STAFF REPORT
DATE: 8/15/2023
REGULAR
MOTION

TO: City Council
FROM: Sophia Jensen, City Planner
AGENDA ITEM: **Variance Request – 8286 Hidden Bay Court**

INTRODUCTION:

Jeff and Judy Otto (Applicants) submitted a variance application for a deviation from the City's Shoreland Management Overlay District Code Section 105.12.1260 Table 17-3 for a reduced ordinary high water level setback for a new septic system. This request is for the property located at 8286 Hidden Bay Court North (Subject Property).

The applicants had previously requested two additional variances for reduced structure setback from the ordinary high water level and increased impervious surface for unsewered shoreland lots but after staff recommendation, planning commission recommendation, and public comment the applicant is only moving forward with the reduced septic setback request at this time.

The variance request at hand is associated with the septic system. The system is currently failing and the applicants needs to replace it. The existing septic is considered a legal nonconformity because it is within the 75' ordinary high water level setback for septic systems. The applicant is proposing to move the new septic location closer to the water which would require a variance.

Below is a table outlining the required criteria, the existing conditions, and what the applicant is proposing:

Request	Required	Existing	Proposed
Septic Setback from OHWL	**75'**	51.3'	**38.3'**

ISSUE BEFORE THE CITY COUNCIL:

The City Council is being asked to make a determination on the variance request for reduced septic setback from the ordinary high water level.

VARIANCE REQUEST DETAILS/ANALYSIS:

Address:	8286 Hidden Bay Court North
PID:	09.029.21.23.0013
Variance Requests:	The applicant is seeking deviations from LEC 105.12.1260 Table 17-3 which requires septic system setbacks from the OHWL to be 75 feet.
Existing Zoning:	Rural Single Family, Shoreland Overlay District, Valley Branch Watershed District

Surrounding Zoning:	North: Rural Single Family South: Rural Single Family East: Rural Single Family West: Rural Single Family
Deadline for Action:	Application Complete – 6/9/2023 60 Day Deadline – 8/8/2023 102 Day Extension -10/7/2023
Applicable Regulations:	Article V - Zoning Administration and Enforcement Article XI – Rural Districts Article XIX – Shoreland Overlay District

REVIEW AND ANALYSIS/DRAFT FINDINGS:

An applicant must establish and demonstrate compliance with the variance criteria set forth in Lake Elmo City Code Section 105.12.320 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.

REDUCED SEPTIC SETBACK FINDINGS: *The current septic system is failing and needs to be replaced. The Applicants have had a septic designer review the Property for a feasible septic system location and the only feasible location is 38.3 from the ordinary high-water level. Staff finds that the Applicants have proven practical difficulties because a septic system is needed given the current failing system, there is no other feasible area on site, and a septic system is needed in order to maintain the house that is on the Property.* ***Practical Difficulties are met.***

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

REDUCED SEPTIC SETBACK FINDINGS: *The Applicants are proposing to replace the septic system in roughly the same area of the Property as the existing system. The current septic system is failing and not due to the fault of the Applicants. The proposed location is the only feasible location on the Property for the new septic system.* ***Unique Circumstances are met.***

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

REDUCED SEPTIC SETBACK FINDINGS: *Given this area does not have access to City sewer and all adjacent properties are on private septic systems, the approval of this request would not alter essential character of the neighborhood.* ***Character of Locality is met.***

4) **Adjacent Properties and Traffic**. The proposed variance must 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.

REDUCED SEPTIC SETBACK FINDINGS: *The proposed location for the new septic system will not increase congestion on a public street as it will not contribute to any additional traffic to the neighborhood. It will also not impair an adequate supply of light or air to adjacent properties given that it is underground. Because it is underground and will not be seen, it will not impair property values within the neighborhood.* ***Adjacent properties and Traffic is met.***

CITY AGENCY REVIEW:

This request was distributed to several departments and agencies for review on June 12th 2023. The following departments provided comments on the variance request. **Note: this commentary was received prior to the applicant's withdrawal of the impervious surface and reduced structure setback variance requests.**

- City Engineer Email (6/20/2023) provided no additional comments.

- Fire Department Email (6/22/2023) provided comments regarding the address numbers of the home. This condition would be applied if the structure related variances are approved.

- Valley Branch Watershed District (6/26/2023) provided comments scrutinizing the request. The applicants would need to raise the low floor elevation to be at least 2 feet higher than the OHWL. A minimum 35-foot-wide buffer strip measured perpendicular to the OHWL extending 35 feet inland is required. A mowed access path and shoreline are allowed but must not exceed 30% of the landowner's shoreline width or 30 feet, whichever is less. The watershed encourages stormwater management although it is not required. Lastly, they are requiring temporary erosion controls to be in place. These conditions related to the structure would be applied if the structure related variances are approved. The 35 foot buffer strip would be applied if any of the variances are approved.

- MN DNR Email (6/30/2023) provided commentary scrutinizing the proposal. The DNR was concerned regarding tree removal since the trees act as screening buffer and habitat for wildlife. The DNR was also concerned regarding the request for an increase in impervious surface and recommended the driveway remain as-is. (This recommendation would support staff's findings listed above on the impervious surface request). The tree replacement condition would be applied if the structure related variances are approved.

PUBLIC COMMENT:

A hearing notice was sent to surrounding properties on July 12th 2023. A hearing notice was published in the local newspaper on July 14th 2023. Public comment that has been received is attached to this report. Below is a summary of the comments received. **Note: this commentary**

was received prior to the applicant's withdrawal of the impervious surface and reduced structure setback variance requests.

- Link Lavey 8510 Hidden Bay Trl – Provided written comment regarding concerns with all three variances requests and the impact they may have on the surrounding ecosystem and lake.
- Anonymous N/A – Provided written comment opposed to all three variance requests citing lake degradation and the possible lack of due diligence from the applicant when purchasing the property.
- Dawn Goracki PID 09.029.21.23.0012 –Provided written comment regarding concerns with the reduced septic setback and the increased impervious surface requests citing runoff and nutrient loading/algae growth in the lake concerns.
- Doug and Pam Huntley 8290 Hidden Bay Ct –Provided written comment regarding concerns with the runoff and snow storage on the lot with the proposed changes.
- Jill Lundgren – 8282 Hidden Bay Ct – Spoke at the public hearing on 7/24/2023 in opposition to the variance requests. Stating concerns with lake quality, drainage/runoff, neighborhood character, and tree removal.

PLANNING COMMISSION:

At the July 24th 2023 Planning Commission meeting the Planning Commission followed staff recommendation by recommending denial of the impervious surface request based on the findings listed in the staff report (Vote 7-0), denial of the reduced structure setback request based on the findings listed in the staff report (6-1), and approval of the reduced septic setback request with conditions based on the findings listed in the staff report (Vote 7-0).

FISCAL IMPACT:

None

RECOMMENDED CONDITIONS OF APPROVAL – SEPTIC REQUEST ONLY

1. The Applicants must obtain all other necessary City, state, and other governing body permits and approvals prior to construction of the septic system.
2. A minimum 35-foot-wide buffer strip measured perpendicular to the ordinary high-water level extending 35 feet inland must be provided. A mowed access path and shoreline are allowed but must not exceed 30 percent of the Applicants' shoreline width or 30 feet, whichever is less.
3. This variance is only for a reduced septic system setback from the ordinary high-water level to 38.3 feet.
4. This variance shall expire if work on the new septic system does not commence within 12 months of the date of this Resolution.

OPTIONS:

The City Council may:

- Approve the variance, citing recommended findings of fact for approval.
- Approve the variance with conditions citing recommended findings of fact for approval.
- Deny the variance, citing recommended findings of fact for denial.

RECOMMENDATIONS:

Staff recommends the City Council approve the septic setbacks variance request since it does meet all four of the required criterial outlined above.

"Motion to adopt Resolution 2023-073 approving the request, with conditions, from Jeff and Judy Otto for a variance to allow a reduced septic system setback of 38.3 feet from the ordinary high water level for the property located at 8286 Hidden Bay Court."

ATTACHMENTS:

1) Location Map
2) Land Use Application
3) Certificate of Survey
4) Written Statement
5) Septic Design
6) City Engineer Email (6/20/2023)
7) Fire Department Email (6/22/2023)
8) VBWD Email (6/26/2023)
9) DNR Email (6/30/2023)
10) Public Comment
11) Emailed Request for Withdrawal of the Increased Impervious Surface Request and Reduced Structure Setback Request (8/9/2023)
12) Resolution 2023-073 – Reduced Septic Setback

Date Received:_____
Received By: _____
Permit #:_____

THE CITY OF
LAKE ELMO

651-747-3900
3800 Laverne Avenue North
Lake Elmo, MN 55042

VARIANCE APPLICATION

Applicant: Jeff and Judy Otto
Address: 8286 Hidden Bay Court North, Lake Elmo, MN 55042
Phone # 612.325.0930
Email Address: baboootto@gmail.com

Fee Owner: Jeff and Judy Otto
Address: 8286 Hidden Bay Court North, Lake Elmo, MN 55042
Phone # 612.325.0930
Email Address: baboootto@gmail.com

~~Engineer~~: ARCHITECT: PLAAD, LLC.
Address: 1229 TYLER ST NE, MINNEAPOLIS, MN 55413
Phone # 651.336.1393
Email Address: MATT@PLAADOFFICE.COM

Property Location (Address): 8286 Hidden Bay Court North, Lake Elmo, MN 55042
Complete Legal Description: That part of Tract A lying Southerly and Westerly of a line described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C; thence Northwesterly along the extension of the Southwesterly line of Tract C a distance of 2.92 feet; thence North parallel with the East line of Tract A and its extension a distance of 63.29 feet; thence Northwesterly, deflecting to the left 46 degrees 30 minutes a distance of 50 feet; thence Northwesterly, deflecting to the left 4 degrees, to the Westerly line of Tract A;
PID#: 0902921230013

Detailed Reason for Request: Please refer to supplemental documentation.

*Variance Requests: As outlined in LEC Section 103.00.110 (c), the applicant must demonstrate practical difficulties before a variance can be granted. The practical difficulties related to this application are as follows: Please refer to supplemental documentation.

In signing this application, I hereby acknowledge that I have read and fully understand the applicable provisions of the Zoning ordinance and current administrative procedures. I further acknowledge the fee explanation as outlined in the application procedures and hereby agree to pay all statements received from the City pertaining to additional application expense.

Signature of applicant: Jeff Otto, Judy Otto Date: 6/7/'23

Signature of fee owner: Judy Otto Jeff Otto Date: 6/7/'23

THE CITY OF
LAKE ELMO

City of Lake Elmo
Escrow Agreement for Municipal Review Services

Deposit Agreement

THIS AGREEMENT is made this 7 day of June 2023, by the Applicant and Owner (hereinafter individually and collectively referred to as "Applicant") in favor of the City of Lake Elmo, a municipal corporation of Minnesota (hereinafter referred to as "City").

A. "Applicant" whose name and address is:

Jeff and Judy Otto
8286 Hidden Bay Court North
Lake Elmo, MN 55042

B. "Owner" whose name and address is:

Jeff and Judy Otto
8286 Hidden Bay Court North
Lake Elmo, MN 55042

RECITALS

WHEREAS, the Applicant has applied to the City for approval for one or more of the following: (Select All That Apply)

- ☐ Plat (Sketch, Preliminary, Final)
- ☐ PUD/OP-PUD (Pre-Application, Preliminary, Final)
- ☐ Vacation
- ☐ Conditional Use Permit
- ☐ Interim Use Permit
- ☐ Comprehensive Plan Amendment
- ☑ Variance
- ☐ Minor Subdivision
- ☐ EAW Review
- ☐ Zoning Text or Map Amendment
- ☐ Wind Generator
- ☐ Wireless Communication Permit (co-location)

WHEREAS, the Applicant acknowledges the receipt of benefit to the property, from the City's technical and compliance review of the application; and

WHEREAS, under authority granted to it, including Minnesota Statutes Chapters 412 and 462, the City will process the application on the condition that the Applicant enter into this Deposit Agreement, which agreement defines certain duties and responsibilities of the Applicant, as well as the City; and the Applicant shall provide cash to the City in the amount satisfactory to the City; and provide security to the City for the payment of all review costs incurred by the City.

NOW THEREFORE, the City and Applicant agree as follows:

1. **Requirement.** The Applicant is required to make the necessary deposits prior to the process of municipal planning, public works, legal & engineering review commences.

2. **Review Process**. Applicant acknowledges and agrees that the City shall commence to review and process the review request checked above at such a time that this Agreement is executed by all parties and the cash required for the specific review is deposited and posted by the City's Finance Department. The City may provide a review completion schedule to the Applicant at the time of deposit. The City reserves the right to modify the schedule based on the completeness of the application, the need for additional information for review, or revisions to the application that may occur during the scheduled review.

3. **Use of Deposited Funds**. The City may draw upon the deposits to pay the costs it incurs in connection with reviewing the application. The City shall determine all of its costs, including both administrative and consulting services, at the rates charged by the City or its consultants, determined according to the City's adopted fee schedule. A copy of the current administrative and consulting rates is attached as Exhibit "A", which rates are subject to change by the City, without notice to the Applicant. Exhibit "A" should not be construed as an exhaustive list of consultants and Applicants shall be responsible for all other consulting fees related to the application. The City shall provide Applicant with the applicable rates for consultants used in the review prior to commencement. This Agreement does not pertain to ancillary charges incurred by reviewing of other governmental bodies, including but not limited to, Soil & Water Conservation Districts, Washington County Government, Water Shed, or any other unit of government that may, by right,have review authority.

4. **Conditions of Deposit.** The following stipulations and conditions shall apply to the deposit account for review services contemplated under this Agreement.

   a. Payment shall be made to City consultants, included but not limited to legal and planning, in the amounts billed to the City, according to consulting rates in effect at the time of the execution of the agreement. Such consulting deemed necessary for the proper review of the application shall be at a usual and customary rate as it relates to the subject matter of the application for payment as determined by the City.

   b. The City shall reimburse itself from deposit accounts for all costs and expense incurred by the City in connection with the implementation and enforcement of this Agreement. Reimbursement shall occur on a monthly basis and the City's Finance Department shall notify Applicant of the reimbursement via account reconciliation report.

   c. The City shall not be responsible for paying any interest on the money deposited under the Agreement.

   d. If in the discretion of both the City's Finance Department and the Community Development Department, there is deemed to be an inadequate balance in the deposit account to pay for all fees and costs incurred by the City, the City will notify the Applicant for the need for an additional deposit. The total of the additional deposit shall be calculated by City staff based on the amount of work yet to be completed in the review of the application. Applicant

agrees to make the additional deposit within (10) days of a receipt of such notice. For purposes hereof, receipt of notice shall be deemed made upon the depositing of the notice in the U.S. Mail, postage paid. In the event, the Applicant fails to make the additional deposit with (10) days of receipt of the notice, the City will terminate its review process and not re-commence until the appropriate deposit is made and posted by the City's Finance Department.

e. No applications will be processed or forwarded to the appropriate governing reviewing body by the City until all amounts due under this Agreement have been paid in full.

5. **Positive Balance in Escrow Accounts.** Upon the happening of any of the following events, the balance in the deposit account less outstanding fees shall be paid to the Applicant within (90) days of receipt by the City of a written request by the Applicant for payment: (1) completion of the development process; or (2) the application is withdrawn by the Application; (3) the applicant is denied by the City for any reason.

6. **Deposit Amounts**. The initial deposit amount contemplated for each the purposes described under the Agreement, which may be revised by the City from time to time, are set forth for Exhibit "B" attached hereto.

7. **Accounting.** If there has been activity in the account, the City will provide a monthly accounting of all expenses charged against the account or when requested by the Applicant. An accounting will also be provided when the City notices the need for an additional escrow deposit.

8. **Terms of Breach.** In the event of any terms of this Agreement are breached by the Applicant, including, but not limited to failure to make additional deposits when required by the City, the City may cease processing any application submitted by the Applicant or order the Applicant to cease any further development or progress under the terms of this Agreement, or both. Applicant indemnifies and holds the City harmless from any liability, claim, action or suit by or any obligation to the Applicant arising from or in connection with the City exercising or enforcing the terms and conditions of this Agreement or action on the Application. The Applicant shall pay all costs and expenses, including reasonable attorney fees and suit costs, incurred by the City arising from or in connection with the City any terms and conditions of this Agreement.

9. **Validity.** If any portion, section, subsection, sentence, clause, paragraph or phrase of this Agreement is for any reason held to be invalid, such invalidity shall not affect the validity of the remaining portion of this Agreement.

10. **Binding Agreement.** The parties mutually recognize and agree that all terms and conditions of this Agreement shall run with the land herein described and shall be binding upon the heirs, successors, administrators and assigns of the parties referenced in this Agreement.

11. **Amendments.** The terms of this Agreement shall not be amended without the written consent of the City and all parties hereto.

[Signature Page Follows]

IN WITNESS WHEREOF, we have hereunto set our hands and seals.

APPLICANT

By: Judy Otto
Its:

By: Jeffery Otto
Its:

OWNER:

By: Judy Otto
Its:

By: Jeffrey E Otto
Its:

STATE OF MINNESOTA)
Ramsey ss.
COUNTY OF ~~WASHINGTON~~)

On this 7 day of June, 2023, before me a Notary Public within and for said County, personally appeared Judy Otto and Jeffrey Otto to me personally known, to be the person described in and who executed the foregoing instrument and acknowledged that he / she/ they executed that same as his / her / their free act and deed.

RHEA M. BENZ
NOTARY PUBLIC MINNESOTA
MY COMMISSION EXPIRES 01/31/26

Notary Public

STATE OF MINNESOTA)
Ramsey ss.
COUNTY OF ~~WASHINGTON~~)

On this 7 day of June, 2023, before me a Notary Public within and for said County, personally appeared Judy Otto and Jeffrey Otto to me personally known, to be the person described in and who executed the foregoing instrument and acknowledged that he / she/ they executed that same as his / her / their free act and deed.

RHEA M. BENZ
NOTARY PUBLIC MINNESOTA
MY COMMISSION EXPIRES 01/31/26

Notary Public

THE CITY OF
LAKE ELMO

651-747-3900
3800 Laverne Avenue North
Lake Elmo, MN 55042

ACKNOWLEDGEMENT OF RESPONSIBILITY

This is to certify that I am making application for the described action by the City and that I am responsible for complying with all City requirements with regard to this request. This application should be processed in my name and I am the party whom the City should contact regarding any matter pertaining to this application.

I have read and understand the instructions supplied for processing this application. The documents and/or information I have submitted are true and correct to the best of my knowledge. I will keep myself informed of the deadlines for submission of material and of the progress of this application.

I understand that this application may be reviewed by City staff and consultants. I further understand that additional information, including, but not limited to, traffic analysis and expert testimony may be required for review of this application. I agree to pay to the City upon demand, expenses, determined by the City, that the City incurs in reviewing this application and shall provide an escrow deposit to the City in an amount to be determined by the City. Said expenses shall include, but are not limited to, staff time, engineering, legal expenses and other consultant expenses.

I agree to allow access by City personnel to the property for purposes of review of my application.

Signature of applicant Jeff Otto, Judy Otto Date 6/7/'23

Name of applicant Jeff and Judy Otto Phone 612.325.0930
(Please Print)

Name and address of Contact (if other than applicant)

8286 Hidden Bay Court North, Lake Elmo, MN 55042

THE CITY OF
LAKE ELMO

651-747-3900
3800 Laverne Avenue North
Lake Elmo, MN 55042

AFFIRMATION OF SUFFICIENT INTEREST

I hereby affirm that **I am the fee title owner** of the below described property or that I have written authorization from the owner to pursue the described action.

Name of applicant Jeff and Judy Otto
(Please Print)

Street address/legal description of subject property

8286 Hidden Bay Court North, Lake Elmo, MN 55042

That part of Tract A lying Southerly and Westerly of a line described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C; thence Northwesterly along the extension of the Southwesterly line of Tract C a distance of 2.92 feet; thence North parallel with the East line of Tract A and its extension a distance of 63.29 feet; thence Northwesterly, deflecting to the left 46 degrees 30 minutes a distance of 50 feet; thence Northwesterly, deflecting to the left 4 degrees, to the Westerly line of Tract A;

Jeff Otto Judy Otto
Signature

6/7/'23
Date

If you are not the fee owner, attach another copy of this form which has been completed by the fee owner or a copy of your authorization to pursue this action.

If a corporation is fee title holder, attach a copy of the resolution of the Board of Directors authorizing this action.

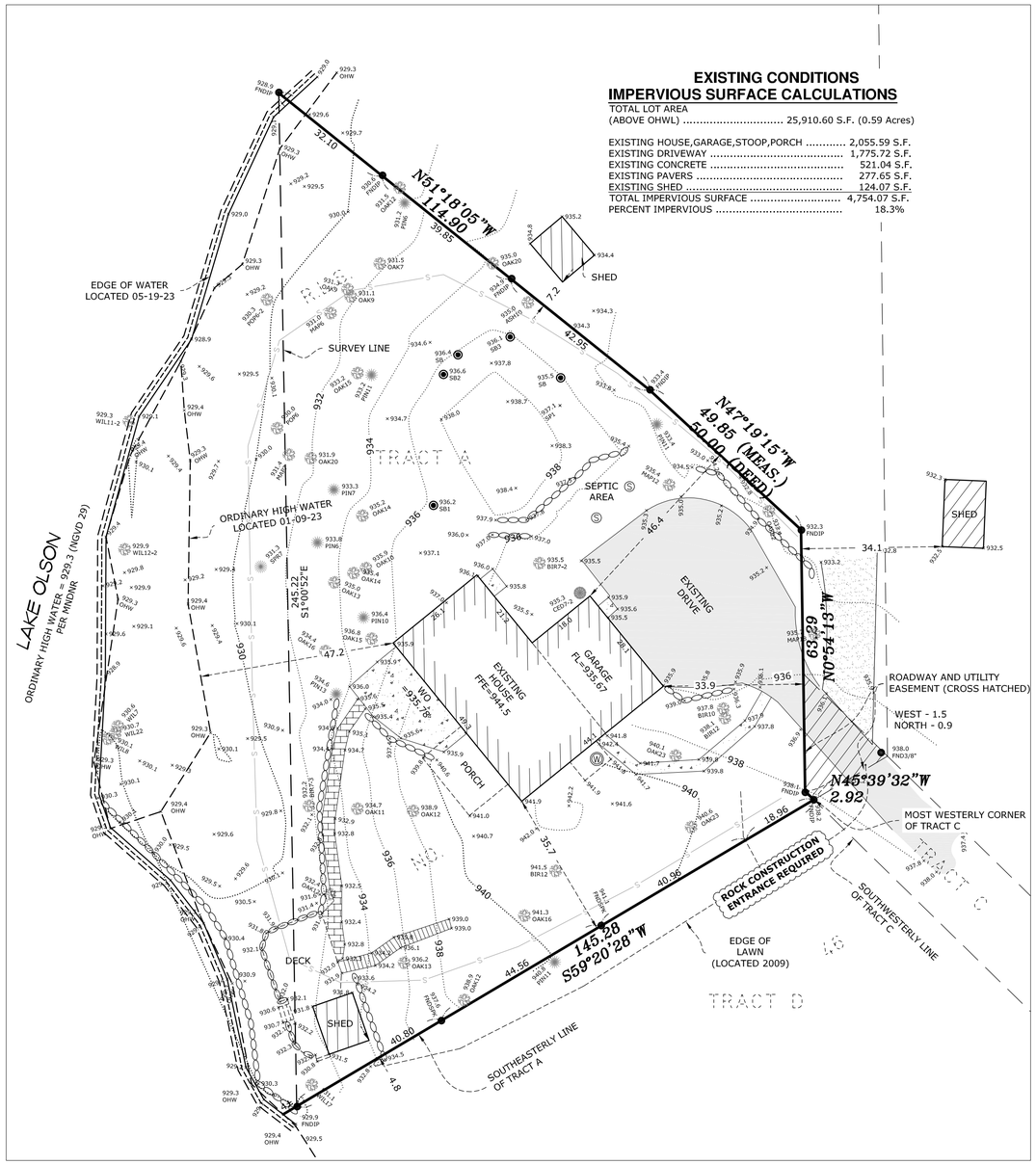
If a joint venture or partnership is the fee owner, attach a copy of agreement authorizing this action on behalf of the joint venture or partnership.

