 Demontreville Trail
Lake Elmo, MN 55042
651-779-7351
carmelbvm@gmail.com

Officers of the Corporation

Reverend John Burns
Br. Joseph Bubanko
Br. Christopher Burnside

2.b.

Legal Description of the Property

All of Government Lot 4 in Section 9, Township 29 north, Range 21 west, City of Lake Elmo, Washington County, Minnesota, according to government survey containing 59.4 acres of land. Also the south 30.6 acres of Government Lot 4 in Section 4, and of the southwest quarter of the southeast quarter of said section 4, all in Township 29 north, Range 21 west, according to government survey, being the south 688 feet thereof.

PID

0902921120002

Parcel Size

90.109 acres
3,924,760 square feet

Existing Use of the Land

Religious. Two monasteries reside on the property whose members engage in a life of prayer, worship, gardening, arts, and crafts.

Current Zoning

Public Facility (PF)

2.c.

Section 154.600(B) (2) a. “Direct access is provided to a public street classified by the Comprehensive Plan as major collector or arterials.”

2.d.

The Carmelite Hermitage of the Blessed Virgin Mary requests a variance from the direct access requirement of Section 154.600(B)(2) of the City Code. It further requests that the variance apply to all 90 acres of the property owned by the Discalced Carmelite Nuns of St. Paul and that the variance apply to all buildings currently existing on the property as well as all buildings shown on its master plan which remain to be built.

2.e.

In December of 1991, the City of Lake Elmo approved the master plan of the Carmelite Hermitage consisting of four phases: Phase 1, consisting of a community building and garage was constructed in 1991/92. Phase 2, consisting of a central court yard with covered walkways (cloister) was constructed in 2001/2002. Phase 3 consists of a chapel and is the building we would now like to construct. Phase 4 will consist of a guest building and library. Additionally, the City of Lake Elmo granted a variance to the Carmelite Hermitage in 1991 since the Hermitage also used the easement over Jesuit land to access Demontreville Trail. The Jesuit Retreat House made no objection to the variance.

An attorney for the Jesuit Retreat House sent a letter to the City Attorney contending that the variance of 1991 is not valid for the construction of the chapel because the CUP code enacted by the City in 2000 and amended in 2006 requires direct access to a collector road or major arterials. The City Attorney stated that an argument can be made that we do not have direct access. Furthermore the City Attorney contends that the 1991 variance applied only to the building

which we built in 1991. We dispute this interpretation because it contradicts the practice of the City to date. We have built several buildings since 1991, including one in 2007 which required an amendment to our master plan, and in none of these cases did the City require a new variance.

At a meeting with the City Attorney and the Director of Planning held at City offices on 2 July 2019, we stated our point of view. Nevertheless, we agreed to apply for a new variance in order to clarify all issues related to access to our property.

2.f.

The circumstances of our property are quite unique in that the property has never bordered a public road since it was divided from the property to the north in 1904. At that time, an unrestricted easement through the northern property was given in order that the southern property could have access to Demontreville Trail. The Discalced Carmelite Nuns received this easement as part of their deed of purchase.

In 2011 the Carmelite nuns acquired three small lots that border their property as well as Hidden Bay Trail. The lots are undeveloped and have no driveways into them. Hidden Bay Trail is not a collector road or major arterial street. It is not suitable as an access road to our property.

Strict enforcement of the City Code requiring direct access creates not only a practical difficulty but a serious hardship in that we would be unable to complete our monastery as planned and as approved by the City of Lake Elmo in 1991.

2.g.

Our plight was in no way created by ourselves; it is rather the result of the division of the property in 1904. Our circumstances were recognized as unique by the City Council in 1991, and for this reason the Council granted us a variance.

2.h.

Far from altering the essential character of the neighborhood, granting a variance will maintain the essential character of the neighborhood as it has always been since the Carmelite Nuns purchased the property in 1954. Building a driveway to Hidden Bay Trail would alter the neighborhood and is vehemently opposed by our neighbors on Hidden Bay Trail and Birch Bark Trail.

CERTIFICATE OF SURVEY

PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 4,
GOVERNMENT LOT 4 OF SECTION 9,
BOTH SECTIONS IN TOWNSHIP 29 NORTH, RANGE 21 WEST,
CITY OF LAKE ELMO, WASHINGTON COUNTY, MINNESOTA

TOPOGRAPHIC SURVEY
PREPARED FOR:

