

TOWN OF CARLISLE, MASSACHUSETTS
ZONING BOARD OF APPEALS
AMENDED DECISION UPON APPLICATION OF
LIFETIME GREEN HOMES, LLC
FOR A COMPREHENSIVE PERMIT UNDER
MASSACHUSETTS GENERAL LAWS CHAPTER 40B

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TOWN CLERK-CARLISLE
CHARLENE M. HINTON

I. BACKGROUND

APPLICANT: Lifetime Green Homes, LLC (the "Applicant")

PROPERTY: 100 Long Ridge Road, Carlisle, MA

ZONING: Residence District B

PROPOSAL: Twenty (20) for-sale, single-family detached residential condominium units, of which nineteen (19) are new construction and one (1) is an existing house, to be served (subject to permitting by the Massachusetts Department of Environmental Protection) by a Public Water System and an on-site septic system made up of four separate component systems (three new systems plus the existing system that serves the existing house), to be located on a 9.84 acre parcel.

DECISION DATE: February 27, 2017.

ORIGINAL HEARING: July 28, 2014, August 11, 2014, August 27, 2014, September 15, 2014, October 6, 2014, October 27, 2014, November 3, 2014, November 17, 2014, January 5, 2015, February 4, 2015, March 26, 2015, April 6, 2015, April 22, 2015, May 4, 2015, May 20, 2015, June 1, 2015, June 8, 2015, June 15, 2015, June 22, 2015 and June 29, 2015.

REMAND HEARING ON
REVISED APPLICATION: August 8, 2016, October 4, 2016, November 28, 2016, December 21, 2016, January 4, 2016 and January 19, 2016

II. PROCEDURAL HISTORY

a. **Original Application and Public Hearing**

In the fall of 2013, the Applicant submitted an application for project eligibility to MassHousing. In a letter to MassHousing dated January 31, 2014, the Town of Carlisle presented extensive comments on the proposed development. See 760 CMR 56.04(3) (“Upon receipt of the application, the Subsidizing Agency shall provide written notice to the Chief Executive of the municipality where the Project is located, initiating a 30-day review period of the Project.”) This letter was sent on behalf of the Town, acting through the Board of Selectmen and Town Administrator, but reflected the comments and concerns of the Fire Department, the Planning Board, the Board of Health, and the Conservation Commission. The Town expressed concerns relating to density, design, public safety, the failure of the Applicant to propose a DEP-permitted public water supply, water quality and quantity, wastewater management, stormwater management, open space and wetlands preservation. In addition, the Town noted “the Applicant should perform all necessary hydrogeological testing to establish definitively that the planned [soil absorption system] SAS/treatment plants and wells will not impact the water quality and capacity of other wells in the vicinity.”

MassHousing issued a Project Eligibility Letter on June 3, 2014. This Project Eligibility Letter stated, in part, that based on MassHousing’s site design review and its consideration of comments received from the Town, that certain issues “should be addressed in [the] application to the Zoning Board of Appeals (“ZBA”) for a Comprehensive Permit and fully explored in the public hearing process prior to submission of [the Applicant’s] application for Final Approval.” *Letter from MassHousing to Lifetime Green Homes, LLC dated June 3, 2014* at p. 3. These issues included the Town’s concern with “potential impacts to groundwater quality in the vicinity of the Site, including impacts to neighboring wells due to the number of wells proposed for the Site” and the need to provide an adequate stormwater management plan for the Site, including erosion control measures during and after construction. *Id.* at 4.

The Applicant filed a comprehensive permit application pursuant to M.G.L. c.40B, §§20-23 (the “Act”) with the ZBA on July 3, 2014.

Pursuant to notice duly mailed, published and posted pursuant to M.G.L. c.40A, §11, the ZBA opened its public hearing on the Application on July 28, 2014, and the ZBA held continued sessions of the public hearing on August 11, 2014, August 27, 2014, September 15, 2014, October 6, 2014, October 27, 2014, November 3, 2014, November 17, 2014, January 5, 2015, February 4, 2015, March 26, 2015, April 6, 2015, April 22, 2015, May 4, 2015, May 20, 2015, June 1, 2015, June 8, 2015, June 15, 2015, June 22, 2015, and June 29, 2015. In accordance with 760 CMR 56.05(3), the Applicant and the ZBA agreed to several extensions of time to conduct the public hearing, with the last such extension running through June 29, 2015.

The ZBA also conducted site visits at the premises on August 11, 2014 and April 16, 2015.

Each session of the public hearing was recorded by detailed minutes, which are available for public review in the ZBA's office.

Sitting for the ZBA and present throughout this original hearing were: Lisa Davis Lewis (Chair), Emmanuel Crespo, Martin Galligan, Steven Hinton (Associate) and Travis Snell (Associate).

Over the course of the public hearing, the ZBA heard testimony and received written comments from the Applicant, abutters, Daniel C. Hill, counsel for a group of abutters, Scott W. Horsley, hydrogeological consultant for a group of abutters, and members of the public.

All Town boards, commissions and departments were notified of the application and the public hearing. The ZBA received extensive written comments from the Town Advisory Group ("TAG") created by the Board of Selectmen in accordance with the ZBA's Comprehensive Permit Rules, and composed of representatives from the Board of Health, the Planning Board, the Conservation Commission, and the Fire Department. In addition, representatives of the TAG, the Board of Health, the Planning Board and the Conservation Commission were in attendance throughout the public hearing and participated extensively. The ZBA considered all of the comments and recommendations of the Town boards, commissions and departments in rendering this Decision, and expresses its thanks for their valuable assistance throughout this process.

The ZBA received guidance throughout the original hearing from Michael Jacobs of MHJ Associates, a real estate development and Chapter 40B consultant engaged through the Massachusetts Housing Partnership's Chapter 40B Technical Assistance Program. In addition, the ZBA retained Nitsch Engineering, Inc. for civil engineering peer review, and Stephen W. Smith, P.E., P.H.G.W., L.S.P., of GeoHydroCycle, Inc. for hydrogeological peer review. As discussed in more detail below, the ZBA also received extensive hydrogeological information from James H. Vernon, Ph.D, P.G., Senior Hydrogeologist at Nobis Engineering, Inc.

At the beginning of the public hearing, the Applicant committed to conduct a comprehensive hydrogeological study of the development parcel and the surrounding area. This study was to include groundwater modeling studies, nitrogen loading and pathogen analyses, groundwater mounding analysis, background testing of abutters' wells, and an agreement to post a security bond to ensure that the abutters would not have to pay to repair or replace an existing water supply well if impacted by the Project. See *Letter from Lifetime Green Homes to ZBA* dated September 12, 2014 (Brem 060). The proper scope and methodology for the Applicant's hydrogeological study was the subject of lengthy discussion with the ZBA over several sessions of the public hearing, with input from Stephen W. Smith and Scott Horsley, a hydrogeologist engaged by a group of abutters to the Project.

By December 2014, however, the Applicant had not commenced the hydrogeological study that had been under discussion for the previous several sessions of hearing, and in a letter dated December 31, 2014 the Applicant announced that it would not

perform the study at all. See Letter from Douglas C. Deschenes, Esq. dated December 31, 2015 (Brem 141). In response, the Town of Carlisle, acting through its Board of Selectmen, engaged James H. Vernon, Ph.D, P.G., Senior Hydrogeologist at Nobis Engineering, Inc., to conduct an independent analysis of the hydrogeology of the site and surrounding area. The Applicant then indicated that it would arrange for a limited hydrogeological study, independent of Dr. Vernon's study, and without regard to many of the recommendations previously submitted by Mr. Smith during the hearing and/or previously agreed to by the Applicant.

The Applicant presented comprehensive revised plan sets on or about December 8, 2014 and on or about March 27, 2015. Each set of plans submitted by the Applicant was the subject of comprehensive peer review by Nitsch Engineering, Inc. Nitsch Engineering submitted comprehensive peer review reports on the Applicant's plans on October 24, 2014, December 22, 2014, and April 17, 2015, and submitted additional reports addressing specific issues on November 3, 2014 (traffic), February 18, 2015 (adequacy of stormwater design), March 13, 2015 (adequacy of stormwater design), April 2, 2015 (traffic), May 15, 2015 (nitrogen loading), June 9, 2015 (nitrogen loading), and June 15, 2015 (memorandum regarding the requested waiver of the Town's septic system design flow regulation).

At several points during the original public hearing, the Applicant amended its request for waivers of local bylaws, rules and regulations, but it did not submit a final comprehensive waiver list prior to the close of the hearing. In emails dated May 29, 2015 and June 1, 2015, counsel for the ZBA and the Applicant confirmed the final set of waivers that the Applicant was seeking from the ZBA. The following three documents collectively comprise the Applicant's final waiver requests: The letter from Doug Deschenes, Esq. dated September 26, 2014 (Brem 069), the letter dated December 30, 2014 withdrawing several of those waiver requests (Brem 140), and the letter dated March 26, 2014 reinstating several of the original waiver requests (Brem 195).

The ZBA voted to close the original public hearing on June 29, 2015. The ZBA deliberated on the application on July 13, July 20 and August 3 and voted on the application on August 3. The ZBA voted unanimously (Davis Lewis, Crespo, Galligan, Hinton and Snell in favor, and none opposed) to approve the Project subject to the terms and conditions stated in the Comprehensive Permit dated and filed with the Town Clerk on August 12, 2015.

The Applicant timely appealed the Comprehensive Permit to the Housing Appeals Committee ("HAC") pursuant to M.G.L. c.40B, §22. *Lifetime Green Homes, LLC v. Carlisle Zoning Board of Appeals*, HAC No. 2015-04. In a separate action, Michael G. Hanauer, David A. Ringheiser, and Colin J. Higgins, Trustee of the Suffolk Lane Realty Trust, timely appealed the Comprehensive Permit to Land Court pursuant to M.G.L. c.40A, §17. *Hanauer et al. v. Carlisle Zoning Board of Appeals et al.*, Land Court 15-MISC-000326.

b. Revised Application and Remand Hearing

While the HAC appeal was pending, the Applicant sought to amend its project in several important respects. The Applicant proposed to change from a network of shared private drinking water wells to a public water system, and relocate its proposed Septic Disposal Area 2 (SDA2). These two changes triggered numerous additional revisions to the site design, including changes to the road layout, the siting of the houses, and the stormwater drainage design.

On April 20, 2016, the Applicant filed an "Amended Request for Project Change" with the HAC. In this filing, the Applicant asked the HAC to process these changes within the context of the pending appeal. On May 10, 2016, the ZBA submitted its "Opposition to the Amended Request for Project Change." The ZBA argued that the Applicant's changes were substantial within the meaning of 760 CMR 56.07(4), and therefore required a remand to the ZBA for a new public hearing.

On June 30, 2016, the HAC issued its "Ruling on Appellant's Request for Project Change, as Amended and on Board's and Intervener's Request for Remand." This Ruling stated, in relevant part, as follows:

This matter is remanded to the Board for further proceedings consistent with the following requirements and accelerated schedule.

1. The Board shall advertise a public hearing in compliance with law and open the hearing as soon as reasonably practical, but in no event more than 35 days from the date of this Order. The Board shall file with the Committee a copy of the Notice of Hearing.
2. Only the changes in the proposal identified in the Request for Project Change as amended, or aspects of the proposal affected thereby, shall be at issue in the Board's hearing.
3. The Board may conduct one or more hearing sessions but shall close its hearing no later than 90 days after opening the public hearing, and shall issue a written decision on remand and file the decision with the Town Clerk no later than 40 days after the termination of the public hearing pursuant to G.L. c.40B, §21.
4. The Board shall file a copy of the written decision on remand with [the] Committee within 5 days after issuance.

Pursuant to notice duly mailed, published and posted pursuant to M.G.L. c.40A, §11, the ZBA opened its public hearing on the remand on August 8, 2016, and held continued sessions of the public hearing on October 4, 2016, November 28, 2016, December 21, 2016, January 4, 2016 and January 19, 2016. The time for conducting the public hearing was continued several times through January 19, 2016 by agreement of the Applicant and the ZBA.

Each session of the public hearing was recorded by detailed minutes, which are available for public review in the ZBA's office.

Sitting for the ZBA and present throughout this remand hearing were: Travis Snell (Chair), Emmanuel Crespo, Lisa Davis Lewis (Associate), Martin Galligan, Steven Hinton (Associate).

Over the course of the public hearing, the ZBA heard testimony and received written comments from the Applicant, the Applicant's counsel, the Applicant's hydrogeologist Joel Frisch, abutters, Daniel C. Hill, counsel for a group of abutters, Scott W. Horsley, hydrogeological consultant for a group of abutters, and other concerned members of the public.

In addition, the ZBA also heard extensively from its Dr. Vernon of Nobis Engineering, Inc. The ZBA also retained Nitsch Engineering, Inc. for civil engineering peer review.

All Town boards, commissions and departments were notified of the application and the public hearing. The ZBA received extensive written comments from the Board of Health, the Planning Board and the Conservation Commission, who also sent representatives and participated throughout the public hearing. The ZBA considered all of the comments and recommendations of the Town boards, commissions and departments in rendering this Decision, and expresses its thanks for their valuable assistance throughout this process.

The Applicant did not submit a formal revised waiver list, but filed a letter dated August 23, 2016 in which it noted various project changes. In this letter, the Applicant asked for one new waiver, of Section 4.2.1 (Building Setbacks). The setback is 40', and the Applicant's revised plans moved Unit 1 to a distance of 20' from the front lot line.

A list of all written evidence received during the combined public hearing is attached as "Exhibit A."

The ZBA voted to close the public hearing on January 19, 2017, and held deliberations on January 30, 2017, February 13, 2017 and February 27, 2017. The ZBA voted unanimously (Snell, Crespo, Galligan, Davis Lewis and Hinton in favor, and none opposed) to approve the Project subject to the terms and conditions of this Amended Decision on February 27, 2017.

III. NATURE OF THE APPLICATION & GOVERNING LAW

This application has been filed under M.G.L. c.40B, §§20-23 (the "Act") and the regulations promulgated by the Department of Housing and Community Development ("DHCD"), 760 CMR 56.00 (the "regulations"). Carlisle does not presently meet the Statutory Minima as defined by 760 CMR 56.03(3). As a result, the Town's Zoning Bylaw and other bylaws and regulations may be waived upon a showing that they are not "consistent with local needs" within the meaning of the Act.

The question of whether a particular bylaw or regulation is “consistent with local needs” involves a balancing of (1) the Commonwealth’s presumed need for Low and Moderate Income Housing in the Carlisle area and (2) “Local Concerns,” which is defined as “the need to protect the health or safety of the occupants of a proposed Project or of the residents of the municipality, to protect the natural environment, to promote better site and building design in relation to the surroundings and municipal and regional planning, or to preserve Open Spaces.” 760 CMR 56.02.

IV. JURISDICTIONAL ELEMENTS

Pursuant to the Act and the Regulations, 760 CMR 56.04(1), an applicant for a comprehensive permit must fulfill, at a minimum, three jurisdictional requirements to be eligible to submit an application to the ZBA. These are:

- a. The Applicant shall be a public agency, a non-profit organization, or a Limited Dividend Organization;
- b. The Project shall be fundable by a Subsidizing Agency under a Low or Moderate Income Housing subsidy program; and
- c. The Applicant shall control the Property.

Pursuant to 760 CMR 56.04(1), compliance with these project eligibility requirements “shall be established by issuance of a written determination of Project Eligibility by the Subsidizing Agency that contains all the findings required under 760 CMR 56.04(4), based upon its initial review of the Project and the Applicant’s qualifications in accordance with 760 CMR 56.04.”

The Applicant has submitted into the record a Project Eligibility Letter from MassHousing, dated June 3, 2014, that contains findings pursuant to 760 CMR 56.04(4). The threshold jurisdictional requirements of 760 CMR 56.04(1) are therefore deemed satisfied.

V. FINDINGS OF FACT

1. Lifetime Green Homes, LLC—hereinafter “the Applicant”—is a Massachusetts limited liability corporation with a business address of 142 Littleton Road, Westford, MA 01886. Jeffrey A. Brem is Manager of Lifetime Green Homes, LLC.
2. The parcel that is the subject of this application is located at 100 Long Ridge Road, Carlisle, MA (the “Property”). The Property contains approximately 9.84 acres. The Property is improved with an existing residential home that was built in or about 1974 and is contains eleven rooms, a horse barn, drinking water well, septic system, and other structures accessory to the existing residential use.
3. Jeffrey A. Brem and his wife, Lisa Brem, are the record owners of the Property.

4. The Applicant and Mr. and Mrs. Brem have entered into a purchase and sale agreement for the Property dated November 11, 2013.

5. The Property is located in the Residence B Zoning District. The Property is located within an existing residential neighborhood, with preexisting single-family residential houses on all sides.

6. The proposed development (the "Project") consists of twenty (20) single-family, detached residences. This includes the existing single-family dwelling located on the Property and nineteen (19) new residential units. The Property is to remain a single lot subject to the provisions of the Massachusetts Condominium Law, M.G.L. c.183A. The twenty residential units will be owned as condominium units. As described by the Applicant in its application materials, the twenty (20) units contain a total of 58 bedrooms. But the Applicant has treated the existing dwelling on the Property as a four-bedroom house. As discussed more fully in Finding No. 36, below, for purposes of Title 5 the 11-room existing dwelling is presumed to be a five-bedroom house, for a total of 59 bedrooms.

7. On remand to the ZBA, the Applicant filed a one-sheet plan labeled Plan P—Public Water Supply "The Birches" 100 Long Ridge Road Carlisle, Massachusetts dated February 2, 2016. The Applicant later submitted a revised version of the same plan sheet (with revisions dated August 18, 2016). A copy of this Plan is attached as Exhibit B. This is the only site plan provided by the Applicant for the revised Project. In contrast, for the original Comprehensive Permit dated August 12, 2015, the ZBA reviewed and conditionally approved an 11-sheet comprehensive plan set with a separate landscaping plan.

During the public hearing, the ZBA repeatedly asked the Applicant to provide a comprehensive plan set, so as to allow it to conduct a more complete review of the revised project. The Applicant declined, and was content to limit its application to the one-sheet "Plan P" dated February 2, 2016 and revised August 18, 2016.

8. As designed by the Applicant, several of the units present significant setback and screening concerns relative to the neighboring properties. On remand, the Applicant did not present a plan indicating the setbacks between the proposed dwelling units and the nearest lot line. Nor did the Applicant provide this information in any other application materials. Based on the scale of the plan, and a comparison with the prior plan that did indicate the setbacks, it appears to the ZBA that Unit 7 is located approximately 24 feet from the abutting property (not including the deck, which is closer) and Unit 8 is located approximately 37 feet from the abutting property line (not including the deck, which is closer).

In addition, on remand the Applicant presented no landscaping plan and did not offer any proposal for screening the revised project from the existing abutters or the surrounding area. The Applicant's original landscape plan showed no landscaping buffer on its side of the western property line, see Landscape Plan dated October 30, 2014 (Brem 086), but late in the original hearing, the Applicant proposed a 6' high solid wood or composite fence, with two black spruce trees on either end, to screen the neighbor with respect to Unit 8 only. See Landscape Plan dated October 30, 2014,

last revised May 27, 2015 (Brem 230). The ZBA finds the proposed setbacks and screening of Units 7 and 8 to be inadequate, but will allow the setbacks to remain as shown on the Approved Plans provided that the units shall not be moved any closer to the lot lines than currently shown on the plan and that increased landscaping and fencing are provided to mitigate these impacts, as discussed more fully in the Conditions of Approval, below.

On the north side of the Property, Unit 11 appears to be located approximately 18 feet from the property line and Unit 14 is located 22 feet from the property line (not counting the deck, which brings it closer). The Applicant's original landscape plan showed no landscaping buffer along this property line, *see Landscaping Plan* dated October 30, 2014 (Brem 086), but late in the original hearing, the Applicant proposed to install eight 8-foot tall Pinus Strobus trees between then Units 12 and 13 (now shown as Units 13 and 14) and the property line. *See Landscaping Plan* dated October 30, 2014, last revised May 27, 2015 (Brem 230). The ZBA finds that the setbacks and screening proposed for Units 11-15 are inadequate, but will allow the setbacks to remain as shown on the Approved Plans provided that increased landscaping and fencing are provided to mitigate these impacts, as discussed more fully in the Conditions of Approval, below.

The Applicant created a new setback concern on its revised plans, when it moved Unit 1 to 20' from the front lot line (on the originally approved plan, Lot 1 was 40' from the front lot line, which complied with the applicable 40' setback set forth in Section 4.2.1 of the Zoning Bylaw). The Applicant has proposed no landscaping, fencing, or screening to provide any kind of buffer to offset its new encroachment into the front setback. The Applicant's perceived need to push a unit into the front yard setback on a 9.84-acre site is a clear indication that it is attempting to squeeze too much onto this site. Nonetheless, the ZBA is amenable to allowing this new setback violation provided adequate screening is provided.

9. As single-family detached dwelling units, the proposed structures have substantial footprints, and the sizes of these units drive many of the problems associated with the geometry of the Project (such as inadequate setbacks from lot lines, inadequate separation between SAS and wells, and encroachment on Bordering Vegetated Wetlands discussed in more detail below). In the original hearing, the ZBA requested, on numerous occasions, that the Applicant reduce the number of bedrooms and modify the footprints of the units. In response, the Applicant reduced the footprints of three units (two also to reduce the bedroom count in an attempt to fit under septic flow regulatory limitations, discussed below), and shifted three units within a range of approximately 8 feet to 13 feet, but simultaneously added decks to these Units, thus more or less maintaining their proximity to lot lines or wetlands. The Applicant's changes did not constitute a meaningful response to the ZBA's density concerns, and were not sufficient to eliminate the many concerns raised herein with the inadequate setbacks shown on the Approved Plans.

10. The Applicant's plans have consistently shown, and the Applicant has so declared, that an area in the northeast portion of the Property is and shall remain undisturbed as vegetated open space. Therefore, the Board finds that all land to the northeast of the site shown as "Proposed Open Space" shall remain undisturbed and

in its current condition except for the improvements related to the public water supply shown on the Approved Plans, and de minimis cutting and removal of trees, shrubs and other vegetation, the planting of native trees, shrubs and other vegetation, the removal of obstacles, such as downed, dead or dying trees, brush, shrubs, debris, or trash for normal maintenance of the vegetated open space, to prevent threat of injury to persons, and the construction and maintenance of any walking trails (such trails proposed by the applicant at an early meeting during the public hearing, but not shown on the Approved Plans).

11. The Project is the continuation of a single access roadway that extends approximately 900 feet from the intersection with Long Ridge Road and approximately 3,400 feet from the closest through street at the intersection of Nowell Farme Road and River Road. Once the Project is constructed, the single access roadway from River Road will serve a total of 75 dwellings. Carlisle's Subdivision Regulations limit the number of dwellings served by a single access roadway to 10. The proposed roadway design for the Project consists of a dead-end road that is 24 feet wide and extends approximately 500 feet from Long Ridge Road to a rotary, and then extends for an additional 200 feet to the northeast, at a width of 20-feet wide, at which point the paved road terminates in a dead-end. The Applicant proposed several unconventional gravel extensions of this dead-end in an attempt to provide the means for a fire truck to turn around. The most recent proposal was a Y-shaped gravel turning area as shown on Exhibit T2—Turning Template dated December 15, 2016 and revised January 2016 [sic]. Brem 340. The final configuration of the fire truck turnaround was found to be unacceptable by Carlisle Fire Chief David R. Flannery based on the inadequate length and width. The final roadway layout is otherwise accessible by the largest Town fire apparatus.

12. There is an intermittent stream and associated bordering vegetated wetland (BVW) in the eastern portion of the site. The 100-foot buffer zone extends into the proposed development resulting in permanent impacts through the creation of impervious area. It appears that the proposed project will require grading in the buffer zone within 25 feet of the wetlands and it appears there may be filling within the wetland for the gravel access drive. This work will need to be permitted by the Conservation Commission and is not to be authorized in this Comprehensive Permit.

13. Each unit will have two (2) dedicated off-street parking spaces.

14. The Project has a total of four (4) guest parking spaces for the proposed twenty (20) units, located in one dedicated location. As conditioned below, overnight parking on the road is prohibited. Overnight parking in the guest spaces is allowed.

15. Nitsch Engineering reviewed the Applicant's proposed stormwater management system and provided the following comments in its written report dated October 18, 2016:

Nitsch Engineering notes that test pits are required for the forebay/bioretention and forebay/extended detention basin to determine estimated seasonal high groundwater, groundwater elevation, ledge conditions, and textural analysis to determine infiltration rates where

infiltration is proposed. Nitsch Engineering recommends that the Applicant provide the soil test pit logs for review.

Nitsch Engineering recommends one (1) test pit within the foundation of each unit during construction, as a Condition of Approval, to confirm that the soils can infiltrate the roof run-off as designed for the units. Nitsch Engineering recommends that the Applicant provide these soil logs to the Building Inspector for review.

The Pre-and Post Development maps should be adjusted to include the area east of the wetland to account for the new gravel access road to wells 4, 5, 6 and 7. The Applicant should update the HydroCAD model to reflect the new area and cover type. The Pre- and Post Development areas should be within 500 square feet of each other.

The Applicant is providing re-charge for the 0.5-inch storm event. Nitsch Engineering recommends that the Applicant provide recharge for up to the 1-inch storm given the number of wells and concerns expressed by the Town Conservation Commission of groundwater recharge in relation to the wetland. Nitsch Engineering notes that if soil test pits indicate soils with an infiltration rate of 2.41 inches per hour or faster, the stormwater system must infiltrate the 1-inch storm. This infiltration rate also applies to discharges to critical areas such as a Vernal Pool. The Applicant should discuss with the ZBA whether these thresholds are met for the site.

The Applicant provided stormwater rate reductions in the Post-Development Condition as required. While not required under the Stormwater Regulations, Nitsch Engineering also recommends that the Applicant provide stormwater volume reduction from the Pre- and Post Development conditions.

The Applicant should clarify if any of the roadways will have curbing to channel stormwater to the [Stormwater Buffer Zone] structures. The Applicant should provide a cross-section of the roadway where curbing is proposed.

Nitsch Engineering recommends that the Applicant provide closed drainage calculations for the stormwater drainage pipes to the proposed basins.

The Applicant must provide drainage calculations that indicate that the water quality storm (0.5-inch or 1 -inch) is captured and held within the proposed extended dry detention basin for 24-hours. Additional calculations are required to meet Standard 2 for retaining the pre-development peak flow as noted on page 52, Volume 2, Chapter 2 of the Stormwater handbook.