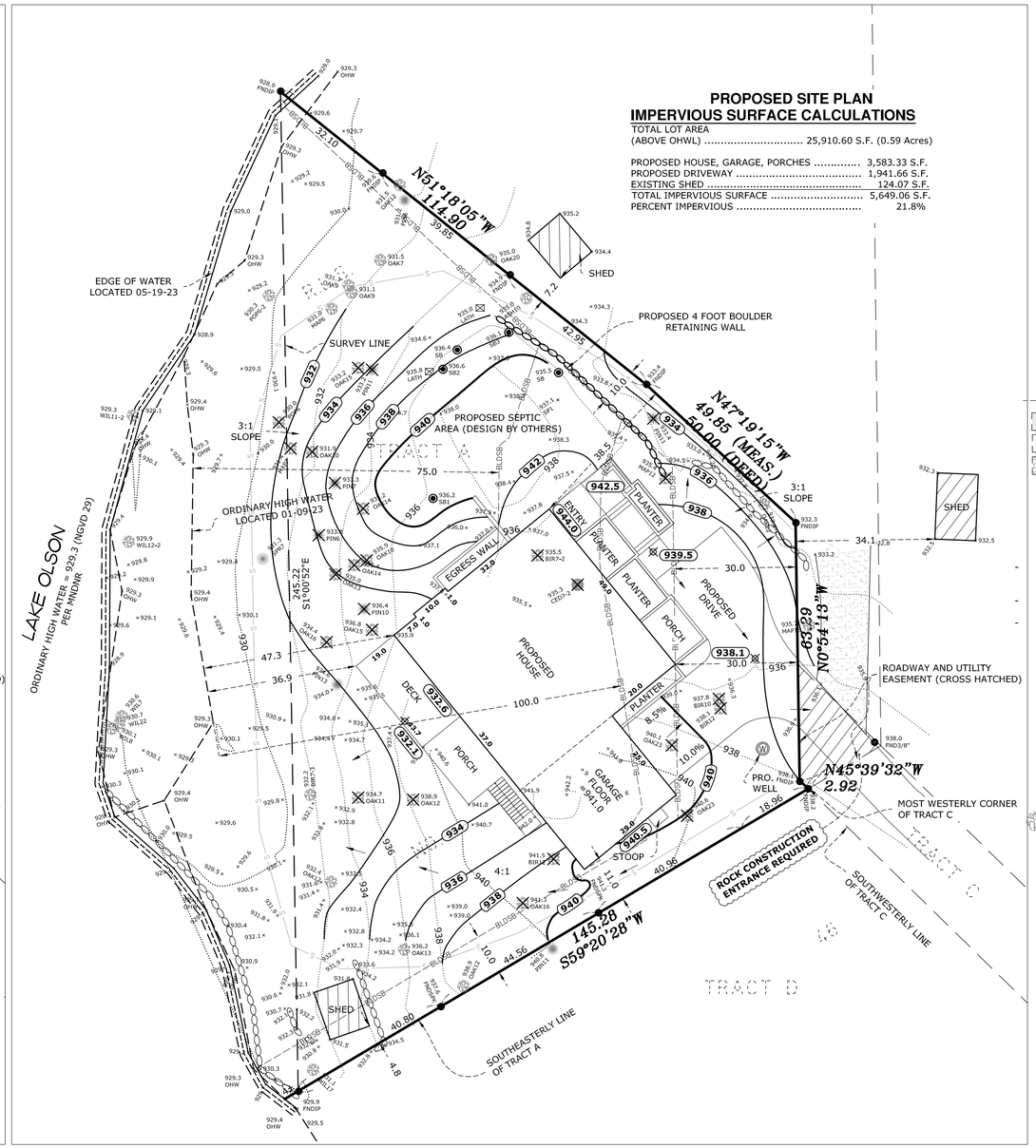
CERTIFICATE OF SURVEY

~for~ JUDY OTTO
~of~ 8286 HIDDEN BAY COURT NORTH
LAKE ELMO, MN

GRAPHIC SCALE
20 0 10 20 40
1 INCH = 20 FEET

NORTH





LEGEND

- DENOTES IRON MONUMENT FOUND
- DENOTES IRON MONUMENT SET
- 800.0 DENOTES PROPOSED ELEVATION
- x1011.2 DENOTES EXISTING ELEVATION
- DENOTES DIRECTION OF DRAINAGE
- DENOTES SANITARY SEWER MANHOLE
- DENOTES SOIL BORING. (BY OTHERS)
- DENOTES WELL
- DENOTES SILT FENCE
- DENOTES EXISTING CONTOURS
- DENOTES PROPOSED CONTOURS
- DENOTES BUILDING SETBACK LINE
- DENOTES BITUMINOUS SURFACE
- DENOTES CONCRETE SURFACE
- DENOTES PAVER SURFACE

SURVEY NOTES

Field survey was completed by E.G. Rud and Sons, Inc. on 10-26-09, 01-09-23, 05-19-23, and 06-01-23.

Bearings shown are on Washington County datum.

This survey was prepared without the benefit of title work. Additional easements, restrictions and/or encumbrances may exist other than those shown hereon. Survey subject to revision upon receipt of a current title commitment or an attorney's title opinion.

TREE DETAIL

- 950 26 OAK20 2 — DENOTES ELEVATION / TREE QUANTITY / TREE SIZE IN INCHES / TREE TYPE
- DENOTES TREE TO BE REMOVED

BENCHMARK

MNDOT BENCHMARK: MICHAEL MN163
ELEVATION: 919.42 (NGVD 29)

(11 FOOT POURED WALL WALKOUT)

PROPOSED ELEVATIONS

TOP OF FOUNDATION = 943.56
GARAGE FLOOR = 941.0
LOWEST FLOOR = 933.06
TOP OF FOOTING = 932.56

LEGAL DESCRIPTION

That part of Tract A lying Southerly and Westerly of a line described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C; thence Northwesterly along the extension of the Southwesterly line of Tract C a distance of 2.92 feet; thence North parallel with the East line of Tract A and its extension a distance of 63.29 feet; thence Northwesterly, deflecting to the left 46 degrees 30 minutes a distance of 50 feet; thence Northwesterly, deflecting to the left 4 degrees, to the Westerly line of Tract A;

All in REGISTERED LAND SURVEY No. 46, as surveyed and platted and now on file and of record in the office of the Registrar of Titles of said County of Washington, State of Minnesota.

Together with a roadway and utility easement over that part of Tract A described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C, thence Northwesterly along the extension of the Southwesterly line of Tract C a distance of 2.92 feet, thence North parallel with the East line of Tract A and its extension to the intersection with the extension Northwesterly of the Northeasterly line of Tract C, thence Southeasterly to the Southeast corner of Tract A, thence Southwesterly along the Southeasterly line of Tract A to the point of beginning; all in REGISTERED LAND SURVEY No. 46, which easement is an appurtenant easement to that part of Tract A described above; also

Together with a roadway and utility easement over Tract C, REGISTERED LAND SURVEY No. 46, which easement is an appurtenant easement to Tracts A, B, and D, REGISTERED LAND SURVEY No. 46; also

Together with a utility easement over the Southwesterly 10 feet of Lot 12 in OACE ACRES.

E.G. RUD & SONS, INC.
EST. 1977
Professional Land Surveyors
6776 Lake Drive NE, Suite 110
Lino Lakes, MN 55014
Tel. (651) 361-8200 Fax (651) 361-8701
www.egrud.com

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

JASON E. RUD

Date: 6/9/2023 License No. 41578

DRAWN BY: RAF	JOB NO: 220858BS	DATE: 01-16-23	
CHECK BY: JER	FIELD CREW: DT/CT		
1	06-02-23	ADDED FIELD INFO.	RAF
2	06-09-23	ADDED PROPOSED HOUSE	RAF
3			
NO.	DATE	DESCRIPTION	BY

S:\RUD\CAD\22PROJ\220858BS\220858BS-2.DWG

220858BS

Otto Residence

8286 Hidden Bay Court
Lake Elmo, Minnesota

Variance Application - Written Statements

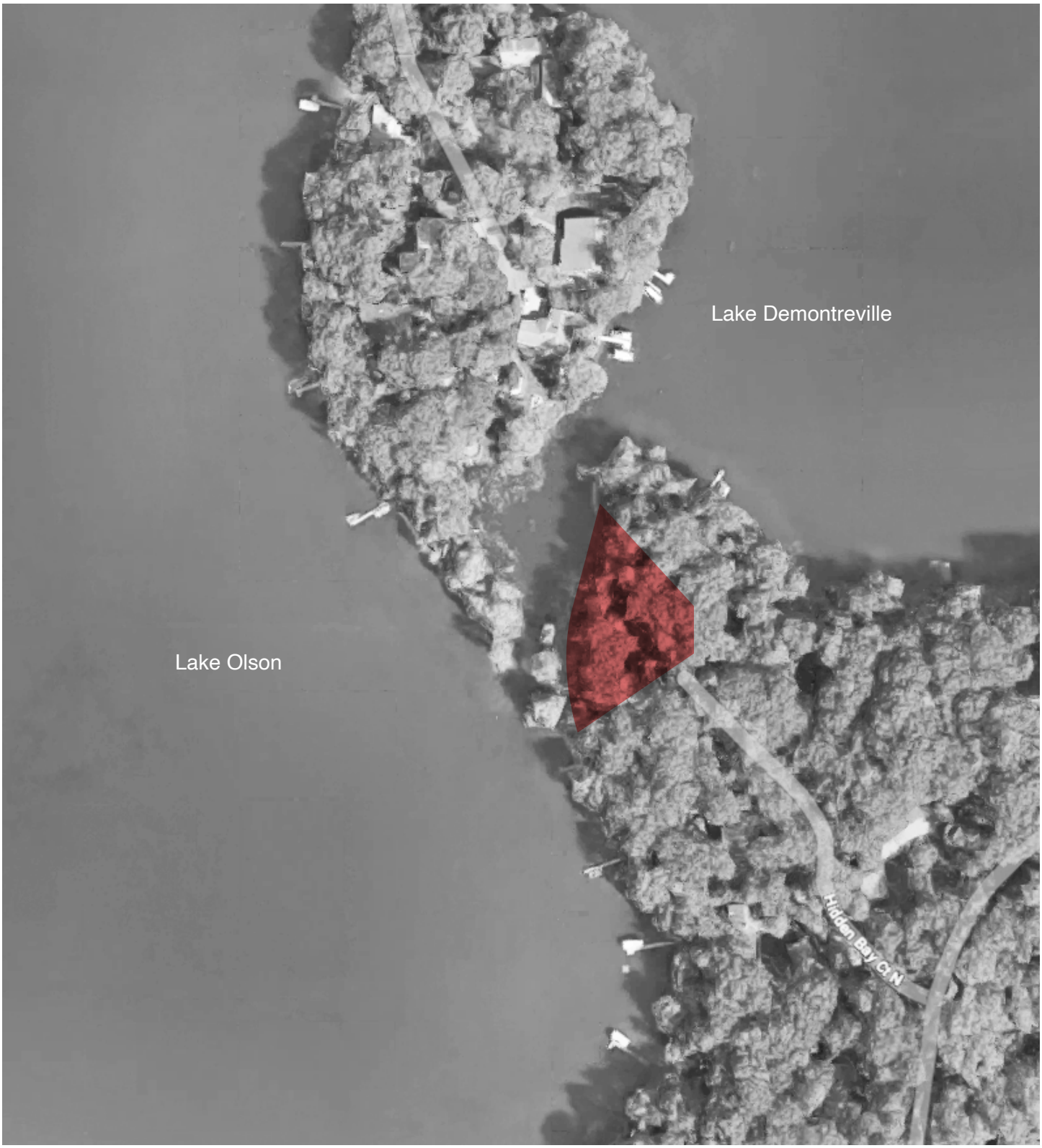


TABLE OF CONTENTS

PROJECT DESCRIPTION

June 9, 2023

Dear City of Lake Elmo Planning Department:

Thank you for the opportunity to submit our application to you that includes a series of variance requests for a new proposed home at 8286 Hidden Bay Court in Lake Elmo for Jeff and Judy Otto.

The parcel is located on the narrows separating Lake Demontreville and Olson Lake. A non-conforming home built in 1958 and non-compliant septic system from 1984 are currently on the property.
Under LEC 105.04.690(b)(3) the septic system is non-compliant and is required to be updated.

In designing the new home, the architecture team took great care to respect the boundaries of the existing footprint of the home, respect the necessary (and only viable) location of the new septic system (as detailed further below) and to the greatest extent possible mimic natural grade toward the lake. The proposed new home satisfies the required side yard and front yard setbacks.

The existing split-level home with a tuck-under garage is quite dated, does not maximize the potential value of the lot and does not serve the owner's desire to age-in-place with single-level primary living spaces.

The owner and design team desired to respect neighboring viewsheds as much as possible. Therefore, instead of building up an additional level on the home (up to the permitted 35' height limitation), the design team instead suggested a slight expansion of the existing footprint, as described within this application. Except for an uncovered deck, the proposed expansion of the new home was directed entirely away from the lake.

Finally, A new soil treatment area is required due to the non-compliant drainfield north of the existing house.

We sincerely thank you for your time and consideration and look forward to answering any additional questions that you may have. You may reach me directly at 651.336.1393 or at matt@plaadoffice.com.

Sincerely,

Matthew M. Byers, AIA

PROJECT TEAM

Owner:	Jeff and Judy Otto 8286 Hidden Bay Court Lake Elmo, Minnesota
Architect:	PLAAD, LLC Matthew Byers, AIA Ryan Andrews, Assoc. AIA 1229 Tyler Street NE, Suite 202 Minneapolis, MN 55413 651.336.1393 matt@plaadoffice.com ryan@plaadoffice.com
Surveyor	E.G. Rud & Sons, Inc. Professional Land Surveyors Jason Rud 6776 Lake Drive NE, Suite 110 Lino Lakes, MN 55014 651.361.8200
Septic Designer	Kloeppner Services and Designs, LLC MPCA License # 4043 763.843.4114 connect@ksd-mn.com

PROJECT DATA

Owner:	*Jeff and Judy Otto* *8286 Hidden Bay Court* *Lake Elmo, Minnesota*

Site Data

Legal Description:	*That part of Tract A lying Southerly and Westerly of a line described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C; thence Northwesterly along the extension of the Southwesterly line of Tract C, a distance of 2.92 feet; thence North parallel with the East line of Tract A and its extension a distance of 63.29 feet; thence Northwesterly, deflecting to the left 46 degrees 30 minutes, a distance of 50 feet; thence Northwesterly, deflecting to the left 4 degrees, to the Westerly line of Tract A; all in Registered Land Survey no. 46.*
Parcel Identification #:	*09.029.21.23.0013*
Parcel Size (acres):	*0.6 acres*
Parcel Size (square feet): *Above OHWM*	*25,910sf*
Existing Use:	*Single family residence*
Zoning:	*RS - Rural Single Family and Shoreland Managent Overlay District*
Lake Elmo City Code provisions for which variance is sought:	*LEC 105.12.1260 (c)(3) Table 17-3 (for structure setbacks)* *LEC 105.12.1260 (c)(3) Table 17-3 (for septic setbacks)* *LEC 105.12.1260 (c)(3) Table 17-3 (for lot coverage)*
Required Structure Setbacks	*Side Yard: 10'* *Rear Yard: 30'* *OHWM: 100'*
Required setbacks to Sewage Tank and Soil Treatment and Dispersal Area	*75' from OHWM*

VARIANCE REQUEST SUMMARY

We are applying for a total of three variances.

The variance numbers are indicated with a red circle and number, (x) which correspond to the variance locations on Figures A and B in the following pages.

1 **Variance for a reduced setback from the OHWM to the building structure**
The first request is simply a request to rebuild a new home to the extents of the existing home footprint. Because the existing home is non-conforming, rebuilding a new home the same distance from the OHWM requires a variance. In addition, we are requesting for an uncovered deck to encroach further into the existing structure setback and continue across the back face of the home. This deck would extend no further than the existing extents of the existing screen porch, but due to the relationship of the geometry of the existing house to the OHWM, it would decrease the setback from the OHWM to the primary structure, for the deck only.

Therefore, we are requesting a reduced structure setback from the OHWM of 36.9'. This allows the north corner of the new home to come as close to the OHWM as the north corner of the existing home. Again, we are respecting the existing footprint as much as possible. As indicated in **Figure A**, the small, dashed line that overlays the new proposed home shows the extents of the existing home and driveway.

In summary:
LEC 105.12.1260(c)(3) Table 17-3 requires a setback of 100' from OHWM to building structure.
The setback of the existing home is 47.3' from OHWM to building structure.
We are requesting a setback of 47.3' to the new home and 36.9' to the new uncovered deck from OHWM.

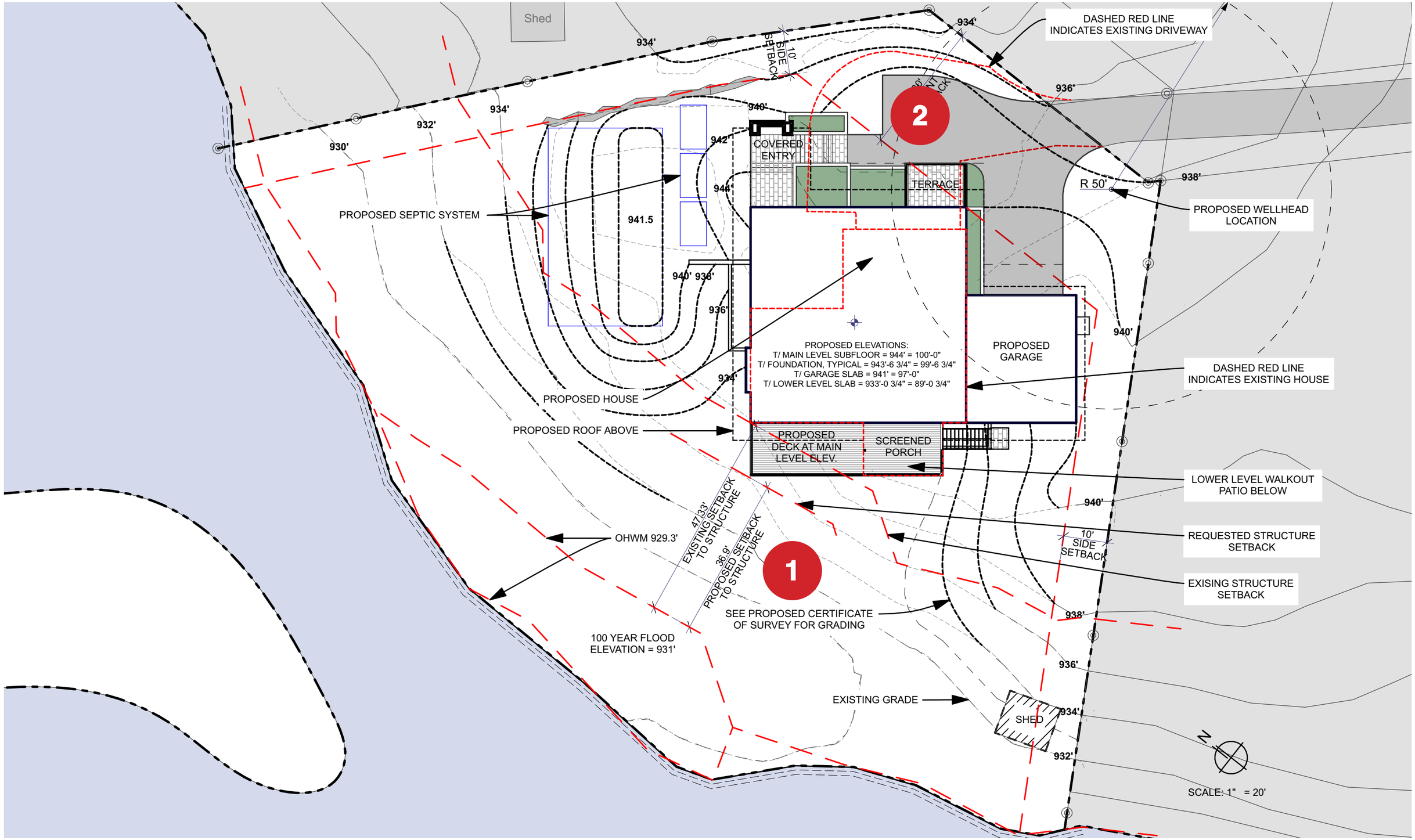
2 **Variance for a slightly increased impervious surface coverage**
The second variance request is to allow an increase of our impervious surface coverage from 18.3% to 21.8% primarily to allow for a hammerhead portion of the driveway design. The design team and owner feel this is necessary in order to provide safe egress access to the road adjoining their property. *The existing home already violates the lot coverage maximum of 15%.*

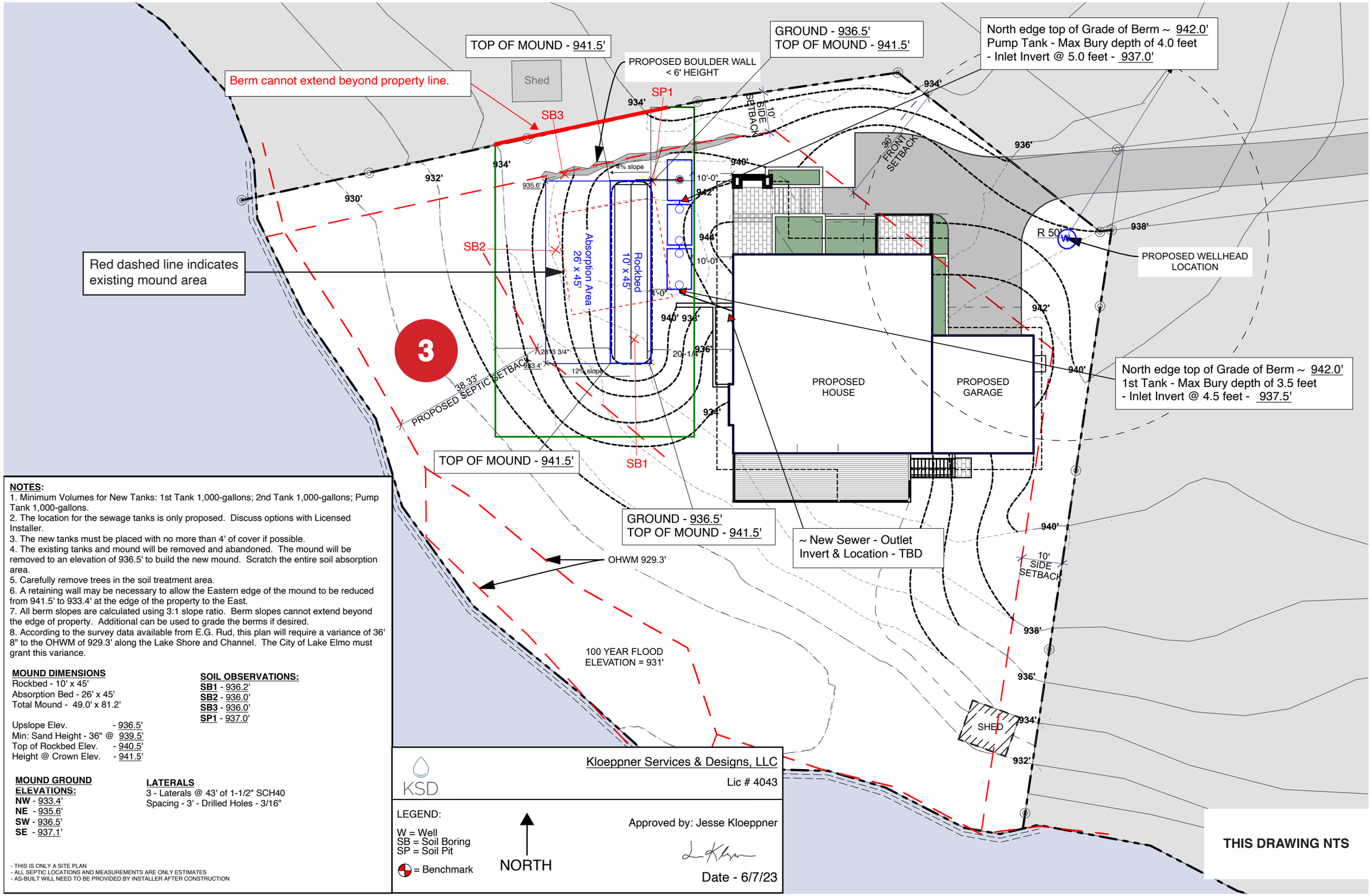
In summary:
LEC 105.12.1260(c)(3) Table 17-3 stipulates maximum impervious surface of 15% lot area.
Existing impervious surface is 18.3% of lot area.
Proposed impervious surface is 21.8% of lot area.