CARMELITE HERMITAGE
OF THE BLESSED VIRGIN MARY

8249 Demontreville Trail North
Lake Elmo, Minnesota 55042

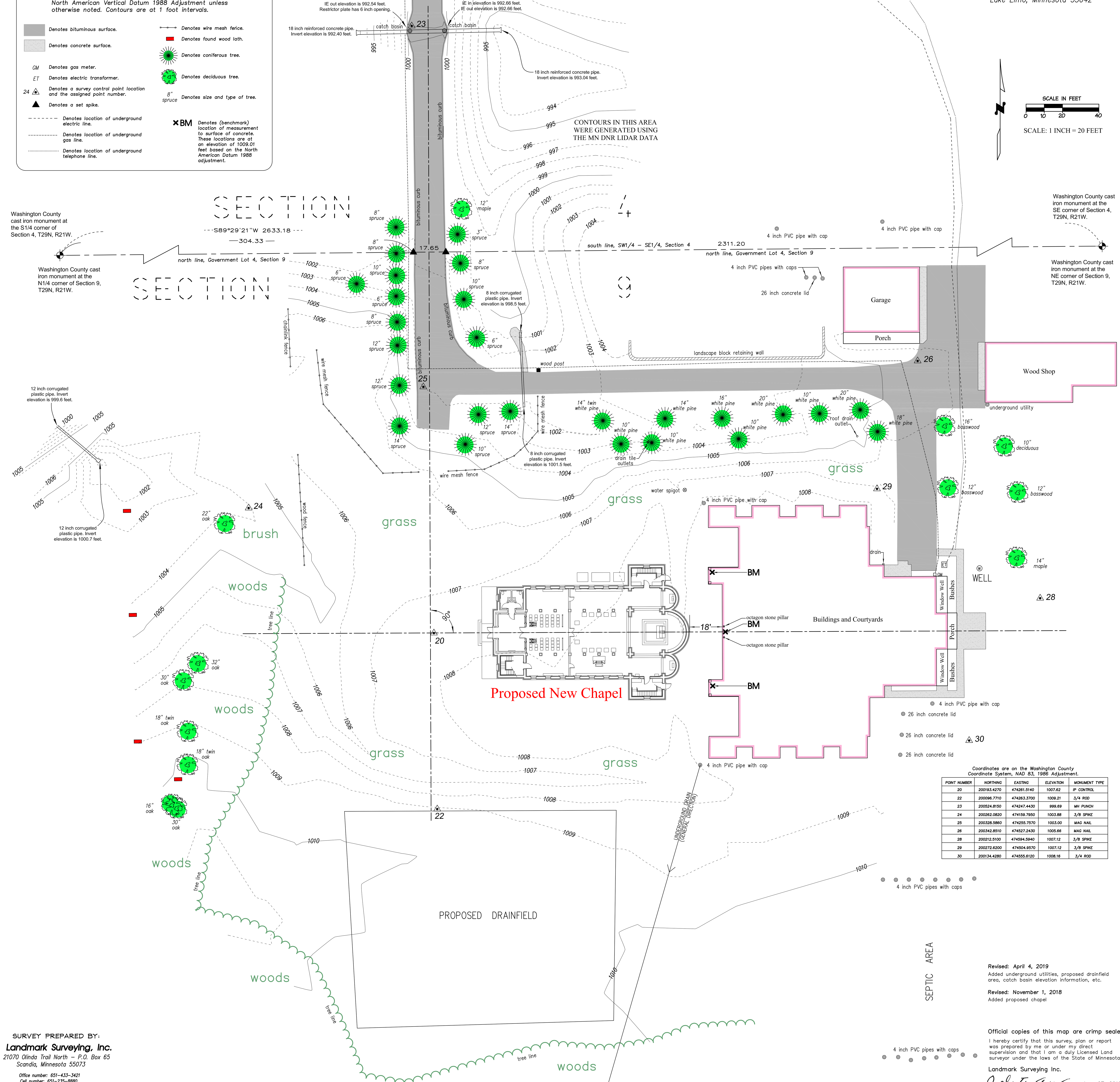
LEGEND

Orientation of the bearing system is the Washington County Coordinate System, NAD 83, 1986 Adjustment.

Distances are in feet and decimals of a foot.

Contours and elevations were generated using field measurements obtained for this project and are based on North American Vertical Datum 1988 Adjustment unless otherwise noted. Contours are at 1 foot intervals.

- *Denotes bituminous surface.*
- *Denotes concrete surface.*
- GM *Denotes gas meter.*
- ET *Denotes electric transformer.*
- 24 *Denotes a survey control point location and the assigned point number.*
- *Denotes a set spike.*
- *Denotes location of underground electric line.*
- *Denotes location of underground gas line.*
- *Denotes location of underground telephone line.*
- *Denotes wire mesh fence.*
- *Denotes found wood lath.*
- *Denotes coniferous tree.*
- *Denotes deciduous tree.*
- 8" spruce *Denotes size and type of tree.*
- ×BM *Denotes (benchmark) location of measurement to surface of concrete. These locations are at an elevation of 1009.01 feet based on the North American Datum 1988 adjustment.*



Coordinates are on the Washington County Coordinate System, NAD 83, 1986 Adjustment.