16. In addition to the foregoing, Nitsch Engineering concluded that the Project did not satisfy several MassDEP Stormwater Management standards, and noted that additional information would be needed in order to assess compliance with other Stormwater Management standards. Specifically, Nitsch Engineering found:

- a. That it does not appear that Standard 1 has been met.
- b. Additional information is required to determine whether Standard 2 is being met.
- c. Additional information is required to determine whether Standard 3 is being met.
- d. Under Standard 6, the Applicant should confirm that there are no resources identified as critical areas by MassDEP (i.e. vernal pools, wellhead protection areas, etc.) associated with the wetland resource area receiving the project's stormwater.¹
- e. Under Standard 8, no erosion controls are provided on the plans. The Applicant does not show adequate perimeter erosion controls, inlet protection, stabilized construction entrances, or the details associated with these practices. Nitsch Engineering recommends the erosion control be shown on the plan and coordinated with the Town Conservation Commission Agent prior to construction. A stormwater Pollution Prevention Plan (SWPPP) must be submitted prior to construction.

17. Nitsch Engineering noted that the O&M Plan should be revised to account for any changes made by the Applicant in response to these comments.

18. Nitsch Engineering noted that the Stormwater Report provided by the Applicant indicates that an Illicit Discharge Statement will be provided prior to construction. Nitsch Engineering recommended that the ZBA include a Condition to require the submittal of the Illicit Discharge Compliance Statement for review at least 30 days prior to the start of construction.

19. The Applicant did not revise its proposed drainage system in response to these comments from Nitsch Engineering during the public hearing. It will therefore be necessary to address these comments, and require the necessary revisions and additional review, through conditions included in this Comprehensive Permit.

20. The Town does not have an in-ground fire hydrant system, or any public water source available to be used for fire suppression at the Property.

¹ There is a vernal pool located downstream of the Property.

21. There is only one point of access into the Project. The proposed roadway extends from Long Ridge Road, which is an existing dead-end road. Chief Flannery expressed concern regarding the single-access off a lengthy dead-end road, and supported having the Applicant provide an additional secondary access from the Nowell Farme Road development. It appeared, however, that this secondary means of access was not feasible. Thus, including the proposed development, the total number of dwellings to which access would be denied with the closure of a single road would be 75. As a result, the need to provide adequate means of fire fighting at the Property is particularly acute given the concerns associated with a single point of access on a lengthy dead-end road.

22. The Applicant originally proposed a roadway width of 20 feet. Chief Flannery commented that two way traffic width for a fire lane in this development calls for 12 feet of width per lane, or 24 feet in width total (NFPA Standard 1141, section 5.4.2). The Applicant's current proposal shows a 24' wide road through the rotary, and then an additional 200' length of dead end road that is 20' wide road after the rotary.

23. Chief Flannery noted that the Y-shaped turnaround proposed by the Applicant is less desirable than a cul-de-sac, and when it used the turnout stubs must be 50 feet long by 20 feet wide, and the Y-radius must be 20 feet. The Y-shaped turnaround shown on the most recent detail provided by the Applicant (Exhibit T2—Turning Template dated December 15, 2016 and revised January 6, 2016) does not comply with this requirement.

24. In its original application, the Applicant proposed to provide a 30,000-gallon fire cistern, without a dedicated well, to serve the Project. In its amended plan, the Applicant showed no fire cistern whatsoever and volunteered no alternative form of fire protection. The Applicant appeared content to leave the question of fire prevention completely unaddressed in its proposal to the ZBA.

In any event, Chief Flannery stated that the 30,000-gallon fire cistern originally proposed by the Applicant is not acceptable for the Project, and that in accordance with the National Fire Protection Association's Standards 1141 and 1142, the fire protection cistern must have a minimum of 45,000 gallons available for draft. Chief Flannery further stated that Fire Department specifications require a dedicated cistern well, and that the cistern's "pull off"—that is, the means of access for a fire truck—must be 10' wide by 50' long with an access easement provided to the Town.

The requirement of a 45,000 gallon cistern, a dedicated well, and a 10'x50' "pull off" with an associated easement are consistent with conditions imposed on comparable developments within the Town of Carlisle. Recent examples in Carlisle include Garrison Place (16 residential units in 8 structures permitted in 2014 served by 40,000 gallon capacity in two cisterns); Benfield Farms (26 apartment units in a single structure permitted in 2010 and served by 46,000 gallon capacity in two cisterns); Hanover Hill (35 lots permitted in 2008 and served by 100,000 gallon capacity in three cisterns); Chestnut Estates (seven lots permitted in 2007 with a 30,000 gallon cistern); Greystone Crossing (15 lots permitted in 2006 with 70,000 gallon capacity in three cisterns); Hart Farm Estates (12 lots permitted in 2000 with 40,000 gallon capacity in two cisterns); Great Brook Estates (10 lots permitted in

2000 with 40,000 gallon capacity in two cisterns); and Carriage Way (10 lots permitted in 2000 with 40,000 gallon capacity in two tanks). For each of these projects, a dedicated well was provided for the cistern.

25. Chief Flannery noted that the NFPA minimum distance for single-family dwellings to one another is 30 feet, and recommended that this setback be maintained between all dwellings within the Project. Chief Flannery also noted that the NFPA setback from a dwelling to a wooded area is 30 feet, and recommended that at least 30 feet of "green space" be provided around each dwelling. Chief Flannery noted that several of the unit porches in the original project encroached on this 30' setback, and recommended that this be allowed only upon provision of the 45,000 gallon cistern.

In the revised project, the Applicant moved many of the proposed dwellings closer together. The revised plan shows a distance of 20' between Unit 2-3 and Units 3-4, a distance of 22' between Units 8-9, Units 9-10, Units 12-13, Units 14-15, and Units 16-17, a distance of 23' between Units 10-11, a distance of 25' between Units 13-14, and a distance of 27' between Units 11-12 and 17-18.

26. Chief Flannery further recommended that each unit within the Project be equipped with fire alarm systems with smoke and heat detectors that would be connected to a central station monitoring service, allowing for immediate Fire Department notification in the case of a fire. The ZBA will not require such an alarm system based on the requirement of the 45,000-gallon cistern with associated and dedicated pump and well, and the revision of the plans to provide the 30-foot setbacks between buildings.

27. Chief Flannery noted that underground propane tanks cannot be installed within 10 feet of a dwelling. The Applicant's plan shows several proposed propane tanks that violate this setback requirement. As a result, the Applicant will be required to adjust the location of propane tanks so that every tank provides the required separation from every dwelling unit.

28. Chief Flannery commented that the addresses need to be assigned in a logical, consistent manner based on the Town's local addressing system, and that street name must be subject to local approval so that it conforms to Carlisle's 911 naming and numbering protocol.

29. The Applicant obtained an Order of Conditions from the Conservation Commission under the Massachusetts *Wetlands Protection Act* and the Town's Wetlands Bylaw for its original project. The Applicant will need to reapply for its new project; no such application has been filed at this time.

30. The Applicant proposes to serve the Project with three new septic systems plus the existing septic system that serves Mr. and Mrs. Brem's existing house. One of the proposed new septic systems (SDA 1) is located in the southwesterly corner of the lot near the Project's frontage on Long Ridge Road, another is located along the westerly property line (SDA2) and the third is located in the northwest corner of the lot (SDA3).

A conventional septic system discharges wastewater containing 35 mg/L of nitrogen. The Applicant proposes to use so-called innovative/alternative technology systems that will provide for enhanced nitrogen removal to 19 mg/L in the wastewater discharge. This is the maximum amount of treatment currently available, which makes additional reduction of nitrogen discharge, should it be needed, unachievable.

The Applicant proposes that the three new systems will have a 110 gallon per day per bedroom design flow, notwithstanding Section 15.221 (General Construction Requirements) of the Board of Health's Supplementary Regulations for Sewage Disposal Systems, which requires a design flow of 165 GPD per bedroom.

The private drinking water well serving the abutting property at 132 Long Ridge Road is located approximately 108 feet from SDA3, notwithstanding Section 15.211 (Distances) of the Board of Health's Supplementary Regulations for Sewage Disposal Systems, which require a setback of 150' from a well to a system of 2,000 GPD or larger.

31. Title 5 defines "system" as "[a] system or series of systems for the treatment and disposal of sanitary sewage below the ground surface on a facility." Pursuant to this definition, the four individual septic systems proposed to be located on the Property constitute one "system" as a matter of law.

32. While, the Applicant has designed its "system" as 4 separate systems with individual flows less than 2,000 GPD (but with an aggregate flow in excess of 2,000 GPD), the Board finds that all systems constitute one "system" that exceeds 2,000 GPD for purposes of Title 5.

33. The Applicant's system is proposed (at the Title 5 design rate of 110 gallons per day per bedroom for the new component systems) to handle 6,604 GPD.

34. Pursuant to Title 5, "[n]o system serving new construction in areas where the use of both on-site systems and drinking water supply wells is proposed to serve the facility shall be designed to receive or shall receive more than 440 gallons of design flow per day per acre from residential uses." 310 CMR 15.214. This allowable nutrient loading limitation may be increased for systems "approved for enhanced nitrogen removal using a technology approved by the Department." 310 CMR 15.217.

35. As noted above, the Applicant has claimed from the outset that it will use a so-called innovative/alternative system. Based on the use of such a system, the Applicant intends to use increased nitrogen loading of 660 gallons per day per acre over the Project site. 310 CMR 15.217.

36. As proposed by the Applicant, the Project will discharge at least the maximum permissible amount of nitrogen for this Site under Title 5. In a memorandum to the ZBA dated October 19, 2016, Nitsch Engineering reviewed the Aggregation of Flows and Nitrogen Loading for the Project, using Title 5 and the DEP's *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading*, revised February 22, 2016. Nitsch concluded that for the Applicant's current proposal (three units with 2 bedrooms,

sixteen units with 3 bedrooms and one existing four-bedroom dwelling served by a conventional septic system) 9.18 acres of area is required to meet the equivalency standard for nitrogen removal.

The Property contains 9.84 acres, but the DEP guidance documents states that road area cannot be used for the nitrogen credit and must be subtracted from the required land area calculation. "The road areas are excluded from credit since imperviousness of the paved roads prevents recharge to the groundwater." *Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading, 310 CMR 15.216 Revised 2/22/16.* Subtracting the roadway leaves 9.26 acres, more than the 9.18 acres necessary to support the proposed nitrogen discharge. Using the calculations just discussed, the Applicant has a buffer of .08 acres, which means that it could not under any circumstances add so much as one additional bedroom to this Project.

However, two additional factors indicate that the Project actually exceeds the maximum nitrogen loading. The existing dwelling on the Property is assessed as a four-bedroom house, and was treated as such in Nitsch's calculations. At the close of the public hearing however, the Board of Health noted that the house has 11 rooms, which means that it is a five bedroom house for purposes of Title 5. 310 CMR 15.002 states in relevant part:

Where the total number of rooms for single family dwellings exceeds eight, not including bathrooms, hallways, unfinished cellars and unheated storage areas, the number of bedrooms presumed shall be calculated by dividing the total number of rooms by two and then rounding down to the next lowest whole number.

(emphasis added). Eleven rooms/2=5.5. Rounded down, this result produces 5 bedrooms attributable to the existing dwelling. This additional Title 5 bedroom causes the Project to exceed the maximum limit for nitrogen loading.

In addition, the Applicant has proposed to install a network of gravel roads to access the public water supply wells and to provide a fire-truck turn-around at the end of the paved length of dead-end road. The Applicant's use of gravel appears to have been motivated entirely by the desire to avoid counting this area as road, which would need to be excluded from the area used to support nitrogen loading because it is impervious and prevents recharge to groundwater. It strains credulity, however, to suggest that the area used for a Fire Truck turnaround will be pervious, given that it will be necessary for it to support the weight of a fully loaded fire truck weighing approximately 60,000 lbs. Based on the Applicant's plan, Nitsch Engineering, Inc. estimated that there is approximately 1,640 square feet (.036 acres) of gravel area needed for Fire Truck turning maneuvers, and the ZBA finds that this area should be excluded from the area used to support nitrogen loading.

37. The DEP defines "public water system" as follows:

a system for the provision to the public of water for human consumption, through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an

average of at least 25 individuals daily at least 60 days of the year...The Department may presume that a system is a public water system as defined herein based on the average number of persons using a facility served by the system or on the number of bedrooms in a residential home or facility. The Department reserves the right to evaluate and determine whether two or more wells located on commonly owned property, that individually may serve less than 25 people, but collectively serve more than 25 people for more than 60 days of the year should not be regulated as a public water system, taking into account the risk to public health.

310 CMR 22.02.

38. Based on the DEP's regulatory definition and the number of individuals expected to reside at the Project, it is presumptively a "public water system." The Applicant has shown a seven-well public water system on its plan and stated that it intends to permit this system with the Massachusetts Department of Environmental Protection. The ZBA's hydrogeological review of the Project suggests a range of concerns regarding the proposed public water system (discussed more fully below), but permitting this water supply is not within the ZBA's jurisdiction and concerns will presumably be addressed by the DEP.

The ZBA does note, however, that the Applicant has left itself, quite literally, no room to move its seven proposed water supply wells without drastically affecting the site plan. Each of the proposed wells is surrounded by a protective Zone I, and most of these Zone I's are bounded by lot lines, the edge of the paved roadway, and/or the proposed dwelling units, and therefore cannot be moved in any particular direction. Stated differently, the Applicant needs its seven proposed wells to be located precisely where they are shown on the current plans.

39. Immediately prior to the filing of this Application, the Property was part of a larger parcel of land owned by Jeffrey and Lisa Brem until March of 2014. On March 10, 2014, the Carlisle Planning Board endorsed the plan entitled "Approval Not Required Plan—Brem Property Long Ridge Road Carlisle Massachusetts" prepared for Jeffrey and Lisa Brem of 100 Long Ridge Road, Carlisle MA 01741, by the Meisner Brem Corporation, 141 Littleton Road, Westford, MA (the "2014 ANR Plan"). The 2014 ANR plan is recorded with the Middlesex North District Registry of Deeds as Plan No. 76 in Plan Book 237. This ANR Plan divided Mr. and Mrs. Brem's property on Long Ridge Road into two new lots: (1) The Property that is the subject of this Application and (2) a separate two-acre (87,124 square foot) lot, with 250.09' feet of frontage.

Mr. and Mrs. Brem then conveyed the two-acre parcel (now known as 90 Long Ridge Road) to G. Gardner Contracting LLC by deed dated April 16, 2014 for consideration of \$312,500.00.

The Applicant, of which Mr. Brem is principal, then filed this application on July 3, 2014.

The ZBA finds that the additional two acres that the owners subdivided and sold in March—April 2014 would have served as an important addition to this Project. This additional area likely could have served to address many of the problems presented by the Applicant's proposal (discussed elsewhere in this Decision). In particular, this additional two acres likely could have allowed the Applicant to provide greater area for its proposed public water system, septic disposal and treatment, greater separation between septic systems and drinking water supply, and area for increased landscaping, buffering between the Property and the abutting residences, and open space.

40. The ZBA heard evidence throughout the original and remand hearings about the hydrogeology of the Property and the surrounding area. This evidence was needed in light of two significant local concerns: (1) The danger that the Project's unusually high drinking water demand could affect the groundwater supply of the neighbors' existing drinking water wells; and (2) the danger that the Project's unusually high septic discharge could adversely affect the safety of the drinking water in the neighbors' existing wells, and in the wells proposed to serve the Project. The Town has no municipal drinking water supply, and no sewer, and all lots in Town rely exclusively on private, on-lot drinking water wells and septic systems.

41. Septic systems discharge nitrogen to the groundwater, and the ZBA was primarily concerned with defining how much nitrogen would be discharged by the Project's septic systems, where it would go, and what the concentrations would be at the nearest sensitive receptors, including the Project's drinking water wells, the Project's property lines, and the neighbors' existing drinking water wells.² Nitrogen is known contaminant, and infants below six months who drink water containing nitrogen in excess of the maximum contaminant level (MCL) could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome. United States Environmental Protection Agency, National Primary Drinking Water Regulations. The primary health hazard from drinking water with nitrate-nitrogen occurs when nitrate is transformed to nitrite in the digestive system. The nitrite oxidizes the iron in the hemoglobin of the red blood cells to form methemoglobin, which lacks the oxygen-carrying ability of hemoglobin. This creates the condition known as methemoglobinemia (a/k/a/ blue-baby syndrome) in which the blood lacks the ability to carry sufficient oxygen to the individual body cells causing the veins and skin to appear blue.

See also *Reynolds v. Stow*, 88 Mass. App. Ct. 339, 342 n.7 (2015) (“There was uncontroverted evidence...that elevated levels of nitrogen in the water, alone, are a public health threat and possibly indicative of other pollutants.”)

² As discussed more fully below, the Town of Carlisle has a local Septic Regulation that is intended to prevent septic systems from impacting neighboring properties. The Town's local septic regulation 15.100 requires that “[m]odels shall predict no rise in ground water elevation and no greater than 5 mg/L of total nitrogen at the perimeter boundary.” (Emphasis added).

42. The ZBA received guidance during its original public hearing from Stephen W. Smith, P.E., P.HGW., L.S.P., of GeoHydroCycle, Inc. Mr. Smith provided input on the scope of the hydrogeological study necessary to assess the Project's impacts on existing abutting drinking water wells and the Project's originally-proposed private wells, and peer review of a study filed by the Applicant.

43. In a series of letters dated October 19, 2014 (Brem 082), November 14, 2014 (Brem 107) and December 30, 2014 (Brem 139), Mr. Smith outlined the hydrogeological analysis necessary to investigate the impacts of the Project. Mr. Smith recommended field-testing to determine site-specific properties of groundwater supplies and sewage discharge area that will be used by the Project. This includes (1) overburden sands, which will be used for wastewater discharge, and (2) bedrock, which will be used to supply drinking water. Mr. Smith stated that a detailed understanding of both overburden and bedrock is required to predict future groundwater supply conditions and to design groundwater protection strategies.

44. Mr. Smith specifically noted that impacts from a 24-hour pump test often do not extend out far enough beyond the pumped wells to be able to determine whether an impact has occurred. For the testing of the Project's water supply wells, a minimum 48-hour test should be required while monitoring abutting wells during the test. The goals of the 48-hour pump test are to determine whether the aquifer can yield sufficient water to meet the Project's demand; to estimate impact to abutting wells; and to determine aquifer characteristics.

45. Mr. Smith recommended that the nitrate plumes for each of the wastewater discharge areas should be calculated and that the plume results should be compared with state drinking water standards at any wells within the plume. The plume analysis/modeling is necessary to determine which downgradient wells (both within the Property and on abutters' properties) are at risk based on their location for nitrate levels exceeding safe drinking water criteria.

46. Mr. Smith recommended water quality sampling of abutters' wells within 500 feet of the wastewater discharge areas quarterly for two years, followed by annual sampling for another three years. Each analysis should include the chemical constituents sampled in the initial baseline well sampling, and should be compared to state drinking water standards and the baseline well tests to assess whether the project poses a public health risk.

47. Mr. Smith recommended that an escrow fund be established to provide for well repairs, upgrades, or replacements where impacts attributable to the Project have occurred. Mr. Smith recommended that this escrow fund be established and that \$15,000 is the amount that should be set aside to adequately cover the cost of replacing a single well, including well drilling, pump replacement, hydro-fracking, water quality sampling and analysis, well disinfection, and costs including permit

fees related to connecting a new well to the home. Mr. Smith recommended that this fund be maintained for 5 years and replenished after any use. Brem 82.³

48. Scott Horsley, a hydrogeologist retained by a group of abutters, submitted a response to a report of the Applicant's hydrogeologist (Northeast Geoscience or NGI), and many of his comments echoed those of Mr. Smith. Mr. Horsley's stated as follows:

- i. The test pit and monitoring well data confirm that the Property has shallow depth to bedrock (refusal) of 9-15 feet, very limited saturated thickness (groundwater in the overburden) of 3-9 feet, shallow depth to the water table (as low as 2 feet beneath the land's surface), and a low permeability of 2-24 feet/day. These characteristics create significant constraints in siting subsurface wastewater disposal systems.
- ii. The test pit and monitoring well data indicate that groundwater mounding will be pronounced and raise serious questions regarding the minimum 4 foot vertical separation beneath the leaching/disposal fields and seasonal high groundwater (water table), which is required by Title V and good design practice.
- iii. While NGI's mounding analysis suggests a minimal increase in the water table, it failed to take into account cumulative mounding from stormwater and wastewater discharges.
- iv. NGI used a 30-day mounding analysis, "far too short a time for this analysis"; the steady state mound height will likely be far greater than that calculated after 30 days, and the mounding analysis should be redone.
- v. NGI's nitrogen loading analysis understated probable impacts of the proposed wastewater discharges, in part because it incorrectly assumed dilution of the proposed wastewater with all recharge on the site. MassDEP's recommended method to determine nitrogen concentrations requires that the proposed wastewater discharge are diluted with only the groundwater that is directly above and downgradient of the discharge area.
- vi. NGI used a solute transport model to estimate downgradient nitrogen concentrations that relied upon two additional factors

³ In September 2014, the Applicant proposed to deposit up to \$12,000 as security for the purposes of mitigating any documented negative impact cause by the Project to any neighboring well(s) within 500 feet that were subject to a testing protocol to establish baseline conditions. The use of these funds, as proposed by the Applicant, would include re-drilling, hydro-fracturing and/or replacement. *See Letter from Lifetime Green Homes, LLC to ZBA dated September 12, 2014 (Brem 060).*

to reduce downgradient concentrations of nitrogen—dispersion and decay. Neither factor is allowed in the recommended MassDEP nitrogen loading model. Both factors are recognized to be minimal/insignificant and can overestimate nitrogen reductions in groundwater.

Letter from Scott Horsley to Daniel C. Hill dated April 10, 2015 (Brem 202).

49. The Town also engaged James H. Vernon, Ph.D, P.G., Senior Hydrogeologist at Nobis Engineering, Inc., to conduct an independent analysis of the hydrogeology of the Property and the surrounding area on behalf of the Town and the ZBA. Dr. Vernon's independent hydrogeological study was presented in a two-phase report (dated February 20, 2015 and May 1, 2015, respectively) and a Technical Memorandum dated May 20, 2015 during the ZBA's original public hearing.

50. Some of the work that Dr. Vernon presented during the original public hearing focused on the hydrogeology of the Property and the surrounding area; some of the work focused on the impacts of the Project's proposed septic systems. As noted above, the Applicant originally proposed to construct two septic system disposal areas directly next to one another in the northwest corner of the Property. This was revised on remand, when the Applicant proposed to move SDA2 approximately halfway down the western property line. The relocation of one of the component septic systems caused considerable changes in the amount of wastewater that would be discharged in different locations on the Property. As a result of these plan changes, Dr. Vernon presented a substantial amount of new information, analysis, and commentary during the remand public hearing, including:

- a. Phase 4 Report—Independent Hydrogeologic Study 100 Long Ridge Road, Carlisle MA (September 30, 2016). Brem 310-314.
- b. Technical Memorandum—Alternate nitrate mass balance calculation, proposed SDA 2, 100 Long Ridge Road (October 25, 2016). Brem 322.
- c. Technical Memorandum—Overburden/Bedrock Groundwater Connectivity Assessment, 100 Long Ridge Road (December 8, 2016). Brem 330.
- d. Response to NGI 12/23/16 Report (January 3, 2017). Brem 335.
- e. Response to NGI 1/4/17 Report (January 16, 2017). Brem 346.

Dr. Vernon's tasks at the beginning of the remand public hearing were to:

- a. Assess the potential impacts of the re-configured septic systems on existing neighbors' wells;
- b. Assess the potential impacts of the re-configured septic systems on the proposed new wells for the Birches PWS; and

- c. Assess the potential impacts of pumping the proposed new PWS wells on existing neighbors' wells and on each other.

Phase 4 Report (Brem 312) dated September 30, 2016 at p. 2.

51. Bedrock at the Property features near-vertical fractures. Once groundwater reaches the network of bedrock fractures, it can travel quickly, and the presence of vertical fractures increases the likelihood that wastewater will reach the nearby downgradient drinking water wells, including the proposed drinking water wells within the Project.

52. In his Phase 2 Report dated May 1, 2015 (Brem 212), Dr. Vernon conducted a mechanistic analysis of predicted nitrogen concentrations at the Project under four different scenarios: Scenario 1 was for a design discharge rate of 110 GPD for the entire 9.84 acre Property, Scenario 2 was for a design discharge rate of 165 GPD per the Town's local regulations for the entire 9.84 acre Property, Scenario 3 was for the design discharge rate of 110 GPD and excluding the land area east of the brook, which is not believed to be available for dilution of nitrate, and Scenario 4 was for the design discharge rate of 165 GPD and similarly excluding the area east of the brook.

Scenario 1 resulted in a predicted nitrogen load of 11.9 mg/l, Scenario 2 resulted in a predicted nitrogen load of 14.0 mg/L, scenario 3 resulted in a predicted nitrogen load of 13.6 mg/L, and scenario 4 resulted in a predicted nitrogen load of 15.5 mg/L.

53. Dr. Vernon was then asked to calculate nitrate loading and mass balance according to the specific method presented in "Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading, 310 CMR 15.216," revised February 22, 2016, including the determination of the Areas of Impact (AOIs) for each component septic system. The analysis involves extending AOIs from the proposed SDAs to down gradient property lines or sensitive receptors such as existing private drinking water wells. The results for the new septic configuration presented on remand were as follows:

54. For proposed SDA1, Dr. Vernon prepared several AOIs because the direction of groundwater flow was not known at the time. AOI-1A extends to eastern property line and the calculation produces a result of 16.3 mg/L. AOI-1 Alt. 1 extends in a southerly direction to the existing drinking water well at 68 Garnet Rock Lane and the calculation produces a result of 14.3 mg/L. AOI-1 Alt. 2 extends to in the southwesterly direction to the existing drinking water well at 200 Long Ridge Road and the calculation produces a result of 13.7 mg/L. Since these calculations were performed, the Applicant presented additional, credible information indicating that groundwater flows to the south at the location of proposed SDA1, making AOI-1 Alt. 1 (extending to the well at 68 Garnet Rock Lane and with a result of 14.3 mg/L) the most relevant of these three calculations.

Dr. Vernon noted that the existing well that serves the home at 90 Long Ridge Road is also downgradient of SDA1, but farther away than the down-gradient edge of AOI-1A at the property line. Dr. Vernon did not delineate an AOI extending to this well

or perform a nitrate mass balance calculation, and stated that he could not conclude that a result at 90 Long Ridge Road would be less than 10 mg/L or 5 mg/L for nitrate.