3 **Variance for a reduced setback from the OHWM for the soil treatment area (STA) of the septic system.**
The third variance request is to permit the new designed septic system (SSTS) to encroach to 38.3' from the OHWM. The existing septic system is not compliant and must be updated to meet current standards for site and soil conditions. *The existing septic system already substantially violates the minimum setback requirements from the OHWM and sits in roughly the same location as the proposed new system. Minimum setbacks to primary structure are not met either, mandating the septic system to be reorientated.*

In summary:
LEC 105.12.1260(c)(3) Table 17-3 requires a setback of 75' from OHWM to STA.
The existing setback is 51.3' from OHWM to STA.
We are requesting a setback of 38.3' from OHWM to STA.

Figure A | Proposed Architectural Site Plan





NOTES:
1. Minimum Volumes for New Tanks: 1st Tank 1,000-gallons; 2nd Tank 1,000-gallons; Pump Tank 1,000-gallons.
2. The location for the sewage tanks is only proposed. Discuss options with Licensed Installer.
3. The new tanks must be placed with no more than 4' of cover if possible.
4. The existing tanks and mound will be removed and abandoned. The mound will be removed to an elevation of 936.5' to build the new mound. Scratch the entire soil absorption area.
5. Carefully remove trees in the soil treatment area.
6. A retaining wall may be necessary to allow the Eastern edge of the mound to be reduced from 941.5' to 933.4' at the edge of the property to the East.
7. All berm slopes are calculated using 3:1 slope ratio. Berm slopes cannot extend beyond the edge of property. Additional can be used to grade the berms if desired.
8. According to the survey data available from E.G. Rud, this plan will require a variance of 36' 8" to the OHWM of 929.3' along the Lake Shore and Channel. The City of Lake Elmo must grant this variance.

MOUND DIMENSIONS
Rockbed - 10' x 45'
Absorption Bed - 26' x 45'
Total Mound - 49.0' x 81.2'

Upslope Elev. - 936.5'
Min: Sand Height - 36" @ 939.5'
Top of Rockbed Elev. - 940.5'
Height @ Crown Elev. - 941.5'

SOIL OBSERVATIONS:
SB1 - 936.2'
SB2 - 936.0'
SB3 - 936.0'
SP1 - 937.0'

MOUND GROUND ELEVATIONS:
NW - 933.4'
NE - 935.6'
SW - 936.5'
SE - 937.1'

LATERALS
3 - Laterals @ 43' of 1-1/2" SCH40
Spacing - 3' - Drilled Holes - 3/16"

- THIS IS ONLY A SITE PLAN
- ALL SEPTIC LOCATIONS AND MEASUREMENTS ARE ONLY ESTIMATES
- AS-BUILT WILL NEED TO BE PROVIDED BY INSTALLER AFTER CONSTRUCTION

KSD

Kloeppner Services & Designs, LLC
Lic # 4043

LEGEND:
W = Well
SB = Soil Boring
SP = Soil Pit
= Benchmark

NORTH

Approved by: Jesse Kloeppner

Date - 6/7/23

THIS DRAWING NTS

Figure B | Proposed New Septic Site Plan and Design

VARIANCE REQUEST DETAILED ANALYSIS

In order for action by the board of adjustment to approve or deny a variance request, four findings must be made in accordance with LEC 105.12.320(f). Below, we have detailed our response to each of these required findings for each of the variances sought.

1 **Variance for a reduced setback from the OHWM to the building structure**

LEC 105.12.320(f)(1) Practical difficulties.

> *a) 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.*
>
> *b) Definition of practical difficulties. The term "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.*

As graphically communicated in **Figure C** on the following page, if the currently mandated setbacks are strictly applied to a new home proposal, the resulting buildable area, shown in the diagram as a hatched red area, provides for an unbuildable site. Given that the owner wishes to construct a modestly sized new home on the property, the strict application of the required structure setbacks alone creates the necessary practical difficulty.

Furthermore, as discussed in more detail under the variance request for the Sewage Tank & Soil Treatment and Dispersal Area, **Figure D** shows the only viable location for the required new Sewage Tank & Soil Treatment and Dispersal Area on the property, as determined by the septic designer engaged on the project.

This adds another level of practical difficulty on top of the structure setbacks, preventing the reasonable use of the property. While a deck facing the lake is a desirable and reasonable feature in lakeshore properties, the location needed for the new septic system precludes locating a deck on the north side of the home. Therefore, the remaining location for the deck is the location proposed on the site plan.

LEC 105.12.320(f)(2) Unique circumstances.

The problem for the landowner/applicant which the proposed variance is intended to correct must be due to circumstances that are unique to the property in question and that were not created by the landowner/applicant.

Generally, in this locale, the OHWM roughly follows the shoreline to within a few feet. As graphically communicated in **Figure C**, unique to this parcel is an OHWM elevation that encroaches well over 25' into the lot. With an east/west lot depth of 175', this represents a defacto 15% reduction in the lot depth, before any setbacks are applied. The application of the OHWM setback of 100' to any structure represents a total setback from the water's edge of approximately 125', or over 70% of the total lot depth. Add on the required front yard setback of 30', and the required setbacks consume nearly 89% of the lot depth. Again, the resultant buildable area is shown as a red hatched area in **Figure C** and **Figure D.**

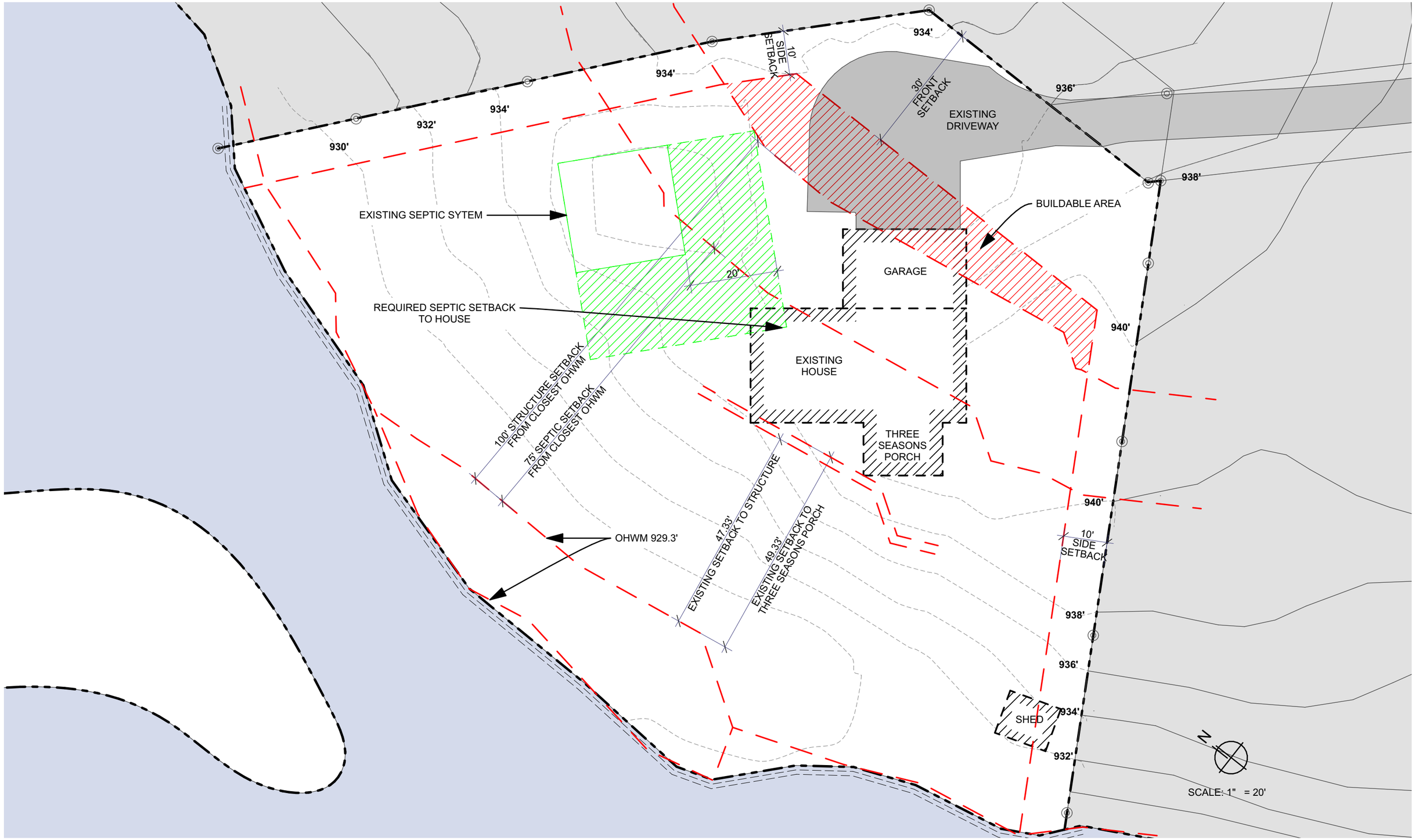


Figure C | Existing Conditions and Existing Septic

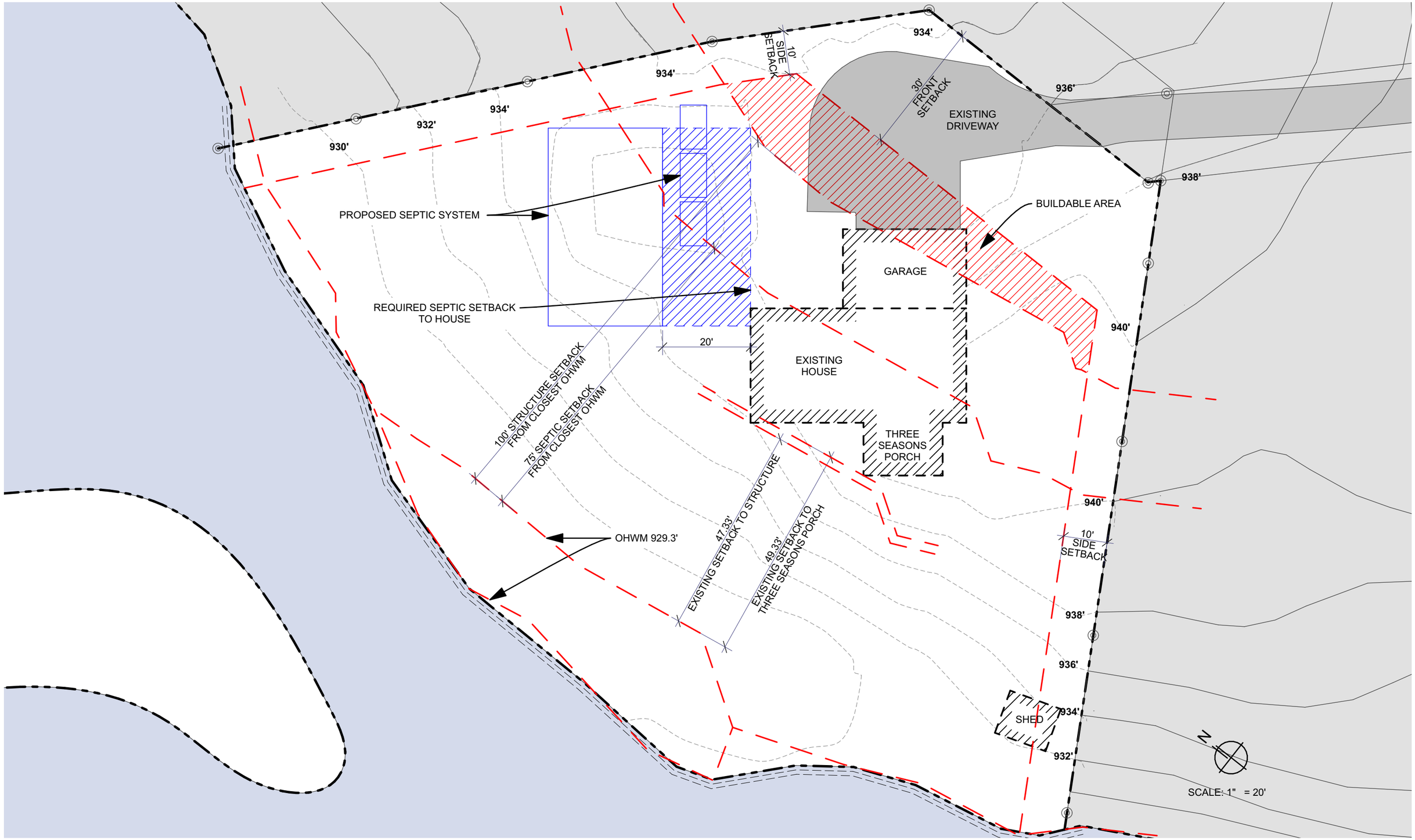


Figure D | Existing Conditions and New Septic Design Requirements

LEC 105.12.320(f)(3) Character of locality.

> *a) The proposed variance will not alter the essential character of the locality in which the property in question is located.*
>
> *b) Definition of locality. For the purposes of this subsection, the term "locality" shall be defined as all that property within 350 feet of the property proposed for the variance; however, in all events, it shall include all parcels abutting the affected parcel, including those immediately across a public street, alley of other public property.*

Within 350' of the property, there are multiple properties with distances between the OHWM and the house structure of less than 100'. There are even a few properties that come to within 25' of the OHWM.

Given these immediately adjacent and nearby examples of non-conformity, it is reasonable to assume that our request to reduce the setback from the OHWM will not dictate a new precedent nor adversely impact neighboring properties' views and access to the lake, therefore the proposed design is consistent with respect to character of locality,

LEC 105.12.320(f)(4) Adjacent properties and traffic.

The proposed variance will not impair an adequate supply of light and air to property 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.

As noted previously, the desire to expand the footprint on the main level away from the lake permits the design to remain a one level structure from the street side, instead of a more imposing two-story structure. The resulting structure therefore protects the viewsheds and access to light and air of the surrounding properties. Finally, a new home will substantially increase the property values of the neighborhood instead of remaining as an older non-conforming home with a non-compliant septic system.

The home will remain a single-family residence, and therefore, no new anticipated traffic or congestion is projected beyond the existing conditions.

Variance for a slightly increased impervious surface coverage

LEC 105.12.320(f)(1) Practical difficulties.

> *a) 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.*
>
> *b) Definition of practical difficulties. The term "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.*

2

The current home exists on a lot that is 27,591 square feet in size. Roughly 1,700 sf of that is unusable due to the location of the OHWM encroaching into the lot, resulting in a lot that contains 25,910 sf of area above the OHWM. Per *LEC 105.12.1260 (c)(3) Table 17-3* the minimum lot size for new unsewered riparian lots is 40,000 square feet. Under the same zoning ordinance, the maximum impervious surface for a new build with a 40,000 minimum lot size is 6,000 sf (15% of lot area). This typically allows for the reasonable use of the property, permitting modestly sized homes with the expected garages, driveways, patios, decks, etc. that one would normally expect to be able to build on a lake lot.

At a lot size of 25,910 square feet, *our* lot is *35% smaller* than the minimum lot size required for a new unsewered riparian lot on the lake. Imposing the same 15% impervious surface limit on a parcel that is already 35% smaller than required creates a practical difficulty to use the property in a reasonable manner.

LEC 105.12.320(f)(2) Unique circumstances.

The problem for the landowner/applicant which the proposed variance is intended to correct must be due to circumstances that are unique to the property in question and that were not created by the landowner/applicant.

Due to the required location of the septic design and the desire to age-in-place on the property with a main level garage, the site topography dictates the garage be placed where shown on the new site plan. A hammerhead in the driveway access is needed to allow for safe forward-facing egress from the driveway to the public road. Likewise, the driveway needed to be lengthened in order to provide a safe slope of approach into the garage from the edge of the property line and adjacent property. Again, under the current zoning ordinances, the minimum property size is 40,000 sf. The 15% impervious surface limit would then allow 6,000 sf of impervious surface. This would normally permit these types of site improvements to occur without a variance needed. However, given that this lot is 35% smaller than the minimum lot size required by the ordinance, this property imposes unique constraints upon the project.

LEC 105.12.320(f)(3) Character of locality.

> *a) The proposed variance will not alter the essential character of the locality in which the property in question is located.*
>
> *b) Definition of locality. For the purposes of this subsection, the term "locality" shall be defined as all that property within 350 feet of the property proposed for the variance; however, in all events, it shall include all parcels abutting the affected parcel, including those immediately across a public street, alley of other public property.*

The lot under consideration is 30% smaller than average size of the closest 18 adjacent lots on Hidden Bay Trail North, most of which have impervious surface coverage well in excess of the required 15% limit - some egregiously so. Most properties on Hill Trail North (just across the channel) are also *well in excess* of the 15% limit. In a desire to limit the height of the home and respect neighboring views and avoid a three-story home from the lakeside, a second level was omitted, necessitating the need for additional main level impervious surface. While we acknowledge that the new site plan does exceed the allowable impervious surface coverage percentage, we argue that the resulting structure is far more respectful of the neighboring properties' views and the visual impact on the lake than a three level home. Therefore, we argue that the essential character of the locality is maintained, if not improved.

LEC 105.12.320(f)(4) Adjacent properties and traffic.

The proposed variance will not impair an adequate supply of light and air to property 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.

Again, while we acknowledge that the new site plan does exceed the allowable impervious surface coverage percentage, we argue that the resulting structure is far more respectful of the neighboring properties' views and the visual impact on the lake than a three level home. Therefore, we argue that the essential character of the locality is maintained, if not improved. We are replacing a single-family residence with a new single-family residence. There is no expected increase in congestion to the public streets.

3 **Variance for a reduced setback from the OHWM to the Sewage Tank & Soil Treatment and Dispersal Area**

LEC 105.12.320(f)(1) Practical difficulties.

> *a) 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.*
>
> *b) Definition of practical difficulties. The term "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.*

The only location for a new soil treatment area (STA) for a 3-bedroom house on this lot is in the location designed by Kloeppner Services & Design, LLC. The setback from the well, the house, the property boundaries, the Ordinary High-Water Level along Lake Olson and connecting waterway, and disturbed areas create a practical difficulty for the proposed STA and no reasonable alternate soil treatment area can be built for this lot. The proposed location is generally shown in **Figure D** and more precisely articulated in **Figure B.**

LEC 105.12.320(f)(2) Unique circumstances.

The problem for the landowner/applicant which the proposed variance is intended to correct must be due to circumstances that are unique to the property in question and that were not created by the landowner/applicant.

The setback from the well, the house, the property boundaries, the Ordinary High-Water Level along Olson Lake and connecting waterway, and disturbed areas create a unique circumstance for the proposed STA and no reasonable alternate soil treatment area can be built for this lot.

LEC 105.12.320(f)(3) Character of locality.

> *a) The proposed variance will not alter the essential character of the locality in which the property in question is located.*
>
> *b) Definition of locality. For the purposes of this subsection, the term "locality" shall be defined as all that property within 350 feet of the property proposed for the variance; however, in all events, it shall include all parcels abutting the affected parcel, including those immediately across a public street, alley of other public property.*

Provided that the new sewage tank & soil treatment and dispersal area is substantially in the same location as the existing non-compliant system, there are no impacts to character of locality.

LEC 105.12.320(f)(4) Adjacent properties and traffic.

The proposed variance will not impair an adequate supply of light and air to property 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.

Provided that the new sewage tank & soil treatment and dispersal area is substantially in the same location as the existing non-compliant system, no new impacts to adjacent properties and traffic are expected.