POINT NUMBER	NORTHING	EASTING	ELEVATION	MONUMENT TYPE
20	200193.4270	474261.5140	1007.62	IP CONTROL
22	200096.7710	474263.3700	1009.21	3/4 ROD
23	200524.8150	474247.4430	999.69	MH PUNCH
24	200262.0820	474159.7950	1003.88	3/8 SPIKE
25	200328.5860	474255.7570	1003.00	MAG NAIL
26	200342.8510	474527.2430	1005.66	MAG NAIL
28	200212.5100	474594.5940	1007.12	3/8 SPIKE
29	200272.6200	474504.9570	1007.12	3/8 SPIKE
30	200134.4280	474555.6120	1008.16	3/4 ROD

Revised: April 4, 2019
Added underground utilities, proposed drainfield area, catch basin elevation information, etc.

Revised: November 1, 2018
Added proposed chapel

Official copies of this map are crimp sealed.

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Licensed Land surveyor under the laws of the State of Minnesota.

Landmark Surveying Inc.

Joel T. Anez Minnesota License No. 13775 — June 27, 2018 (Date)

June 27, 2018

Job Number 2018–13

SURVEY PREPARED BY:
Landmark Surveying, Inc.
21070 Olinda Trail North – P.O. Box 65
Scandia, Minnesota 55073
Office number: 651–433–3421
Cell number: 651–235–8880
E-mail address: inthefield@frontiernet.net

RESOLUTION 91-40

A RESOLUTION GRANTING A VARIANCE TO THE CARMELITE MONASTERY FROM SECTION 301.090 I OF THE LAKE ELMO MUNICIPAL CODE (FRONTAGE ON A PUBLIC ROAD)

WHEREAS, the Carmelite Monastery submitted an application dated September 27, 1991 for a variance from Section 301.090 I of the Lake Elmo Municipal Code in order to be able to construct a building on a parcel which does not have frontage on a public dedicated road; and

WHEREAS, the City Council, sitting as the Board of Adjustment and Appeals held a public hearing pursuant to Section 301.060 C. 3. of the Lake Elmo Municipal Code on November 19, 1991 to consider such application; and

NOW, THEREFORE, BE IT RESOLVED that the Lake Elmo City Council makes the following findings:

1. The applicant is the owner of the property legally described as follows:

All of Government Lot 4 in Section 9, Township 29, Range 21, according to government survey containing 59.4 acres of land. Also the South 30.6 acres of Lot 4 in Section 4, and the South West quarter of the South East quarter of said Section 4, all in Township 29, Range 21, being the Sough 688 feet, more or less, thereof.

2. The applicant has a private recorded easement which allows access to the north to DeMontreville Trail N. In order to connect to a public road on the south or east side of the property, it would be necessary for applicant to acquire a private easement and incur substantial road construction costs due to the existing topography.

3. The City's Law Enforcement Officials and the City's Fire Chief have advised the City that the private road is constructed in such a manner to support emergency vehicles; that they can gain access to such private roadway by notifying applicant, and in an emergency circumstance, if necessary, by cutting any security device on the access gate; and that the private road system is designed to facilitate the turn-around of emergency vehicles.

4. This property is located in the PF (Public Facility) zoning district and there are no other parcels in the PF zoning district in similar circumstances.

5. The applicant's property is part of an overall campus currently served by a private easement to a public road.

6. The granting of the variance requested will not confer on the applicant any special privileges denied by this ordinance to owners of property in the same zoning district.

7. The building proposed to be constructed will house up to 14 additional people, but due to the nature of this religious community, there will be less than the normal amount of traffic.

8. The requested variance is the minimum variance which would be required to alleviate the hardship.

9. The construction of a building on this site, to be used as a monastery, will not be materially detrimental to the City's zoning ordinance.

NOW, THEREFORE, the City Council hereby grants a variance to the Carmelite Monastery from the provisions of Section 301.090 I., subject to the following conditions:

1. If the access gate is locked, the City's emergency personnel shall be provided with a key.

2. The City's emergency personnel shall be advised of the names and telephone numbers of on-site residents who can provide access to the site.

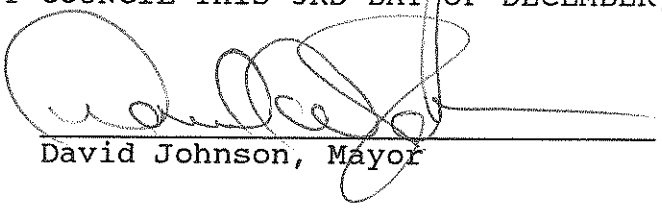
3. The private access road shall be maintained at all times, during all seasons, in a manner which allows access of emergency vehicles and shall be able to support emergency vehicles.

4. The Applicant shall comply with all State Building Standards and Safety Codes.

5. The City shall not be liable for damages incurred due to the use of wire cutters, or similar tools, when their use is necessary to gain access to property.

6. Any further expansion on this property shall comply with the then current zoning regulations.

ADOPTED BY THE CITY COUNCIL THIS 3RD DAY OF DECEMBER, 1991.



David Johnson, Mayor

Attest:

Mary Kueffner, City Administrator