55. For proposed SDA2, Dr. Vernon produced three AOIs in his Phase 4 Report. AOI 2A extends to near the up-gradient edge of the existing septic system on the Property (to determine the amount of loading and dilution that might occur prior to adding the nitrate load from this septic system), AOI 2B terminates at the edge of composite Zone I for the proposed public water system, and AOI2C extends to the nearest downgradient public water supply well. The calculation for these AOIs produced results of 17.0 mg/L, 17.9 mg/L and 15.4 mg/L, respectively.

During testimony at the public hearing, the Applicant's hydrogeologist argued that Dr. Vernon should have prepared an AOI for proposed SDA2 that extended to the south, given uncertainty as to which direction groundwater flowed. Based on this comment, Dr. Vernon submitted a Technical Memorandum dated October 25, 2016. In this Technical Memorandum, Dr. Vernon produced two additional AOIs for proposed SDA2: AOI-2A Alt. 1 terminates at the northern corner of proposed SDA1 and AOI-2B Alt.1 that terminates at the existing wells at 200 Long Ridge Road and 68 Garnet Rock Lane. The calculation produced results for AOI-2A Alt. 1 and AOI-2B Alt. 1 of 15.3 mg/L and 12.7 mg/L, respectively.

56. For proposed SDA3, Dr. Vernon produced two AOIs. AOI 3A extends to the nearest property line to the northeast, and AOI3B extends to the brook located on abutting property. The calculation for these AOIs produced results of 11.5 mg/L and 7.5 mg/L, respectively. The brook located on the abutting property flows onto the Property and through the proposed public water supply well field.

57. Copies of the Figures illustrating the AOIs and the Tables showing Dr. Vernon's calculation results are attached as Exhibit C.

58. The DEP's Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading lists "18 inches per of recharge over one acre of land" among several assumed values to be used in the calculation. The Guidance document further provides, however, that these assumptions will apply in most cases and that the applicant may use other assumptions to better address site specific conditions. Guidelines for Title 5 Aggregation of Flows and Nitrogen Loading, at p. 12.

59. When conducting the nitrate calculations discussed in Findings 53-57, Dr. Vernon used 18 inches per acre per year as the input for groundwater recharge from precipitation. This was done as an accommodation to the Applicant, and in an attempt to determine what results would obtain when adhering as closely as possible to the DEP Guidance document. In prior reports submitted to the ZBA, both Dr. Vernon and NGI had used the site-specific figure of 8.2 inches per year of recharge per acre. In his Phase 2 reports, Dr. Vernon stated as follows:

Water budget inputs from precipitation have been estimated by NGI at 20% of the average annual precipitation; for the Site, this amounts to 8.2 inches per year distributed over the 9.84 acres of the Site, for a

total of about 7.8 million liters per year (NGI Report, Table 2), or about 2 million gallons per year. Nobis agrees that 20% is a reasonable assumption for the sandy glacial till deposits at the Site.

Phase 2 Report—Independent Hydrogeologic Study—100 Long Ridge Road, Carlisle, MA at pp. 8-9 (Brem 212).

If the more site-specific figure of 8.2 inches per year were to be used in the nitrate calculation, the calculated nitrate concentrations discussed above would increase significantly based on the reduced amount of recharge that would realistically be anticipated for this Property (8.2 inches per year instead of 18 inches per year).

60. Dr. Vernon specifically noted that his calculations were for the overburden and are not predictive of nitrate concentrations in any particular well drilled in bedrock. Dr. Vernon is of the opinion that without subsurface investigations of the potential hydraulic connectivity between the proposed septic disposal areas (in the overburden soils) and specific existing and proposed wells (in bedrock), it is not possible to determine that nearby wells are reasonably safe from potential impacts.

61. The concerns relating to the nitrogen concentration in the groundwater are exacerbated by the fact that the Applicant, in an attempt to meet the nitrogen equivalency calculation, is currently proposing to use an “alternative system” that provides the highest degree of nitrogen removal currently available. An alternative system discharges wastewater with nitrogen concentration of 19 mg/L, whereas a conventional system discharges wastewater with a concentration of 35 mg/L; all of Dr. Vernon’s calculations are based on the 19 mg/L discharge as proposed by the Applicant. This means that the proposed septic system cannot be upgraded or improved to remove additional nitrogen from the wastewater that would be discharged at the Property.

62. Dr. Vernon commented in his September 30, 2016 Phase 4 report as follows:

The degree of hydraulic connection between overburden groundwater and bedrock groundwater at the Site has not been characterized. If dense, low permeability glacial till deposits are present on top of the bedrock in some locations, these deposits may inhibit flow between the overburden and the bedrock. If a low-permeability layer is absent, impacted overburden groundwater is more likely to reach a well drilled in bedrock. Proposed wastewater discharge will be to the overburden; all new and proposed wells obtain their water from the bedrock.

At the next session of the public hearing, the Applicant suggested that if Dr. Vernon wanted answers to these outstanding questions, he was welcome to come on to the Property and gather additional information. With that invitation extended, the ZBA and the Applicant spent several weeks negotiating to allow Dr. Vernon access to the Property, and a scope of work for his visit. Ultimately it was agreed that Dr. Vernon would subcontract a driller to install borings in the vicinity of the proposed SDAs,

analyze the soils and prepare boring logs, and install pressure transducers to record water levels in five existing monitoring wells.

63. Dr. Vernon subcontracted with a drilling company, and on November 23, 2016 drilled borings at pre-agreed locations on the Property. The drilling proceeded with the permission of the Applicant, with both Mr. Brem and Joel Frisch from NGI present while the borings were made.

64. Boring B3-16 was located near the proposed SDA3. This boring was advanced to a depth of 30 feet below ground surface (bgs) without reaching "refusal" (a drilling term for the inability to advance the boring further, often indicating that bedrock has been reached). Boring B3 encountered a clay layer from about 17 ft bgs to about 20 ft bgs. This clay layer can be expected to inhibit downward movement of groundwater and mixing or transport of dissolved wastewater components in this location, although the areal extent of this clay layer is unknown.

65. Boring B2-16 was located near proposed SDA2. The boring was advanced to 20 ft bgs after several attempts were made due to dense, resistant deposits. The boring encountered wet, sandy clay from 10-15 ft bgs and dense glacial till from 15-20 ft bgs. These deposits likely would restrict and slow the downward movement or mixing of groundwater and dissolved wastewater components at this location.

66. Boring B1-16 was located near proposed SDA1. Initial drilling attempts reached refusal at 11 ft bgs and another attempt reached refusal at 12.5 ft bgs. The deposits encountered were sandy all the way to refusal, with no evidence of a layer that would restrict downward mixing of groundwater or transport of wastewater components at this location.

67. Boring B4-16 was located about 10 from the edge of pavement at 68 Garnet Rock Lane. The boring reached refusal at 12.5 ft bgs and the deposits were entirely sandy. There is no evidence of a layer that would restrict downward mixing of groundwater or transport of wastewater components at this location.

68. Based on his findings, Dr. Vernon concluded that in the area of Boring B3/Proposed SDA3 and Boring B2/Proposed SDA2, groundwater flow and contaminant transport may be slowed, restricted or precluded between overburden (where the proposed SDAs will discharge) and bedrock (from which all area water supply wells obtain their water). Specifically, wastewater discharged from proposed SDA3 may remain perched above a clay layer at 17-20 ft bgs, and wastewater discharged from proposed SDA2 may be prevented from mixing with deeper bedrock groundwater by dense glacial till that underlies the location of boring B2.

But the areal extent of these layers is unknown. Drilling logs for existing monitoring wells MW-4 and MW-5 (both located to the east/southeast of Proposed SDA3 and to the northeast of Proposed SDA2) show that competent bedrock was reached without encountering either clay or glacial till. These logs demonstrate that the low-permeability layer found at Boring B3/Proposed SDA3 pinches out and disappears by MW-4 and MW-5, raising concern that in these downgradient locations impacted groundwater might infiltrate into bedrock fractures and pose a

concern for the proposed public water system wells. The same is holds true of the low-permeability layer found at Boring B2/Proposed SDA2. Given that the groundwater flow direction in this area is not known, this area carries the additional concern of communication between overburden and bedrock to the east (brook/wetland area) and to the south.

69. In the area of Boring B1/Proposed SDA1 and Boring B4, the existence of sandy deposits down to refusal indicate the flow of groundwater between overburden and bedrock surface is likely. In addition, all available evidence indicates that groundwater flow is southerly from Proposed SDA1, in the direction of 68 Garnet Rock Lane.

70. In his Phase 4 report, Dr. Vernon expressed several concerns related to the Applicant's proposed public water system. These are as follows:

a. Dr. Vernon noted that the Applicant has assumed that each of the seven proposed wells will produce one-seventh of the required flow. But whether each well can sustainably produce this amount of water will be unknown until the wells are drilled and subjected to pumping tests. It is more likely than not that two or more wells will interfere with each other when pumped.

Given the uncertainty with respect to well yields, some wells may need to be moved from their presently proposed locations. This would result in moving, and potentially increasing the size of, the corresponding Wellhead Protection Area Zone I's. This appears to be impossible given the Applicants' proposed project density, as discussed above and as shown on the plan.

b. The proposed PWS is located immediately next to a brook and wetland. If the brook and wetland are hydraulically connected to groundwater, pumping of the PWS could cause impacts. Based on the presence of bedrock outcrops only a few tens of feet east of the brook, it is likely in Dr. Vernon's opinion that the overburden is fairly thin in this area and that the brook and wetland receive groundwater discharge.

c. Dr. Vernon noted that "The Surface Water Treatment Rule (SWTR), an amendment to the Federal Safe Drinking Water Act, requires MassDEP to inform the U.S. EPA of groundwater sources determined to be "under the direct influence of surface water," as these may be at risk of carrying water-borne pathogens. New PWS wells must either receive an SWTR exemption, or be considered as surface water sources. Dr. Vernon stated that under current regulations, an exemption should not be assumed, and that absent an exemption the wells will be subject to additional testing, and potentially be required to have a water filtration plant.

71. On January 3, 2017, Dr. Vernon submitted a letter response to the December 23, 2016 written submission from NGI. Dr. Vernon agreed with several of NGI's comments, and did not agree with others. In particular, Dr. Vernon noted that his results predict a separation of less than 5 feet beneath Proposed SDA2 and less than

4 feet beneath Proposed SDA3. Title 5 requires the separation between the top of the groundwater mound and the bottom of the stone underlying the soil absorption system to be at least 4 or 5 feet depending upon percolation rate.

72. NGI submitted an additional letter on January 4, 2017, reporting in part that it had gathered new information about the direction of groundwater flow in the area of Proposed SDA1. Dr. Vernon reviewed and commented on this new submittal in a written response dated January 17, 2017. Based on his review of this letter, Dr. Vernon and NGI agreed that the new groundwater level measurements taken by NGI indicate that overburden groundwater flow from Proposed SDA1 is southward. Dr. Vernon noted that the actual flow direction may vary several degrees in either direction, however, from that presented in NGI's January 4, 2017 letter. Dr. Vernon agreed with NGI that the well at 200 Long Ridge Road is not downgradient from Proposed SDA1. There was consensus that the well at 68 Garnet Rock Lane was generally downgradient from proposed SDA1, and Dr. Vernon found that there was not sufficient information to conclude that the well at 68 Garnet Rock Lane was not directly downgradient from that system.

73. All of the modeling performed by Dr. Vernon and NGI concerns the overburden, rather than the bedrock layer below the overburden. All of the abutters' drinking water wells draw their water from the bedrock. Once groundwater reaches bedrock, it can travel great distances very quickly, and the path of travel depends on the orientation and characteristics of the bedrock fractures.

74. In a letter dated January 4, 2017, the Applicant stated as follows:

In response to comments received relating to back up provisions in the situation of concern wherein a neighboring well to the above referenced project is rendered unusable due to the referenced project please refer to your Condition Number 95 [in the original Comprehensive Permit dated August 12, 2015] which provides for a funding mechanism to replace wells outside of the project. You will recall that the basis for this condition was from a voluntary offer of the applicant back in September, 2014 with a different amount (\$12,000 vs. \$30,000) and slightly different conditions.

With this correspondence the applicant offers that if any of the neighboring private wells are rendered unusable pursuant to new Condition Number 95 (specifically those presently owned by Hanauer, Ringheiser, and Higgins) then those property owners can tie directly into the public water supply as constructed and installed by this project at no cost to the neighbor and to be paid by the developer or the Homeowner's Association, if after the project is completed. Further, to ease in this connection, the initial installation of the water main will include stubs to the street to the southwest (Ringheiser and Hanauer) and the property line to the northeast (Higgins).

(Brem 337).

75. The affected abutters expressed their opposition to this proposal. The ZBA finds their opposition to be well founded, on several grounds. In order to make good on the offer, the Applicant would need to obtain DEP authorization to construct a public water system to service three single-family homes that would not immediately connect to the system, and hopefully would never connect at all. The public water system shown on the Approved Plans was not intended to serve houses outside the Project; this idea was first raised at the end of the public hearing. The Applicant has stated that the capacity exists, without the need to revise the plans, but this cannot realistically be known or relied upon until DEP has approved the system. In addition, the Applicant has left itself no room to move any of the proposed public water supply wells from the locations shown on the Approved Plans. This leaves significant doubt as to whether the system can be constructed as currently proposed, let alone supply houses external to the Project.

In addition, if the public water system is ever constructed, it will be owned, operated, managed and maintained by the condominium association for this project. As a general matter, it is not reasonable to expect the owners of an existing single-family home located on a private lot to enter in to a permanent and involuntary regulatory relationship with a private condominium association in order to continue to have potable water. Even if this were reasonable as a general matter, this relationship would be governed by detailed legal documentation, including without limitation, the condominium master deed, condominium bylaws, and a contract between the abutter and the condominium association. Specific provisions of such documents could be objectionable to the abutters, or to the condominium association, and without comprehensive understanding of what the parties would be committing to, it would be grossly premature for the abutters to agree to the proposal, or the ZBA to agree to it on their behalf.

Finally, the record indicates that there are serious concerns about the ability of this Project to provide a safe public water system. See Finding No. 70, above.

Fundamentally, the Project cannot be allowed to proceed pursuant to a comprehensive permit unless it can be demonstrated that it will not adversely affect the existing drinking water wells of the abutters. This has not been shown here, and the underdeveloped concept of allowing abutters to join a privately owned and operated public water system is no substitute for requiring a project design that will ensure their water wells will remain safe.

76. Based on the all of the hydrogeological analysis presented into the record during the public hearing, and the guidance received from Dr. Vernon and others, the Board found that additional analysis of hydrogeological site-specific conditions is needed and that the Project as currently proposed presents a threat to the health and safety of the community drinking water supply.

77. Throughout the public hearing, the ZBA carefully avoided any effort to redesign the Project, and focused primarily on the public health and safety issues related to the Applicant's proposed density and design in an area that is entirely reliant on private drinking water wells and on-site subsurface sewage disposal. Although the ZBA and its consultants identified serious public health and safety

issues attributable to the amount of wastewater to be discharged by the Project, the Applicant was unwilling to make any responsive revision to its proposed development.

As a result, the ZBA finds that the Project may only be approved subject to certain local septic and drinking water regulations for which the Applicant had sought waivers, and subject to certain conditions of approval, that are essential to adequately safeguard the public health and safety. In particular, the ZBA must require compliance with the Board of Health's requirement that the Applicant demonstrate that there will be no more than 5 mg/L of nitrogen at the perimeter boundary.

Chapter 40B requires the ZBA to balance the Town's legitimate land use, planning, environmental, and public safety interests against the need for affordable housing. It must find a balance that preserves the integrity of the Town's local bylaws and regulations to the greatest extent possible while also addressing the demand for housing for the area's low and moderate-income families.

Under conventional zoning, the Property could likely accommodate 4 single-family homes (the minimum lot size is 2 acres, and the Property contains 9.84 acres total). While the Property cannot safely accommodate the development of 20 housing units as currently designed the ZBA does not make any specific findings as to what alternative density and/or project design the Applicant should pursue in accordance with this Decision. Rather, by denying a waiver of the Town's local regulation requiring that there be no more than 5 mg/L of nitrogen at the perimeter boundary, and imposing the conditions of approval set forth below, the ZBA intends to require the Applicant to demonstrate that the public health and safety of the existing area residents and the new residents of the Project will be adequately protected.

VI. WAIVERS FROM LOCAL BYLAWS AND REGULATIONS

The ZBA voted to GRANT the following specific waivers:

Zoning Bylaws:

1. Section 4.2.1—Building Setback. Pursuant to Section 4.2.1 of the Zoning Bylaw, no building shall be erected so as to extend nearer to the front lot line than 40 feet in a Residence B District. This waiver is granted so as to allow the southerly wall of Unit 1 to be no closer than 20 feet from the Property's frontage on Long Ridge Road, as shown on the Approved Plans.
2. Section 3—District Use Regulations. Pursuant to Section 3 of the Zoning Bylaw, this Project is not a permissible use of property within the Residence B District. This waiver is granted so as to allow for the development of a twenty (20) unit housing development on a single lot in the Residence B District.
3. Section 4.3.2—Side and Rear Setbacks in a Residence B District. Pursuant to this section, no building may be erected in a Residence B district closer than forty

(40) feet to any side or rear lot line. The ZBA believes that every effort should be made to adhere to the 40-foot setback requirement, but is willing to grant relief provided that the Applicant (1) maintain the setbacks for each unit that is shown on the Approved Plans and (2) shall be required to supplement the landscaping and fencing buffers as discussed in the Conditions of Approval, below. Accordingly, this waiver is conditionally granted.

4. Section 5.4.4—Common Driveways. Pursuant to this section, a maximum of six (6) lots may be accessed by a private driveway. This Project involves twenty (20) units on a single lot, but to the extent that this waiver may be deemed to be necessary, it is granted to allow the road to be constructed as shown on the Approved Plans (as defined in Condition of Approval 1, below).

Subdivision Rules and Regulations

5. Article III, Section 2.A(1). This regulation states: “A Subdivision, or continuation of a Subdivision, shall not have fewer than two (2) noncontiguous accesses with existing Town Roads except in a Subdivision of ten (10) or fewer building Lots having legal frontage on a single Dead-end Street.” This waiver is granted to allow the road to be constructed as shown on the Approved Plans.

6. Article III, Section 2.A(2). This regulation states: “Roads within a Subdivision shall be laid out such that the closure of any single Road will deny access to no more than ten (10) building Lots. Included in this count are any existing Lots with denied access, plus those of the Subdivision.” This waiver is granted to allow the road and the development to be constructed as shown on the Approved Plans, thereby allowing the total number of dwellings to which access would be denied with the closure of a single road to rise to seventy five (75) total in the neighborhood.

7. Article III, Section 2.B(1). This regulation states, in pertinent part: “Intersections along an existing and/or a proposed Local Street shall have minimum centerline offsets of not less than one hundred and twenty-five (125) feet.” This waiver is granted to allow the road to be constructed as shown on the Approved Plans.

8. Article III, Section 2.B(4). This regulation states: “The minimum centerline radius shall be as shown on Exhibit E. Warning signs shall be provided where appropriate.” Exhibit E shows a centerline radius of 125’. This waiver is granted to allow the road to be constructed with a centerline radius of 80’ as shown on the Approved Plans.

9. Article III, Section 2.D(1). This regulation states: “No part of the Street Right-of-way shall be more than one thousand (1000) feet measured by the centerline from the point of closure referred to in the definition of a Dead-end Street in Article II, Section 1 of these Regulations and no Dead-end Street shall provide legal frontage for more than ten (10) building Lots.” This waiver is granted to allow the road, and the Project generally, to be constructed as shown on the Approved Plans.

10. Article III, Section 2.D(2). This regulation states: "Dead-end Streets shall be provided at the closed end with a Cul-de-Sac turnaround having an outside Street line diameter of one hundred and sixty (160) feet, with an outside diameter of the paved surface of one hundred and forty (140) feet. A landscaped island having a diameter of one hundred (100) feet shall be provided in the center of the turn-around and the natural vegetation shall be retained where possible; in areas that cannot retain the natural vegetation, a landscaping plan shall be provided for the Cul-de-Sac island." This waiver is granted to allow the road to be constructed as shown on the Approved Plans.

11. Article III, Section 2.D(4). This regulation states: "No more than three Lots can be accessed on the Cul-de-Sac." This waiver is granted to allow four residential units to be accessed on the Cul-de-Sac, as shown on the Approved Plans.

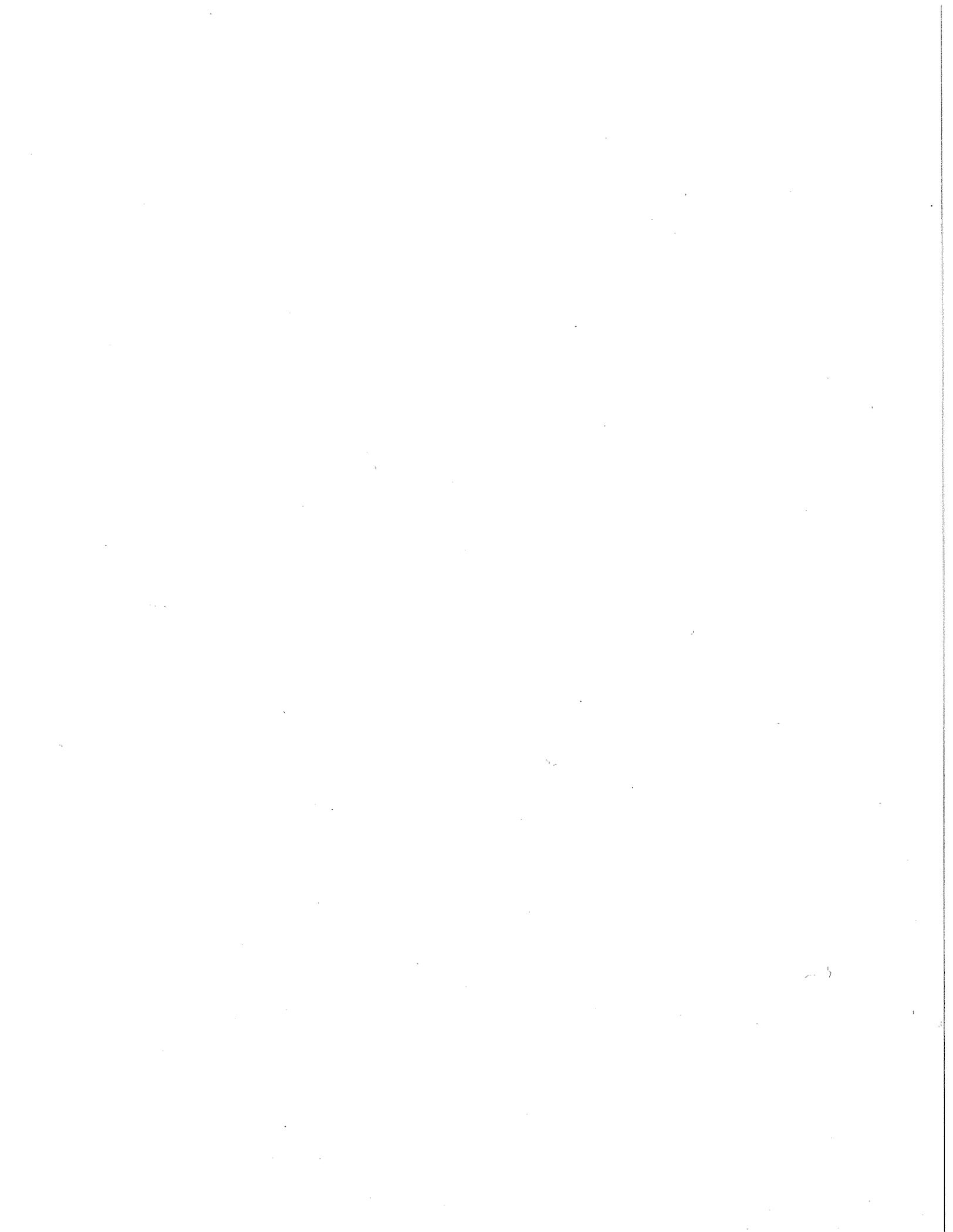
12. Article III, Section 5.G(3)(i). This regulation states: "Infiltration of runoff from impervious surfaces (other than roof runoff) shall only be allowed where pretreatment of runoff for sediment removal of eighty percent TSS (total suspended solids) is provided." This waiver is granted to allow the stormwater management system to be constructed as shown on the Approved Plans, subject to the conditions discussed below.

Carlisle Supplemental Septic Regulations

13. 15.100—General Provisions. This regulation states, in pertinent part, that for septic systems with a design wastewater flow of 2000 gallons per day or greater "[m]odels shall predict no rise in ground water elevation and no greater than 5 mg/L of total nitrogen at the perimeter boundary." To the extent that this regulation requires that "[m]odels shall predict no rise in ground water elevation...at the perimeter boundary," it is waived in part. The ZBA recognized that some change in ground water elevation is inevitable due to the asymptotic nature of ground water mounding flow. In recognition of this fact and the intent of the Board of Health's regulation to limit nitrate impacts of large disposal field discharges across property lines, the Applicant must provide an analysis prepared by a qualified engineering professional that demonstrates that the proposed SAS configuration will not increase the saturated thickness of the overburden at the property line by more than 2%.

14. 15.211—Distances. This regulation states, in pertinent part: "The minimum setback distance between a system 2000 GPD or larger to a well is 150'." The Applicant requested a waiver to allow for a setback of 100 feet. This waiver is granted with respect to the setback between SDA3 and the existing private well located at 132 Long Ridge Road only, and subject to the condition that no component of SDA3 may be moved any closer to the well than as shown on the Approved Plans. This distance is presently estimated to be 108 feet since the plans of record lack specificity.

15. 15.221—General Construction Requirements for All System Components. Pursuant to this regulation, septic systems serving three (3) bedroom houses must have a design flow of 165 GPD per bedroom. This waiver is granted so as to allow for a design flow of 110 GPD per bedroom.



16. 15.290-293(5). This section states as follows:

Condominium systems “with design flows of 2000 GPD or greater shall meet a minimum design flow requirement of 165 GPD per bedroom. Monitoring wells used for the hydrogeological study shall remain in place, unless their removal or capping is authorized by the Board of Health. The Board of Health reserves the right to maintain the wells and continue monitoring as it deems appropriate. System owners are required to test available monitoring wells for fecal coliform, TSS, BOD and Total Nitrogen and submit the results to the Board of Health at least once every three years in conjunction with the required Title 5 inspections.

This waiver is granted so as to allow a design flow of 110 GPD per bedroom. No other component of this regulation is waived.