EXISTING PHOTOS AND PROPOSED RENDERINGS

Figure E | Existing and Proposed View From Entry Drive

Existing view to the northwest from entry drive

Proposed view to the northwest from entry drive

Figure F | Existing and Proposed View From Rear Yard

Existing view to the southeast from rear yard

Proposed view to the southeast from rear yard

Figure G | Existing and Proposed View From Septic Field

Existing view to the southwest from septic field

Proposed view to the southwest from septic field

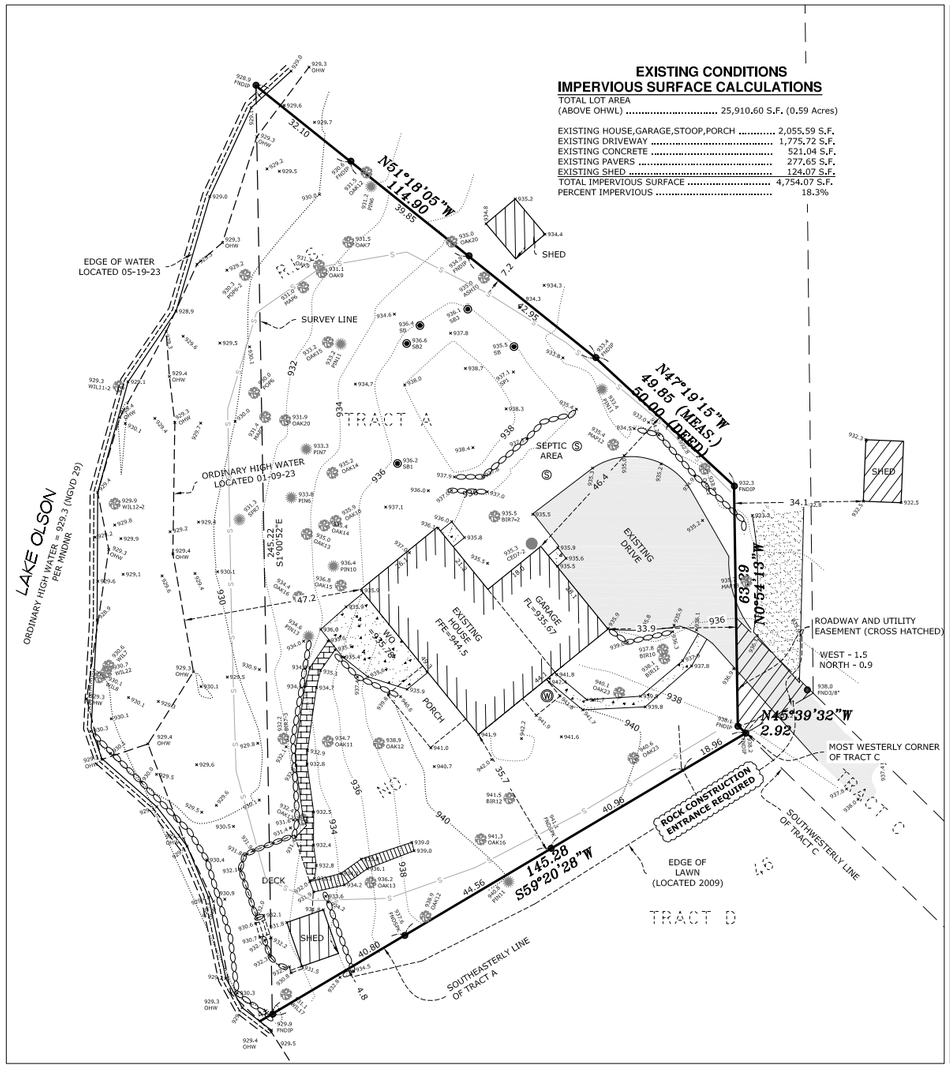
CERTIFICATE OF SURVEY

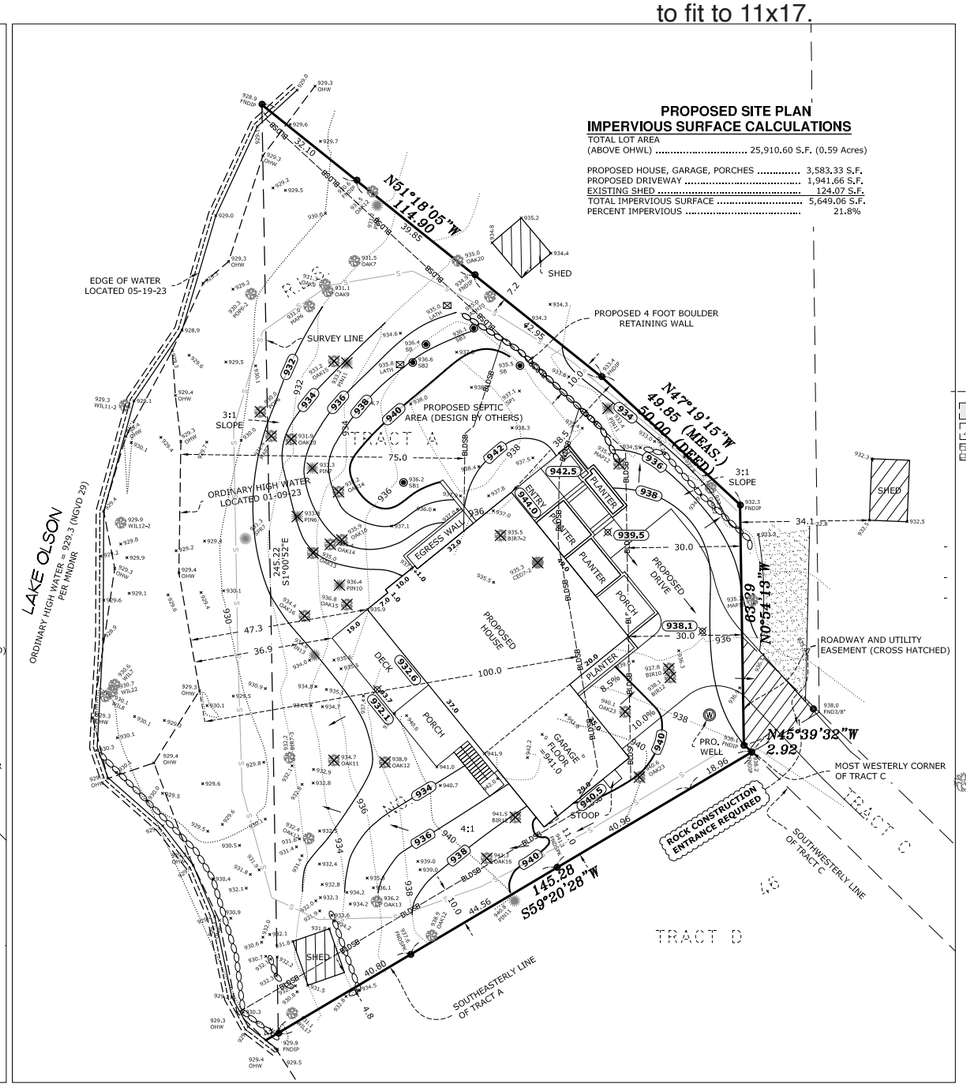
~for~ JUDY OTTO
~of~ 8286 HIDDEN BAY COURT NORTH
LAKE ELMO, MN

GRAPHIC SCALE
20 0 10 20 40
1 INCH = 20 FEET

this version is NTS to scale to fit to 11x17.

NORTH





LEGEND

- DENOTES IRON MONUMENT FOUND
- DENOTES IRON MONUMENT SET
- 800.0 DENOTES PROPOSED ELEVATION
- x1011.2 DENOTES EXISTING ELEVATION
- DENOTES DIRECTION OF DRAINAGE
- S DENOTES SANITARY SEWER MANHOLE
- DENOTES SOIL BORING. (BY OTHERS)
- W DENOTES WELL
- S DENOTES SILT FENCE
- DENOTES EXISTING CONTOURS
- DENOTES PROPOSED CONTOURS
- BLDSB DENOTES BUILDING SETBACK LINE
- DENOTES BITUMINOUS SURFACE
- DENOTES CONCRETE SURFACE
- DENOTES PAVER SURFACE

SURVEY NOTES

- Field survey was completed by E.G. Rud and Sons, Inc. on 10-26-09, 01-09-23, 05-19-23, and 06-01-23.
- Bearings shown are on Washington County datum.
- This survey was prepared without the benefit of title work. Additional easements, restrictions and/or encumbrances may exist other than those shown hereon. Survey subject to revision upon receipt of a current title commitment or an attorney's title opinion.

TREE DETAIL

- DENOTES ELEVATION
- DENOTES TREE QUANTITY
- DENOTES TREE SIZE IN INCHES
- DENOTES TREE TYPE
- DENOTES TREE TO BE REMOVED

BENCHMARK

MNDOT BENCHMARK: MICHAEL MN163
ELEVATION: 919.42 (NGVD 29)

(11 FOOT POURED WALL WALKOUT)

PROPOSED ELEVATIONS

TOP OF FOUNDATION = 943.56
GARAGE FLOOR = 941.0
LOWEST FLOOR = 933.06
TOP OF FOOTING = 932.56

LEGAL DESCRIPTION

That part of Tract A lying Southerly and Westerly of a line described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C; thence Northwesterly along the extension of the Southwesterly line of Tract C a distance of 2.92 feet; thence North parallel with the East line of Tract A and its extension a distance of 63.29 feet; thence Northwesterly, deflecting to the left 46 degrees 30 minutes a distance of 50 feet; thence Northwesterly, deflecting to the left 4 degrees, to the Westerly line of Tract A;

All in REGISTERED LAND SURVEY No. 46, as surveyed and platted and now on file and of record in the office of the Registrar of Titles of said County of Washington, State of Minnesota.

Together with a roadway and utility easement over that part of Tract A described as beginning at the point of intersection of the Southeasterly line of Tract A and the most Westerly corner of Tract C, thence Northwesterly along the extension of the Southwesterly line of Tract C a distance of 2.92 feet, thence North parallel with the East line of Tract A and its extension to the intersection with the extension Northwesterly of the Northeasterly line of Tract C, thence Southeasterly to the Southeast corner of Tract A, thence Southwesterly along the Southeasterly line of Tract A to the point of beginning; all in REGISTERED LAND SURVEY No. 46, which easement is an appurtenant easement to that part of Tract A described above; also

Together with a roadway and utility easement over Tract C, REGISTERED LAND SURVEY No. 46, which easement is an appurtenant easement to Tracts A, B, and D, REGISTERED LAND SURVEY No. 46; also

Together with a utility easement over the Southwesterly 10 feet of Lot 12 in OACE ACRES.

E. G. RUD & SONS, INC.
EST. 1977
Professional Land Surveyors
6776 Lake Drive NE, Suite 110
Lino Lakes, MN 55014
Tel. (651) 361-8200 Fax (651) 361-8701
www.egrud.com

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

JASON E. RUD
Date: 6/9/2023 License No. 41578

DRAWN BY: RAF	JOB NO: 220858BS	DATE: 01-16-23	
CHECK BY: JER	FIELD CREW: DT/CT		
1	06-02-23	ADDED FIELD INFO.	RAF
2	06-09-23	ADDED PROPOSED HOUSE	RAF
3			
NO.	DATE	DESCRIPTION	BY

S:\RUD\CAD\22PROJ\220858BS\220858BS-2.DWG

220858BS

6/7/2023

KSD
Your water. Our neighbors.

SSTS Design

8286 Hidden Bay Court North
Lake Elmo, MN 55042

PID # 09.029.21.23.0013

Version 1.2

Kloeppner Services & Designs, LLC
MPCA LICENSE # 4043

763.843.4114
CONNECT@KSD-MN.COM

SSTS Design Summary Report 6/7/23

On May 23rd, 2023, a site evaluation was conducted at 8286 Hidden Bay Court North, Lake Elmo, MN 55042 to identify a location for a replacement Subsurface Sewage Treatment System (SSTS) for a new 3-bedroom home. The PID number is 09.029.21.23.0013.

Prior to submitting for permit from Washington County, please review and sign all pages which require a signature.

Wastewater Sources & Peak Flow Rate

The expected waste strength is Residential Wastewater with a Peak flow of 450 gallons per day (GPD) for a 3-bedroom house. The Actual Daily Flow should be less than 70% of the Peak Flow (315 GPD).

Type III - Mound

The dispersal area will be a Type III Mound. The Mound Soil Absorption Area required 1,117-sqft (26' x 45'). The site was evaluated for a Type I system with or without the need for a variance. Due to the location of the house, a new well, and existing soil, no suitable area is available for a Type I system with soil with > 12" to a limiting condition or slope < 12%.

The minimum required materials for the sewer line, distribution network, pumps, supply line, sand, rock, fill and cover are detailed in the design worksheets included with this design. Actual values may change slightly and will need to be field verified for correctness.

Design Notes

1. Minimum Volumes for New Tanks: 1st Tank 1,000-gallons; 2nd Tank 1,000-gallons; Pump Tank 1,000-gallons.
2. The location for the sewage tanks is only proposed. Discuss options with Licensed Installer.
3. The new tanks must be placed with no more than 4' of cover if possible.
4. The existing tanks and mound will be removed and abandoned. The mound will be removed to an elevation of 936.5' to build the new mound. Scratch the entire soil absorption area.
5. Carefully remove trees in the soil treatment area.
6. A retaining wall may be necessary to allow the Eastern edge of the mound to be reduced from 941.5' to 933.4' at the edge of the property to the East.
7. All berm slopes are calculated using 3:1 slope ratio. Berm slopes cannot extend beyond the edge of property. Additional can be used to grade the berms if desired.
8. According to the survey data available from E.G. Rud, this plan will require a variance of 36' 8" to the OHWM of 929.3' along the Lake Shore and Channel. The City of Lake Elmo must grant this variance.

Construction Notes

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.

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.

MR 7080.2100, Subpart 1. F

Electrical installations must comply with applicable laws and ordinances including the most current codes, rules, and regulations of public authorities having jurisdiction and with part 1315.0200, which incorporates the National Electrical Code.

As-Built Drawing

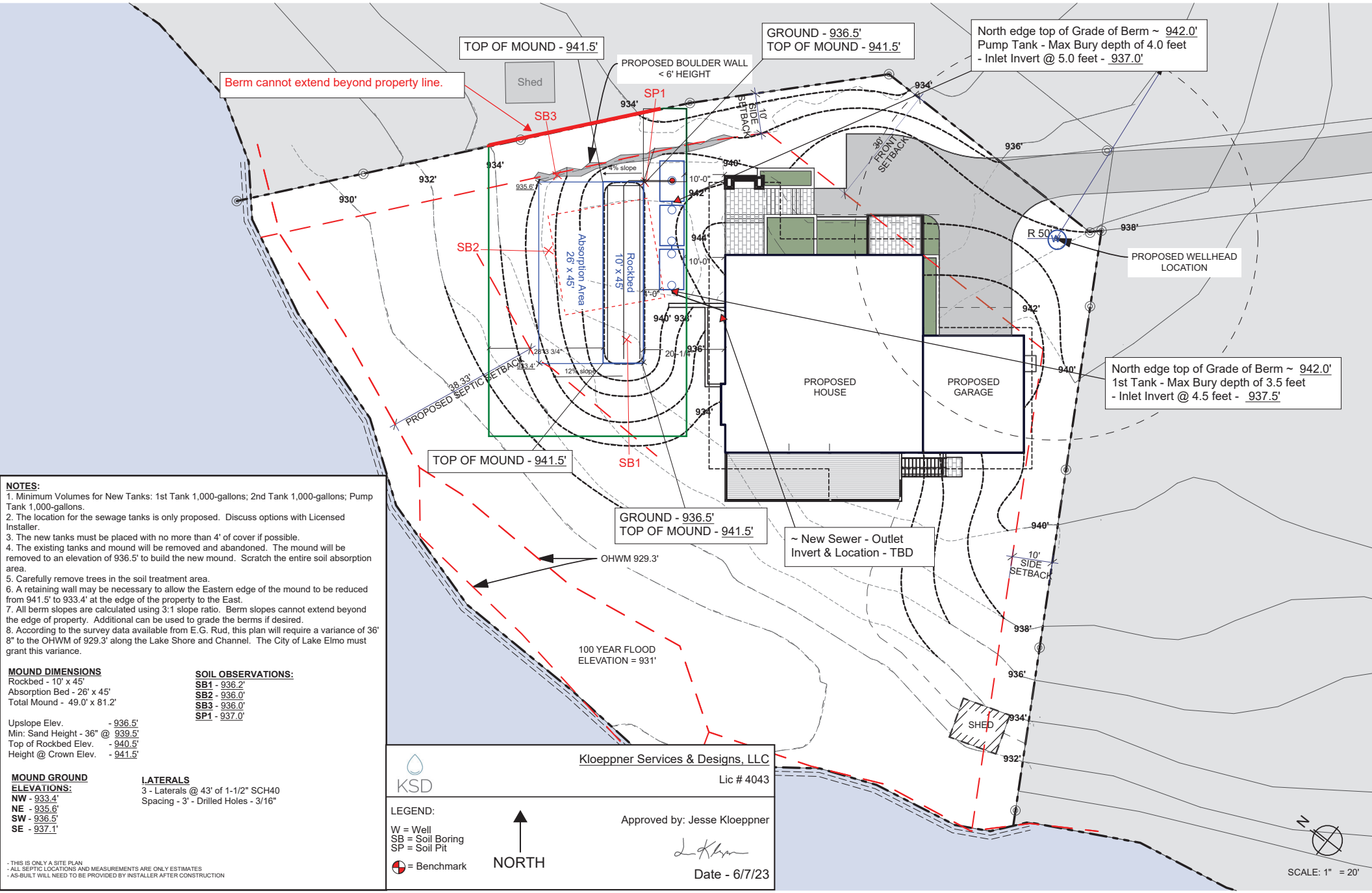
The Licensed Installer must provide an As-Built of the final location of all components. The attached Site Plan is only for reference and should not be considered as final survey or location of system components.

Protection from Freezing for Supply Line

The Mound supply line must drain back and empty pipe after each dose. To avoid potential freezing, additional depth or insulation may be necessary to keep line from freezing if buried too shallow.

Soil Erosion & Protection from Freezing

The dispersal area must have seed and grass established throughout the excavated areas to maintain proper protection from soil erosion and freezing.



NOTES:

1. Minimum Volumes for New Tanks: 1st Tank 1,000-gallons; 2nd Tank 1,000-gallons; Pump Tank 1,000-gallons.
2. The location for the sewage tanks is only proposed. Discuss options with Licensed Installer.
3. The new tanks must be placed with no more than 4' of cover if possible.
4. The existing tanks and mound will be removed and abandoned. The mound will be removed to an elevation of 936.5' to build the new mound. Scratch the entire soil absorption area.
5. Carefully remove trees in the soil treatment area.
6. A retaining wall may be necessary to allow the Eastern edge of the mound to be reduced from 941.5' to 933.4' at the edge of the property to the East.
7. All berm slopes are calculated using 3:1 slope ratio. Berm slopes cannot extend beyond the edge of property. Additional can be used to grade the berms if desired.
8. According to the survey data available from E.G. Rud, this plan will require a variance of 36' 8" to the OHWM of 929.3' along the Lake Shore and Channel. The City of Lake Elmo must grant this variance.

MOUND DIMENSIONS

Rockbed - 10' x 45'
Absorption Bed - 26' x 45'
Total Mound - 49.0' x 81.2'

Upslope Elev. - 936.5'
Min: Sand Height - 36" @ 939.5'
Top of Rockbed Elev. - 940.5'
Height @ Crown Elev. - 941.5'

SOIL OBSERVATIONS:

SB1 - 936.2'
SB2 - 936.0'
SB3 - 936.0'
SP1 - 937.0'

MOUND GROUND ELEVATIONS:

NW - 933.4'
NE - 935.6'
SW - 936.5'
SE - 937.1'

LATERALS

3 - Laterals @ 43' of 1-1/2" SCH40
Spacing - 3' - Drilled Holes - 3/16"

- THIS IS ONLY A SITE PLAN
- ALL SEPTIC LOCATIONS AND MEASUREMENTS ARE ONLY ESTIMATES
- AS-BUILT WILL NEED TO BE PROVIDED BY INSTALLER AFTER CONSTRUCTION

KSD

Kloeppner Services & Designs, LLC
Lic # 4043

LEGEND:

W = Well
SB = Soil Boring
SP = Soil Pit
= Benchmark

NORTH

Approved by: Jesse Kloeppner

Date - 6/7/23

SCALE: 1" = 20'


NEW MOUND - 26' X 45'
TANKS


NEW MOUND - 26' X 45'
TANKS


SOUTHEAST CORNER OF STA
TANK - 935.0'


SOUTHEAST CORNER OF STA


MOUND UPSLOPE - 1365
SOUTHWEST CORNER OF STA


NORTHWEST CORNER OF STA
MOUND STA - 933+


NORTHEAST CORNER OF STA
MOUND STA - 9356'

University of Minnesota Onsite Sewage Treatment Program

Preliminary Evaluation Worksheet

Minnesota Pollution Control Agency

1. Contact Information

v 03.15.2023

Property Owner/Client:	Otto	Date Completed:	4/25/2023
Site Address:	8286 Hidden Bay Ct N, Lake Elmo, MN 55402	Project ID:	

Legal Description: LOT A SUBDIVISIONCD 37672 SUBDIVISIONNAME RLS #46 THAT PART OF TRACT A LYING SOUTHERLY AND WESTERLY OF A LINE DESCRIBED AS BEGINNING AT THE POINT OF INTERSECTION OF THE SOUTHEASTERLY LINE OF TRACT A AND THE MOST WESTERLY CORNER OF TRACT C; THENCE NORTHWESTERLY ALONG THE EXTENSION OF THE SOUTHWESTERLY LINE OF TRACT C, A DISTANCE OF 2.92 FEET; THENCE NORTH PARALLEL WITH THE EAST LINE OF TRACT A AND ITS EXTENSION A DISTANCE OF 63.29 FEET; THENCE NORTHWESTERLY, DEFLECTING TO THE LEFT 46 DEGREES 30 MINUTES, A DISTANCE OF 50 FEET; THENCE NORTHWESTERLY, DEFLECTING TO THE LEFT 4 DEGREES, TO THE WESTERLY LINE OF TRACT A; ALL IN REGISTERED LAND SURVEY NO. 46.

Parcel ID:	09.029.21.23.0013	SEC:	09	TWP:	29	RNG:	21

2. Flow and General System Information

A. Client-Provided Information

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

Project Use: ☑ Residential ☐ Other Establishment:

Residential use: # Bedrooms: 3 Dwelling sq.ft.: Unfinished sq.ft.:

Adults: # Children: # Teenagers:

In-home business (Y/N): No 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:

The above is complete & accurate:

Client signature & date

B. Designer-determined Flow and Anticipated Waste Strength Information

Attach additional information as necessary.

Design Flow: 450 GPD Anticipated Waste Type: Residential

Maximum Concentration BOD: 170 mg/L TSS 60 mg/L Oil & Grease 25 mg/L

3. Preliminary Site Information

A. Water Supply Wells

#	Description	Mn. ID#	Well Depth (ft.)	Casing Depth (ft.)	Confining Layer	STA Setback	Source
1	8286 Hidden Bay Ct N	??	>50	>50		50	New Well
2							
3							
4							

Additional Well Information: All SSTS components must be >50' from non-sensitive wells.

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 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?	Yes	Yes, name:	Lake Olson
Elevation of ordinary high water level:	929 ft	Source:	County GIS
Classification: Lake- Recreational	Tank Setback: 75 ft.	STA Setback: 75 ft.	
C. Site located in a floodplain?	No	Yes, Type(s):	N/A
Floodplain designation/elevation (10 Year):	N/A ft	Source:	N/A
Floodplain designation/elevation (100 Year):	N/A ft	Source:	N/A

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: 1033; Udifluvents — Slope Range: %

List landforms: Shorelines

Landform position(s): Plain

Parent materials: Lacustrine

Depth to Bedrock/Restrictive Feature: >80 in — Depth to Watertable: >80 in

Map Unit Ratings

Septic Tank Absorption Field- At-grade:	Not rated
Septic Tank Absorption Field- Mound:	Not rated
Septic Tank Absorption Field- Trench:	Not rated

5. Local Government Unit Information

Name of LGU:	Washington County
LGU Contact:	Public Health & Environment - 651-430-6655
LGU-specific setbacks:	75' from Recreational Lake
LGU-specific design requirements:	Sewage Tanks: 3-bedroom = 1,000-gal & 1,000-gal
LGU-specific installation requirements:	

Notes:

University of Minnesota Onsite Sewage Treatment Program

Proposed Design Map

MINNESOTA POLLUTION CONTROL AGENCY

Project ID:

Property Address: 8286 Hidden Bay Ct N, Lake Elmo, MN 55402

Date Completed: 6/1/2023

Elevations in feet Benchmark: 935.8 ft BM Location - Top of Existing Pump Tank Manhole Cover

System Corners:		Soil Observation:				Bury Depth
NW:	933.4 ft	SB1:	936.2 ft	Existing Tanks - Inlet Invert	932.8 ft	ft
NE:	935.6 ft	SB2:	936.0 ft	**New Tanks**		
SW:	936.5 ft	SB3:	936.0 ft	1st Tank - Ground	ft	
SE:	937.1 ft	SP1:	936.0 ft	- Inlet Invert	ft	ft
				2nd Tank - Ground	ft	
Rockbed -	ft			- Inlet Invert	ft	ft
Rockbed -	ft			Pump Tank - Ground	ft	
				- Inlet Invert	ft	ft
				Pump Intake	ft	

Mapping Checklist

Locate

- ☐ Lot Dimensions/Property Lines
- ☐ Dwellings and Other Improvements
- ☐ Existing or Proposed System(s)
- ☐ Replacement Area
- ☐ Unsuitable Area(s)
- ☐ Public Water Supply Wells
- ☐ Pumping Access
- ☐ Inner Wellhead Zone
- ☐ Other: _____
- ☐ Other: _____

Easements

- ☑ Phone
- ☑ Electric
- ☐ Gas
- ☐ Other: _____
- ☐ Other: _____

Elevations

- ☐ Benchmark
- ☐ Borings
- ☐ Perc Tests
- ☐ Horizontal and Vertical Reference Points

Setbacks

- ☑ Building
- ☐ All water wells within 100 feet
- ☐ Pressure Pipe
- ☐ Water Suction
- ☐ Streams, Lakes
- ☐ Floodway and Fringe
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Elevation Difference: Pump Intake (BURY DEPTH OF 4 FEET FROM 942.0') 933.5' to 940.0' = 6.5'

University of Minnesota Onsite Sewage Treatment Program

Field Evaluation Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

1. Project Information

v 03.15.2023

Property Owner/Client: Otto | Project ID:

Site Address: 8286 Hidden Bay Ct N, Lake Elmo, MN 55402 | Date Completed: 6/1/2023

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): Lawn | Landscape position: Back/ Side Slope

Percent slope: 12 % | Slope shape: Convex, Convex | Slope direction: northwest

Describe the flooding or run-on potential of site:

Describe the need for Type III or Type IV system: The mound will be placed in footprint of existing system.

Note: The new system will be built after removing existing mound to grade 936.5'

Proposed soil treatment area protected? (Y/N): Yes | If yes, describe: Stakes

4. General Soils Information

Filled, Compacted, Disturbed areas (Y/N): Yes

If yes, describe: The soil treatment area will be located in place of existing mounds after removed.

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: 4 | Soil observation logs attached (Y/N): Yes

Percolation tests performed & attached (Y/N): No

5. Phase I. Reporting Information

	Depth		Elevation		
Limiting Condition*:	0	in	**936.5**	ft	**Most Restrictive Depth Identified from List Below*
Periodically saturated soil:	0	in	936.5	ft	Soil Texture: Clay Loam
Standing water:		in		ft	Percolation Rate: min/inch
Bedrock:		in		ft	Soil Hyd Loading Rate: 0.45 gpd/sq.ft
Benchmark Elevation:	935.8	ft			Elevations and Benchmark on map? (Y/N): Yes

Benchmark Elevation Location: Top of Existing Pump Tank Manhole Cover

Differences between soil survey and field evaluation: Clay Loam was observed at within 12" of surface at SB1

Site evaluation issues / comments:

Anticipated construction issues: The new tanks must be placed with no more than 4' of cover if possible.

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 03.15.2023

Client:	Otto	Location / Address:	8286 Hidden Bay Ct N, Lake Elmo, MN 55402

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

Landscape Position:	Shoulder	Slope %:	12.0	Slope shape:	Convex, Convex	Flooding/Run-On potential:	No
Vegetation:	Lawn	Soil survey map units:	1033; Udifluvents			Surface Elevation-Relative to benchmark:	936.2
Date/Time of Day/Weather Conditions:		5/23/2023	1:20 PM	Sunny		Limiting Layer Elevation:	935.2
Observation #/Location:	SB1	Southwest end of Mound Upslope		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	Fine Sandy Loam	5	10YR	3/2	None		None	None	Granular	Weak	Friable
6-10	Silt Loam	5	10YR	3/4	None		None	None	Granular	Moderate	Friable
10-13	Clay Loam	10	7.5YR	4/3	None		None	None	Blocky	Strong	Firm
13-20	Clay Loam	10	7.5YR	4/4	10YR	5/2	Depletions	S2	Blocky	Strong	Extremely Firm
					5YR	4/6	Concentrations	S1			
20-30	Clay Loam	5	5YR	4/4	10YR	6/2	Depletions	S2	Blocky	Strong	Extremely Firm
					5YR	5/6	Concentrations	S1			

Comments: Limiting Layer - 13" soil credit

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

Jesse Kloeppner		L4043	5/23/2023
(Designer/Inspector)	(Signature)	(License #)	(Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

(LGU/Designer/Inspector)	(Signature)	(Cert #)	(Date)

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 03.15.2023

Client:	Otto	Location / Address:	8286 Hidden Bay Ct N, Lake Elmo, MN 55402

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

Landscape Position:	Shoulder	Slope %:	12.0	Slope shape:	Convex, Convex	Flooding/Run-On potential:	No
Vegetation:	Lawn	Soil survey map units:	1033; Udifluvents			Surface Elevation-Relative to benchmark:	936.0
Date/Time of Day/Weather Conditions:		5/23/2023	1:50 PM	Sunny		Limiting Layer Elevation:	936.0
Observation #/Location:	SB2	Northwest end of Mound STA		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	Fine Sandy Loam	0	10YR	3/2	None		None	None	Granular	Weak	Friable
6-10	Silt Loam	0	10YR	3/4	None		None	None	Blocky	Moderate	Friable
10-13	Clay Loam	5	7.5YR	4/4	10YR	5/2	Depletions	S2	Blocky	Strong	Firm
13-20	Clay Loam	0	7.5YR	4/6	10YR	6/2	Depletions	S2	Blocky	Strong	Extremely Firm
					7.5YR	4/6	Concentrations	S1			
20-30	Clay Loam	0	5YR	4/4	10YR	6/2	Depletions	S2	Blocky	Strong	Extremely Firm
					5YR	5/6	Concentrations	S1			

Comments: Limiting Layer - 0" soil credit.

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

Jesse Kloeppner		L4043	
(Designer/Inspector)	(Signature)	(License #)	(Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

(LGU/Designer/Inspector)	(Signature)	(Cert #)	(Date)

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 03.15.2023

Client:	Otto	Location / Address:	8286 Hidden Bay Ct N, Lake Elmo, MN 55402

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

Landscape Position:	Shoulder	Slope %:	4.0	Slope shape:	Convex, Convex	Flooding/Run-On potential:	No
Vegetation:	Lawn	Soil survey map units:	1033; Udifluvents			Surface Elevation-Relative to benchmark:	936.0
Date/Time of Day/Weather Conditions:		5/23/2023	2:05 PM	Sunny		Limiting Layer Elevation:	936.0
Observation #/Location:	SB3	Northeast end of Mound STA		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	Loam	5	10YR	3/2	None		None	None	Granular	Weak	Friable
6-10	Loam	0	10YR	3/4	None		None	None	Granular	Weak	Friable
10-20	Medium Sand	0	10YR	4/3	None		None	None	Single grain	Structureless	Loose
20-30	Medium Sand	0	10YR	5/3	None		None	None	Single grain	Structureless	Loose
30-46	Fine Sandy Loam	0	10YR	3/3	10YR	4/6	Concentrations	S1	Granular	Weak	Friable
			10YR	3/2	10YR	5/2	Depletions	S2			

Comments: Limiting Layer - 0" soil credit.

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

Jesse Kloeppner		L4043	5/23/2023
(Designer/Inspector)	(Signature)	(License #)	(Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

(LGU/Designer/Inspector)	(Signature)	(Cert #)	(Date)

University of Minnesota Onsite Sewage Treatment Program

Soil Observation Log

Project ID:

v 03.15.2023

Client:	Otto	Location / Address:	8286 Hidden Bay Ct N, Lake Elmo, MN 55402

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

Landscape Position:	Shoulder	Slope %:	4.0	Slope shape:	Convex, Convex	Flooding/Run-On potential:	No
Vegetation:	Lawn	Soil survey map units:	1033; Udifluvents			Surface Elevation-Relative to benchmark:	937.0
Date/Time of Day/Weather Conditions:		5/23/2023	1:35 PM	Sunny		Limiting Layer Elevation:	937.0
Observation #/Location:	SP1	Southeast Corner of Mound Upslope		Observation Type:	Pit		

Depth (in)	Texture	Rock Frag. %	Matrix Color(s)		Mottle Color(s)		Redox Kind(s)	Indicator(s)	I-------- Structure----------I		
									Shape	Grade	Consistence
0-6	Fine Sandy Loam	5	10YR	3/2	None		None	None	Granular	Weak	Friable
6-12	Loam	5	10YR	3/4	None		None	None	Granular	Weak	Friable
12-19	Coarse Sand	>50	10YR	4/3	None		None	None	Single grain	Structureless	Loose
19-33	Medium Sand	10	10YR	5/3	None		None	None	Single grain	Structureless	Loose
33-45	Loamy Fine Sand	5	10YR	4/2	10YR	6/2	Depletions	S2	Granular	Weak	Friable
			10YR	3/2	10YR	5/6	Concentrations	S1			

Comments: Limiting Layer - 0" soil credit - The boring is the side of the Existing Mound. Remove soil to 936.5' to build new mound. Cut soil to 936.5'.

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

Jesse Kloeppner		L4043	5/23/2023
(Designer/Inspector)	(Signature)	(License #)	(Date)

Optional Verification: I hereby certify that this soil observation was verified according to Minn. R. 7082.0500 subp. 3 A. The signature below represents an infield verification of the periodically saturated soil or bedrock at the proposed soil treatment and dispersal site.

(LGU/Designer/Inspector)	(Signature)	(Cert #)	(Date)

Textures:	
C	Clay
SiC	Silty Clay
SC	Sandy Clay
CL	Clay Loam
SiCL	Silty Clay Loam
SCL	Sandy Clay Loam
Si	Silt
SiL	Silt Loam
L	Loam
SL	Sandy Loam*
LS	Loamy Sand*
S	Sand*

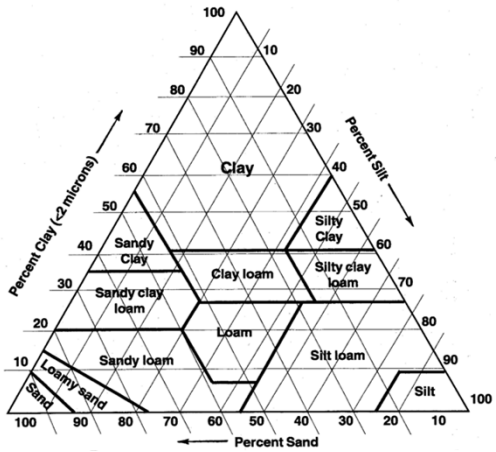
*Sand Modifiers:	
Co	Coarse
M	Medium
F	Fine
VF	Very Fine

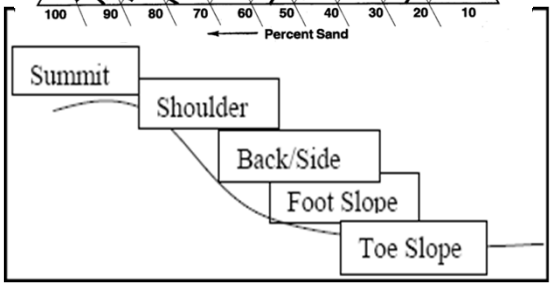
Topsoil Indicator(s) of Saturation:

T1. Wetland Vegetation
T2. Depressional Landscape
T3. Organic texture or organic modifiers
T4. N 2.5/ 0 color
T5. Redox features in topsoil
T6. Hydraulic indicators

Subsoil Indicator(s) of Saturation:

S1. Depleted matrix (value >/=4 and chroma </=2)
S2. Distinct gray or red redox features (any Matrix Hue)
S3. Matrix Hue of 5Y with a chroma </= 3
S4. Matrix Hue of 7.5 YR or redder with faint redox concentrations or redox depletions





Shape:

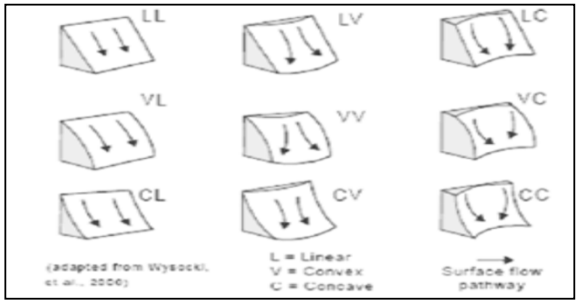
Granular	The peds are approximately spherical or polyhedral and are commonly found in topsoil. These are the small, rounded peds that hang onto roots when soil is turned over.
Platy	The peds are flat and plate like. They are oriented horizontally and are usually overlapping. Platy structure is commonly found in forested areas just below the leaf litter or shallow topsoil.
Blocky	The peds are block-like or polyhedral, and are bounded by flat or slightly rounded surface that are castings of the faces of surrounding peds. Blocky structure is commonly found in the lower topsoil and subsoil.
Prismatic	Flat or slightly rounded vertical faces bound the individual peds. Peds are distinctly longer vertically, and faces are typically casts or molds of adjoining peds. Prismatic structure is commonly found in the lower subsoil.
Single Grain	The structure found in a sandy soil. The individual particles are not held together.

Slope Shape:

Slope shape is described in two directions:
up and down slope (perpendicular to the contour),
and across slope (along the horizontal contour);
e.g. Linear, Convex or LV'.

Grade:

Loose	No peds, sandy soil
Weak	Poorly formed, indistinct peds, barely observable in place
Moderate	Well formed, distinct peds, moderately durable and evident, but not distinct in undisturbed soil
Strong	Durable peds that are quite evident in un-displaced soil, adhere weakly to one another, withstand displacement, and become separated when soil is disturbed
Massive	No observable aggregates, or no orderly arrangement of natural lines of weakness



Consistence:

Loose	Intact specimen not available
Friable	Slight force between fingers
Firm	Moderate force between fingers
Extremely Firm	Moderate force between hands or slight foot pressure
Rigid	Foot pressure

University of Minnesota Onsite Sewage Treatment Program

Design Summary Page

Minnesota Pollution Control Agency

1. PROJECT INFORMATION

v 03.15.2023

Property Owner/Client:	Otto	Project ID:	
Site Address:	8286 Hidden Bay Ct N, Lake Elmo, MN 55402	Date:	06/01/23
Email Address:		Phone:	

2. DESIGN FLOW & WASTE STRENGTH

Attach waste strength data/estimated strength for Other Establishments

Design Flow: 450 GPD Anticipated Waste Type: Residential

BOD: 170 mg/L TSS: 60 mg/L Oil & Grease: 25 mg/L

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

3. HOLDING TANK SIZING

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

Code Minimum **Holding Tank** Capacity: _____ Gallons with _____ Tanks or Compartments

Recommended **Holding Tank** Capacity: _____ Gallons with _____ Tanks or Compartments

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

Comments: _____

4. SEPTIC TANK SIZING

A. Residential dwellings:

Number of Bedrooms (Residential): 3

Code Minimum **Septic Tank** Capacity: 2000 Gallons with 2 Tanks or Compartments

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

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

B. Other Establishments:

Waste received by: _____ _____ GPD x _____ Days Hyd. Retention Time

Code Minimum **Septic Tank** Capacity: _____ Gallons with _____ Tanks or Compartments

Recommended **Septic Tank** Capacity: _____ Gallons with _____ Tanks or Compartments

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

*** Other Establishments Require Department of Labor and Industry Approval and Inspection for Building Sewer ***

5. PUMP TANK SIZING

Soil Treatment Dosing Tank				**Other Component Dosing Tank:**			
Pump Tank Capacity (Minimum):	1000 Gal			Pump Tank Capacity (Minimum):	Gal		
Pump Tank Capacity (Recommended):	1000 Gal			Pump Tank Capacity (Recommended):	Gal		
Pump Req: 19.0 GPM	Total Head	11.7 ft		Pump Req: GPM	Total Head	ft	
Supply Pipe Dia. 2.00 in	Dose Vol:	110.0 gal		Supply Pipe Dia. in	Dose Vol:	Gal	

*** Flow measurement device must be incorporated for any system with a pump: Elapsed Time Meter and/or Event Counter ***

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:	935.8 ft	Benchmark Location:	Top of Existing Pump Tank Manho
MPCA System Type:	Type III	Distribution Media:	Rock
Type III/IV/V Details:	Mound will use 36" of sand		

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: See Soil Boring Logs

	Depth		Depth		Elevation of Limiting Condition		
Limiting Condition:	0	inches	0.0	ft	936.50	ft	*Critical for system compliance*
Minimum Req'd Separation:	36	inches	3.0	ft			*Distribution Elevation >Code Max Depth*
					Elevation		
Code Max System Depth*:	Mound	inches	-3.0	ft	939.50	ft	**Elevation OK**

*This is the maximum depth to the bottom of the distribution media for required separation. Negative Depth (ft) requires a mound.

Designed Distribution Elevation: 939.5 ft Minimum Sand Depth: 36.0 inches

A. Soil Texture:	Clay Loam	B. Organic Loading Rate (optional):		lbs/sq.ft/day	0
C. Soil Hyd. Loading Rate:	0.45 GPD/ft^2	D: Percolation Rate:		MPI	
E. Contour Loading Rate:	10	Note:			
F. Measured Land Slope:	12.0 %	Note:			
Comments:					

8. SOIL TREATMENT AREA DESIGN SUMMARY

Trench:

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

Bed:

Dispersal Area		sq.ft	Sidewall Depth		in	Maximum Bed Depth	in
Bed Width		ft	Bed Length		ft	Designed Bed Depth	in

Mound:

Dispersal Area	450.0	sq.ft	Bed Length	45.0	ft	Bed Width	10.0 ft
Absorption Width	26.0	ft	Clean Sand Lift	3.0	ft	Berm Width (0-1%)	ft
Upslope Berm Width	11.1	ft	Downslope Berm	29.1	ft	Endslope Berm Width	18.6 ft
Total System Length	82.2	ft	System Width	50.1	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:

Dispersal Area		sq.ft	Bed Length		ft	Bed Width		ft
Upslope Berm		ft	Downslope Berm		ft	Finished Height		ft
System Length		ft	Endslope Berm		ft	System Width		ft

Level & Equal Pressure Distribution Soil Treatment Area

No. of Laterals	3		Lateral Diameter	1.50	in	Lateral Spacing	3	ft
Perforation Spacing	3	ft	Perforation Diameter	3/16	in	Drainback Volume	2	gal
Min Dose Volume	57	gal	Max Dose Volume	113	gal	Total Dosing Volume	112	gal

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

Organic Loading to Soil Treatment

A. Starting BOD Concentration = Design Flow X 0.7 X Starting BOD (mg/L) X 8.35 ÷ 1,000,000

_____ gpd X _____ mg/L X 8.35 ÷ 1,000,000 = _____ lbs. BOD/day (Organic Loading Design)

B. Organic Loading to Soil Treatment Area: (enter loading value in 7B)

_____ mg/L X _____ gpd X 0.7 X 8.35 ÷ 1,000,000 ÷ _____ sq.ft = _____ lbs./day/sqft

HSW Technology Strength Reduction

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

_____ gpd X _____ mg/L X 8.35 ÷ 1,000,000 = _____ lbs. BOD/day (HSW Technology Design)

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

_____ gpd X _____ mg/L X 8.35 ÷ 1,000,000 = _____ lbs. BOD/day (HSW Technology Design)

Lbs. BOD To Be Removed: _____ lbs. BOD/day (HSW Technology Design)

Pretreatment Technology: _____ *Must Meet or Exceed Target

Disinfection Technology: _____ *Required for Levels A & B

10. Comments/Special Design Considerations:

1. Minimum Volumes for New Tanks: 1st Tank 1,000-gallons; 2nd Tank 1,000-gallons; Pump Tank 1,000-gallons.
2. The location for the sewage tanks is only proposed. Discuss options with Licensed Installer.
3. The new tanks must be placed with no more than 4' of cover if possible.
4. The existing tanks and mound will be removed and abandoned. The mound will be removed to an elevation of 936.5' to build the new mound. Scratch the entire soil absorption area.
5. Carefully remove trees in the soil treatment area.
6. A retaining wall may be necessary to allow the Eastern edge of the mound to be reduced from 941.5' to 933.4' at the edge of the property to the East.
7. All berm slopes are calculated using 3:1 slope ratio. Berm slopes cannot extend beyond the edge of property. Additional can be used to grade the berms if desired.
8. According to the survey data available from E.G. Rud, this plan will require a variance of 36' 8" to the OHWM of 929.3' along the Lake Shore and Channel. The City of Lake Elmo must grant this variance.