Zoning Board of Appeals’ Comprehensive Permit Rules
Attachment A—Performance Standards

17. Section II.A.2—Setbacks. This performance standard states: “No building shall be erected or altered so as to extend nearer to the line of any street or nearer to its front lot line, where different, than forty (40) feet and no building shall be erected or altered so as to extend nearer to any side or rear lot line of its lot than forty (40) feet. In addition, in nontraditional developments (developments other than single-family homes on individual building lots conforming to the Zoning Bylaws and local boards’ rules and regulations), such as a development with attached homes or density not following Section 4.1.1 of the Zoning Bylaws, all residential buildings are to be located at least 100 feet from the boundary of the property subject to development, at least 50 feet from any Open Space, and at least 30 feet from other residential buildings, as set forth in Section 5.7.4.16 of the Zoning Bylaws.” The ZBA believes that every effort should be made to adhere to the 100-foot setback requirement. While the increase in setbacks to 100 feet from the property boundary for projects denser than one-unit per lot is reasonable in the context of Carlisle, the ZBA understands that the Project cannot be built with the 100-foot setback applied strictly. Accordingly, the ZBA is willing to grant relief provided that the Applicant (1) maintains the setbacks for each unit that is shown on the Approved Plans and (2) supplements the landscaping and fencing buffers as discussed in the Conditions of Approval, below. Therefore, this waiver is conditionally granted.

18. Section II.A.5—Units on Common Drives. This performance standard states: “Drives and roads that are not built to the standards for a roadway that may be accepted by the Town as a public way should limit the number of homes or units within the development to no more than six.” This waiver is granted to allow the road, and the Project generally, to be constructed as shown on the Approved Plans.

19. Section II.B.2.c. This performance standard states: “Where a common driveway exceeds 300 feet in length, turnouts shall be installed and maintained...at reasonable intervals, but at least every 300 feet, in order to allow vehicles to pass.”

This waiver is granted to allow the road to be constructed without turnouts, as shown on the Approved Plans.

20. Section II.B.2.e.i. This regulation states: "Dead-end streets shall be provided at the closed end with a Cul-de-Sac turnaround...with an outside diameter of the paved surface of one hundred and forty (140) feet [and a] landscaped island having a diameter of one hundred (100) feet shall be provided in the center of the turnaround." This waiver is granted to allow the road to be constructed as shown on the Approved Plans.

21. Section II.B.2.e.iii. This regulation states: "No more than three dwelling units shall be accessed directly from a Cul-de-Sac." This waiver is granted to allow four dwelling units to be accessed directly from the Cul-de-Sac, as shown on the Approved Plans.

22. Section II.B.2.f. This regulation states: "A development shall have not fewer than two (2) noncontiguous accesses with existing Town roads except in a development of ten (10) or fewer homes or units having legal frontage on a single dead end street. Roads within a development shall be laid out such that the closure of any single road will deny access to no more than 10 homes or units." This waiver is granted to allow the road to be constructed as shown on the Approved Plans.

* * * * *

The ZBA carefully considered each waiver requested by the Applicant, evaluating all of the evidence and argument that the Applicant presented in support of its request, and seeking expert input from its peer review consultants where appropriate. It is the intention of the ZBA to grant only those specific waivers discussed above. If, in reviewing the Applicant's Proposed Final Approved Plans or building permit application(s), the Building Commissioner determines that any additional waiver is needed, all matters shall be reported back to the ZBA for disposition of the Applicant's waiver request.

The ZBA voted to DENY the following specific waivers:

Carlisle Supplemental Septic Regulations

1. 15.100—General Provisions. This regulation states, in pertinent part, that for septic systems with a design wastewater flow of 2000 gallons per day or greater “[m]odels shall predict no rise in ground water elevation and no greater than 5 mg/L of total nitrogen at the perimeter boundary.” To the extent that this regulation requires that “[m]odels shall predict...no greater than 5 mg/L of total nitrogen at the perimeter boundary” the waiver is denied.
2. 15.290-293(5). This section states as follows:

Condominium systems “with design flows of 2000 GPD or greater shall meet a minimum design flow requirement of 165 GPD per bedroom. Monitoring wells used for the hydrogeological study shall remain in place, unless their removal or capping is authorized by the Board of Health. The Board of Health reserves the right to maintain the wells and continue monitoring as it deems appropriate. System owners are required to test available monitoring wells for fecal coliform, TSS, BOD and Total Nitrogen and submit the results to the Board of Health at least once every three years in conjunction with the required Title 5 inspections.

As noted above, the Applicant requested, and has been granted, a waiver to allow design flow of 110 GPD. The remainder of this regulation shall remain fully applicable to the Project.

Zoning Board of Appeals’ Comprehensive Permit Rules

3. Section 3.02—Filing Fee. This rule states: “The application shall be accompanied by a filing fee to cover the costs associated with statutorily required notice and mailings plus an additional cost based upon the number of proposed housing units: a) for Limited Dividend Organizations pursuant to a project eligibility letter issued by a federal or state agency-\$1,000 per unit plus \$5000 filing fee.” The Applicant requested that this fee be partially waived, so as to reduce the fee to \$4000.

Carlisle Nonzoning Wetland Bylaw

4. The Applicant sought a waiver of the filing fees established by the Carlisle Nonzoning Wetland Bylaw.

General Waiver

5. The Applicant requested “that the Carlisle Zoning Board of Appeals grant relief from any other zoning requirement or other applicable local rule, regulation, bylaw or policy which the Carlisle Zoning Board of Appeals determines to be applicable to the Project and which is not met by the current site plan or any

subsequent site plans reflecting changes resulting from the Zoning Board of Appeals' review of the Project." Letter from Douglas C. Deschenes dated September 26, 2014.

VII. CONDITIONS OF APPROVAL

For the foregoing reasons, the ZBA grants the Application of Lifetime Green Homes, LLC for a comprehensive permit consisting of no more than twenty (20) for-sale, single-family detached condominium units on the Property under M.G.L. c.40B, §§20-23, subject to the following conditions.

The Project:

1. The Project shall be constructed in substantial accordance with the following plans, subject to all revisions specifically provided for in these Conditions of Approval:

Plan P—Public Water Supply—Utility “The Birches” 100 Long Ridge Road Carlisle, Massachusetts Prepared for: Lifetime Green Homes, LLC 142 Littleton Road, Westford, MA 01886 dated February 2, 2016 and revised August 18, 2016.

Exhibit T2—Turning Template Driveway Turnaround “The Birches” 100 Long Ridge Road Carlisle, Massachusetts dated December 15, 2016 and revised January 6, 2016 [sic].

Exhibit U—Plan to Show Potential Location of Water Supply for Fire Dept. “The Birches” 100 Long Ridge Road Carlisle, Massachusetts dated January 5, 2017.

(the “Approved Plans”).

2. This Decision permits the construction, use and occupancy of twenty (20) housing units on the Property. No additional housing units may be added to the Property.

3. The unit models to be constructed within the Project are (1) “Calinda,” (2) “Brandywine Classic,” (3) “Brandywine Gold,” and (4) “Goldenrod,” all as designed by Art Form Architecture, and shown on the documents presented in Exhibit D. Only these particular housing units may be constructed within the Project, and these housing units shall be distributed as follows:

Calinda—Units 2, 4, 5, 6, 7, 11, 15, 16, 17
Brandywine Classic—Unit 13
Brandywine Gold—Units 8, 9, 12
Goldenrod—Units 1, 3, 10, 14, 18, 19

Unit 20 is the preexisting house that exists on the Property. Unit 20 shall remain in place in its existing form and shall become a part of the Project subject to all of the conditions of approval contained in this decision.

4. The twenty (20) units allowed at the Property shall contain a maximum of 58 bedrooms, distributed as follows:

- Calinda—3 bedrooms per unit (x 9 units)
- Brandywine Classic—3 bedrooms per unit (x 1 unit)
- Brandywine Gold—2 bedrooms per unit (x 3 units)
- Goldenrod—3 bedrooms (x 6 units)
- Preexisting four-bedroom house (Unit 20)—4 bedrooms (x 1 unit)

No additional bedrooms are allowed within the Project. No space within any individual unit that is not shown as a bedroom on the plans attached as Exhibit D may be converted to a bedroom, or used as a sleeping area. No space within the preexisting house may be converted to provide an additional bedroom or sleeping area.

Notwithstanding the foregoing, the ZBA notes that for purposes of Title 5 the Project contains 59 bedrooms (see Finding No. 36), and expects that the Applicant will be required to reduce its bedroom count by at least one in order to satisfy the nitrogen equivalency limits at such time as it applies for a septic permit from the Board of Health.

5. Units 1-19 shall be constructed within the building footprints shown on the Approved Plans and Unit 20 shall be limited to its existing footprint. Units 1-20 shall be set back from (1) all other structures within the Project and (2) the Property's lot lines at least by those distances shown on the Approved Plans.

6. Units 1-20 may not be changed or revised, including dormers, so as to create additional interior space. Applicant shall disclose this condition to prospective purchasers when units are marketed for initial sale, and this condition shall be noted in the unit deeds to provide for notice to purchasers thereafter.

7. No additional accessory structures, sheds, outdoor enclosures, impervious surfaces or infrastructure not shown on the Approved Plans shall be allowed in connection with the use of any residential units. Applicant shall disclose this condition to prospective purchasers when units are marketed for initial sale, and this condition shall be noted in the unit deeds to provide for notice to purchasers thereafter.

8. Units 1-20 shall each have exactly two (2) dedicated off-street driveway parking spaces as shown on the Approved Plans.

9. Screening shall be provided substantially as shown on the latest revision to the Landscape Plan presented during the original public hearing, dated October 30, 2014 and revised on December 10, 2014 and May 27, 2015 (Brem 230). Without limiting the foregoing, the Applicant shall:

- a. Provide as screening relative to Units 7, 8 and 9 a six-foot high wood construction solid fence, beginning at the southern most point of Unit 7 and continuing parallel with property line to a point aligned with the northern most corner of Unit 9. In addition, there shall be one 10 - 12 foot tall black spruce tree planted in line with the wooden fence at each end of the wooden fence.
- b. Provide as screening relative to Units 11 through 15 a six-foot high wood construction solid fence, beginning at the western most point of Unit 11 and continuing parallel with property line to a point aligned with the eastern most corner of Unit 15. In addition, there shall be one 10 - 12 foot tall black spruce tree planted in line with the wooden fence at each end of the wooden fence. Any screening measures required within the 100-foot wetland buffer are subject to the approval of the Conservation Commission.
- c. Provide as screening relative to Unit 1 a dense screening of plantings between the unit and the front lot line. Plantings shall be evergreen bushes on 3' centers of no less than 6' in height, or an alternative planting set subject to review and approval by the ZBA.

10. All land to the northeast of the site shown as "Proposed Open Space" on the Approved Plans shall remain undisturbed and in its current condition, except for the improvements related to the public water supply shown on the Approved Plans and de minimis cutting and removal of trees, shrubs and other vegetation, the planting of native trees, shrubs and other vegetation, the removal of obstacles, such as downed, dead or dying trees, brush, shrubs, debris, or trash for normal maintenance of the vegetated open space, to prevent threat of injury to persons, and the construction and maintenance of any walking trails, subject to review and approval of the Conservation Commission if applicable.

Pre-Construction Submissions:

11. Prior to commencement of any site clearing or construction (whether pursuant to a building permit or otherwise), the Applicant shall submit to the ZBA and the Building Commissioner the following construction-level site plans, plans and calculations (the "Proposed Final Plans") for the Project. Said Proposed Final Plans shall include:

- a. Detail sheets for proposed site and layout components, erosion and sedimentation controls, and utility infrastructure, including site specific details for the proposed stormwater management systems, gravel access road and wetland filling and mitigation.
- b. Typical cross-section of the Project roadway and gravel access drive that indicates curb type, shoulder width, and proposed treatments at the shoulder slopes. Applicant should also provide a general utility layout as part of a general road cross-section.

- c. Landscaping Plan consistent with Condition 9, above.
- d. Rim and invert information for the proposed drainage utilities.
- e. Utility plan showing, without limitation, water lines, fire protection lines, underground propane tanks, electric service, telephone and cable service, and indicating all utilities by size, pipe material type, and length. This plan shall demonstrate that any drain, sewer, and water line crossings do not conflict and meet adequate vertical and horizontal separation.
- f. Stormwater management facilities.
- g. The approved septic systems.
- h. The approved public water supply wells.
- i. Architectural plans, including the final architectural drawings for the units to be constructed that are materially consistent with Exhibit D and the conditions of this Decision, providing a scaled depiction of the front, rear and side elevations with accompanying specification sheets for all exterior lighting fixtures, stamped and signed by a Registered Architect or Professional Engineer, as appropriate, licensed in the Commonwealth of Massachusetts.

All structures, roads, gravel drives, and Project infrastructure shall have the same dimensions and locations as shown on the Approved Plans, except that the Proposed Final Plans shall be revised as needed to comply with the requirements of this Decision, and to include the additional detail and dimensions not shown on the Approved Plans (including without limitation the setbacks from all structures to the nearest lot lines, to infrastructure such as subsurface propane tanks, and road dimensions and length). Along with this set of Proposed Final Plans, the Applicant shall submit a list, prepared and stamped by the Applicant's Design engineer, of all changes made to the Approved Plans to conform to the requirements of this Decision.

The Building Commissioner shall review the Proposed Final Plans and the list of changes to ensure that they are consistent with and in conformity with this Decision. Upon the Building Commissioner's positive finding, the ZBA shall endorse the Proposed Final Approved Plans, which shall thereupon constitute the Final Plans for the Project.

In the event that the Building Commissioner determines that the Applicant's Proposed Final Approved Plans, or its construction drawings submitted with its building permit application(s) materially deviate from the Approved Plans and/or do not conform to the requirements of this Decision, the Building Commissioner shall notify the Applicant of the specific deviation(s) or the manner in which they do not conform, and the Applicant shall thereafter bring the plans into compliance or seek a modification of this Decision in accordance with 760 CMR 56.05(11). In the event of a disagreement between the Building Commissioner and the Applicant with respect

thereto, they shall notify the ZBA, which shall thereupon determine whether the Proposed Final Plans and/or building permit construction drawings, do conform with this Decision. Should the ZBA determine that the plans conform, the ZBA shall endorse them; otherwise, the Applicant shall follow the procedures set forth in 760 CMR 56.05(11). If the ZBA determines that Applicant's Proposed Final Approved Plans should be peer reviewed, the cost of said review shall be borne by the Applicant.

12. This Decision shall be noted on the Final Plans and both this Decision and the Final Plans shall be recorded at the Middlesex Registry of Deeds. The Applicant shall provide the ZBA with proof of recording prior to issuance of a building permit.

13. The Applicant shall maintain a copy of the Final Plans and this Decision at the Property during construction.

14. The Building Department shall not issue a building permit until it has been determined that the Final Plans are in compliance with this Decision as provided in Condition 11, above.

15. No construction activity shall occur on the Project, and no building permit shall be issued, until the Applicant shall have:

- a. Obtained Final Approval from its Subsidizing Agency and provided a copy of such approval to the ZBA and to the Building Commissioner. The Applicant shall submit the Final Approval Application to the ZBA for review at the time of submission to the Subsidizing Agency.
- b. Executed and recorded the standard form Regulatory Agreement, and provided evidence of same to the ZBA and the Building Commissioner. The Regulatory Agreement shall be subject to review and approval, as to form and consistency with this Decision, by Town Counsel prior to execution, such approval not to be unreasonably withheld.
- c. Obtained final DEP approval to operate the public water system to serve all dwelling units within the Project, with the wells, roads and other components as shown on the Approved Plans.
- e. Obtained final approvals from the Carlisle Conservation Commission or DEP that may be required under any statute, code or regulation not otherwise preempted by 40B, including a final Order of Conditions under the *Wetlands Protection Act* as to any portion of the Property subject to the *Wetlands Protection Act*.
- f. Obtained any approvals from the Carlisle Board of Health and DEP that may be required under any statute, code or regulation affecting public health that is not specifically addressed or waived by this Decision.

- g. Obtained National Pollutant Discharge Elimination System ("NPDES") storm water permit for the Project, if applicable.
- h. Submitted to the ZBA and the Building Commissioner a Construction Management Plan (CMP), as well as a Construction Management Schedule (CMS), that generally conforms to industry standard practice and addresses all construction-related conditions specifically set forth in this Decision. Additional copies of the proposed CMP shall be provided to the Planning Board, Board of Health, Conservation Commission, DPW, Fire Chief and Police Chief. The CMP shall include:
 - i. Construction phasing plan, which shall include a construction schedule in order to provide guidance and facilitate inspections. Such construction schedule shall, at a minimum, be revised quarterly to reflect work completed and changes in construction timing.
 - ii. Trucking Plan, which shall specify (i) planned truck routes (ii) estimated volumes of any imported and exported materials (iii) estimated truck trips and (iv) construction period mitigation measures consistent with the conditions stated herein, including without limitation details and locations of crushed stone entrance pads, street sweeping protocols and dust control measures to be implemented on the Property.
 - iii. Construction administration (hours of construction, hours of deliveries, trash and debris removal).
 - iv. Communication (designated contacts on site).
 - v. Noise and Dust Control (tree removal, public street cleaning and repair, dust, noise, rock crushing).
 - vi. Blasting.
 - vii. Erosion Control (silt sacks, hay bales, silt fences, etc., tree protection plan, drainage infrastructure).
 - viii. Identification of existing underground utilities.
 - ix. Construction staging (staging areas, trailer locations, open storage areas, truck holding locations, re-fueling areas).
 - x. Traffic and parking during construction (on-site locations, snow removal, warning signs, police details).
 - xi. Fire and Emergency (timing and testing of cistern installation).

The CMP shall be subject to review and approval by the ZBA for consistency with this Decision and generally accepted construction practices. The approved CMP shall be posted on site during construction.

- i. Properly marked the limits of the area that is to remain undeveloped, as shown on the Approved Plans. No construction or site development activity, including clearing, shall occur within such area. Before initiating site development activities, the Applicant shall obtain the Building Commissioner's confirmation that the flags are properly located.

16. The Applicant shall submit a Stormwater Pollution Prevention Plan and an Illicit Discharge Compliance Statement to the ZBA and the Conservation Commission at least 30 days prior to construction.

Site Development Construction Conditions:

17. Construction activities on-site shall only occur between 7:00 AM and 5:00 PM Monday through Friday and between 9:00 AM and 3:00 PM on Saturday. For the purposes of this condition, "construction activities" shall be defined to include start-up or operation of equipment or machinery, delivery of building materials and supplies, removal of trees, grubbing, clearing, grading, filing, excavating, import or export of such materials, installation of utilities both on and off the Property, demolition of existing structures, removal of stumps and debris, the erection of new structures, and the installation of new infrastructure including roads.

18. The Applicant shall ensure safe and convenient vehicular access to the Property during construction at the Project.

19. The Applicant shall ensure that nuisance conditions do not exist at the Property during construction. The Applicant shall at all times use all reasonable means to minimize inconvenience to residents in the general area of the Property.

20. The Applicant shall be responsible for mitigating all construction-related impacts, including erosion, siltation and dust control.

21. The Applicant shall implement dust control operations as necessary to comply at all times with applicable law, including without limitation DEP's Dust regulations at 310 CMR 7.09, as amended, and all applicable air pollution standards as set forth by Federal and State regulatory agencies. The Applicant shall further implement such dust control measures as directed by the Building Commissioner.

22. The Applicant shall regularly remove construction trash and debris from the Property in accordance with good construction practice, and dumpsters shall be emptied when full. Dumpsters shall be located outside of the 100 foot buffer zone and closed at the end of the day and during rain events. No tree stumps, demolition material, trash or debris shall be burned or buried on the Property. Localized burial

of stones and/or boulders is prohibited to prevent the creation of voids from soil settlement over time.

The Construction Trailer and portable toilets shall be located outside of the 100 foot buffer zone and at least 40 feet from Carlisle Conservation land.

23. All potential safety hazards that may exist on the Property during the period of construction shall be adequately secured prior to the end of each workday.

24. Only earth products that are intended for use on the Property shall be delivered to the Property. No earth shall be stripped or excavated and removed from the Property except in connection with road, infrastructure or permitted construction activities. No earth processing operations shall occur on the Property, unless the earth products are to be combined and/or mixed for use on the Property. All piles of stockpiled earth shall be stabilized with adequate dust and erosion controls. All piles of stockpiled earth shall be removed from the Property upon completion of construction of roads and infrastructure. Stockpiling areas shall be located in a safe place as far from Long Ridge Road and neighboring properties as practicable, and visually screened to the extent practicable. Stockpiling of materials within 400' of Long Ridge Road shall be minimized and stockpiling of materials greater than 100 cubic yards within 400' of Long Ridge Road for more than 60 days shall be prohibited.

25. A licensed blasting professional shall perform any necessary blasting on the Property after proper pre-blast inspections have been conducted and all required permits have been obtained from the Carlisle Fire Department. Pursuant to M.G.L. c.148, §19, before issuance of a permit to use an explosive in the blasting of rock or any other substance as prescribed by the State Fire Marshall at the Property, the applicant for the permit shall file with the Carlisle Town Clerk a bond running to the Town, with sureties approved by the Treasurer of the Town, in the penal sum as the officer granting the permit shall determine in accordance with M.G.L. c.148, §19 to be necessary in order to cover the risk of damage that might ensue from the blasting or its keeping therefor.

26. The Applicant shall implement measures to ensure that noise from project construction activities does not exceed acceptable levels, as set forth by Federal and State regulatory agencies, including without limitation DEP's noise regulations at 310 CMR 7.10, as amended, and DEP's DAQC Noise Policy No. 90-001 (2/1/90), as amended, and shall further implement noise and vibration control measures as directed by the Building Commissioner. The Applicant shall implement necessary controls to ensure that vibration does not create a nuisance or hazard beyond the subject Property. The Applicant shall cease any noise that does not comply with applicable regulations when directed by the Building Commissioner to comply therewith.

27. The Applicant is responsible for the sweeping, removal of snow and sanding of the internal roadways and driveways permitting access to residents, emergency vehicles, and others during construction and until the Condominium Association has been legally established and has assumed responsibility for same.

28. The Applicant shall maintain all portions of any public road used for construction access free of soil, mud or debris deposited due to use by construction vehicles associated with the Project.
29. The Applicant shall repair in a timely manner any damage to public roads adjacent to the Project that results from the construction and/or maintenance of the Project.
30. Soil material to be used as backfill for pipes, roads, and/or structures (*i.e.* detention basins) shall be certified by the Design Engineer to the Building Commissioner as meeting design specifications.
31. The Applicant shall notify the relevant Town department of installation of utilities and infrastructure for inspections prior to backfilling.
32. The Applicant shall comply with any Order of Conditions issued with respect to the Project.
33. No disturbed areas shall be left in an open, unstabilized condition longer than 30 days. Temporary stabilization shall be accomplished by loaming and seeding exposed areas in accordance with the landscaping plans.
34. All construction vehicles and all vehicles associated with those working on the Property shall be parked entirely within the Property and outside of the 100 foot buffer zone. No construction vehicles and no vehicles associated with those working on the Property shall park on Long Ridge Road, and the Applicant shall not cause congestion on the abutting public ways due to construction activities.
35. Upon issuance of this Decision, the Applicant may install and maintain signage at the Project during site preparation and construction. Such signage may include one (1) single-sided, non illuminated construction sign, the dimensions of which shall be not more than four (4) feet by eight (8) feet each, providing customary notice of Project lenders, sponsors and team. The signs shall be located on the Project, not in the Town's right of way for Long Ridge Road.
36. Construction, once commenced, shall progress through to completion as continuously and expeditiously as possible and substantially in accordance with the construction sequence and timetable approved by the ZBA during review of the CMP.
37. The Applicant shall submit to the ZBA an updated construction and permitting schedule semi-annually to assist in project status update and review.
38. The Building Department, its appointed agents and the Town's permitting boards may conduct periodic inspections during the construction of the Project to ensure compliance with this Decision, the Final Plans, and the State Building Code, and for consistency with generally-accepted construction and engineering practices for the installation of roadways, stormwater management facilities, utilities, and other common development infrastructure.

39. The Conservation Commission and Building Commissioner shall have the authority to review and approve all erosion control measures. Additional erosion control material shall be stockpiled on site.

40. During construction the Applicant shall not alter the Davis Corridor Conservation Land, including, but not limited to the following: damage to the stone wall, vegetation, and signs, accumulation of trash including papers, cans, construction materials, unauthorized entrance to the area by vehicles, stockpiling of any kind, and excessive noise in the area of said Conservation Land.

Traffic, Fire, and Public Safety:

41. All utilities, including but not limited to electric, cable and telephone shall be located underground.

42. Traffic signage shall be consistent with the requirements of the current edition of the Manual for Uniform Traffic Control Devices (MUTCD). In addition, the Applicant shall install traffic signs wherever they are deemed necessary and appropriate by the Department of Public Works and MassHighway, and shall bear the cost of all such signage and installation.

43. There shall be one (1) permanent sign identifying the Project, which shall be substantially as shown on the Landscape Sign Feature dated April 21, 2015 (Brem 208-209) and attached hereto as Exhibit E. All other signs located at the Project shall conform to applicable Town regulations.

44. All roadway design standards and requirements of the Planning Board's Subdivision Rules and Regulations shall be fully complied with, except for those specific waivers granted in this Decision. The Final Plans shall indicate that roadway construction materials and thicknesses conform to the standards set forth in the Subdivision Rules and Regulations.

45. There shall be no overnight parking within the twenty-four (24) foot or twenty (20) foot private roadway at any time, nor shall there be any overnight parking within the portion of the roadway provided for fire truck maneuvers and to serve the public water system, except vehicles involved in maintenance of the public water supply. Such prohibition shall be clearly marked with signs approved by the Police Department. This condition shall be incorporated into the condominium documents.

46. No vehicles may be parked in any unit driveway so as to encroach on the road. This condition shall be incorporated into the condominium documents.

47. Guest parking shall be limited to the four (4) parking spaces designated on the Approved Plans. Parking by residents in the guest spaces for extended and continuous periods is prohibited.

48. A fire cistern sized to provide 45,000 gallons available for draft and an appropriate paved "bump out" shall be provided at the location shown on the Approved Plans; provided that the paved "bump out" shall be subject to any

necessary authorization from the Town, which the Applicant shall pursue in good faith. A fire hydrant system for the cistern shall also be provided. The Fire Chief shall review and approve the final design and size of the cistern and the hydrant system prior to installation. A dedicated well to be used exclusively for the purpose of refilling the cistern shall be provided by the Applicant adjacent to the fire cistern, subject to approval by the Board of Health. A pre-construction meeting with the Fire Department, the Applicant, and the general contractor shall be held before the work begins on installing the cistern. No above-grade construction of residential structures may be initiated or framing lumber brought to the Property until the cistern is installed and operational, as certified by the Carlisle Fire Department. In accordance with the foregoing, the Applicant may obtain foundations permits prior to completion of the fire cistern.

The Applicant shall convey to the Town of Carlisle an easement providing for access to the fire cistern and dedicated cistern well. Such easement shall be satisfactory in content and in form to Town Counsel and the Fire Chief, and shall be conveyed to the Town before above-grade construction is initiated or framing lumber is brought to the Property.

The Applicant shall revise its plans to provide for the required 10' setback of all underground propane tanks to residential structures.

49. The Applicant shall revise the Y-shaped fire truck turnaround so that the area available for turning maneuvers are 50 feet long by 20 feet wide with a Y-radius of 20 feet.

50. The numbering system and the identification of the dwelling units shall be subject to the approval of the Building Commissioner. This system shall include a logical and easily identifiable numbering system that is uniform throughout the Project.

51. The Applicant shall obtain approval from the United States Post Office as to the placement of mailboxes for the units.

52. No exterior lighting shall be designed or installed so as to spill over onto or into any adjacent property. In addition, all exterior light fixtures specified for the Project shall cast light downward, and no light should be emitted above a horizontal plane running through the lowest part of the fixture to minimize sky glow.

53. The use of garbage grinders at the Project is prohibited. The restriction shall be included in the condominium documents, and may be enforced by the Condominium Association.

54. There shall be no open burning permitted on the Property. These restrictions shall be incorporated into the condominium documents.

55. The Applicant (and subsequently the Condominium Association) shall maintain all landscaped areas of the Property as shown on the final Landscape Plan. A bond or surety shall be maintained 1 year after landscaping has been installed for

each phase to insure that dead and unhealthy plant materials are replaced. One year after the landscaping has been installed, the Building Commissioner or his designee shall do a site walk and advise the Condominium Association of plants that need to be replaced. Dead or diseased planting shall be replaced as soon as possible in accordance with growing and weather conditions.

56. The Applicant shall provide an irrigation well for common area landscaping elements, and such irrigation well shall be subject to approval by the Board of Health and shall be operated in accordance with the applicable Board of Health regulations and policies. In addition to the foregoing:

- a. The volume that may be withdrawn from the irrigation well shall be subject to approval by the Board of Health.
- b. The Condominium Association shall collect and maintain pumping data from the irrigation well through a flow meter and from an hour meter and submit such data, and a statement as to the effectiveness of the irrigation well, to the Board of Health on a quarterly basis. Such records shall disclose the amount of water pumped from the irrigation well by month, and the pumping rate (*e.g.*, average 15 gallons per minute); and
- c. The Board of Health shall have the authority to declare a local water emergency and may order the irrigation well shut off for such time as it determines to be necessary to protect the potable water supply of the Project and its abutters. The irrigation well shall also be shut off upon a declaration of a drought level of "Watch" or higher by the Mass. Drought Management Task Force and shall remain shut off until the drought level is returned to "Advisory" or "Normal." After commencement of operation of the irrigation well, the Board of Health may order the irrigation well shut off if a Project well or a private well of an abutter to the Project fails to provide water at generally acceptable rates or flow and pressure, and the Board determines that such failure probably would not have occurred but for the operation of the irrigation well. The Board of Health may further order that the irrigation well not be turned back on until the failure has been cured to its satisfaction.

57. All snow shall be removed from the road to ensure access by fire trucks and other public safety vehicles.

58. Snow shall be stored within the areas of the site shown on the Approved Plans. In the event that snow storage areas designated on the Approved Plans are inadequate for a particular storm or events, the Applicant shall remove the excess snow off-site. Snow shall not be stored in guest parking spaces.

59. In addition to the foregoing, no plowed snow shall be allowed to encroach on any stormwater management facility located within the Project. In the event that such encroachment occurs, the Applicant shall report the incident in writing to the ZBA and to the Building Commissioner within seven (7) days. The Applicant shall

initiate such remedial measures as are necessary to ensure the proper functioning of the system as soon as seasonal weather conditions allow, and shall certify to the ZBA and the Building Commissioner that such measures have been completed. The Building Commissioner shall inspect the Property periodically to insure that the Applicant and its successors and assigns comply with this condition.

60. The Project's stormwater management infrastructure shall be constructed in substantial accordance with the Approved Plans, provided that the Applicant shall submit as part of its Proposed Final Approved Plans a final stormwater design (including plan and revised Stormwater Management Report). As part of this final stormwater design, the Applicant shall address all comments of Nitsch Engineering concerning stormwater management, as presented in the letter dated October 18, 2016 (Brem 321), to Nitsch's satisfaction. See Findings No. 15-19. In addition, the final stormwater design shall be subject to review and approval by the ZBA's civil engineer for compliance with the MassDEP Stormwater Handbook. This review shall be conducted for the ZBA at the Applicant's expense, and the Applicant shall address all comments, questions, and requests for further design changes that arise during this review to the engineer's satisfaction.

61. The Applicant shall cause the inspection, maintenance and repair of the stormwater management infrastructure to be performed in strict accordance with the Operation and Maintenance Manual contained in the final Stormwater Management Report. Pursuant to the preceding condition, this O&M Manual shall require the review and approval of the ZBA's peer review engineer. Without limiting the foregoing, the recordkeeping requirements set forth in subsection 9.3.2 (Record Keeping) and the best management practices discussed in subsection 9.3.7 (Permanent Best Management Practices) of the initial Stormwater Management Report dated August 19, 2016 (Brem 302) shall be deemed mandatory.

62. The Applicant shall further revise the O&M Manual to highlight the as-built locations of the roof recharge systems in the diagram of the surface and subsurface BMPs.

Condominium Association--General:

63. The Applicant and all of its successors and assigns shall be bound by all conditions and requirements set forth in this Decision. Any sale or transfer of rights or interest in all or any part of the Property shall include a condition that the grantee and its successors and assigns shall be bound by the terms and conditions of this Decision.

64. The Applicant shall establish a condominium owners' association (the "Condominium Association") for the Project.

65. The Condominium Association shall either self-manage the Project or shall contract with a qualified management entity that shall be subject to the provisions of this Decision.

66. The following common facilities and services of the Project shall be maintained in perpetuity by the Applicant and/or the Condominium Association, as applicable, and further shall remain forever private, and the Town shall not have, now or ever, any legal responsibility for operation or maintenance of same:

- a. Stormwater management system, including the maintenance of catch basins and the like;
- b. Drinking water system;
- c. Wastewater System;
- d. All roadways, walkways, driveways and parking areas;
- e. Snow plowing and removal;
- f. Landscaping and landscape maintenance.

The road within the Project shall never be dedicated to or accepted by the Town as a public way.

67. In accordance with the foregoing, regardless of whether the Condominium Association self manages or contracts with a management entity, it shall at all times have qualified contractors under agreement to conduct regular inspections and all necessary maintenance and repair of the Project's stormwater management system, wastewater system and drinking water system, to maintain all common area landscaping, and to perform all street maintenance and snow removal. The Condominium Association shall, on or before January 15 of each year, submit a current list of all such contractors, with contact information for each, to the Building Commissioner to demonstrate ongoing compliance with this condition.

68. The Condominium Association shall, on or before January 15 of each year, submit a current list of its Trustees, and shall designate a lead contact responsible for communicating with the Town, its officials and representatives, and a backup contact. Contact information for those designated as lead and backup shall be provided.

69. The condominium documents shall include a realistic condominium fee budget based upon comparable developments that have been occupied for at least two (2) years, and shall include adequate provision for all inspection, maintenance, repair and replacement of the Project's significant infrastructure components, as discussed more specifically below.

70. The condominium documents shall provide for the maintenance and repair of the roadway in a safe and passable condition, including sufficient access for fire, police, and emergency vehicles during all seasons and weather conditions, including the removal of snow and ice and the clearing of brush and foliage.

71. The following covenants shall be included in the Master Deed and in the individual unit deeds:

- a. For each individual unit, all structures and impervious surfaces shall be contained within the footprint shown on the Approved Plans. Sheds

and other accessory structures associated with the individual units are prohibited.

- b. There shall be no conversion of interior space into additional bedrooms (as compared to the floor plans attached hereto as Exhibit D).
- c. All yard and landscaping waste shall be disposed of off-site. Under no circumstances shall yard or landscaping waste be disposed of within the wooded portion of the Project.
- d. Resident parking in the guest spaces within the Project for extended and continuous periods shall be prohibited.
- e. Spillage of light onto neighboring properties is prohibited.
- f. The use of garbage grinders is prohibited.
- g. Storage of flammable, combustible or explosive materials, other than lighting and cleaning fluids customary for residential use, within any unit is prohibited.
- h. Irrigation using the potable water supply is prohibited.

72. The condominium documents for the Project shall provide that:

- a. There shall be no amendments to provisions regarding or relating to the Affordable Units or conditions set forth in this Decision without ZBA approval.
- b. The affordable units shall remain affordable in perpetuity.
- c. The Master Deed shall reference the Deed Rider and the Regulatory Agreement.
- d. All votes shall be one unit one vote except where the condominium statute requires percentage interest votes.
- e. To the extent permitted by law, at least 25% of the trustees of the Condominium Association shall be owners of the Affordable Units unless a sufficient percentage of such Unit Owners are unwilling to be trustees.
- f. The Master Deed shall provide that in the event of condemnation or casualty of any Affordable Unit(s), any insurance proceeds above the resale price of said Affordable Unit(s) as set forth in the Deed Rider shall be given to the Town to be used for affordable housing.

73. The condominium documents shall provide that each unit is to be used for residential purposes.

74. The condominium documents shall establish procedures for design review by the Condominium Trust or its designee of all alterations, and improvements of individual units. This procedure shall ensure that the architectural integrity of each unit shall not be modified without the approval of the Board of Trustees and that no unit may be altered in any manner that is not consistent with the terms and restrictions set forth in this Decision.

75. The condominium documents shall provide that no space within any unit shall be modified or improved so as to serve as an additional bedroom (relative to the floor plans attached as Exhibit D), and the Condominium Association shall require

certification of the same as part of its design review process for any proposed modifications and improvements.

76. Prior to the issuance of any certificate of occupancy for the Project, the Applicant shall submit to the ZBA the condominium documents (Master Deed, Declaration of Trust, Bylaws, Rules and Regulations) for review and approval by Town Counsel for consistency with this Decision. At the time that the documents are provided to Town Counsel, the Applicant shall certify that such documents are in compliance with M.G.L. c.183A.

77. The Project will be constructed in two phases, with the scope of each phase being substantially as shown on the Approved Plans. The Applicant shall ensure that construction of Phase 2 does not unreasonably affect the use and enjoyment of the residents of Phase 1.

Condominium Association—Stormwater Infrastructure

78. The Condominium Association shall cause the inspection, maintenance and repair of the stormwater management infrastructure to be performed in strict accordance with the O&M Manual, as it shall be revised and approved after final design (the "O&M Manual"). Without limiting the foregoing, the recordkeeping requirements set forth in subsection 9.3.2 (Record Keeping) and the best management practices discussed in subsection 9.3.7 (Permanent Best Management Practices) shall be deemed mandatory.

79. The Master Deed shall specifically reference the final O&M Manual, and shall bind the Condominium Association to arrange for regular inspection, maintenance and repair of the stormwater management system by a qualified contractor to ensure its effectiveness for as long as the Project is in existence.

80. The Condominium Association shall include in its annual budget adequate funds to conduct all routine repair and maintenance of the stormwater management system in accordance with the O&M Manual, and shall provide for adequate annual funding to create a savings reserve so as to provide for the timely replacement of failed system components.

81. The Applicant and the Condominium Association, as may be applicable, shall submit an annual report to the Building Commissioner in which a qualified contractor certifies that it has timely performed all inspection, maintenance and repair called for by the O&M manual. Such report shall be filed no later than January 15 of each year.

Condominium Association—Septic Systems

82. The Condominium Association shall cause the inspection, maintenance and repair of the septic systems to be performed in strict accordance with the manufacturer's operation and maintenance manual. The Condominium Association shall submit an annual report to the Building Commissioner in which a qualified contractor certifies that it has timely performed all inspection, maintenance and

repair called for by such manual. Such report shall be filed no later than January 15 of each year.

83. Pursuant to Section 15.290.3 of the Town of Carlisle's Supplementary Regulations for Sewage Disposal Systems, the Applicant shall contemporaneous with the permitting of its septic systems be required to provide an insurance policy, bond, or other financial instrument to guarantee long term operation and maintenance of the system, which shall have a face value not less than the current replacement cost of the system as determined by a professional engineer, registered sanitarian or licensed installer, and which shall be submitted annually to the Board of Health along with the sewage disposal system report.

In accordance with the foregoing, unless an alternative form of security satisfactory to the Board of Health is provided, the Condominium Association shall establish and maintain (1) an Operations and Maintenance Fund, to be held by the system owner(s) for normal and regularly occurring maintenance, (2) a Working Capital Fund to be held by the system owner(s) for the current and future replacement and repair expenses of the system, and (3) a Reserve Fund, to be held by the Town, to provide for the replacement of Septic Systems at the end of their useful lives. Such funds held by the Association shall be separate and apart from other funds in its custody.

The schedule of deposits to the Working Capital Fund and Reserve Fund shall be such that each contains 25% and 75%, respectively, of the replacement value of the septic systems at the end of the anticipated life span.

The number and types of such funds, and the schedule of sums to be deposited therein, shall be subject to the review and approval of the Board of Health as part of its review of the applications under Title 5 and the Town's Supplementary Regulations for Sewage Disposal Systems.

Prior to the commencement of operation of the septic systems, and annually thereafter, the Condominium Association shall determine the amount necessary to provide the sums needed to be paid over the next twelve month period to support the maintenance of the septic systems to be deposited in the Operations and Maintenance Fund and these assessments shall be made proportionately to the owner of each unit.

Condominium Association—Water Supply

84. The Applicant shall obtain final approval from the DEP to operate a public water system to serve all dwelling units within the Project, with the wells, roads and other components as shown on the Approved Plans. The Applicant shall file a copy of the final DEP permit and any DEP required maintenance procedures with the Board of Health. The Applicant shall copy the Board of Health on all regular reporting made to DEP.

85. The condominium documents shall provide for the maintenance and repair of the irrigation well and fire cistern well by the Condominium Association.

Water Quality and Water Quantity Conditions:

86. The Applicant shall comply with the Board of Health's Supplementary Regulations for Sewage Disposal Systems except as specifically waived in Section VI, above. In accordance with the foregoing, the Applicant shall demonstrate to the Board of Health, through analyses prepared by qualified engineering professionals, at such time as it seeks a permit authorizing the proposed septic systems, that there shall be no greater than 5 mg/L concentration of total nitrogen at the perimeter boundary, and that the proposed SAS configuration will be designed so that mounding will not increase the saturated thickness of the overburden at the property line by more than 2%.

87. The Applicant shall fully comply with the Board of Health's Water Supply Regulations and policies with respect to the irrigation and fire cistern wells. Site clearing for the well pump tests shall only be to the extent necessary to conduct the pump tests.

88. Contemporaneous with its pump tests associated with the permitting of the public water supply, the Applicant shall monitor the impact of the pump tests on all existing private wells located at 132 Long Ridge Road, 200 Long Ridge Road, 68 Garnet Rock Lane, 55 Suffolk Lane Extension, and all other existing private wells within 500 feet of any proposed well in accordance with the Well Monitoring Plan and Protocol ("WMPP") set forth under Condition 90, below:

The purpose of the WMPP is to determine whether the Project, under simulated conditions, will have a detrimental effect on the quantity and/or quality of private drinking water wells on abutting properties. The WMPP shall be implemented before the issuance of building permits for the Project or any Post-Well Test Site Activities. The costs of implementing the WMPP shall be borne by the Applicant. The Applicant shall retain a civil engineer to perform the services under the WMPP and oversight of the pump testing shall be provided by an independent qualified engineer retained by the ZBA at the Applicant's expense. The Applicant shall indemnify any abutter for damage to private property caused by its own negligence, recklessness, or intentional conduct, or that of its contractors and subcontractors, in carrying out the WMPP.

If the results of the water well testing protocol indicate that the Water Well Performance Standard ("WWPS") forth in Condition 89 below will be exceeded, the Applicant may not apply for a building permit or commence additional site clearing work until such time as the WWPS can be met.

89. Well monitoring plan and protocol. The testing of the above private wells shall be governed by the following Well Testing Protocol:

i. Water Quality.

For those residences participating in the WWMP, a baseline water quality sample shall be collected from each residence and shall be submitted for laboratory analysis by a qualified independent laboratory for the constituents listed in the table entitled "Long Ridge Road Water Quality Testing for Abutter Existing Wells" shown below.

Long Ridge Road
Water Quality Testing for Abutters' Existing Wells

Parameter	Parameter
Alkalinity	Hardness
Chloride	Arsenic
Color	Calcium
Nitrate Nitrogen	Copper
Nitrite Nitrogen	Iron
Odor	Magnesium
pH	Manganese
Sediment	Radon
Sulfate	Sodium
Turbidity	Lead
Total Dissolved Solids	Total Coliforms

This same water quality analysis shall be completed at the end of the public water supply pump test for the Project and again approximately 2-4 days after the transducers have been removed from the wells and the wells have been chlorinated. Another water quality analysis shall be completed once the project's blasting activities (if any) are complete. Additional water quality analyses shall be completed eighteen (18) months after full occupancy of Phase 1 and eighteen (18) months after full occupancy of Phase 2, provided that the Phase 1 analysis may be waived if it appears, at the time of the required test, that Phase 2 is being built out in a timely fashion in accordance with the CMP. The costs for the water quality testing shall be borne by the Applicant. If the post-blasting test results and/or the post-construction test results for any abutter's well exceeds the previous test results by a statistically significant (95% confidence interval) margin for any of the constituents, the Applicant shall restore the abutter's previous water quality at its own expense. The data collected from the water quality testing shall be reported to the Board of Health with the pump test results within 15 days of completion of the chemical analysis.

No perchlorate shall be used by the Applicant in blasting activities. The Applicant shall test each consenting abutter's well for perchlorate at least once before any blasting is performed on the Property, and once no later than two weeks after blasting has been concluded, and report the results to the Board of Health within 15 days of completion of the chemical analysis.

ii. Water Quantity.

In accordance with Board of Health regulations, the pumping test for the public water supply shall include all existing wells within 500 feet of any new well on the Property.

Transducers shall be installed and will be set to record on an automatic monitoring device, baseline water levels every 2 minutes for a minimum of 10 days before commencement of the pumping test, continuing during the required pumping tests,

and for 7 days following the pumping test or until 90 percent recovery of all wells, whichever is longer; After this time they will be removed from the wells.

Utilizing the data from the transducers, the maximum self-induced drawdown ("Baseline Self-induced Drawdown Range") in each private well shall be calculated. This is the range between the depth to the non-pumping average static water level and the depth to the lowest pumping water level in each well. Next, the 180-day projected test-induced drawdown ("Test-Induced Drawdown") on each private well (if observed) shall be calculated by creating a drawdown versus log of time graph of the decline in the normal static water levels (if observed) due to pumping the Project's wells. Lastly, after determining the pump depth in each well (either by pump installers records, Board of Health records, or by probing the well), the total available water column above the well pump as the difference between the depth to the non-pumping average static water level and the depth to the well pump ("Total Available Water Column") shall be calculated.

All data from the pumping tests shall be conveyed to the Board of Health for permanent preservation within 30 days of test completion. Additionally, data from each abutter's well tests shall be conveyed to each abutter within 30 days of test completion.

Based on the above data, if the sum of the Baseline Self-Induced Drawdown Range and the Test-Induced Drawdown (1) exceeds 50% of the Total Available Water Column, and at least 10% of this total is the Test-induced Drawdown, or (2) exceeds 75% of the Total Available Water Column, and at least 2% of this total is the Test-induced Drawdown, then the well shall be deemed to be impacted.

90. Subject to DEP approval, it is recommended that well pump tests shall be conducted during August or September.

91. Before the issuance of the first occupancy permit granted for the Project, the Applicant shall deposit into escrow \$30,000 which shall be held by the Board of Health in escrow until 18 months after issuance of the final certificate of occupancy for the Project to cover expenses incurred by the Applicant or by the abutting well owners listed above to treat or correct deficiencies or to address impacts on the private wells caused by the Project's wells. Escrowed monies shall be released by the Board of Health to aggrieved well owners only upon request of the aggrieved well owner and only if the WWPS has been breached and the requested disbursement constitutes a reasonable reimbursement, in the Board of Health's discretion, of the well owner's expenses to restore the well to its pre-pump test Total Available Water Column. The Applicant may deposit the requisite funds as cash or as a letter of credit. Town Counsel shall approve any letter of credit used to satisfy this condition. The Applicant must maintain \$25,000 in the account. If an approved disbursement reduces the amount of funds within the account below \$25,000, the Applicant must replenish the account within three business days.

This provision shall not be interpreted as precluding any private cause of action any aggrieved well owners may have against the Applicant or its successors or assigns.

Any escrowed funds remaining 18 months after full occupancy shall be released to the Applicant, with any accrued interest.

92. Annual yield data from the Project's wells, including the irrigation well, shall be submitted to the Board of Health prior to October 15 for the preceding 12 months (October 1 to September 30). The wells shall be instrumented as needed to gather this yield data.

Wastewater Management

93. Consistent with United States Environmental Protection Agency's Final Ground Water Rule promulgated November 8, 2006, the Applicant shall demonstrate to the satisfaction of the Board of Health that any septic system that is upgradient or cross-gradient of any property boundary that abuts lots containing existing domestic water supply well will achieve at least 99.99% inactivation or removal of viruses from the groundwater at the Site's downgradient and cross-gradient property boundaries. If the Applicant believes the groundwater already contains viruses, it may achieve this performance standard by demonstrating that the septic system will generate no additional viruses, or higher concentrations of viruses, at those locations.

94. Consistent with the Board of Health's regulations, the Applicant shall demonstrate to the satisfaction of the Board of Health through use of a hydrogeological evaluation using a three dimensional model such as ModFlow, performed by a qualified engineer or geologist, that the standards of 5 mg/L total nitrogen will be met at the downgradient and cross-gradient property boundaries.

95. The Applicant shall install three shallow overburden monitoring wells (a/k/a "soldier wells") downgradient and cross-gradient from each soil absorption area in locations specified by the Board of Health before issuance of the final certificate of occupancy for the Project, and shall perform readings quarterly upon initial occupancy on any unit served by the respective septic system, then quarterly for two years following full occupancy of all units served by the respective septic system, and then annually thereafter unless the Board of Health requires more frequent monitoring, submitting data to the Board of Health at the Applicant's and successor Condominium Association's own expense. The wells shall be sampled for E. coli coliform bacteria, total phosphorus, nitrate nitrogen, and ammonia nitrogen.

96. The septic systems shall be designed so that mounding will not increase the saturated thickness of the overburden at the property line by more than 2%. To monitor groundwater, permanent monitoring wells shall be installed at locations acceptable to the Board of Health along property boundaries downgradient from any soil absorption area. Samples shall be collected from these wells monthly from January through June during the first year of occupancy. Copies of the monitoring reports shall be provided to the Board of Health with 15 days of data collection.

Affordability Requirements:

97. No less than five (5) of the single family residences within the Project shall be made available for purchase by Households earning 80% or less of the area

median income, adjusted for Household size, as published by the United States Department of Housing and Urban Development for the Boston-Cambridge-Quincy, MA-NH Metro FMR Area, (the "Affordable Units").

98. Sale Prices: The Affordable Units shall be sold to qualified Households at prices deemed affordable to Households earning 70% of the area median income, adjusted for Household size, in accordance with the applicable regulations and guidelines of the Subsidizing Agency.

The maximum sale prices for the Affordable Units shall be subject to review and approval by a monitoring agent (the "Affordability Monitoring Agent"), which shall be selected by MassHousing. The sale prices shall be reviewed for consistency with the Act's guidelines and the Regulations, and determined at the time of the lottery for the selection of buyers of the Affordable Units (the "Lottery"). In the event that the designated Affordability Monitoring Agent fails or refuses to administer the Affordable Units, or in the event that such agent ceases to exist, the Applicant shall notify MassHousing and the ZBA, and MassHousing shall designate another entity to administer those units. In the event that MassHousing fails to designate an Affordability Monitoring Agent, the ZBA or its designee may elect to serve that role, subject to approval by MassHousing within sixty (60) days after being notified by the ZBA of such designation, and MassHousing's failure to respond within said timeframe shall result in the designation being deemed approved.

99. The Applicant proposed to make Units 3, 9, 13, 17, and 19 the Affordable Units. Phase 1 of the Project, as shown on the Approved Plans, contains seven units (Units 1-6 and Unit 20) but only one of the Applicant's proposed affordable unit (Units 3). Phase 2, as shown on the Approved Plans, contains 13 units and the remaining four proposed affordable units. Notwithstanding the Applicant's proposed phasing plan, one of every four certificates of occupancy issued on this Project shall be for at least one of the Affordable Units identified above until such time as all Affordable Units have been issued occupancy permits. For purposes of this condition and Condition 101, the existing single-family house (Unit 20) shall be counted as a market-rate unit, and shall count as the first certificate of occupancy issued for the Project.

100. Phasing-in of affordable units: Affordable Units shall be sold contemporaneous with the market-rate units in the Project. Throughout the development and construction of the Project, the Building Commissioner shall not issue more than three Certificates of Occupancy for market-rate units until at least one Certificate of Occupancy has been issued for an affordable unit. With respect to the final four units in the Project, the Certificate of Occupancy for the final affordable unit shall be issued prior to that of the last three remaining market rate units.

101. The exterior of all of the Affordable Units shall be indistinguishable in terms of construction and finishes from the Market Rate Units in the Project.

102. The Applicant shall prepare an Affirmative Fair Housing Marketing Plan to be approved by the Subsidizing Agency or its designee.

103. Selection of Buyers for Affordable Units: The Applicant shall obtain the approval of the Subsidizing Agency or its designee of a Lottery Plan for the sale of the Affordable Units prior to putting the Affordable Units on the market. The Lottery to select such buyers shall be conducted as a fair lottery process.

To the maximum extent permitted by applicable law and by the requirements of the Subsidizing Agency, a provision that preference for the purchase of 70% of the Affordable Units shall be given to households that meet one or more of the following preference criteria:

- (i) At least one member of the household is currently a legal resident of the Town of Carlisle. For purposes of the Lottery, a person shall be deemed a resident if that person has been registered as a Carlisle resident with the Carlisle Town Clerk pursuant to M.G.L. c.51, §4 and would be considered a resident under the United States Census Bureau's residency guidelines;
- (ii) At least one member of the household is an employee of the Town of Carlisle, or the Carlisle public schools;
- (iii) At least one member of the household is currently privately or publicly employed within the Town of Carlisle; or
- (iv) At least one member of the household is a METCO student enrolled in the Carlisle Public Schools system or Concord-Carlisle Regional High School.