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

Jesse Kloeppner		L4043	06/01/23
(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 03.15.2023

A. Design Flow:	450	GPD
B. Soil Loading Rate:	0.45	GPD/sqft
C. Depth to Limiting Condition	0.0	ft
D. Percent Land Slope:	12.0	%
E. Media (Sand) Loading Rate:	1.0	GPD/sqft
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	← OR →	1.0, 1.3, 2.0, 2.4, 2.6	→	≤12
61-120 mpi		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: Absorption Area Loading Rate (gpd/ft²)	Treatment Level C: Mound Absorption Ratio	Treatment Level A, A-2, B,: Absorption Area Loading Rate (gpd/ft²)	Treatment Level A, A-2, B,: 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. Hydraulic Absorption Required Bottom Area: Design Flow (1A) ÷ Design Media Loading Rate(1E)

450 GPD ÷ 1.0 GPD/sqft = 450 sq.ft

Organic Sizing (OPTIONAL)

B. Organic Absorption Bed Area = Organic Loading (Summary 9A) ÷ Organic Soil Loading Rate (Summary 7B)

lbs BOD ÷ lbs BOD/sq.ft = sq.ft

C. Required Bed Area = Greater of Hydraulic (1D) or Organic Bed Area (1E) 450 sq.ft

D. Designed Dispersal Media Area: 450 sq.ft *Optional upsizing of area to be larger than 2C*

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

C. Calculate Contour Loading Rate: Bed Width(2B) X Design Media Loading Rate(1E)

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

D. Calculate Minimum Dispersal Bed Length: Dispersal Bed Area(2A) ÷ Bed Width(2B)

450 sqft ÷ 10.0 ft = 45.0 ft

If a larger dispersal media Length is desired, enter size: ft

3. ABSORPTION AREA SIZING

A. Calculate Absorption Width: Bed Width(2B) X Mound Absorption Ratio(1F)

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(1F) - Bed Width(2B)

26.0 ft - 10.0 ft = 16.0 ft

4. DISTRIBUTION MEDIA: Project ID:

Select Dispersal Media: Rock — Enter Either 4A or 4B

A. Rock Depth Below Distribution Pipe

6 in

B. Registered Media

Registered Media Depth in

Check registered product information for specific application details and design

Specific Media Comments:

5. MOUND SIZING Project ID:

A. Clean Sand Lift: Required Separation - Depth to Limiting Condition = Clean Sand Lift (1 ft minimum)

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

B. Upslope Height: Clean Sand Lift(6A) + Depth of Media(4AorB) +Depth to Cover Pipe+ Depth of Cover (1 ft)

3.0 ft + 0.50 ft + 0.5 ft + 1.0 ft = 5.0 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): 2.21

D. Calculate Upslope Berm Width: Multiplier (5C) X Upslope Mound Height (5B)

2.21 X 5.0 ft = 11.1 ft

E. Calculate Drop in Elevation Under Bed: Bed Width(2B) X Land Slope(1D) ÷ 100 = Drop (ft)

10.0 ft X 12.0 % ÷ 100 = 1.20 ft

F. Calculate Downslope Mound Height: Upslope Height(5B) + Drop in Elevation(5E)

5.0 ft + 1.20 ft = 6.2 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): 4.69

H. Calculate Downslope Berm Width: Downslope Multiplier(5G) X Downslope Height (5F)

4.69 x 6.2 ft = 29.1 ft

I. Calculate Minimum Berm to Cover Absorption Area: Downslope Absorption Width(3A) + 4 feet

16.0 ft + 4 ft = 20.0 ft

J. Design Downslope Berm = greater of 5H and 5I: 29.1 ft

K. Select Endslope Berm Multiplier: 3.00 *(usually 3.0 or 4.0)*

L. Calculate Endslope Berm Width = Endslope Berm Multiplier(5K) X Downslope Mound Height(5F)

3.00 X 6.2 ft = 18.6 ft

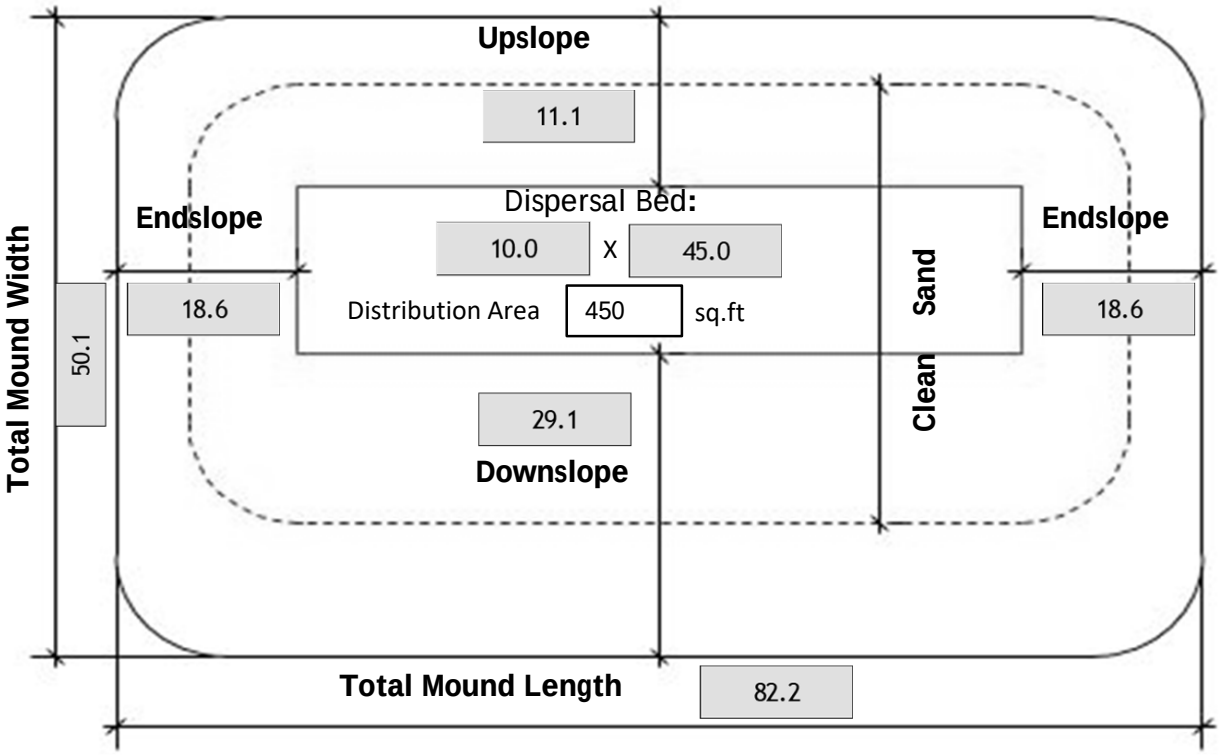
M. Calculate Mound Width: Upslope Berm Width(5D) + Bed Width(2B) + Downslope Berm Width(5J)

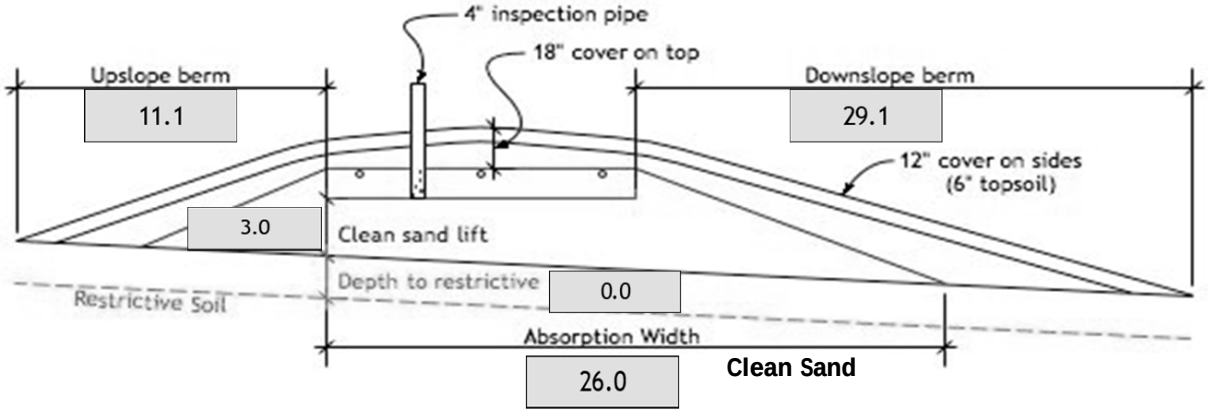
11.1 ft + 10.0 ft + 29.1 ft = 50.1 ft

N. Calculate Mound Length: Endslope Berm Width (5L) + Bed Length(2D) + Endslope Berm Width(5L)

18.6 ft + 45.0 ft + 18.6 ft = 82.2 ft

6. MOUND DIMENSIONS (Feet) Project ID:





Elevation to Benchmark

Required Separation:	36	(in)	Elevation Limiting Layer:	936.5	ft
Distribution Media:	Rock		Elevation required Separation:	939.5	ft
Media Depth:	6.0	(in)	Elevation Distribution Media Bottom:	939.5	ft
Manifold Connection:	End		Elevation Top of Media(min):	940.5	ft
Lateral Pipe Diameter:	1.50	(in)	Elevation Top of System(min):	941.5	ft
Perforation Size:	3/16	(in)	Perforation Spacing:	36.0	(in)

If Split and Non-Level Pressure Distribution Used: See Non-Level Pressure Distribution Form

Comments:

All berm slopes calculated using 3:1 slope ratio.

University of Minnesota Onsite Sewage Treatment Program

Mound Materials Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

Project ID:

v 03.15.2023

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

(6 in + 2.0 in) ÷ 12 X 45.0 ft X 10.0 ft = 300.0 cu.ft

Divide cu.ft by 27 cu.ft/cu.yd to calculate cubic yards: 300.0 cu.ft ÷ 27 = 11.1 cu.yd

Add 30% for constructability: 11.1 cu.yd X 1.3 = 14.4 cu.yd

B. Calculate *Clean Sand Volume:*

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

3.6 ft X 10.0 ft X 45 ft = 1620 cu.ft

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*

cu.ft + cu.ft + cu.ft = cu.ft

For a Mound on a slope greater than 1%

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

((5.0 ft - 1) X 3.0 ft X 45.0) ÷ 2 = 270.0 cu.ft

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

((6.2 ft - 1) X 16.0 ft X 45.0) ÷ 2 = 1872.0 cu.ft

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

(6.2 ft - 1) X 3.0 ft X 10.0 ft = 156.0 cu.ft

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

270.0 cu.ft + 1872.0 cu.ft + 156.0 cu.ft + 1620.0 cu.ft = 3918.0 cu.ft

Divide cu.ft by 27 cu.ft/cu.yd to calculate cubic yards: 3918.0 cu.ft ÷ 27 = 145.1 cu.yd

Add 30% for constructability: 145.1 cu.yd X 1.3 = 188.6 cu.yd

C. Calculate *Sandy Berm Volume:*

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

(5.6 - 0.5)ft X 50.1 ft X 82.2) ÷ 2 = 10507.3 cu.ft

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

10507.3 cu.ft - 3918.0 cu.ft - 300.0 cu.ft = 6289.3 cu.ft

Divide cu.ft by 27 cu.ft/cu.yd to calculate cubic yards: 6289.3 cu.ft ÷ 27 = 232.9 cu.yd

Add 30% for constructability: 232.9 yd^3 x 1.3 = 302.8 cu.yd

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

50.1 ft X 82.2 ft X 0.5 ft = 2060.3 cu.ft

Divide cu.ft by 27 cu.ft/cu.yd to calculate cubic yards: 2060.3 cu.ft ÷ 27 = 76.3 cu.yd

Add 30% for constructability: 76.3 cu.yd X 1.3 = 99.2 cu.yd

Pressure Distribution Design Worksheet

University of Minnesota Onsite Sewage Treatment Program

MINNESOTA POLLUTION CONTROL AGENCY

Project ID: v 03.15.2023

1. Media Bed Width: 10 ft

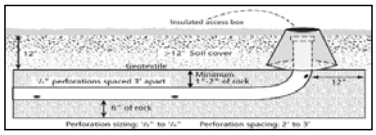
2. Minimum Number of Laterals in system/zone = Rounded up number of [(Media Bed Width - 4) ÷ 3] + 1.

[(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(1.) - 2 Feet.

45.0 - 2ft = 43.0 ft *Perforation can not be closer then 1 foot from edge.*

7. Determine the *Number of Perforation Spaces*. Divide the *Length of Laterals(6.)* by the *Perforation Spacing* (4.) and round down to the nearest whole number.

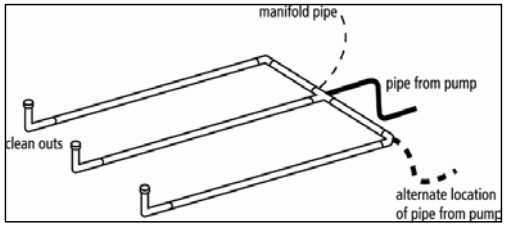
Number of Perforation Spaces = 43.0 ft ÷ 3.0 ft = 14 Spaces

8. *Number of Perforations per Lateral* is equal to 1.0 plus the *Number of Perforation Spaces(7.)*. 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.

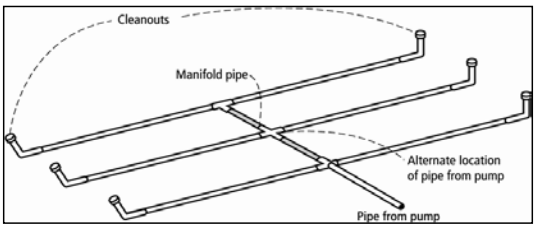
Perforations Per Lateral = 14 Spaces + 1 = 15 Perfs. Per Lateral

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

¼ 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



END Connection



CENTER Connection

Perf Per Lateral: 15

Perf Per Lateral Equal Split: 8 | 7

OPTIONAL Perf Per Lateral Non-Equal Split*: ____ | ____

* must not exceed maximum number perfs per lateral in table

9. *Total Number of Perforations* equals the *Number of Perforations per Lateral (8.)* multiplied by the *Number of Perforated Laterals.(3.)*

15 Perf. Per Lat. X 3 Number of Perf. Lat. = 45 Total Number of Perf.

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

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

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

If Center Manifold Connection the max number of perfs per lateral in the table can be doubled.

University of Minnesota Onsite Sewage Treatment Program

Pressure Distribution Design Worksheet

MINNESOTA POLLUTION CONTROL AGENCY

13. 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	45	ft =	450	sq.ft

b. *Square Foot per Perforation = Bed Area* ÷ by the *Total Number of Perfs*

450	sqft ÷		45	perf =	10.0	sq.ft/perf

14. Select *Minimum Average Head* : 1.0 ft

15. Select *Perforation Discharge* based on Table: 0.41 GPM per Perf

16. *Flow Rate = Total Number of Perfs(9.) X Perforation Discharge(15.)*

45	Perfs X	0.41	GPM per Perforation =	19	GPM

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

18. *Volume of Distribution Piping = Number of Perforated Laterals(3.) X Length of Laterals(6.) X Volume of Liquid Per Foot of Distribution Piping (17.)*

3	X	43	ft X	0.110	gal/ft =	14.2	Gallons

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

14.2	gals X	4	=	56.8	Gallons

20. Maximum Delivered Volume = Design flow x 25%

450.0	gpd X	25%	=	112.5	Gallons

21. Minimum Delivered vs Maximum Delivered evaluation: Volume ratio correct

Perforation Discharge (GPM)				
Head (ft)	Perforation Diameter			
	1/8	3/16	7/32	1/4
1.0[a]	0.18	0.41	0.56	0.74
1.5	0.22	0.51	0.69	0.9
2.0[b]	0.26	0.59	0.80	1.04
2.5	0.29	0.65	0.89	1.17
3.0	0.32	0.72	0.98	1.28
4.0	0.37	0.83	1.13	1.47
5.0[c]	0.41	0.93	1.26	1.65
1 foot	Dwellings with 3/16 inch to 1/4 inch perforations			
2 feet	Dwellings with 1/8 inch perforations			
	Other establishments and MSTS with 3/16 inch to 1/4 inch perforations			
5 feet	Other establishments and MSTS with 1/8 inch perforations			

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 STA Pump Selection Design Worksheet

1. PUMP CAPACITY Project ID: v 03.15.2023

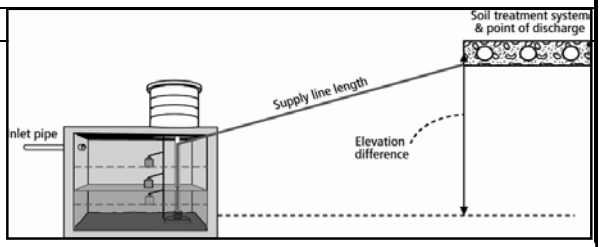
Pumping to Gravity or Pressure Distribution: Pressure

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

B. If pumping to a pressurized distribution system: 19.0 GPM

C. Enter pump description: Demand Dosing

2. HEAD REQUIREMENTS



A. Elevation Difference between pump and point of discharge: 6.5 ft

B. Distribution Head Loss: 5 ft

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

*** Common additional head loss: gate valve = 1 ft each, globe valve = 1.5 ft each, splitter valve = see manufacturers details**

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

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

D. 1. Supply Pipe Diameter: 2.0 in

2. Supply Pipe Length: 13 ft

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

Friction Loss = 1.02 ft per 100ft of pipe

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* X 1.25 = *Equivalent Pipe Length*

13 ft X 1.25 = 16.3 ft

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

Supply Friction Loss =

1.02 ft per 100ft X 16.3 ft ÷ 100 = 0.2 ft

H. *Total Head* requirement is the sum of the *Elevation Difference(2A)* + Distribution Head Loss(2B) + Additional Head Loss(2C) + Supply Friction Loss(2G)

6.5 ft + 5.0 ft + _____ ft + 0.2 ft = 11.7 ft

3. PUMP SELECTION

A pump must be selected to deliver at least **19.0** GPM with at least **11.7** feet of total head.

Comments:

Goulds Pump PE41 Pump Curve: 51 GPM @ 11.7 TDH

Elevation Difference: Pump Intake (BURY DEPTH OF 4 FEET FROM 942.0') 933.5' to 940.0' = 6.5'

STA Dosing Pump Tank Design Worksheet (Demand Dose)

DETERMINE TANK CAPACITY AND DIMENSIONS | Project ID: | v 03.15.2023

1. A. *Design Flow (Design Sum.1A)*: 450 GPD C. Tank Use: **Dosing**
   B. Min. required pump tank capacity: 1000 Gal D. Recommended pump tank capacity: 1000 Gal

2. A. Tank Manufacturer: Wieser Concrete B. Tank Model: W1000-R
   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* (2D)

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

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

   -Item 19 of the Pressure Distribution STA or Item 11 of Non-level STA 57 **Gallons (Minimum dose)** 2.3 inches/dose

5. Calculate *Maximum Pumpout Volume* (25% of Design Flow(1A))

   Design Flow: 450 GPD X 0.25 = 113 **Gallons (Maximum dose)** 4.5 inches/dose

6. *Select a pumpout volume that meets both Minimum and Maximum:* 110 Gallons

7. Calculate *Doses Per Day* = Design Flow(1A) ÷ *Delivered Volume(6.)*

   450 gpd ÷ 110 gal = 4.09 *Doses**

   *** Doses need to be equal to or greater than 4**

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

8. Calculate Drainback:

   A. *Diameter of Supply Pipe* = 2 inches

   B. Length of Supply Pipe = 13 feet

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

   D. *Drainback = Length of Supply Pipe(8B)* X *Volume of Liquid Per Lineal Foot of Pipe(8C)*

   13 ft X 0.170 gal/ft = 2.2 Gallons

9. *Total Dosing Volume = Delivered Volume(6.)* + *Drainback* (8D)

   110 gal + 2.2 gal = 112 Gallons

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

    3 in X 25.0 gal/in = 75.0 Gallons

11. Reserve Capacity Volume = [Tank Liquid Depth(2E) - Alarm Float Depth(10.)] x gallons per inch of tank(2D)

    [40.0 in - 19.5 in] X 25.0 gal/in = 512.8 Gallons

DEMAND DOSE FLOAT SETTINGS **Alarm and Pump are to be wired on separate circuits and inspected by the electrical inspector**

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

    Total Dosing Volume(9.) ÷ Gallons Per Inch(2D)

    112 gal ÷ 25.0 gal/in = 4.5 inches

13. Measuring from bottom of tank:

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

    10 in + 2 in = 12 inches

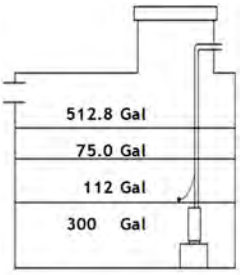
    B. *Distance to set Pump On Float=Distance to Set Pump-Off Float(13A) + Float Separation Distance(12.)*

    12 in + 4.5 in = 16 inches

    C. *Distance to set Alarm Float = Distance to set Pump-On Float(13B) + Alarm Depth* (2-3 inches)(10.)

    16 in + 3.0 in = 19 inches

Inches for Dose:	**4.5**	in
Alarm Depth	**19.5**	in
Pump On	**16.5**	in
Pump Off	**12.0**	in



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	Otto	Email	
Property Address	8286 Hidden Bay Ct N, Lake Elmo, MN 55402	Property ID	09.029.21.23.0013
System Designer	Kloeppner Services & Designs	Contact Info	763-843-4114
System Installer		Contact Info	
Service Provider/Maintainer		Contact Info	
Permitting Authority	Washington County - Public Health & Environment	Contact Info	651-430-6655
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.