The selection of purchasers for the Affordable Units, including the administration of the Lottery, shall be administered by a consultant retained by the Applicant, subject to the approval of the Subsidizing Agency. The Lottery shall be implemented pursuant to a Lottery Plan developed by the Lottery consultant and approved by the Monitoring Agent. The Monitoring Agent shall oversee the Lottery.

The Monitoring Agent shall develop such rules and guidelines as may be necessary and appropriate to carry out the provisions of this section. Income and other applicable eligibility requirements shall be governed by the Subsidizing Agency.

The provisions of this section are intended to complement and not to override or supersede any applicable Massachusetts, local, or Federal law, including without limitation, fair marketing regulations of the DHCD, the Massachusetts Commission Against Discrimination, MassHousing, or any authority with jurisdiction and like purpose, to provide low- and/or moderate-income housing.

104. As this Decision grants permission to build the Project on the Property under the Act, and as the Applicant has gained the benefits of a comprehensive permit, the Affordable Units shall remain affordable so long as the Project is not in compliance with the Town of Carlisle's bylaws and regulations which otherwise would be applicable to the Project but for the comprehensive permit's override of local regulations to promote affordable housing. Accordingly, the affordability requirements of this Decision shall restrict the Project so long as the Project is not in

compliance with the Town of Carlisle's bylaws and regulations, so that the Affordable Units continue to serve the public interest for which the Project was authorized in perpetuity.

105. To ensure the survival of the affordability restriction applicable to this Property, this Comprehensive Permit Decision shall be recorded ahead of any mortgage or other instrument capable of being foreclosed upon, such that its provisions shall survive any foreclosure on all or any portion of the Property. In the alternative, the Applicant may provide for recording of a duly executed Subordination, Nondisturbance and Attornment Agreement which provides equivalent protection and which is satisfactory in content and in form to Town Counsel.

106. In addition to the foregoing, prior to the issuance of any building permits, a Regulatory Agreement, in the form approved by MassHousing and acknowledged by the Board, shall be executed and recorded. The Regulatory Agreement shall provide, among other things, that (a) five (5) units in the Project will be sold and resold subject to a Deed Rider approved as to form by MassHousing and the Board, and (b) the Project Owner's profit shall be limited as defined by G.L. c. 40B, §§ 20 — 23, the Regulatory Agreement and the Regulations, as well as subsidy program and cost certification guidance, specifically, DHCD's "Comprehensive Permit Guidelines" (Sections IV.B, C, E and F), updated December 2014 , and MassHousing's guidance document entitled "Preparation of Cost Certification Upon Completion of Homeownership 40B Project for Which MassHousing Serves as Project Administrator," dated July 30, 2007, as each has been or may be amended from time to time.

A Deed Rider, known as the Universal Deed Rider, shall be attached to and recorded with the Deed for each and every Affordable Unit in the Project at the time of each sale and resale, and the Deed Rider shall restrict each such affordable unit pursuant to this Decision in perpetuity (subject to the standard exceptions set forth in the standard MassHousing Housing Starts or NEF Program form of Deed Rider to be incorporated into the Deed Rider) in accordance with the requirements of G.L. c. 184, §§ 31-33. The Deed Rider shall give the Town of Carlisle a right of first refusal to purchase the Affordable Unit upon any notice of an impending mortgage foreclosure.

107. Profit Cap: To conform to the intent of the Act that profits from the Project be reasonable and limited, the Applicant's profits from the Project shall be limited to 20% of total development costs as governed by the applicable Act guidelines and the Regulations, and the applicable guidelines and regulations of MassHousing. Moreover, the Applicant shall follow the cost examination and certification requirements described and as required in 760 CMR 56.04(8) and in MassHousing's and DHCD' s guidance and policies, as amended. The ZBA shall have the right to review the cost examination for accuracy using the same standards as the Subsidizing Agency.

MassHousing in accordance with 760 CMR 56.05(6)(c) has the sole responsibility to establish and enforce reasonable profit limitations on the Applicant as set forth in 760 CMR 56.04(8).

108. Monitoring Services Agreement: Any Limited Dividend Monitoring Agreement and/or Affordability Monitoring Agreement that MassHousing requires to be executed by the Applicant under its program guidelines and regulations shall be executed and delivered prior to the issuance of any building permits for the Project. Such Agreement(s) shall be in a form substantially the same as that used by MassHousing under the Housing Starts program or the NEF Program, and shall be subject to the approval of Carlisle Town Counsel for consistency with this Decision only, such approval not to be unreasonably withheld or delayed. The Applicant shall pay a monitoring services fee to the Monitoring Agent(s).

109. Any assumptions used to determine the initial sales price of the Affordable Units must include reasonable condominium fee budget projections of all costs, including operation and maintenance of the drinking water supply, wastewater system, and stormwater management system.

110. If, at any time after the date of this Decision, the Applicant's subsidizing agency rescinds or revokes its June 3, 2014 project eligibility determination for the Project, this Decision shall be deemed null and void and have no further effect.

Occupancy and Surety Requirements:

111. As security for the completion of the infrastructure related to the Project as shown on the Approved Plans, no certificate of occupancy shall be issued for any unit in the Project until:

- a. All sewage treatment and disposal facilities serving the Project are the subject of a final approval from the Board of Health, and may begin operation.
- b. The unit has a fully functioning drinking water system that has been lawfully permitted and for which all permits have become final.
- c. The base and binder course for the road, driveways and guest parking areas serving such unit have been installed.
- d. All stormwater management and drainage facilities serving such building or unit as shown on the Approved Plans have been installed.
- e. All utilities serving such unit have been installed.
- f. All required landscaping within the applicable phase of the Project has been installed.
- g. In addition to the foregoing, prior to issuance of an occupancy permit for any unit in the Project, the Applicant shall have provided to the

ZBA a performance guaranty to secure the complete construction of the remaining road, stormwater management infrastructure and/or utilities, as shown on the Approved Plans, for the Project. Said performance guaranty shall be secured by one, or in part by one and in part by another, of the methods set forth in clauses (1), (2) and (4) of M.G.L. c.41, §81U, which method or combination of methods may be selected and from time to time varied by the Applicant. The security provided as aforesaid shall be administered in accordance with the provisions of G.L. c.41, §81U, relative to such security; provided; however, that wherever the Planning Board is referred to in M.G.L. c.41, §81U, the ZBA is substituted.

112. Notwithstanding the foregoing, in the event that the Building Commissioner determines that seasonal weather have reasonably delayed the installation of plantings to complete the landscaping, the Building Commissioner may, in his discretion, nonetheless issue certificates of occupancy; provided that the Applicant shall complete the final landscaping improvements not later than the conclusion of the next planting season, which for the spring shall be April 30 and for the fall shall be October 15, and the Applicant shall, prior to issuance of any certificate of occupancy pursuant to this condition post sufficient cash surety with the Town Treasurer for completion of said improvements should the Applicant fail to timely do so.

113. The final coat of pavement shall not be installed until after the base and binder coat has endured a full winter season.

114. Before occupancy or use of the final housing unit within the Project, the Applicant shall submit to the ZBA an "As-Built Plan" in both paper and CAD format, showing all pavement, buildings, stormwater management structures and other infrastructure as they exist on the Property, above and below grade, including appropriate grades and elevations. The plans shall include a description of each deviation from the Final Approved Plans. The plans shall be stamped and signed by a registered land surveyor or civil engineer, certifying that the Project as built conforms and complies with the conditions of this Decision. A purpose of this condition is to facilitate the Consulting Engineer's review of the Project for compliance with this Decision before the final certificate of occupancy is issued.

General Requirements:

115. As this Comprehensive Permit Decision grants permission to build the Project on the Property under the Act, and as the Applicant has gained the benefits of a comprehensive permit including the right to construct and use the Project in a manner that is not in compliance with the Town of Carlisle's regulatory requirements which otherwise would be applicable to the Property and the Project, but for the Comprehensive Permit's override of local regulations to promote affordable housing, no use shall be made of the Property or of any building or unit on the Property except as permitted by this Decision. Without limiting the foregoing, no business or commercial use shall be conducted on the Property or in any building or use on the Property; provided that nothing contained herein shall be construed as prohibiting a

resident of any unit carrying on their profession in a manner that does not involve visitors to, or parking at, the Project, or any other externally visible manifestation of such practice.

116. If, between the date of the Decision is filed in the office of the Carlisle Town Clerk and the completion of the Project, the Applicant desires to change in a material way and/or to a significant degree the Project as reflected and approved by the Decision, such changes shall be governed by 760 CMR 56.05(11). Without limitation, in the event that any subsequent permitting or regulatory process (such as state wetlands review of the Project by the Conservation Commission or DEP, review of the proposed drinking water system by DEP, or other state or federal approvals) results in a change to the Approved Plans which trigger the need for further waivers from local bylaws, rules or regulations, any such matter shall be treated as a project change and the procedures in 760 CMR 56.05(11) shall be followed.

117. Prior to substantial completion of the Project, this comprehensive permit may not be transferred or assigned to any party without the approval of the subsidizing agency and written notice to the ZBA, as required by 760 CMR 56.05(12)(b).

118. Pursuant to 760 CMR 56.05(12)(c), if construction authorized by this Decision has not begun within three years of the date on which the permit becomes final except for good cause, the permit shall become void. This time shall be tolled for the time required to pursue or await the determination on any appeal on any other state or federal permit or approval required for the Project. The applicant may seek an extension as allowed in 760 CMR 56.05(12)(c).

119. The Applicant shall comply with all local bylaws, rules and regulations of the Town of Carlisle and its boards and commissions in effect as of July 3, 2014 unless expressly waived herein.

120. The Applicant shall pay all fees of the Town of Carlisle imposed generally for construction projects, including but not limited to building permit fees, and for the purposes of monitoring compliance of the construction and occupancy of the Project in accordance with this Comprehensive Permit unless otherwise expressly waived in this Decision.

121. The Applicant shall copy the ZBA on all correspondence between the Applicant and any federal, state or Town official, board or commission that concerns the design and/or conditions set forth in this Decision, including but not limited to all testing results, official filings and other permit applications that concern this Project. In addition, the Applicant shall provide the Building Commissioner, the ZBA and the Board of Health copies of all communications, reports, submissions, or other documents concerning the drinking water system sent by or on behalf of the Applicant or DEP.

122. The terms, provisions and conditions of this Decision shall run with the land and shall be binding on the Applicant and all of its successors and assigns, with the same effect as if specifically mentioned in each instance where the Applicant is named or referred to. Any and all references to the "Applicant" herein shall include

any authorized successors or assigns of the Applicant including, but not limited to, any Condominium Association created relative to the Project and individual unit owners, as applicable. Any sale or transfer of rights or interest in all or any part of the Property shall include a condition that the grantee and its successors and assigns shall be bound by the terms and conditions of this Decision. This Decision shall be so referenced in the condominium Master Deed for the Project and in each condominium unit deed.

123. On remand, the ZBA retained Nitsch Engineering to perform civil peer review of the Applicant's new plans. Nitsch prepared a letter dated October 18, 2016 (Brem 321) containing its comments on the new plans and attended one session of the remand public hearing.

Pursuant to 760 CMR 56.05(5) and M.G.L. c.44, §53G, the ZBA asked the Applicant to deposit with the Town the funds necessary to cover Nitsch's peer review of the new plans. The Applicant stated that it would pay a portion of the cost of Nitsch's review only. The ZBA declined to accept partial payment, and as of the date of this Decision the Town has not been reimbursed for any of the peer review work that Nitsch performed on remand. In accordance with the foregoing, the Applicant shall reimburse the Town for all invoices for peer review performed by Nitsch Engineering, Inc. during the remand hearing prior to issuance of any building permit for the Project.

124. Upon submission of the Proposed Final Plans, the Applicant shall replenish the project review fee account in the amount of \$20,000 to fund the review of the Proposed Final Plans by the ZBA Consulting Engineer. Any amounts not expended from this account shall be returned to the Applicant.

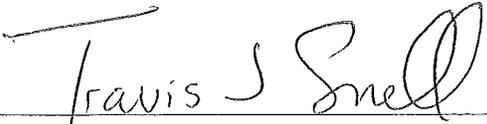
125. Inspection of the roadway construction and stormwater infrastructure shall be performed by a qualified engineer retained by the ZBA at the Applicant's expense, and shall be in accordance with Article IV, Section 2 (Inspections and Controls) of the Planning Board's Subdivision Rules and Regulations.

126. The Applicant shall promptly pay the reasonable fees of any consulting engineers or outside inspectors as the ZBA or relevant Town staff determine to be necessary to conduct construction and post-construction inspections of the Project's infrastructure.

127. For all matters relating to enforcement of this Decision by the Town of Carlisle responsibility for the cost and maintenance of the common facilities and infrastructure of the Project shall be joint and several between the Condominium Association and the entity(ies) developing the applicable phase of the Project; and the entity(ies) developing the applicable phase shall be relieved of such responsibility upon issuance of the occupancy permit for all of the units within that phase.

VIII. Conclusion

For the reasons stated above, the Application for a comprehensive permit for the Project is approved subject to the foregoing conditions.



Travis Snell, Chair



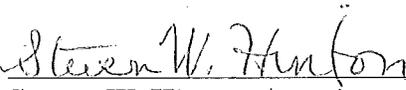
Emmanuel Crespo



Martin Galligan



Lisa Davis Lewis, Associate



Steven W. Hinton, Associate

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FEB 28 2017

TOWN CLERK CHARLES
CHARLENE M. HINTON

EXHIBIT A



Town of Carlisle

66 Westford Street, Carlisle, MA 01741
Phone: (978) 369-6136 Fax: (978) 369-6155

Zoning Board of Appeals Exhibits

Lifetime Green Homes, LLC - Long Ridge Road

<u>Brem_001</u>	07.03.2014	Lifetime Green Homes Application
<u>Brem_002</u>		Applicant's Stormwater Management report Vol. 1 - See Brem 003
<u>Brem_003</u>	07.03.2014	Applicant's Stormwater Management report Vol. 1 revised (5.2 mb)
<u>Brem_004</u>	07.03.2014	Applicant's Stormwater Management report Volume 2 (11 mb)
<u>Brem_005</u>	07.03.2014	Site plan -- full size map n.a. electronically, see 8½" x 11" in Brem_001
<u>Brem_006</u>	07.03.2014	Utility plan -- full size map n.a. electronically, see 8½" x 11" in Brem_001
<u>Brem_007</u>	07.22.2014	Letter from Hill Law -- abutters comments
<u>Brem_008</u>	07.18.2014	Letter from Carlisle BOH regarding well classification
<u>Brem_009</u>	07.03.2013	Applicant's Requested Waivers
<u>Brem_010</u>	07.26.2014	Letter of comments from Carlisle Fire Department
<u>Brem_011</u>	07.28.2014	Purchase & Sale Agreement of 100 Long Ridge Rd to Lifetime Green Homes
<u>Brem_012</u>	07.06.2014	Proposed Scope of Services for traffic study by MDM Transport
<u>Brem_013</u>	07.28.2014	Lifetime Green Homes Commonwealth of Mass Annual Report
<u>Brem_014</u>	08.07.2014	Letter from BOH requesting written determination regarding wells
<u>Brem_015</u>	07.29.2014	Ltr. from applicant to BOH regarding DEP Annual Report -- Water Supply
<u>Brem_016</u>	07.29.2014	Ch. 40B Technical Review Assistance Application
<u>Brem_017</u>	08.08.2014	Nobis Engineering proposal for professional services (4.1 mbs)
<u>Brem_018</u>	08.07.2014	Nitsch Engineering proposal for civil and traffic peer review
<u>Brem_019</u>	08.06.2014	Horsley Witten Group proposal for Environmental Consulting Services
<u>Brem_020</u>	08.08.2014	Beals & Thomas response to request to provide consulting svcs. (14 mb)
<u>Brem_021</u>	08.15.2014	Grading plan -- full size map -- not available electronically
<u>Brem_022</u>	08.20.2014	Deschenes & Farrell, P.C. letter requesting permission to survey wells
<u>Brem_023</u>	08.20.2014	Memo of comments from Planning Board to ZBA
<u>Brem_024</u>	09.03.2014	Email from applicant regarding list of documents from 8/27/14 meeting
<u>Brem_025</u>	09.03.2014	Email from Member Galligan -- list of incomplete areas on application
<u>Brem_026</u>	08.26.2014	Applicant's NOI as delivered to Conservation Comm on paper (8 mb)
<u>Brem_027 - Brem_049</u>		<i>not used</i>
<u>Brem_050</u>	08.14.2014	Horsley Witten Group revised proposal for consulting services
<u>Brem_051</u>	08.14.2014	Horsley Witten Group professional experience of Neal M. Price
<u>Brem_052</u>	08.14.2014	Horsley Witten Group Coventry Woods report
<u>Brem_053</u>	08.13.2014	Nitsch Engineering revised proposal for civil engineering services
<u>Brem_054</u>	08.29.2014	Email from Nitsch Eng re: Proposal Update for 40B

Brem_055_09.03.2014 Copy of check from applicant for \$18,000 for peer review costs
Brem_056 *not used*
Brem_057_09.05.2014 Architectural Plans at scale of ¼" = 1' – 0"
Brem_058_09.10.2014 MDM Transportation report with comments from Nitsch Eng
Brem_059_09.11.2014 MHJ Associates memorandum re: Missing Documents

Brem_060_09.12.2014 Applicant's letter to ZBA re: water supply – wells & hydrogeologic study
Brem_061_09.15.2014 MDM Transportation report with comments from Nitsch Eng
Brem_062_09.15.2014 Email to ZBA from abutter Dave Ringheiser
Brem_063_09.15.2014 Ltr. from applicant to ConsCom, Cc:ZBA rgd 3rd reviewer at site inspection
Brem_064_09.15.2014 Letter from Hill Law - list of abutters representing
Brem_065_09.22.2014 Letter from applicant to MassHousing – update on project
Brem_066_09.24.2014 Letter from ZBA to applicant requesting delinquent information
Brem_067_09.26.2014 Letter from applicant to ZBA regarding traffic study
Brem_068_09.26.2014 Plan of Existing Conditions of wells & septic within 200 feet of property
Brem_069_09.26.2014 Ltr. from applicant's atny. addressing missing document & revised waivers

Brem_070_10.01.2014 BOH rsp. to ZBA request for comments on water supply & septic system
Brem_071_10.03.2014 Hill Law memo to BOH regarding Public Water System Determination
Brem_072_10.02.2014 Assessor's letter to abutter missed in initial notification
Brem_073_10.02.2014 BOH letter to ZBA regarding proposed well testing protocol
Brem_074_10.02.2014 ConsCom Ltr to ZBA re Wetlands Hearing and Wetlands Peer Review Status
Brem_075_10.01.2014 BOH ltr to ZBA: Water Supply'- Wells Testing Protocol
Brem_076_10.03.2014 HILL Law Memo to ZBA re Horsley Witten Grp Hydrology Study
Brem_077_10.06.2014 Letter frm Lyn Lemaire to ZBA regarding 40B Concerns
Brem_078_10.06.2014 See BREM 095
Brem_079_09.15.2014 NGI scope of work report to applicant Re: ground water (table missing).

Brem_080_10.14.2014 NGI Scope of Work Report to Applicant Re: Ground Water (table included)
Brem_081_10.17.2014 Ltr from Horsley Witten Group to ZBA regarding Goundwater Analysis
Brem_082_10.21.2014 GeoHydroCycle, Inc. representing abutters recommendations
Brem_083_10.21.2014 Board of Health Scope of Work Recommendations to ZBA
Brem_084_10.21.2014 Proposed Condominium Provisions Relative to Water Lines and Wells
Brem_085_10.24.2014 Traffic Assessment by MDM Transportation Consultants, Inc (8mb)
Brem_086_10.24.2014 Landscape Plan prepared by Garnder + Gerrish, LLC (2 pages)
Brem_087_10.24.2014 Nitsch Engineering Peer Review Initial Report – Preliminary
Brem_088_10.27.2014 Nitsch Engineering Peer Review Initial Report – Final
Brem_089_10.23.2014 Board of Health Additional Scope of Work Recommendations

Brem_090_10.30.2014 Proforma documents from applicant
Brem_091_10.30.2014 Letter of concern to ZBA from Susan Blankenship, a Carlisle resident
Brem_092_10.31.2014 See BREM 094
Brem_093_10.31.2014 Letter from Applicant to BOA re: septic system
Brem_094_11-03-2014 Updated Traffic Memo from NITSCH Eng., Replaces BREM 092
Brem_095_11-03-2014 Updated Architectural Board Replaces BREM 078
Brem_096_11-03-2014 Locus Map with Plan Inserted & Neighborhood Tree Cover
Brem_097_11-07-2014 Project location overlay on satellite view
Brem_098_11-03-2014 Rear Perspective of Building Type A

<u>Brem 099 11-03-2014</u>	Project Building Specifications
<u>Brem 100 11-03-2014</u>	Architectural Facsimile - Building Type B
<u>Brem 101 11-06-2014</u>	Agreement to extend time to conduct public hearing
<u>Brem 102 11-07-2014</u>	Ltr from Applicant to Cons Comm in resp to EcoTec, Inc review
<u>Brem 103 11-07-2014</u>	Review of Notice of Intent form Eco Tec, Inc. to Cons Comm
<u>Brem 104 11-10-2014</u>	Ltr of recommendations to Building Inspector from the Fire Dept
<u>Brem 105 11-13-2014</u>	Neighborhood Well and Septic Exhibit
<u>Brem 106 11-13-2014</u>	Neighborhood Flow Path Exhibit
<u>Brem 107 11-14-2014</u>	GeoHydroCycle, Inc ltr. to Nitsch Engineering re: testing recommendations
<u>Brem 108 11-14-2014</u>	Applicant's letter to BOA
<u>Brem 109 11-14-2014</u>	Ltr to Mass DEP re: groundwater resources from Carlisle Town Counsel
<u>Brem 110 11-17-2014</u>	Letter to BOS from Thornton Ash, re: water testing
<u>Brem 111 11-17-2014</u>	Letter to BOS from Steven Davis, re: water testing
<u>Brem 112 11-17-2014</u>	Letter to BOS from Carolyn and Colin Higgins, re: water testing
<u>Brem 113 11-17-2014</u>	Well Impact Testing Options Submitted B
<u>Brem 114 11-17-2014</u>	Private Well Guidelines Pgs 15 and 16
<u>Brem 115 11-17-2014</u>	Rendering of Water Flow Submitted by SC
<u>Brem 116 11-17-2014</u>	Richard Williams, PHD, Regard
<u>Brem 117 11-24-2014</u>	Letter of concern to the ZBA from Dave Ringheiser, an abutter
<u>Brem 118 11-24-2014</u>	Letter of concern to the ZBA from Thornton Ash, an abutter
<u>Brem 119 12-01-2014</u>	Letter of concern to BOS from Long Ridge Road Neighbors
<u>Brem 120 12-01-2014</u>	Letter from BOH regarding meeting with MassDep on water supply
<u>Brem 121 12-04-2014</u>	Letter of clarification to BOS rom Thornton Ash, an abutter
<u>Brem 122 12-08-2014</u>	Response ltr. by applicant to peer review, Fire & Police Dpts & others
<u>Brem 123 12-08-2014</u>	Residential Site Plan – cover sheet
<u>Brem 124 12-08-2014</u>	Residential Site Plan – detail
<u>Brem 125 12-08-2014</u>	Residential Site Plan – existing conditions
<u>Brem 126 12-08-2014</u>	Residential Site Plan – layout/dimension plan
<u>Brem 127 12-08-2014</u>	Residential Site Plan – detailed grading & utility plan
<u>Brem 128 12-08-2014</u>	Residential Site Plan – Plan & Profile and Utility plan – Phase 1
<u>Brem 129 12-08-2014</u>	Residential Site Plan – Plan & Profile and Utility plan – Phase 2
<u>Brem 130 12-08-2014</u>	Stormwater Management Design – Signed and Stamped
<u>Brem 131 12-08-2014</u>	Stormwater Management Design – Volume 1 of 2 (11.8 MB)
<u>Brem 132 12-08-2014</u>	Stormwater Management Design – Volume 2 of 2
<u>Brem 133 12-08-2014</u>	Pressure Sewer Prelim Cost & Design Analysis by Environment One Corp
<u>Brem 134 12-08-2014</u>	E/ONE Pressure System Design Report
<u>Brem 135</u>	Not used
<u>Brem 136 12-12-2014</u>	Landscape plan by Gardner + Gerrish, LLC
<u>Brem 137 12-12-2014</u>	Plant schedule by Gardner + Gerrish, LLC
<u>Brem 138 12-22-2014</u>	Nitsch Eng. Revised Peer Review Report
<u>Brem 139 12-24-2014</u>	GeoHydroCycle, Inc. recommendations regarding groundwater testing
<u>Brem 140 12-31-2014</u>	Applicant's amendments to requested local waivers
<u>Brem 141 12-31-2014</u>	Applicant's attorney letter to ZBA regarding waivers
<u>Brem 142 01-02-2015</u>	Correspondence from Hill Law to ZBA rgd revised design of the project
<u>Brem 143 01-05-2015</u>	Board of Health memorandum to ZBA regarding waivers
<u>Brem 144 01-05-2015</u>	Mass DEP Clarification of Groundwater Mounding Analysis & Pressure Distrib
<u>Brem 145 01-05-2015</u>	Applicant's Computation of Sewage Flows
<u>Brem 146 01-08-2015</u>	Soil Testing Brem-2012,2014
<u>Brem 147 01-08-2015</u>	Soil Testing Berkes - 1998
<u>Brem 148 01-09-2015</u>	Applicant's Attorney's ltr. to ZBA regarding Hydro testing and extension
<u>Brem 149 01-12-2015</u>	Letter of concern to Mass DEP from Thornton Ash, an abutter