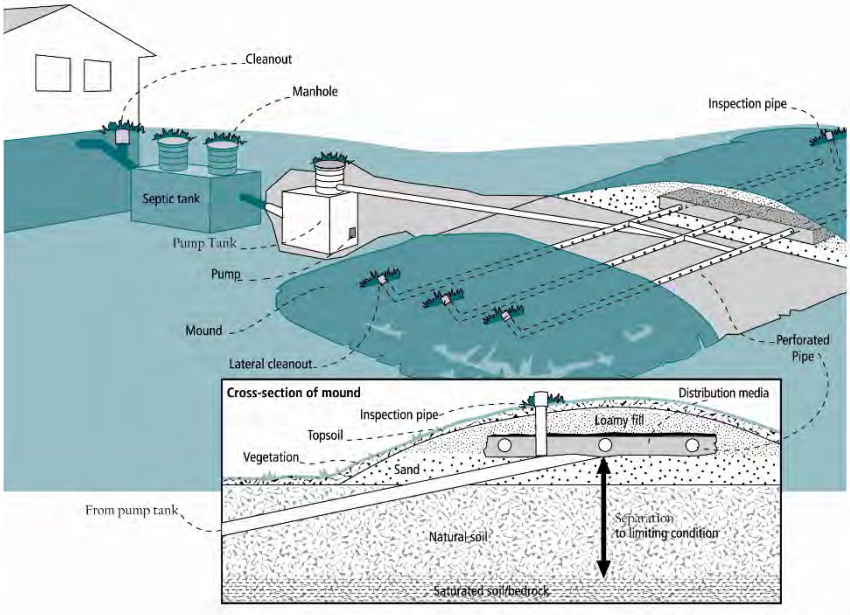
For more information see http://septic.umn.edu

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: 3

System capacity/ design flow (gpd): 450

Anticipated average daily flow (gpd): 315

Comments_____

Business? : ◯ Y ◉ N What type? _____

Well Construction

Well depth (ft): >50

- ❑ Cased well Casing depth: >50
- ❑ Other (specify): _____

Distance from septic (ft): > 50

Is the well on the design drawing? ◉ Y ◯ N

Septic Tank

- ❑ First tank *Tank volume:* 1,000 *gallons*
  Does tank have two compartments? ◯ Y ◉ N
- ❑ Second tank *Tank volume:* 1,000 *gallons*
- ❑ Tank is constructed of Concrete
- ❑ Effluent screen: ◉ Y ◯ N Alarm ◉ Y ◯ N

- ❑ Pump Tank 1,000 *gallons*
- ❑ Effluent Pump *make/model*: Goulds PE41 or equal
  Pump capacity 19 GPM
  TDH 11.7 Feet of head
- ❑ Alarm location TBD

Soil Treatment Area (STA)

Mound/At-Grade area (width x length): 49.0 ft x 81.2 ft

Rock bed size (width x length): 10 ft x 45 ft

Location of additional STA: _____

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: 112 gallons: Pump run time: 2.10 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:

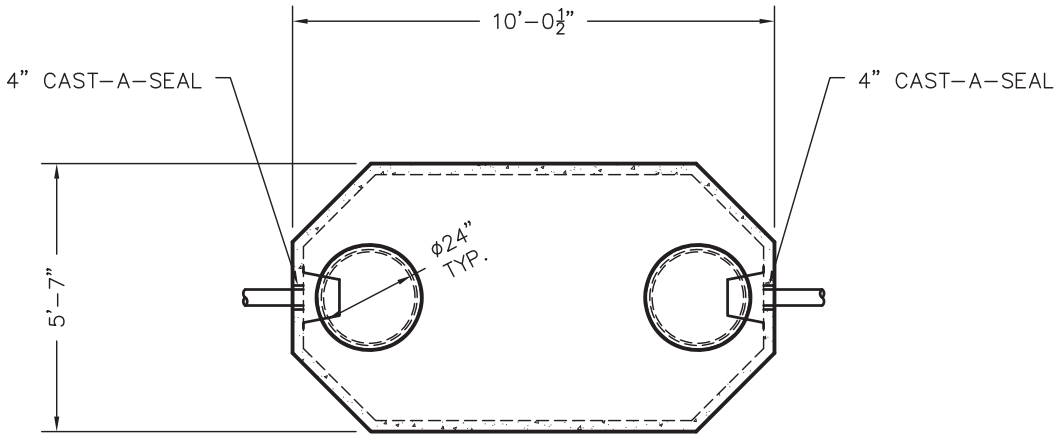
"As the owner of this SSTS, I understand it is my responsibility to properly operate and maintain the sewage treatment system on this property, utilizing the Management Plan. If requirements in this Management Plan are not met, I will promptly notify the permitting authority and take necessary corrective 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

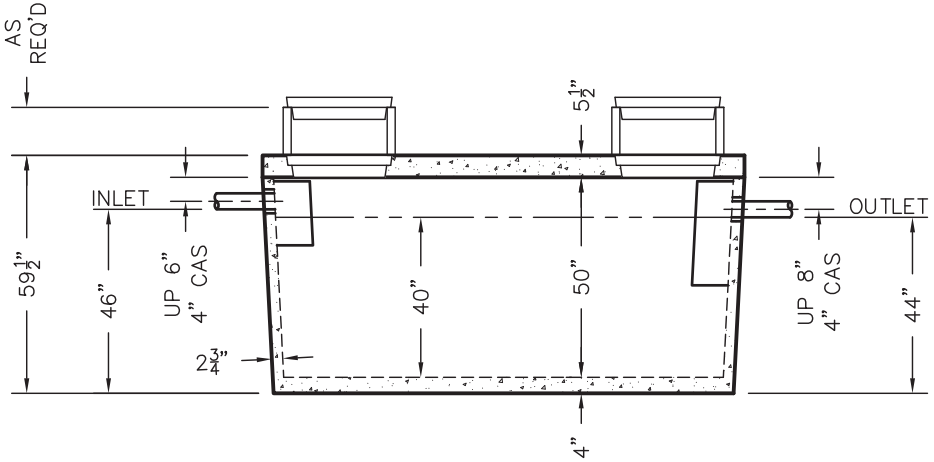
Management Plan Prepared By: Jesse Kloeppner Certification # C8188

Permitting Authority: Washington County - Public Health & Environment

W1000–R END RISER
TANK SPECIFICATIONS



TOP VIEW



SIDE VIEW

DIMENSIONS:
- WALL: 2 3/4"
- BOTTOM: 4"
- COVER: 5 1/2"
- MANHOLE: 24" I.D. PRECAST CONCRETE RISER
- HEIGHT: 59 1/2"
- LENGTH: 10'–0 1/2"
- WIDTH: 5'–7"
- BELOW INLET: 46"
- LIQUID LEVEL: 40"
- WEIGHT: 9,000 LBS.

INLET AND OUTLET:
- 4" CAST–A–SEAL BOOT OR EQUAL GASKET

LIQUID CAPACITY: 25.00 GAL/IN

HOLDING TANK:
- OUTLET HOLE PLUGGED
- ACTUAL CAPACITY: 1,136 GALLONS

LOADING DESIGN: 8'–0" UNSATURATED SOIL

TANK CAN BE USED AS:
- SEPTIC / HOLDING / PUMP OR SIPHON

COVER: MIX DESIGN #8 (NO FIBER)
TANK: MIX DESIGN #10 (STRUCTURAL FIBER)

CUSTOMIZED TANKS:
- FOR CUSTOM TANKS CONTACT WIESER CONCRETE

REVIEWED BY _____
REVIEW DATE _____

DRAWINGS SUBMITTED FOR APPROVAL
APPROVED BY: _____
APPROVAL DATE: _____
PRODUCTS NEEDED BY: _____

TANKS ARE MANUFACTURED TO MEET OR EXCEED ASTM C–1227 REQUIREMENTS

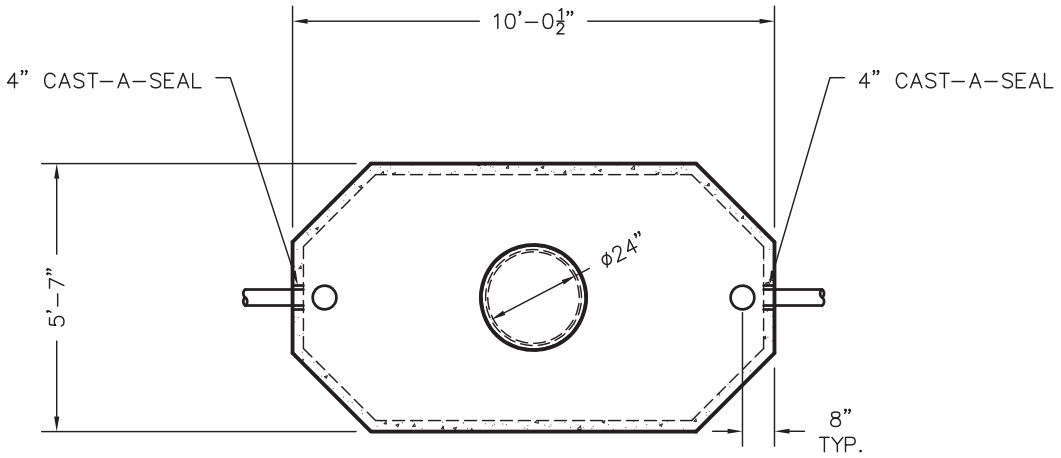
PRE–POUR: | POST–POUR:
REV. | DATE:
SCALE: 1/4" = 1'–0" | DRAWN BY: WCP | DATE: 00/00/00 | FILE: w1000–r single lid

WIESER CONCRETE
W3716 US HWY 10, MAIDEN ROCK, WI 54750
800–325–8456

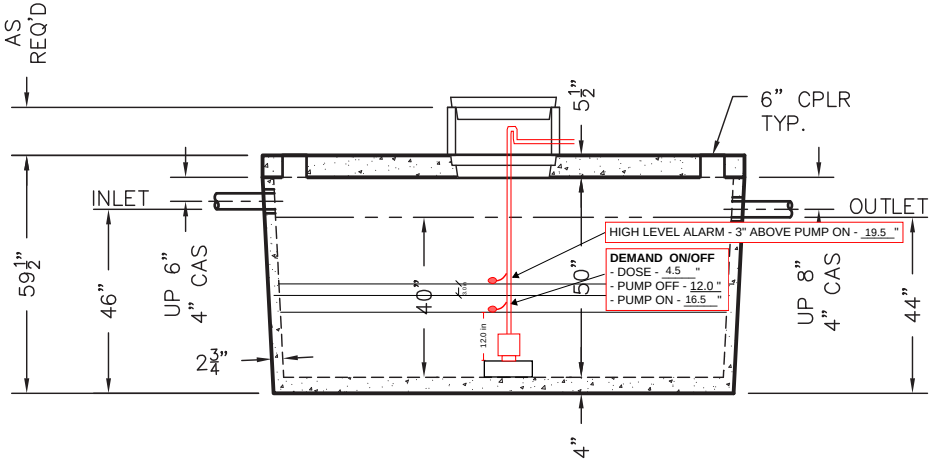
W1000–R SINGLE LID
SEPTIC MANUAL

SHEET NO. 1 OF 1

W1000–R CENTER RISER
TANK SPECIFICATIONS



TOP VIEW



SIDE VIEW

DIMENSIONS:
- WALL: 2 3/4"
- BOTTOM: 4"
- COVER: 5 1/2"
- MANHOLE: 24" I.D. PRECAST CONCRETE RISER
- HEIGHT: 59 1/2"
- LENGTH: 10'–0 1/2"
- WIDTH: 5'–7"
- BELOW INLET: 46"
- LIQUID LEVEL: 40"
- WEIGHT: 9,000 LBS.

INLET AND OUTLET:
- 4" CAST–A–SEAL BOOT OR EQUAL GASKET

LIQUID CAPACITY: 25.00 GAL/IN

HOLDING TANK:
- OUTLET HOLE PLUGGED
- ACTUAL CAPACITY: 1,136 GALLONS

LOADING DESIGN: 8'–0" UNSATURATED SOIL

TANK CAN BE USED AS:
- SEPTIC / HOLDING / PUMP OR SIPHON

COVER: MIX DESIGN #8 (NO FIBER)
TANK: MIX DESIGN #10 (STRUCTURAL FIBER)

CUSTOMIZED TANKS:
- FOR CUSTOM TANKS CONTACT WIESER CONCRETE

REVIEWED BY _____
REVIEW DATE _____

DRAWINGS SUBMITTED FOR APPROVAL
APPROVED BY: _____
APPROVAL DATE: _____
PRODUCTS NEEDED BY: _____

TANKS ARE MANUFACTURED TO MEET OR EXCEED ASTM C–1227 REQUIREMENTS

PRE–POUR: | POST–POUR:
DATE: | REV.
SCALE: 1/4" = 1'–0" | DRAWN BY: WCP | DATE: 00/00/00
FILE: w1000–r single lid

WIESER CONCRETE
W3716 US HWY 10, MAIDEN ROCK, WI 54750
800–325–8456

W1000–R SINGLE LID
SEPTIC MANUAL

SHEET NO. 1 OF 1

POLYLOK™ Inc.
Innovations in Precast, Drainage & Wastewater Products
Zabel® A Division of Polylok Inc.

PL-525 Effluent Filter

PL-525 Filter

The PL-525 Filter is rated for 10,000 GPD (gallons per day) making it one of the largest filters in its class. It has 525 linear feet of 1/16" filtration slots. Like the Polylok PL-122, the Polylok PL-525 has an automatic shut-off ball installed with every filter. When the filter is removed for cleaning, the ball will float up and temporarily shut off the system so the effluent won't leave the tank.

Features:

- Rated for 10,000 GPD (gallons per day).
- 525 linear feet of 1/16" filtration.
- Accepts 4'' and 6'' SCHD 40 pipe.
- Built in gas deflector.
- Automatic shut-off ball when filter is removed.
- Alarm accessibility.
- Accepts PVC extension handle.

PL-525 Installation:

Ideal for residential and commercial waste flows up to 10,000 gallons per day (GPD).

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the 4" or 6" outlet pipe. If the filter is not centered under the access opening use a Polylok Extend & Lok or piece of pipe to center filter.
4. Insert the PL-525 filter into its housing.
5. Replace and secure the septic tank cover.

PL-525 Maintenance:

The PL-525 Effluent Filters will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years. If the installed filter contains an optional alarm, the owner will be notified by an alarm when the filter needs servicing. Servicing should be done by a certified septic tank pumper or installer.

1. Locate the outlet of the septic tank.
2. Remove tank cover and pump tank if necessary.
3. Do not use plumbing when filter is removed.
4. Pull PL-525 cartridge out of the housing.
5. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
6. Insert the filter cartridge back into the housing making sure the filter is properly aligned and completely inserted.
7. Replace and secure septic tank cover.

Outdoor SmartFilter® Alarm
Polylok, Zabel & Best filters accept the SmartFilter® switch and alarm.

Extend & Lok™
Easily installs into existing tanks.

Polylok, Inc. 3 Fairfield Blvd. Wallingford, CT 06492 Toll Free: 877.765.9565 Fax: 203.284.8514 www.polylok.com

xylem
Let's Solve Water

TECHNICAL BROCHURE
BPE R2

PE

SUBMERSIBLE EFFLUENT PUMP

BUILT IN THE USA
ENGINEERED, ASSEMBLED & TESTED

GOULDS WATER TECHNOLOGY
a xylem brand

FEATURES

- Corrosion resistant construction
- Cast iron body
- Thermoplastic impeller and cover
- Upper sleeve and lower heavy duty ball bearing construction
- Motor is permanently lubricated for extended service life
- Powered for continuous operation
- All ratings are within the working limits of the motor
- Quick disconnect power cord, 20' standard length, heavy duty 16/3 SJTW with 115 or 230 volt grounding plug
- Complete unit is heavy duty, portable and compact
- Mechanical seal is carbon, ceramic, BUNA and stainless steel
- Stainless steel fasteners

APPLICATIONS

Specially designed for the following uses:

- Mound Systems
- Effluent/Dosing Systems
- Low Pressure Pipe Systems
- Basement Draining
- Heavy Duty Sump/Dewatering

SPECIFICATIONS

Pump – General:

- Discharge: 1½" NPT
- Temperature: 104°F (40°C) maximum, continuous when fully submerged.
- Solids handling: ½" maximum sphere.
- Automatic models include a float switch.
- Manual models available.
- Pumping range: see performance chart or curve.

PE31 Pump:

- Maximum capacity: 53 GPM
- Maximum head: 25' TDH

PE41 Pump:

- Maximum capacity: 61 GPM
- Maximum head: 29' TDH

PE51 Pump:

- Maximum capacity: 70 GPM
- Maximum head: 37' TDH

MOTOR

General:

- Single phase, 60 Hz, 115 and 230 volts
- Built-in thermal overload protection with automatic reset
- Class B insulation
- Oil-filled design
- High strength carbon steel shaft

PE31 Motor:

- .33 HP, 3000 RPM
- 115 volts
- Shaded pole design

PE41 Motor:

- .40 HP, 3400 RPM
- 115 and 230 volts
- PSC design

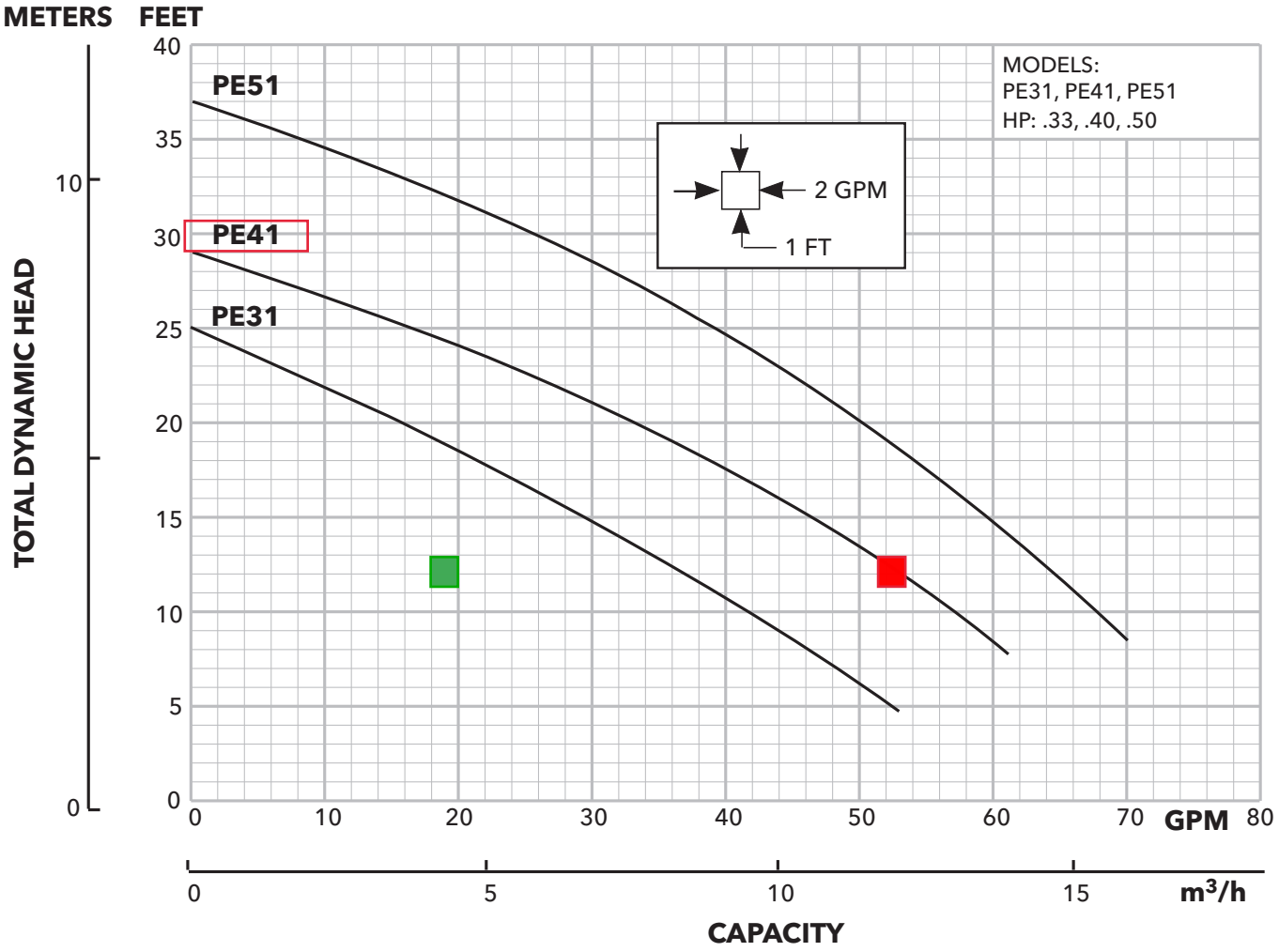
PE51 Motor:

- .50 HP, 3400 RPM
- 115 and 230 volts
- PSC design

AGENCY LISTINGS

C US

Tested to UL 778 and CSA 22.2 108 Standards
By Canadian Standards Association
File #LR38549



PUMP INFORMATION

Order No.	HP	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
PE31M	0.33	115	12	20	1	Manual / No Switch	20'	1.5"	18"	.5"	31 / 14.1
PE31P1						Piggyback Float Switch					
PE41M	0.4		7.5	15		Manual / No Switch					
PE41P1						Piggyback Float Switch					
PE42P1		230	3.7	10		Piggyback Float Switch					
PE51M	0.5	115	9.5	20		Manual / No Switch					
PE51P1						Piggyback Float Switch					
PE52M		230	4.7	10		Manual / No Switch					
PE52P1						Piggyback Float Switch					

PERFORMANCE RATINGS

PE31

Total Head (feet of water)	GPM
5	52
10	42
15	29
20	16
25	0

PE41

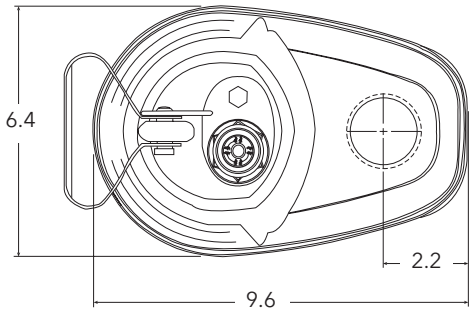
Total Head (feet of water)	GPM
8	61
10	57
15	46
20	33
25	16

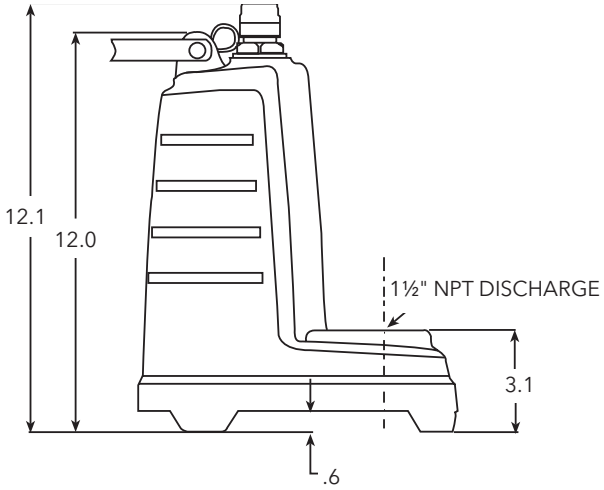
PE51

Total Head (feet of water)	GPM
10	67
15	59
20	50
25	39
30	26
35	8

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)





xylem
Let's Solve Water

Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877
www.xylem.com/goulds

SITE RESEARCH

SCHEMATIC DESIGN
BASIS OF DESIGN

placeland

OTTO RESIDENCE

NOTES: CLEAR AND GRUB TREES AS NECESSARY.
MINIMUM BOTTOM OF FILTER MATERIAL - ELEV. 936.0

1"=30'

LAKE OLSON

SHORELINE

APPROX. TOE OF SLOPE

BSMT FL. EL. 935.4

50' LIMIT

2" DISCHARGE PIPE

TREATMENT AREAS

75' SETBACK FROM HIGH FLOOD

HIDDEN BAY CT.

LAKE DE MONTREVILLE

REMOVE EX. SEPTIC TANK. INSTALL PUMP STATION AND 1200 GAL. SEPTIC TANK, CONNECT TO EX. BLDG. SEWER. CONSTRUCT TWO 10'x25' TREATMENT BEDS WITHIN A SINGLE MOUND.

7015
8286 HIDDEN BAY TRAIL

LEGEND

- EX. SEPTIC TANK
- EX. DRYWELL
- EX. WELL
- EX. DRAINFIELD
- PROP. SEPTIC TANK
- PROP. PUMP STATION
- PROP. DRAINFIELD
- PROP. DISTRIB./DROP BOX
- PROP. 2" DISCHARGE PIPE
- PERCOLATION TEST OR SOIL BORING LOCATION
- PROP. MOUND SYSTEM

NO	DATE	BY	DESCRIPTION
			REVISIONS

DESIGNED LDB DRAWN DLW
CHECKED LDB

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA
Larry D. Bohen
DATE 10-31-84 REG NO 12120

TKDA
ENGINEERS ARCHITECTS PLANNERS
TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED
SAINT PAUL, MINNESOTA

Wastewater Facilities Improvements
Lake Elmo, Minnesota
EPA Project No. C 271411

7015
SHEET NO. 7 OF 107 SHEETS

Custom Soil Resource Report
Soil Map

Map Scale: 1:485 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12D	Emmert gravelly loamy coarse sand, 15 to 25 percent slopes	0.2	20.3%
1033	Udifluvents	0.6	79.7%
Totals for Area of Interest		**0.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

Washington County, Minnesota

12D—Emmert gravelly loamy coarse sand, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 1t939
Elevation: 700 to 1,600 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Emmert and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Emmert

Setting

Landform: Pitted outwash plains
Landform position (two-dimensional): Shoulder
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Outwash

Typical profile

Ap - 0 to 6 inches: loamy coarse sand
Bw,C - 6 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F090AY019WI - Dry Sandy Uplands
Forage suitability group: Sandy (G090XN022MN)
Other vegetative classification: Sandy (G090XN022MN)
Hydric soil rating: No

Minor Components

Kingsley

Percent of map unit: 5 percent
Hydric soil rating: No

Chetek
Percent of map unit: 5 percent
Hydric soil rating: No

1033—Udifluvents

Map Unit Setting
National map unit symbol: 1t96x
Elevation: 670 to 1,070 feet
Mean annual precipitation: 28 to 36 inches
Mean annual air temperature: 39 to 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition
Udifluvents and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udifluvents

Setting
Landform: Shorelines
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy beach sediments

Properties and qualities
Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Ecological site: F090AY009WI - Moist Sandy Lowland
Forage suitability group: Sloping Upland, Low AWC, Acid (G090XN008MN)
Other vegetative classification: Sloping Upland, Low AWC, Acid (G090XN008MN)
Hydric soil rating: No

Minor Components

Aquolls, ponded
Percent of map unit: 10 percent
Landform: Depressions on moraines
Down-slope shape: Concave
Across-slope shape: Concave

Ecological site: F090AY006WI - Wet Loamy Lowland
Other vegetative classification: Not Suited (G090XN024MN)
Hydric soil rating: Yes

Septic Tank Absorption Fields (MN)–Washington County, Minnesota							
Map symbol and soil name	Pct. of map unit	Septic Tank Absorption Fields - At-Grade		Septic Tank Absorption Fields - Mound		Septic Tank Absorption Fields - Trench	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
12D—Emmert gravelly loamy coarse sand, 15 to 25 percent slopes							
Emmert	90	Very limited		Extremely limited		Very limited	
		>= 35% Rock Frags	0.90	Slope	1.00	>= 35% Rock Frags	0.90
		Slope	0.73	>= 35% Rock Frags	0.90	Slope	0.73
						Excessive percolation	0.32
1033—Udifluvents							
Udifluvents	90	Not rated		Not rated		Not rated	

8286 Hidden Bay Ct N, Lake Elmo

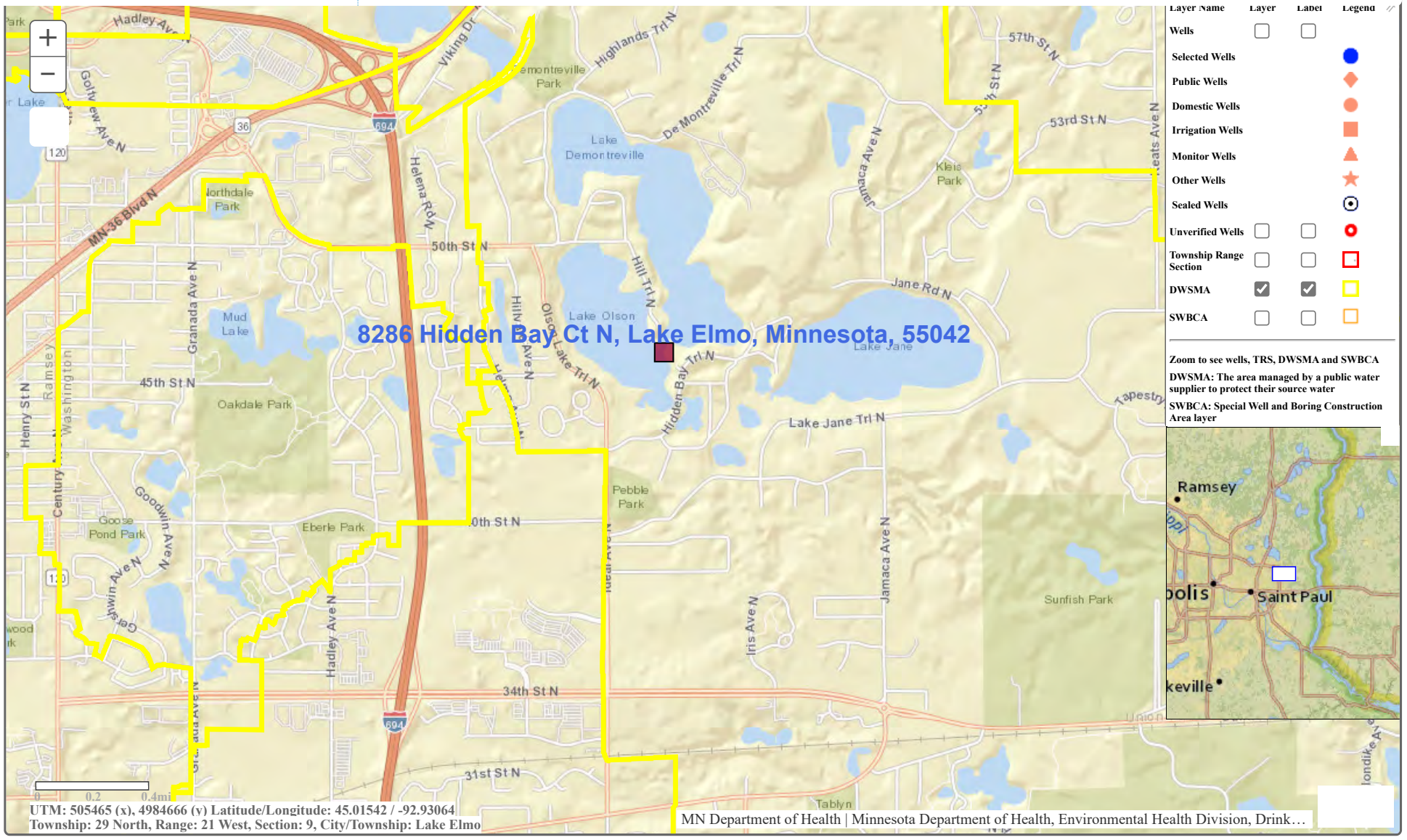
Minnesota Department of Health

Minnesota Well Index

Version 2.0.85, 11/19/21 3:34PM

8286 Hidden Bay Ct N, Lake Elmo, MN, 5504

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



Minnesota Department of Health

Minnesota Well Index

Version 2.0.85, 11/19/21 3:34PM

8286 Hidden Bay Ct N, Lake Elmo, MN, 5504

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

Layer Name	Layer	Label	Legend
Wells	☑	☑	
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

Subsurface Sewage Treatment Systems

Non-transferable

Business License

Kloeppner Services & Designs LLC

License # L4043 License Expires: 4/1/2024 Issued: 4/7/2023

Specialty Area(s):

Service Provider
Advanced Designer
Advanced Inspector

Designated Certified Individual(s):

Cert #	Name	Certification Expires:
C8188	Jesse J Kloeppner	11/15/2026
	Service Provider, Advanced Designer, Advanced Inspector	

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Nick Haig

Nick Haig, Supervisor
Certification and Training Unit

Sophia Jensen

From: Jack Griffin <Jack.Griffin@focusengineeringinc.com>
Sent: Tuesday, June 20, 2023 6:36 PM
To: Sophia Jensen
Cc: Chad Isakson
Subject: 8286 Hidden Bay Trail

Sophia,
Engineering does not have any comments related to the 4 variance requests at 8286 Hidden Bay Trail. It appears the requested variances are essentially a continuation of existing non conforming conditions. The septic system design will need to meet the approvals of Washington County.

Thanks ~Jack

John (Jack) W. Griffin, P.E.
Principal / Sr. Municipal Engineer

FOCUS ENGINEERING, INC.
651.300.4264
jack.griffin@focusengineeringinc.com

Sophia Jensen

From: Dustin Kalis
Sent: Thursday, June 22, 2023 1:41 PM
To: Sophia Jensen
Subject: RE: Lake Elmo Land Use Review - 8286 Hidden Bay Trl

The Lake Elmo Fire Department has the following comments:

8286 Hidden Bay Trl Variance: Building address numbers shall be plainly visible from the street fronting the property and shall contrasting color from the background. Addresses may be required to be posted adjacent to driveways or other access ways.

Dustin Kalis | Fire Chief
Lake Elmo Fire Department
Fire Station #1 - 3510 Laverne Ave N. | Lake Elmo, MN | 55042
651-747-3933 *office* | www.lakeelmo.org

Sophia Jensen

From: John P. Hanson <JHanson@barr.com>
Sent: Monday, June 26, 2023 8:39 AM
To: Sophia Jensen
Cc: Scollan, Daniel (DNR)
Subject: RE: Lake Elmo Land Use Review - June 1st Batch

Sophia-

- The proposed home at 8286 Hidden Bay Court North needs to be raised. The VBWD-established 100-year flood level of Olson Lake is 931.8 (NAVD88) and the lowest floor needs to be at least 2 feet higher.
- Less than 6,000 square feet of new and fully reconstructed impervious surface is proposed so permanent stormwater management isn't required, but it's still encouraged.
- A minimum 35-foot-wide buffer strip measured perpendicular to the OHW extending 35 feet inland shall be provided. A mowed access path and shoreline are allowed but must not exceed 30% of the landowner's shoreline width or 30 feet, whichever is less. For shorelines less than 20 feet wide, a 6-foot-wide access path is allowed. Access paths shall not be located where concentrated runoff will flow to the lake. Buffer vegetation shall not be cultivated, cropped, pastured, mowed, fertilized, subject to the placement of mulch, yard waste, or snow piles, or otherwise disturbed, except for periodic cutting or burning that promotes the health of the buffer, actions to address disease or invasive species, mowing for purposes of public safety, temporary disturbance for placement or repair of buried utilities, or other actions to maintain or improve buffer quality, each as approved by the VBWD or when implemented pursuant to a written agreement executed with the VBWD. No new structure or impervious surface shall be placed within a buffer.
- Temporary erosion controls need to be installed and maintained between the proposed grading and the lake.

John

John P. Hanson, PE
Valley Branch Watershed District Engineer
Barr Engineering Co. | 4300 MarketPointe Drive | Bloomington, MN 55435
office: 952.832.2622 | cell: 612.590.1785
JHanson@barr.com | www.barr.com | www.vbwd.org

Sophia Jensen

From: Scollan, Daniel (DNR) <daniel.scollan@state.mn.us>
Sent: Friday, June 30, 2023 10:25 AM
To: Sophia Jensen
Cc: John P. Hanson
Subject: RE: Lake Elmo Land Use Review - June 1st Batch

Hello Sophia:

- The application proposes removal of numerous trees located between the principal structure and Lake Olson. These trees provide important shoreland habitat and provide screening of structures as viewed from the water. If the City determines that the variance criteria have been met, DNR recommends the city require a tree replacement plan as a condition of approval.

- The proposed increase of impervious surface from existing conditions, 4,754 SF (18.3%) to proposed conditions, 5,649 SF (21.8%), should be carefully scrutinized. The application, for example, does not explain why the driveway area needs to be expanded from the existing condition of 1775 SF to 1941 SF to provide for adequate ingress/egress. We recommend requiring the applicant to maintain the existing footprint of the driveway.

Best Regards,

Dan Scollan
East Metro Area Hydrologist – Ramsey and Washington Counties
Division of Ecological and Water Resources

Minnesota Department of Natural Resources
1200 Warner Road
St. Paul, MN 55106
Phone: 651-259-5732
Fax: 651-772-7977
Email: daniel.scollan@state.mn.us
mndnr.gov

From: Sophia Jensen <SJensen@lakeelmo.org>
Sent: Thursday, June 29, 2023 7:24 AM
To: Scollan, Daniel (DNR) <daniel.scollan@state.mn.us>
Subject: RE: Lake Elmo Land Use Review - June 1st Batch

Link Lavey
8510 Hidden Bay Trl N
Lake Elmo, MN 55042
July 11th, 2023

Sophia Jensen
City Planner
City of Lake Elmo
3800 Laverne Ave N
Lake Elmo, MN 55042

Dear Sophia Jensen:

Thank you for taking the time to meet with me today. As mentioned in our conversation I have been the President of the Lake Demontreville and Olson Association (LDO) for the past six years, and am also member of the VBWD Citizen Advisory Committee. The LDO is focused on the health of lakes Demontreville and Olson. We spend approximately $40,000 annually fighting invasive species and controlling algae. Additionally, we take water samples for the Met Council, sponsor educational programs, lake clean up days and work with other local partners. These efforts are so everyone can enjoy these great resources we have here in Lake Elmo.

The variance requests for the property located at 8286 Hidden Bay CT are very concerning. The property is already noncompliant with existing building codes in its current location. Any variances could have a further negative impact on surface and subsurface (septic) drainage into the lakes. Either of these would add additional unwanted nutrients into the lakes and upset the balance we are working very hard to manage.

I do realize that not all properties are able to meet all city building codes. However, I do ask that any deviation from current codes please consider the potential environmental impact to a recreational resource shared and enjoyed by many.

Sincerely,

Link Lavey

Sophia Jensen

From: Charles Cadenhead
Sent: Tuesday, July 11, 2023 10:01 AM
To: Sophia Jensen
Cc: kyle.risner@gmail.com
Subject: 8286 Hidden Bay Ct - Variance Request

Sophia,

I need to pass along some information that came from a resident, but they wish to not be named.

They would like to be assured that the committee is aware of the DNR and the VBWSD comments.

They are opposed to Variance 1: "They are requesting to be 10.4 feet closer to the OHWM. Part of the LDO (Lake Demontreville/Olson) management program is to maintain and protect these precious natural resources and this cannot be done if we continue to encroach on the OHWM.

They are opposed to Variance 2: They do not believe in increasing impervious surface coverage for one self, and then put it in writing as to a "safe egress for adjoining their property". They believe that it is jus for a fancy driveway entrance and that it would be out of character for the neighborhood. They say, "City code is 15%, stick to it. They just want a bigger footprint."

They are opposed to Variance 3: "They may not have done their homework nor due diligence when they bought this property and bought it as is. That does not give them an excuse to put a septic system dangerously closer to the water, there are other pump out options. They are requesting it to be 13 feet closer than the existing one.

We as neighbors are most concerned about our lakes. Building a home and septic system closer to the lake doesn't make sense. Increasing impervious surfaces, ignoring proper drainage, catch basins and removing large established trees all adds to the degradation of our lakes.

We believe that the Otto's current application should not be recommended as presented and our concerns must be addressed in any future plans.

Thank you for any and all consideration to this matter."

That's their letter in a nutshell. Please let me know if you have any questions.

Charles Cadenhead, Jr.
City of Lake Elmo, Mayor
phone: 651.300.9641

July 13, 2023

Dawn Goracki
2620 5th Ave E
North St Paul, MN 55109

Sophia Jensen
City Planner
City of Lake Elmo
3800 Laverne Ave N
Lake Elmo, MN 55042

Dear Sophia Jensen,

In response to the Notice of Public Hearing regarding the property at 8286 Hidden Bay Ct., I'd like to make the following comments:

Variance 1 – Reduced structure setback from ordinary high-water level. I have no comment regarding this variance.

Variance 2 – Reduced septic setback from ordinary high-water level. As a lake property owner, one of the biggest issues we've been dealing with is the weeds/algae growth on our lakes. Therefore, I am concerned that by moving a septic system closer to the water will exacerbate the weed/algae situation.

In this regard, I believe this decision should be based on recommendations by the experts at VBWSD & the DNR.

Variance 3 – Increase in impervious surface for unsewered shoreland lots. The proposed re-landscaping on the NW side of the property creates a slope going toward the neighboring property which is also slightly higher at that point, forming a channel that I presume will funnel any run off right into the lake. Based on the drawing, it appears that area will be all grass, which will require maintenance that will almost certainly cause nutrients to flow freely into the lake. The proposed removal of many established trees is another factor in more run off to the lake.

Thank you for considering our concerns.

Sincerely,

Dawn Goracki

Sophia Jensen

From: Douglas Huntley <dahuntley1@gmail.com>
Sent: Friday, July 21, 2023 9:03 PM
To: Sophia Jensen
Subject: written input for proposed variances related to 8286 Hidden Bay Ct N

Sophia,

My wife and I are next door neighbors to the Ottos as we have lived at 8290 Hidden Bay Court North for the last 7 years. Jeff and Judy kindly showed the plans for their new home to us and we voiced two concerns with them that they stated they would address with their architect. As we have not seen any plan changes, we wish to also reach out to you in order to follow the prescribed process to provide input.

The first concern has to do with the elevation change needed to build up what currently is their basement garage into a first floor entrance. We believe that this elevated and sloped road surface would magnify the amount of rainwater and runoff that naturally occurs today into the back NW part of our property, especially if the road surface is impervious. Today there is an area that collects with water during heavy rains but it drains after a reasonable time. We believe this could become a much bigger issue if the current plan is allowed to proceed.

Our second concern is that there appears to be no clear way to handle snow in the current design. We want to make sure that excess snow is not simply moved onto our property and that there is a plan in place to manage.

We very much appreciate having the Ottos as neighbors and hope that you will be able to work with them to come to a reasonable solution while still respecting the precedence that will be set with any variances.

Kind regards,

Doug and Pam Huntley
(651) 334-0524

Sophia Jensen

From: Ryan Andrews <ryan@plaadoffice.com>
Sent: Wednesday, August 9, 2023 2:18 PM
To: Sophia Jensen
Subject: Fwd: Variance

Ryan Andrews ASSOCIATE AIA
PLAAD, LLC
ryan@plaadoffice.com
651 472 3748
plaadoffice.com

Begin forwarded message:

From: Jeff Otto <jeff.otto@opmpallet.com>
Subject: Variance
Date: August 9, 2023 at 2:15:17 PM CDT
To: "SJensen@lakeelmo.org" <SJensen@lakeelmo.org>
Cc: Ryan Andrews <ryan@plaadoffice.com>, Judy Otto <judy.otto@opmpallet.com>

Sophia,

We are officially withdrawing two of the three variance requests from our variance application, dated June 9th, 2023.

Please remove variance requests for a reduced setback from the OHWM to the building structure, as well as the request for slightly increased impervious surface coverage.

We would like to keep the third variance on the agenda for the City Council's meeting on Tuesday for a reduced setback from the OHWM for the soil treatment area (STA) of the septic system.

Sincerely,
Jeff and Judy Otto
8286 Hidden Bay Court Lake Elmo, Minnesota

Jeff Otto
Pallet Recycling
391 Topping St
St Paul, Mn 55117
651-370-2258 Direct
651 260 3540 cell

“We Never Forget Our Customers"

CITY OF LAKE ELMO
COUNTY OF WASHINGTON
STATE OF MINNESOTA

RESOLUTION NO. 2023-073

A RESOLUTION APPROVING A VARIANCE TO ALLOW A REDUCED SEPTIC SYSTEM SETBACK OF 38.3 FEET FROM THE ORDINARY HIGH-WATER LEVEL ON THE PROPERTY LOCATED AT 8286 HIDDEN BAY COURT NORTH

WHEREAS, the City of Lake Elmo is a municipal corporation organized and existing under the laws of the State of Minnesota; and

WHEREAS, Jeff and Judy Otto (the "Applicants"), owners of the property located at 8286 Hidden Bay Court N, PID # 09.029.21.23.0013, Lake Elmo, MN 55042 (the "Property") have submitted an application to the City of Lake Elmo (the "City") to request a variance to allow a reduced septic system setback of 38.3 feet from the ordinary high-water level for a replacement septic system; and

WHEREAS, notice of a public hearing has been published, mailed, and posted pursuant to the Lake Elmo Zoning Code, Section 103.00.120; and

WHEREAS, the Lake Elmo Planning Commission held a public hearing on said matter on July 24th 2023; and

WHEREAS, the Lake Elmo Planning Commission has submitted its report and recommendation of approval of the variance to the City Council as part of a Staff Memorandum dated August _____, 2023; and

NOW, THEREFORE, based on the testimony elicited and information received, the City Council makes the following:

FINDINGS

1. The Applicants' current septic system on the Property is failing and needs to be replaced.

2. The Applicants had a septic system designer review the Property to determine feasible locations for a new septic system. The Applicants' septic system designer determined that the proposed location of the septic system that is 38.3 feet from the ordinary high-water level is the only feasible location on the Property for the new septic system.

3. The Applicants are requesting a variance to allow for a reduce septic system setback of 38.3 feet from the ordinary high-water level for the replacement septic system.

4. That the procedures for obtaining a variance are set forth in Section 105.12.320 of the Lake Elmo Zoning Code. Any action taken by the City Council to approve a variance request must meet all of the following findings:

   a. 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 current septic system is failing and needs to be replaced. The Applicants have had a septic designer review the Property for a feasible septic system location and the only feasible location is 38.3 from the ordinary high-water level. The City Council finds that the Applicants have proven practical difficulties because a septic system is needed given the current failing system, there is no other feasible area on site, and a septic system is needed in order to maintain the house that is on the Property.* ***Practical Difficulties are met.***

   b. Unique Circumstances - the problem for the landowner/applicant which the intended variance is intended to correct is unique to the property in question that was not created by the landowner/applicant.

   FINDINGS: *The Applicants are proposing to replace the septic system in roughly the same area of the Property as the existing system. The current septic system is failing and not due to the fault of the Applicants. The proposed location is the only feasible location on the Property for the new septic system.* ***Unique Circumstances are met.***

   c. Character of Locality - the proposed variance will not alter the essential character of the locality in which the property in question is located.

   FINDINGS: *Given this area does not have access to City sewer and all adjacent properties are on private septic systems, the City Council finds that approval of this request would not alter essential character of the neighborhood.* ***Character of Locality is met.***

   d. 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 location for the new septic system will not increase congestion on a public street as it will not contribute to any additional traffic to the neighborhood. It will also not impair an adequate supply of light or air to adjacent properties given that it is underground. Because it is underground and will not be*

seen, it will not impair property values within the neighborhood. ***Adjacent properties and Traffic is met.***

DECISION

NOW, THEREFORE, BE IT FURTHER RESOLVED, and based upon the information received and the above Findings, that the City Council of the City of Lake Elmo hereby approves the Applicants' request for a variance to allow a reduced septic system setback from the ordinary high-water level on the Property, subject to the following conditions:

1. The Applicants must obtain all other necessary City, state, and other governing body permits and approvals prior to construction of the septic system.

2. A minimum 35-foot-wide buffer strip measured perpendicular to the ordinary high-water level extending 35 feet inland must be provided. A mowed access path and shoreline are allowed but must not exceed 30 percent of the Applicants' shoreline width or 30 feet, whichever is less.

3. This variance is only for a reduced septic system setback from the ordinary high-water level to 38.3 feet.

4. This variance shall expire if work on the new septic system does not commence within 12 months of the date of this Resolution.

Passed and duly adopted this 15th day of August, 2023 by the City Council of the City of Lake Elmo, Minnesota.

_____
Mayor Charles Cadenhead

ATTEST:

_____
Julie Johnson, City Clerk