<u>Brem 150 01-13-2015</u>	Letter of concern to Mass DEP from Lyn Lemaire, a resident
<u>Brem 151 01-14-2015</u>	Proposed Scope of Services from Nobis engineer Jim Vernon
<u>Brem 152 01-14-2015</u>	Comments and Recommendations from GeoHydroCycle, Inc., Steve Smith
<u>Brem 153 01-16-2015</u>	Comments on Revised Plans from Carlisle Planning Board
<u>Brem 154 01-20-2015</u>	Applicant's letter of approval for Nobis Engineering to inspect the property
<u>Brem 155 01-22-2015</u>	BOH comments on water supply classification
<u>Brem 156 01-22-2015</u>	Fire Dept. comments on Nitsch Peer Review Report
<u>Brem 157 01-23-2015</u>	Town Advisory Group input to the ZBA on the process
<u>Brem 158 01-26-2015</u>	CCC response to ZBA request for comment
<u>Brem 159 01-28-2015</u>	Letter from Lyn Lemaire, a resident, to BOS requesting bylaw enforcement
<u>Brem 160 02-02-2015</u>	Letter to ZBA from the Applicant providing an update
<u>Brem 161 02-03-2015</u>	MDM Transportation Response to Peer Review Comments
<u>Brem 162 02-03-2015</u>	MDM Transportation Revised Traffic Study 166p.
<u>Brem 163 02-06-2015</u>	Extension of hearing process agreement
<u>Brem 164 02.06.2015</u>	Applicant's response to comments from Nitsch Eng letter of 12/22/14
<u>Brem 165 02-06-2015</u>	Stormwater Management Report – Volume 1 of 2
<u>Brem 166 02-06-2015</u>	Stormwater Management Report – Volume 2 of 2
<u>Brem 167 02-06-2015</u>	Revised Residential Site Plan Set (19mb)
<u>Brem 168 02-18-2015</u>	BOH letter to ZBA regarding Grinder Pumps in Chelmsford
<u>Brem 169 02-11-2015</u>	ConsCom forwarding req/ from Applicant to continue ConsCom hearing
<u>Brem 170 02-18-2015</u>	Nitsch Engineering Drainage Review based Applicant's revised report
<u>Brem 171 02-19-2015</u>	BOH letter to ZBA regarding Title 5
<u>Brem 172 02-20-2015</u>	Nobis Engineering Independent Hydrogeologic Study – Phase 1 Report
<u>Brem 173 02-23-2015</u>	List of open issues prepared by ZBA member Martin Galligan
<u>Brem 174 02-23-2015</u>	Town Counsel req. for Peer Review Fees and Hydrogeologic Information
<u>Brem 175 02-23-2015</u>	Request from Applicant's Attorney for continuance of hearing
<u>Brem 176 02-23.2015</u>	Applicant's Attorney correspondence to Town Counsel
<u>Brem 177 02-26-2015</u>	Stormwater Management Report Volume 1 of 2
<u>Brem 178 02-26-2015</u>	Stormwater Management Report Volume 2 of 2 (7.2 mb)
<u>Brem 179 02-26-2015</u>	Bioretention Planting schedule
<u>Brem 180 02-26 2015</u>	Plan & Profile and Utility Plan – Phase 1
<u>Brem 181 02-26-2015</u>	Detailed Grading and Utility Plan
<u>Brem 182 02-26-2015</u>	Plan & Profile and Utility Plan – Phase 2
<u>Brem 183 02-23-2015</u>	Letter of concern to the BOS from Lyn Lemaire, a Carlisle resident
<u>Brem 184 03-03-2015</u>	Applicants ltr. to Peer Reviewer abt. HydroCAD & minor plan revisions
<u>Brem 185 03-04-2015</u>	ConsCom request to Applicant for WPA fees
<u>Brem 186 03-05-2015</u>	Letter of concern to the BOS from Lyn Leamire, a Carlisle resident
<u>Brem 187 03-13-2015</u>	Town Counsel req. to Applicant to provide hydrogeologic information
<u>Brem 188 03-13-2015</u>	Plan of monitoring well locations (1.3mb)
<u>Brem 189 03-13-2015</u>	Nitsch Engineering latest drainage review
<u>Brem 190 03-13-2015</u>	Town Counsel ltr. to Applicant - Outstanding Issues for 3/26/15 Hearing
<u>Brem 191 03-16-2015</u>	Applicant's rsp. to ZBA list of variations from standard practice
<u>Brem 192 03-25-2015</u>	Letter from Applicant's Attorney regarding survey data
<u>Brem 193 03-25-2015</u>	Northeast Geoscience Inc. Goundwater Impact Analysis
<u>Brem 194 03-26-2015</u>	Ltr. from Applicant presented at 3/26/15 meeting
<u>Brem 195 03-26-2015</u>	Ltr. from Applicant's Attorney presented at 3/26/15 meeting (6.7mb)
<u>Brem 196 03-31-2015</u>	Civil Eng response to Nitsch letter of 3/13/15

Brem_197_03-31-2015 Revised Construction Plans (22.2mb)
Brem_198_04-02-2015 Nitsch Engineering Traffic Memorandum
Brem_199_04-02-2015 Hearing Extension Agreement from Applicant's Attorney

Brem_200_04-03-2015 Town Advisory Group Report
Brem_201_04-06-2015 Applicant's list of changes to Construction Site Plan
Brem_202_04-10-2015 Horsley Witten Group comments on NGI report
Brem_203_04-15-2015 Letter of concern regarding potential hydro impacts from Kenneth Belitz, Carlisle resident
Brem_204_04-17-2015 Letter of concern from group of abutters
Brem_205_04-15-2015 Letter from Thornton Ash, an abutter
Brem_206_04-17-2015 Nitsch Engineering updated comments and recommendations
Brem_207_04-17-2015 GeoHydroCycle, Inc review of NGI Groundwater Impact Analysis Rpt.
Brem_208_04-22-2015 Landscape Sign Feature profile view
Brem_209_04-22-2015 Photograph of rock to be used as sign (2mb)

Brem_210_04-23-2015 Fire Cistern requirements for recent residential developments
Brem_211_04-24-2015 Town Counsel ltr to DEP regarding Water Supply designation (11mb)
Brem_212_05-01-2015 Nobis Engineering Phase 2 Report (5.4mb)
Brem_213_05-04-2015 Northeast Geoscience Inc resp. to GeoHydroCycle ltr. of 4/17/15
Brem_214_05-04-2015 Horsley Witten Group Inc Nitrogen Loading Analysis
Brem_215_05-01-2015 Landscape sign - exhibit G
Brem_216_05-01-2015 Landscape sign - exhibit H
Brem_217_05-01-2015 Landscape sign - exhibit I
Brem_218_05-04-2015 Nobis Engineering presentation at 5/4/15 meeting
Brem_219_05-13-2015 Applicant's response to Nobis Engineering Report of 5/1/15

Brem_220_05-14-2015 GeoHydroCycle, Inc. review of NGI's report dated 5/4/15
Brem_221_05-15-2015 Nitsch Engineering memo on nitrogen calculation
Brem_222_05-18-2015 DEP response to Town Counsel request for water supply classification
Brem_223_05-19-2015 Attorney Deschenes letter to ZBA about peer review fees
Brem_224_05-20-2015 Technical Memorandum as an Addendum to Nobis' Phase 2 report (2.1mb)
Brem_225_05-29-2015 Impervious surface map
Brem_226_05-29-2015 Letter of concern to the State from David Ringheiser, an abutter
Brem_227_05-29-2015 E-Mail frm Marty Galligan with 2-page Nitrogen equivalency calculation
Brem_228_05-29-2015 Unit layout change
Brem_229_05-29-2015 Detailed grading & utility plan (color)

Brem_230_05-29-2015 Landscape plan
Brem_231_05-29-2015 Layout/Dimension plan
Brem_232_05-29-2015 Detailed grading & utility plan
Brem_233_05-29-2015 Artform Home Plans - Calinda
Brem_234_05-29-2015 Artform Home Plans - Brandywine Gold
Brem_235_05-29-2015 Artform Home Plans - Brandywine Classic
Brem_236_05-29-2015 Letter to the ZBA from the Applicant regarding new plans
Brem_237_06-01-2015 Summary of Requested Waivers
Brem_238_06-05-2015 Town Advisory Group letter to ZBA s
Brem_239_06-05-2015 Attachment to TAG letter - Coventry Decision

Brem_240_06-05-2015 Attachment to TAG letter - Rockpoint Decision
Brem_241_06-05-2015 Applicant's letter to ZBA
Brem_242_06-05-2015 Goldenrod architect plan attachment Brem_241
Brem_243_06-05-2015 Building specification attachment to Brem_241
Brem_244_06-05-2015 Unit style & Bedroom tabulation attachment to Brem_241
Brem_245_06-08-2015 ConsCom conditions recommendations to the ZBA
Brem_246_06-09-2015 Revised ConsCom conditions recommendations
Brem_247_06-08-2015 Preliminary Conditions List

<u>Brem 248 06-09-2015</u>	Aggregation of Flows and Nitrogen Loading by Nitsch Eng
<u>Brem 249 06-08-2015</u>	Applicant's submittal letter to ZBA
<u>Brem 250 06-08-2015</u>	Birches Pro-forma 13 units with equiv calcs
<u>Brem 251 06-08-2015</u>	Birches Pro-forma 13 units
<u>Brem 252 06-08-2015</u>	Birches Pro-forma 16 units
<u>Brem 253 06-09-2015</u>	Revised Birches Pro-forma 17 units
<u>Brem 254 06-09-2015</u>	Revised Birches Pro-forma 18 units
<u>Brem 255 06-09-2015</u>	Revised Birches Pro-forma 19 units
<u>Brem 256 06-09-2015</u>	Revised Birches Pro-forma 20 units
<u>Brem 257 06-08-2015</u>	Uneconomic analysis, well setback waiver, Exhibit D
<u>Brem 258 06-08-2015</u>	Uneconomic analysis, well setback 165 GPD, Exhibit E
<u>Brem 259 06-08-2015</u>	Birches Pro-forma 4 units
<u>Brem 260 06-10-2015</u>	Letter to ZBA regarding 110 standard from an abutter
<u>Brem 261 06-12-2015</u>	Applicant's comments on the draft conditions
<u>Brem 262 06-12-2015</u>	BOH response to waiver requests
<u>Brem 263 06-15-2015</u>	Planning Board Recommendations on Requested Waivers
<u>Brem 264 06-15-2015</u>	Nitsch Engineering memo regarding Septic Flow
<u>Brem 265 06-08-2015</u>	Birches Pro-forma 17 units
<u>Brem 266 06-08-2015</u>	Birches Pro-forma 18 units
<u>Brem 267 06-08-2015</u>	Birches Pro-forma 19 units
<u>Brem 268 06-08-2015</u>	Birches Pro-forma 20 units
<u>Brem 269 06-19-2015</u>	Extension Request from Attorney Doug Deschenes
<u>Brem 270 06-18-2015</u>	Planning Board decision on special permit for Garrison Place
<u>Brem 271 06-18-2015</u>	Operation and Management Plan for Garrison Place
<u>Brem 272 06-22-2015</u>	Definitive Subdivision Approval by Planning Board for Hart Farm Estates
<u>Brem 273 06-26-2015</u>	Letter of concern to the ZBA from David Ringheiser, Carlisle resident
<u>Brem 274 06-24-2015</u>	Revised Detailed Grading and Utility Plan
<u>Brem 275 06-26-2015</u>	Revised Layout/Dimension Plan
<u>Brem 276 06-26-2015</u>	Revised Detailed Grading and Utility Plan
<u>Brem 277 06-26-2015</u>	Revised Plan and Profile & Utility Plan
<u>Brem 278 06-26-2015</u>	BOH condition regarding escrow accounts
<u>Brem 279 06-25-2015</u>	Input from abutters and neighbors to conditions and condo docs
<u>Brem 280 06-24-2015</u>	Well data and central tendency statistics for project, PDF Summary
<u>Brem 281 06-24-2015</u>	Well data and central tendency statistics for project, XLS file
<u>Brem 282 06-24-2015</u>	Cover letter from Member Hinton to statistics for project
<u>Brem 283 06-23-2015</u>	Link to video regarding water on Cape Cod (updated)
<u>Brem 284 06-29-2015</u>	Letter of concern from Susan Blankenship, an abutter
<u>Brem 285 06-29-2015</u>	Covenant for Operations and Maintenance for Garrison Place
<u>Brem 286 06-29-2015</u>	Draft Conditions Concerning Condo documents
<u>Brem 287 06-29-2015</u>	Applicant's letter to ZBA regarding Consultant Review Fees
<u>Brem 288 07-13-2015</u>	Draft Decision - version 1
<u>Brem 289 07-17-2015</u>	Draft Decision - version 2
<u>Brem 290 08-12-2015</u>	Final decision for 100 Long Ridge Rd (17mb)
<u>Brem 291 07-08-2016</u>	Revised site plan dated 2/6/16
<u>Brem 292 08-02-2016</u>	ConsCom comments regarding revised site plan
<u>Brem 293 08-03-2016</u>	Planning Board's comments regarding revised Site Plan
<u>Brem 294 08-05-2016</u>	Applicant's Summary of The Birches Plan Changes
<u>Brem 295 08-05-2016</u>	Board of Health comments regarding revised site plan
<u>Brem 296 08-08-2016</u>	Letter of concern from abutter David Ringheiser
<u>Brem 297 08-08-2016</u>	NGI Wastewater & Water Supply Design Modification Impacts
<u>Brem 298 08-11-2016</u>	Summary of Planning Administrator's 8/8/16 comments

Brem 299 08-13-2016 Fire Chief David Flannery's comments on the revised site plan

Brem 300 08-22-2016 Public Water Supply Utility Plan

Brem 301 08-22-2016 Stormwater Management Volume 2 HydroCAD

Brem 302 08-22-2016 Stormwater Management Volume 1

Brem 303 08-25-2016 Revised site plan for Fire Truck Turning Exhibi

Brem 304 08-25-2016 Applicant's letter explaining Plan P revision

Brem 305 08-23-2016 Attachment A to Brem_304, updated Nitro Equivalency Calculations

Brem 306 08-26-2016 Conservation Commission's revised comments

Brem 307 08-30-2016 Corrected tabulation of bedroom mix

Brem 308 09-09-2016 Additional comments from the Board of Health

Brem 309 09-09-2016 Attachment to Brem_308

Brem 310 09-30-2016 Figures for Nobis Phase 4

Brem 311 09-30-2016 Tables for Nobis Phase 4

Brem 312 09-30-2016 Nobis Phase 4 Report (11 mb)

Brem 313 09-30-2016 Attachments A,B,C for Nobis Phase 4

Brem 314 09-30-2016 Attachment D to Nobis Phase 4 report (draft)

Brem 315 10-03-2016 Letter from abutter Dave Ringheiser questioning Nobis report

Brem 316A 10-03-2016 Key Chapters from MassDep Guideline for PWS

Brem 316B 10-03-2016 Appendix D

Brem 316C 10-03-2016 Chapter 4 Groundwater Supply delivery

Brem 316D 10-03-2016 Chapter 2 General design considerations

Brem 317 10-03-2016 Nobis attachment D (final) to Phase 4 report

Brem 318 10-04-2016 Revised 2016 Nobis Phase 4 proposal

Brem 319 10-05-2016 Letter of concern from abutter Colin Higgins

Brem 320 10-12-2016 Letter of concern from abutter David Ringheiser

Brem 321 10-18-2016 Peer Review Report by Nitsch Eng

Brem 322 10-25-2016 Nobis Tech Memo on nitrate mass balance

Brem 323 10-26-2016 Applicant's response to Nitsch peer review report

Brem 324 11-28-2016 Guidelines for Title 5 Aggregation of Flows and Nitro Loading

Brem 325 12-01-2016 Letter of concern from abutter Mike Hanauer, 200 Long Ridge Rd

Brem 326 12-04-2016 Letter regarding fire safety from abutter Thornton Ash

Brem 327 12-05-2016 Comments regarding cistern requirements from Chief of the Fire Department

Brem 328 12-06-2016 Letter of concern regarding water quality from Dave Ringheiser

Brem 329 12-08-2016 Correspondence from abutter Dave Ringerheiser regarding protect abutters water

Brem 330 12-08-2016 Final Nobis Overburden Bedrock Tech Memo

Brem 331 12-15-2016 Revision of site plan with Fire Truck Turnaround

Brem 332 12-20-2016 Letter from Attorney Dan Hill regarding hydrologist study (5.9 mb)

Brem 333 12-24-2016 Letter of concern from abutter David Ringheiser

Brem 334 12-24-2016 BOH waivers report from the Applicant's hydrogeologist

Brem 335 01-04-2017 Nobis Engineering review of NGI report (Brem 334)

Brem 336 01-04-2017 NGI Additional Modeling Results

Brem 337 01-04-2017 Applicant's letter regarding funding for mechanism to replace wells outside of project

Brem 338 01-04-2017 Attny. Bobrowski's proposed edits to Conditions of Approval (11mb)

Brem 339 01-05-2017 Project dispersion model sensitivity analysis table

Brem 340 01-06-2017 Revised fire truck turnaround per NFPA

Brem 341 01-06-2017 Exhibit U potential 48,000 gallon cistern

Brem 342 01-10-2017 Letter from David Freedman regarding BOH waivers

Brem 343 01-16-2017 A letter of concern regarding water from abutter David Ringheiser

Brem 344 01-16-2017 Nobis response to statement in Brem_338

Brem 345 01-17-2017 Fire Chief comments on Turning Template & Cistern

Brem 346 01-17-2017 Nobis response to NGI 1/4/17 report (8 mb)

Brem 347 01-18-2017 Board of Health requested waivers
Brem 348 01-19-2017 NGI mixing zone dilution analysis
Brem 349 01-19-2017 NGI Comments on Nobis 1/3/17 report

Brem 350 01-19-2017 Letter from Planning Administrator regarding fire protection
Brem 351 01-19-2017 Letter from abutter Stephen Davis regarding Blue Baby Syndrome
Brem 352 01-19-2017 Letter from Lyn Lemaire regarding issues Board should consider
This is the last document in the Brem case because the public hearing closed on the evening of 19 Jan 2017

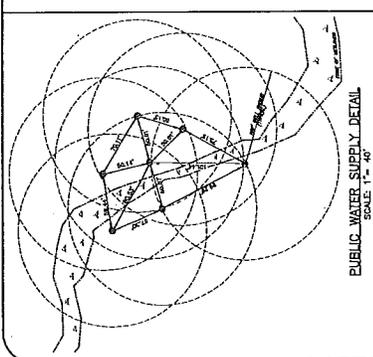
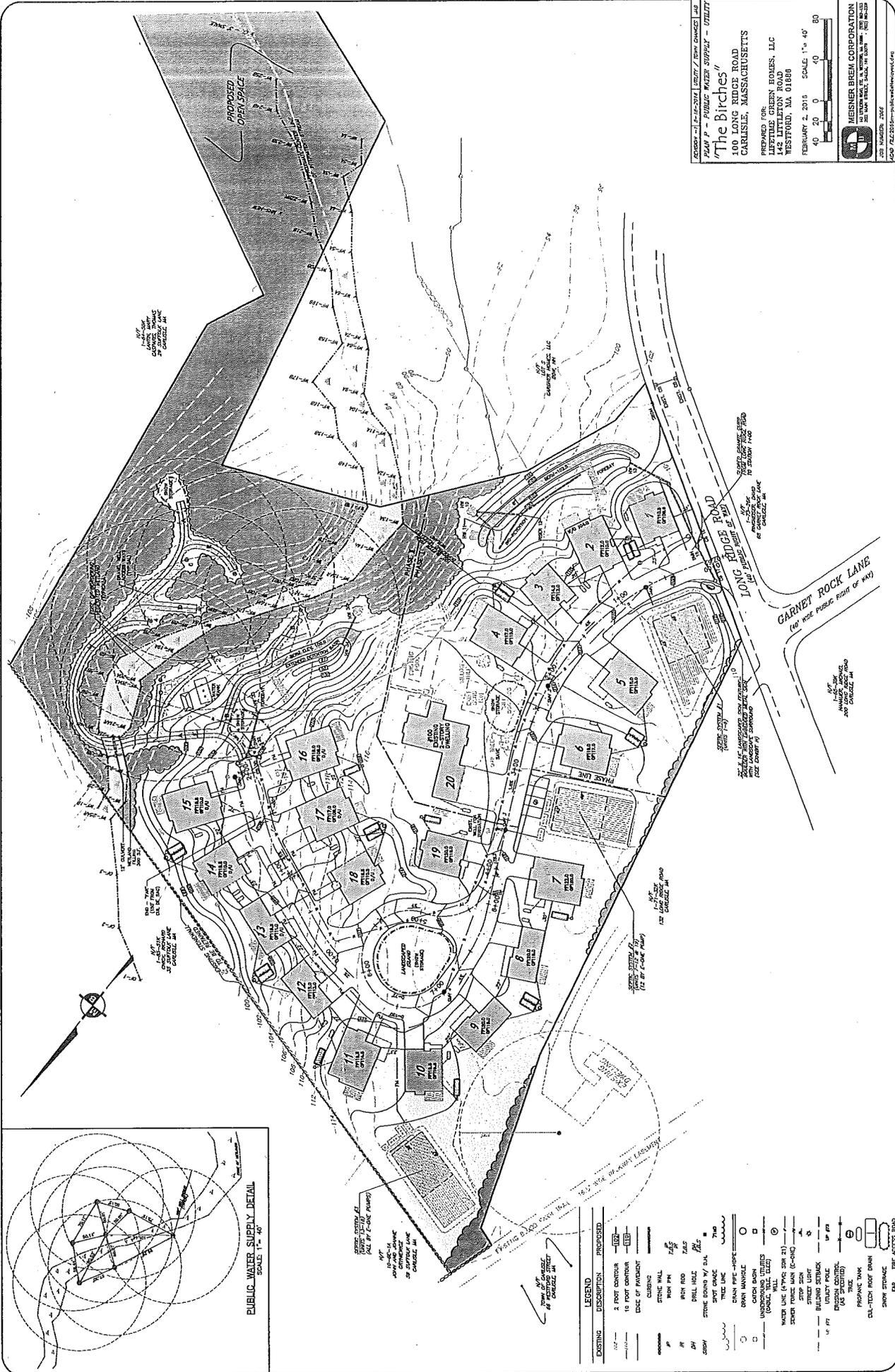
Keys:

BREM - Brem Property, 100 Long Ridge Road

Note: BREM 079 and 080 are essentially the same document; 079 contains a brief email and the 3-page letter, 080 contains the 3-page letter and a chart of wells within 100 feet

Last Updated: 20 Jan 2017 10:38 pm EST

EXHIBIT B



EXISTING	DESCRIPTION	PROPOSED
—○—	2 FOOT CONDUIT	—○—
—□—	10 FOOT CONDUIT	—□—
—	EDGE OF PAVEMENT	—
—	CURBLINE	—
—	STONE WALL	—
—	IRON PIPE	—
—	IRON ROD	—
—	DRILL HOLE	—
—	STONE FLOOR W/ DIA.	—
—	SPOT GRADE	—
—	TREE LINE	—
—	DRAIN PIPE - HIDE	—
—	BRICK MANHOLE	—
—	CATCH BASIN	—
—	UNDERGROUND UTILITY (SIGNAL, TELE, CABLE)	—
—	WATER LINE (4" PVC SCH 20)	—
—	SEWER FORCE MAIN (6" - 8")	—
—	STOP SIGN	—
—	UTILITY POLE	—
—	BUILDING STRUCK	—
—	DRUG STORE	—
—	PROPANE TANK	—
—	CAL-TECH ROOF DRAIN	—
—	SNOW STORAGE	—
—	PAV	—
—	FILE ACCESS ROAD	—

PREPARED FOR:
"The Birches"
 100 LONG RIDGE ROAD
 CARLISLE, MASSACHUSETTS

PREPARED BY:
MEISSNER BREEM CORPORATION
 142 LITTLETON ROAD
 WESTFORD, MA 01889

FEBRUARY 2, 2015 SCALE: 1" = 40'
 40 20 0 40 80

PROJECT NO. 15-001
 DRAWING NO. 15-001-01

EXHIBIT C

TABLE 4
 MASS-BALANCE NITRATE LOADING ANALYSES - MULTIPLE SCENARIOS
 100 Long Ridge Road
 Carlisle, Massachusetts

	Scenario	Defined Area	Wastewater Daily Volume Value Applied	Nitrate Concentration (mg/L)
<u>Proposed Septic Disposal Area 1</u>	1	AOI	Applicant	16.3
	2	AOI	Town	17.1
	3	Alt 1	Applicant	14.3
	4	Alt 1	Town	15.6
	5	Alt 2	Applicant	13.7
	6	Alt 2	Town	15.1
<u>Proposed Septic Disposal Area 2</u>	7	AOI 2A	Applicant	17.0
	8	AOI 2A	Town	17.6
	9	AOI 2B	Applicant	17.9
	10	AOI 2B	Town	19.0
	11	AOI 2C	Applicant	15.4
	12	AOI 2C	Town	17.1
<u>Proposed Septic Disposal Area 3</u>	13	AOI 3A	Applicant	11.5
	14	AOI 3A	Town	13.2
	15	AOI 3B	Applicant	7.5
	16	AOI 3B	Town	9.4

Assumptions

Applicant wastewater volume value = 2735708.58 L/yr, existing 4-bedroom house wastewater volume value = 607935.24 L/yr

Town wastewater volume value = 4103562.87 L/yr, existing 4-bedroom house wastewater volume value = 911902.86 L/yr

Recharge from precipitation = 1.5 ft./yr

Nitrate load from fertilizer = 933 mg/1000 ft.²

AOI Areas - Septic #1 (sqft)		
1-A	Impervious	4,580
	PerVIOUS Fertilized	4,143
	PerVIOUS Non-Fertilized	6,637
	Total	15,360
1-AIT 1	Impervious	6,982
	PerVIOUS Fertilized	385
	PerVIOUS Non-Fertilized	20,805
	Total	28,152
1-AIT 2	Impervious	5,953
	PerVIOUS Fertilized	0
	PerVIOUS Non-Fertilized	24,990
	Total	30,943

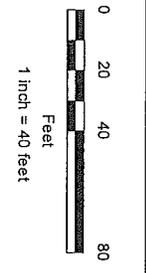
Legend

Surface Type

- Impervious
- PerVIOUS Fertilized
- PerVIOUS Unfertilized
- Existing Water Supply Well

- Notes:**
1. Source: 'Plan P - Public Water Supply' by Malvern Brom Corp., February 2, 2016.
 2. Proposed Septic Disposal Area #1 is included in all area calculations.

3. It is assumed that all pervious areas outside the site boundary are non-fertilized.
4. Assessor's parcels are from the Town of Carlsle, Aerial photography from MassGIS map service, 2013.
5. Locations of site features depicted hereon are approximate and given for illustrative purposes only.



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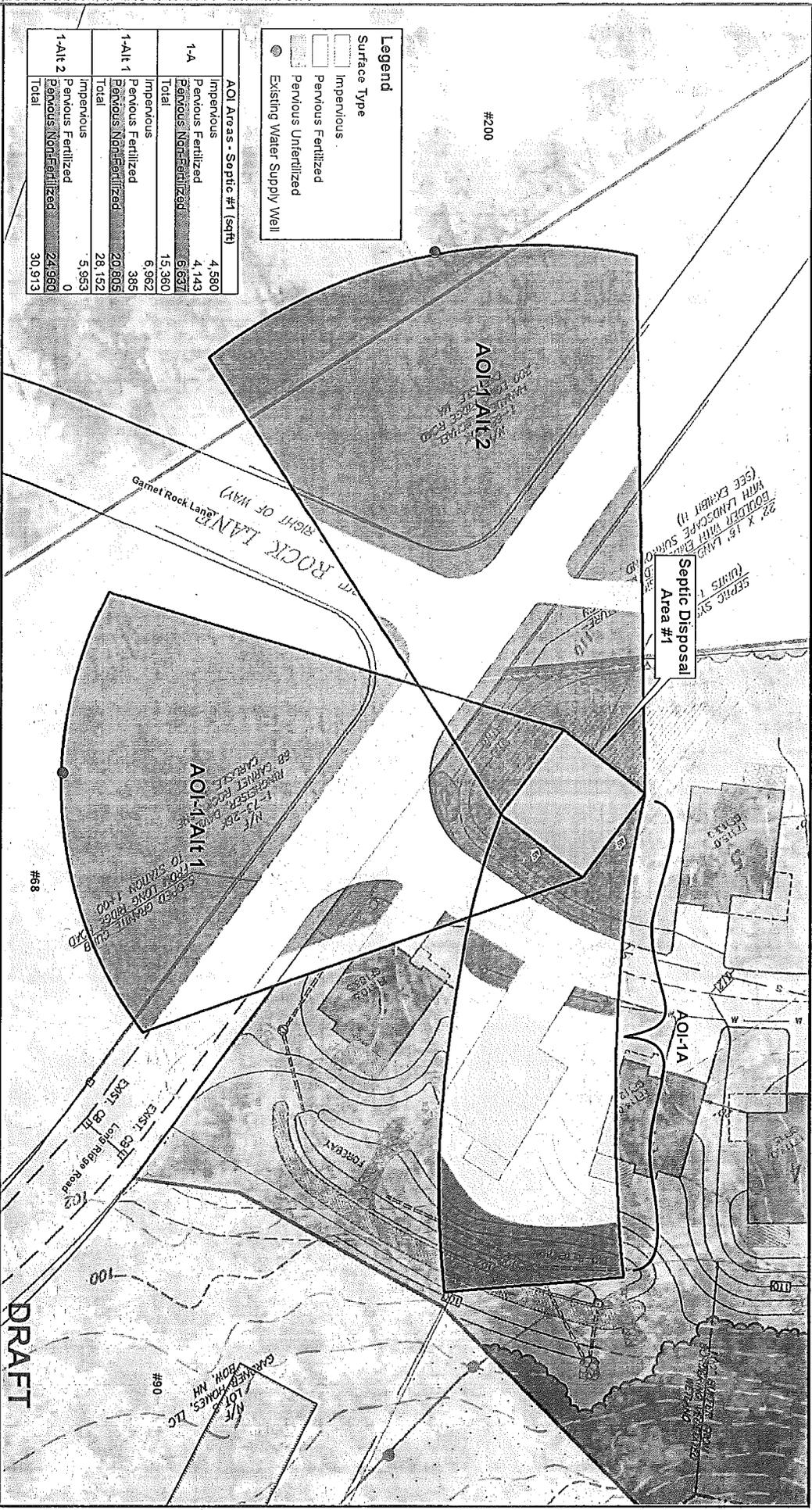
FIGURE D1

DRAFT

**SURFACE CHARACTERISTICS
 PROPOSED SEPTIC #1 AOI**

100 LONG RIDGE ROAD
 CARLSLE, MASSACHUSETTS

PREPARED BY: JH CHECKED BY: JV
 PROJECT NO. 89220.00 DATE: SEPTEMBER 2016



AOI Areas - Septic #2 (sqft)	
Impervious	4,327
Pervious Fertilized	2,981
Pervious Unfertilized	4,528
Total	11,836
2-B	
Impervious	8,497
Pervious Fertilized	7,627
Pervious Unfertilized	10,131
Total	26,315
2-C	
Impervious	8,497
Pervious Fertilized	7,627
Pervious Unfertilized	26,022
Total	42,146

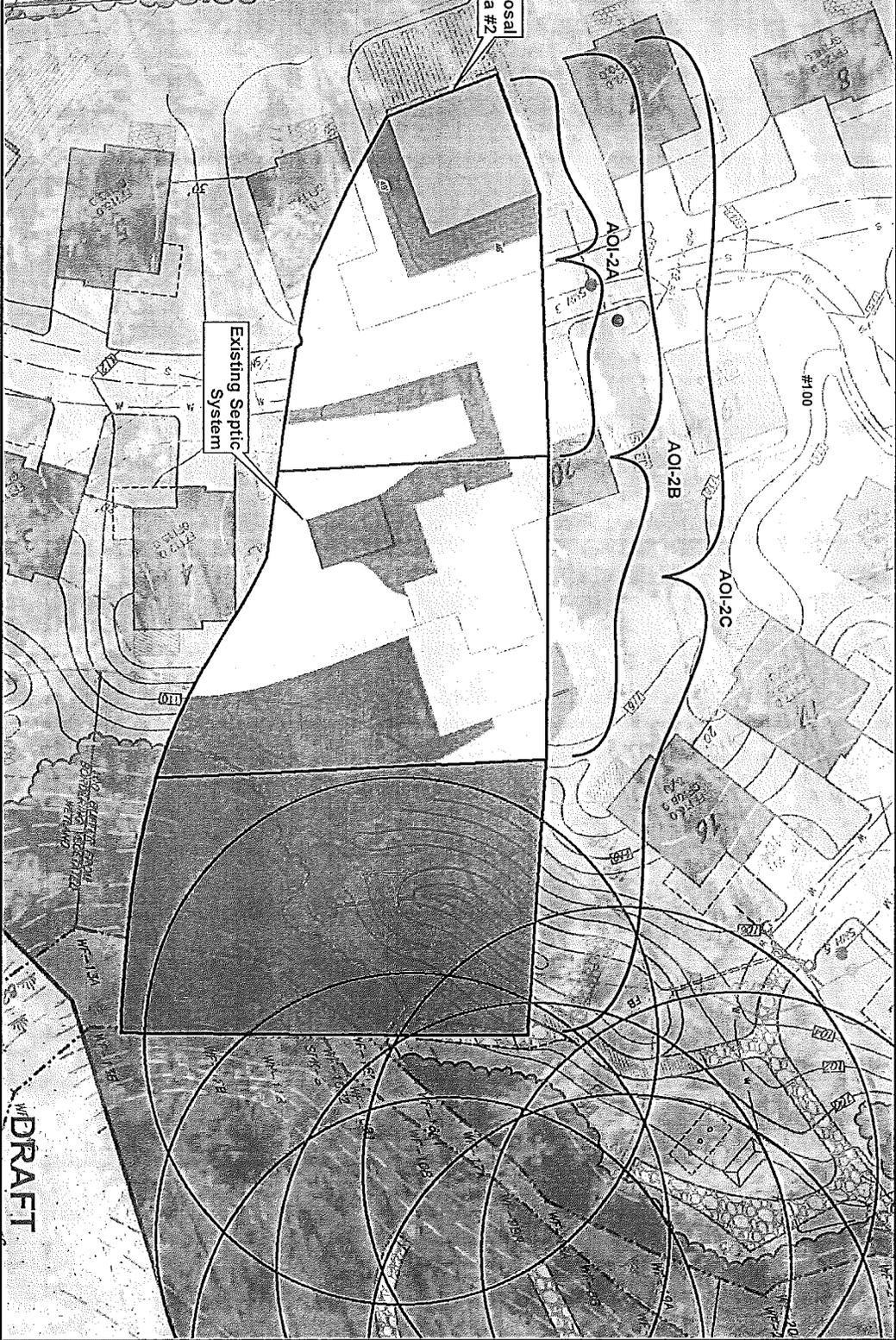
Legend

Surface Type

- Impervious
- Pervious Fertilized
- Pervious Unfertilized
- 100 foot Well Buffer (Zone I)
- Existing Water Supply Well

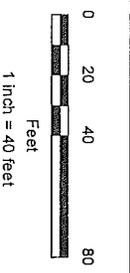
Septic Disposal Area #2

Existing Septic System



- Notes:**
1. Source: Plan P - Public Water Supply by Wesner Brom Corp., February 2, 2016.
 2. Proposed Septic Disposal Area #2 is included in all area calculations.

3. It is assumed that all pervious areas outside the Site boundary are non-fertilized.
4. Assessor's parcels are from the Town of Carlisle, Aerial photography from MassGIS map service, 2013.
5. Locations of site features depicted hereon are approximate and given for illustrative purposes only.



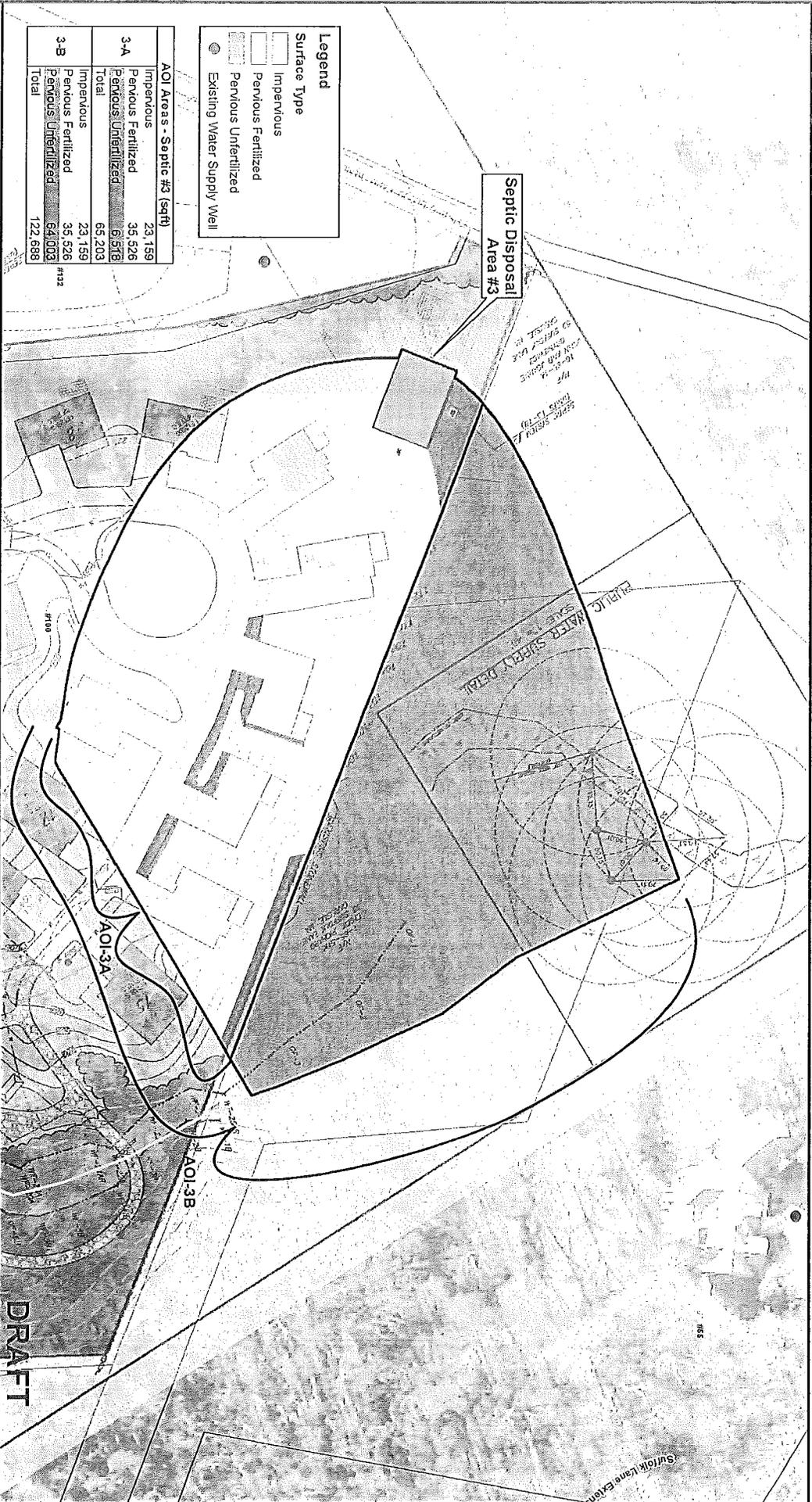
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Client: Carlisle, Employee-owned

FIGURE D2

DRAFT

SURFACE CHARACTERISTICS
PROPOSED SEPTIC #2 AOI
100 LONG RIDGE ROAD
CARLISLE, MASSACHUSETTS

PREPARED BY: JH CHECKED BY: JV
PROJECT NO. 09220.00 DATE: SEPTEMBER 2016



AOI Areas - Septic #3 (sqft)	
Impervious	23,159
Pervious Fertilized	35,526
Pervious Unfertilized	65,203
Total	122,888

Legend

Surface Type

- Impervious
- Pervious Fertilized
- Pervious Unfertilized
- Existing Water Supply Well

- Notes:**
1. Source: Plan P - Public Water Supply by Malvern Brom Corp., February 2, 2016.
 2. Proposed Septic Disposal Area #3 is included in all area calculations.

3. It is assumed that all pervious areas outside the Site boundary are non-fertilized.
4. Assessor's parcels are from the Town of Carlisle, Aerial photography from MassGIS map service, 2013.
5. Locations of site features depicted herein are approximate and given for illustrative purposes only.



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FIGURE D3

DRAFT

SURFACE CHARACTERISTICS
 PROPOSED SEPTIC #3 AOI
 100 LONG RIDGE ROAD
 CARLISLE, MASSACHUSETTS

PREPARED BY: JH CHECKED BY: JV
 PROJECT NO: 89220.00 DATE: SEPTEMBER 2016

TABLE 4 Alt
 MASS-BALANCE NITRATE LOADING ANALYSES - MULTIPLE SCENARIOS
 100 Long Ridge Road
 Carlisle, Massachusetts

	Scenario	Defined Area	Wastewater Daily Volume Value Applied	Nitrate Concentration (mg/L)
<u>Proposed Septic Disposal Area 1</u>	1	AOI	Applicant	16.3
	2	AOI	Town	17.1
	3	Alt 1	Applicant	14.3
	4	Alt 1	Town	15.6
	5	Alt 2	Applicant	13.7
	6	Alt 2	Town	15.1

	Scenario	Defined Area	Wastewater Daily Volume Value Applied	Nitrate Concentration (mg/L)
<u>Proposed Septic Disposal Area 2</u>	7	AOI 2A	Applicant	17.0
	8	AOI 2A	Town	17.6
	9	AOI 2B	Applicant	17.9
	10	AOI 2B	Town	19.0
	11	AOI 2C	Applicant	15.4
	12	AOI 2C	Town	17.1

	Scenario	Defined Area	Wastewater Daily Volume Value Applied	Nitrate Concentration (mg/L)
<u>Proposed Septic Disposal Area 2</u>	17	AOI 2A Alt 1	Applicant	15.3
	18	AOI 2A Alt 1	Town	16.3
Includes Input from Proposed SPA 1	19	AOI 2B Alt 1	Applicant	12.7
Includes Input from Proposed SPA 1	20	AOI 2B Alt 1	Town	14.3

	Scenario	Defined Area	Wastewater Daily Volume Value Applied	Nitrate Concentration (mg/L)
<u>Proposed Septic Disposal Area 3</u>	13	AOI 3A	Applicant	11.5
	14	AOI 3A	Town	13.2
	15	AOI 3B	Applicant	7.5
	16	AOI 3B	Town	9.4

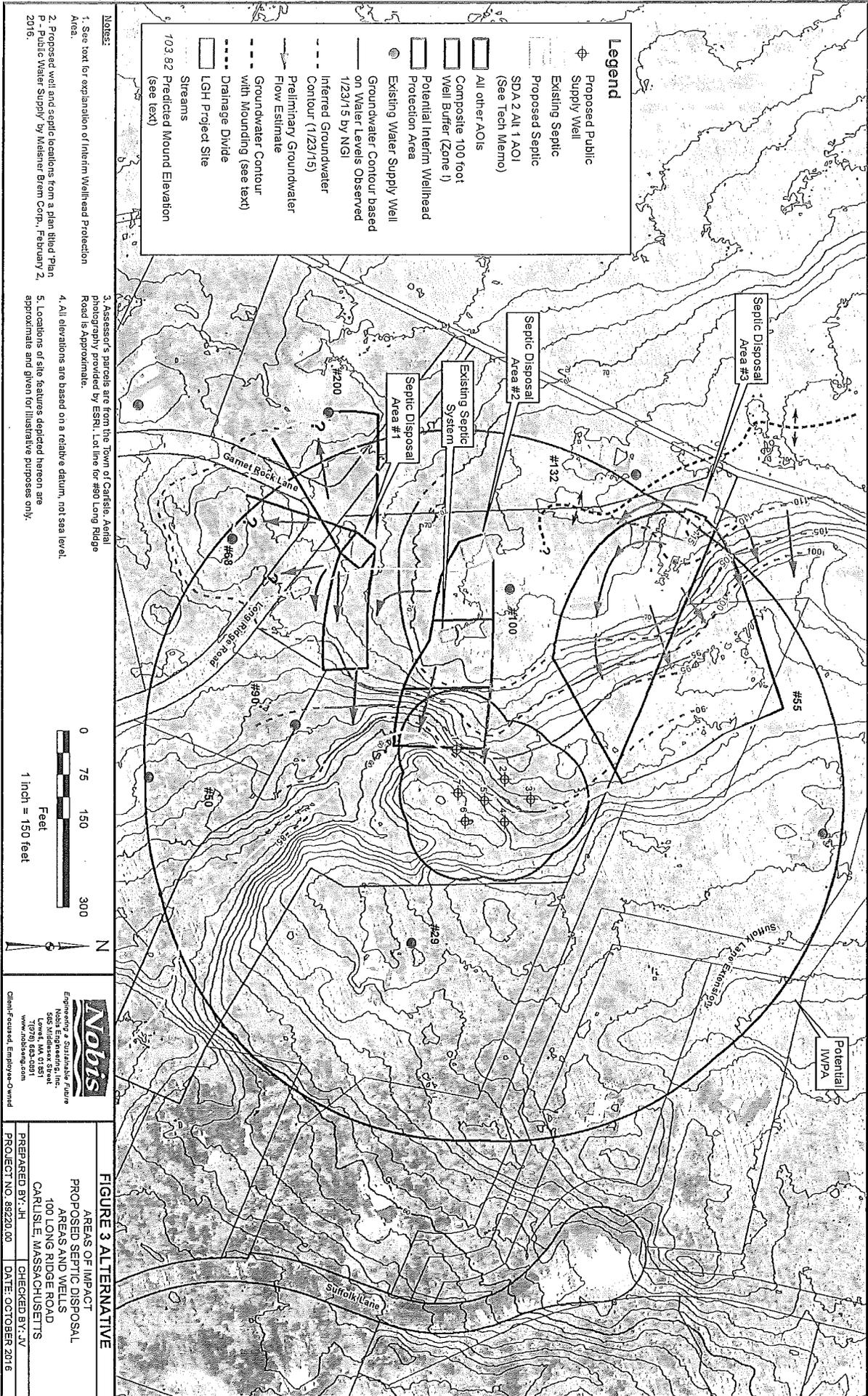
Assumptions

Applicant wastewater volume value = 2735708.58 L/yr, existing 4-bedroom house wastewater volume value = 607935.24 L/yr

Town wastewater volume value = 4103562.87 L/yr, existing 4-bedroom house wastewater volume value = 911902.86 L/yr

Recharge from precipitation = 1.5 ft./yr

Nitrate load from fertilizer = 933 mg/1000 ft.²



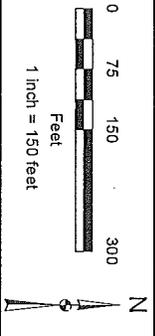
Legend

- Proposed Public Supply Well
- Existing Septic
- Proposed Septic
- SDA 2 All 1 AOI (See Tech Memo)
- All other AOIs
- Composite 100 foot Well Buffer (Zone 1)
- Potential Interim Wellhead Protection Area
- Existing Water Supply Well
- Groundwater Contour based on Water Levels Observed 1/23/15 by NIGI
- Inferred Groundwater Contour (1/23/15)
- Preliminary Groundwater Flow Estimate
- Groundwater Contour with Mounding (see text)
- Drainage Divide
- LGH Project Site
- Streams
- 103 82 Predicted Mound Elevation (see text)

Notes:

1. See text for explanation of Interim Wellhead Protection Area.
2. Proposed well and septic locations from a plan titled 'Plan P - Public Water Supply' by Malsiner Brem Corp., February 2, 2016.

3. Assessor's parcels are from the Town of Carlsle. Aerial photography provided by ESRI. Lot line for #90 Long Ridge Road is Approximate.
4. All elevations are based on a relative datum, not sea level.
5. Locations of site features depicted herein are approximate and given for illustrative purposes only.



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FIGURE 3 ALTERNATIVE

AREAS OF IMPACT
PROPOSED SEPTIC DISPOSAL
AREAS AND WELLS
100 LONG RIDGE ROAD
CARLSLE, MASSACHUSETTS

PREPARED BY: JH CHECKED BY: JV
PROJECT NO. 89220.00 DATE: OCTOBER 2016

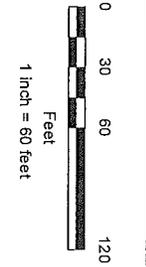
AOI Areas - Septic #2 Alt 1 (sqft)		
A	Impervious	3,186
	Pervious Fertilized	12,867
	Pervious Non-Fertilized	2,826
	Total	18,879
B	Impervious	17,400
	Pervious Fertilized	13,375
	Pervious Non-Fertilized	49,959
	Total	80,744

Legend

- Impervious
- Pervious Fertilized
- Pervious Non-Fertilized
- 100 foot Well Buffer (Zone I)
- Existing Water Supply Well

- Notes:**
1. Source: Plan P - Public Water Supply by Waterborn Corp., February 2, 2016.
 2. Proposed Septic Disposal Area #2 is included in all area calculations.

3. It is assumed that all pervious areas outside the site boundary are non-fertilized.
4. Assessor's parcels are from the Town of Carlisle, Aerial photography from MassGIS map service, 2013.
5. Locations of site features depicted hereon are approximate and given for illustrative purposes only.



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FIGURE D2 ALT 1
 SURFACE CHARACTERISTICS
 PROPOSED SEPTIC #2 AOI
 100 LONG RIDGE ROAD
 CARLISLE, MASSACHUSETTS

PREPARED BY: JH
 PROJECT NO: 89220.00
 CHECKED BY: JV
 DATE: OCTOBER 2016

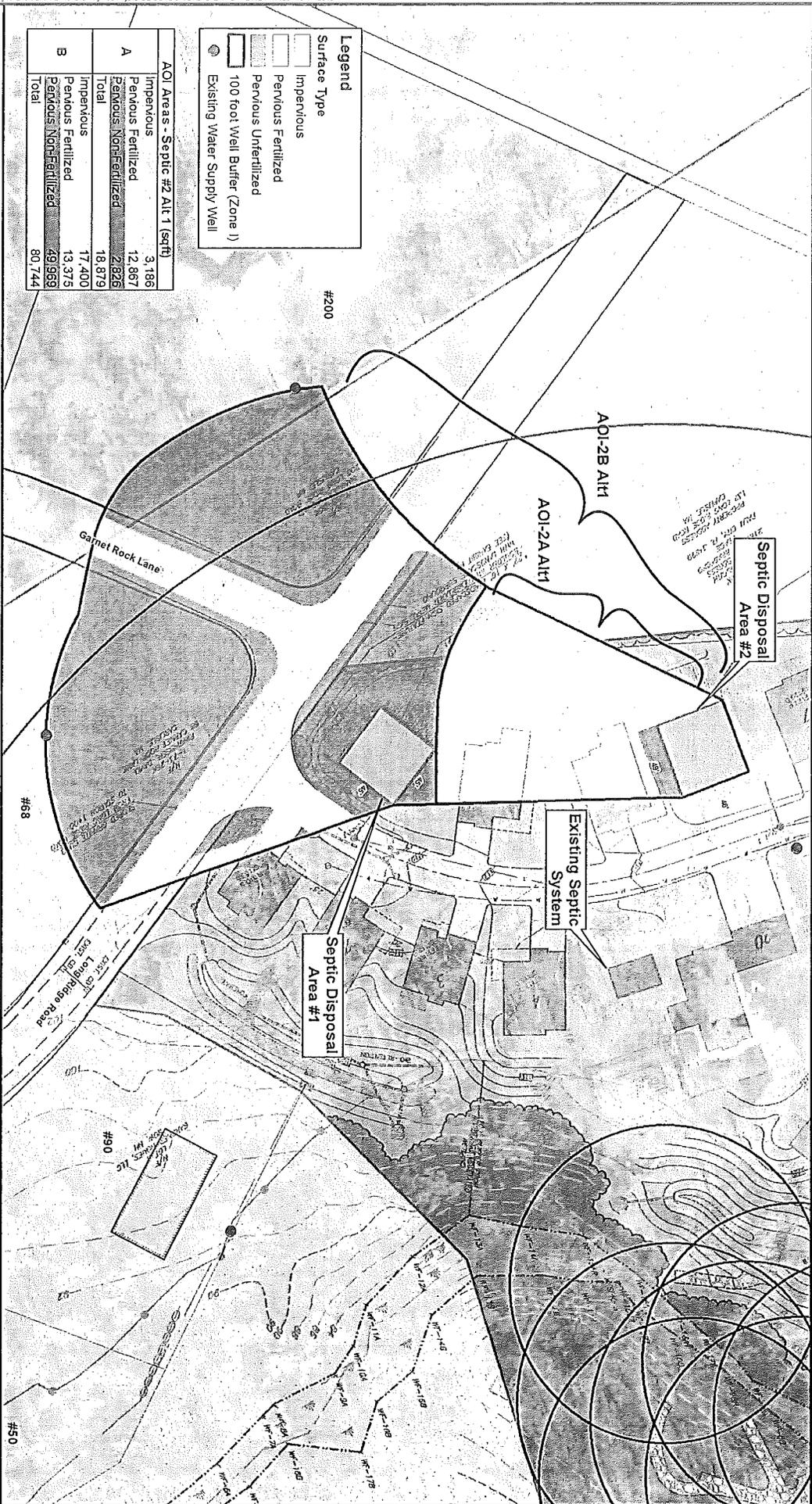


EXHIBIT D

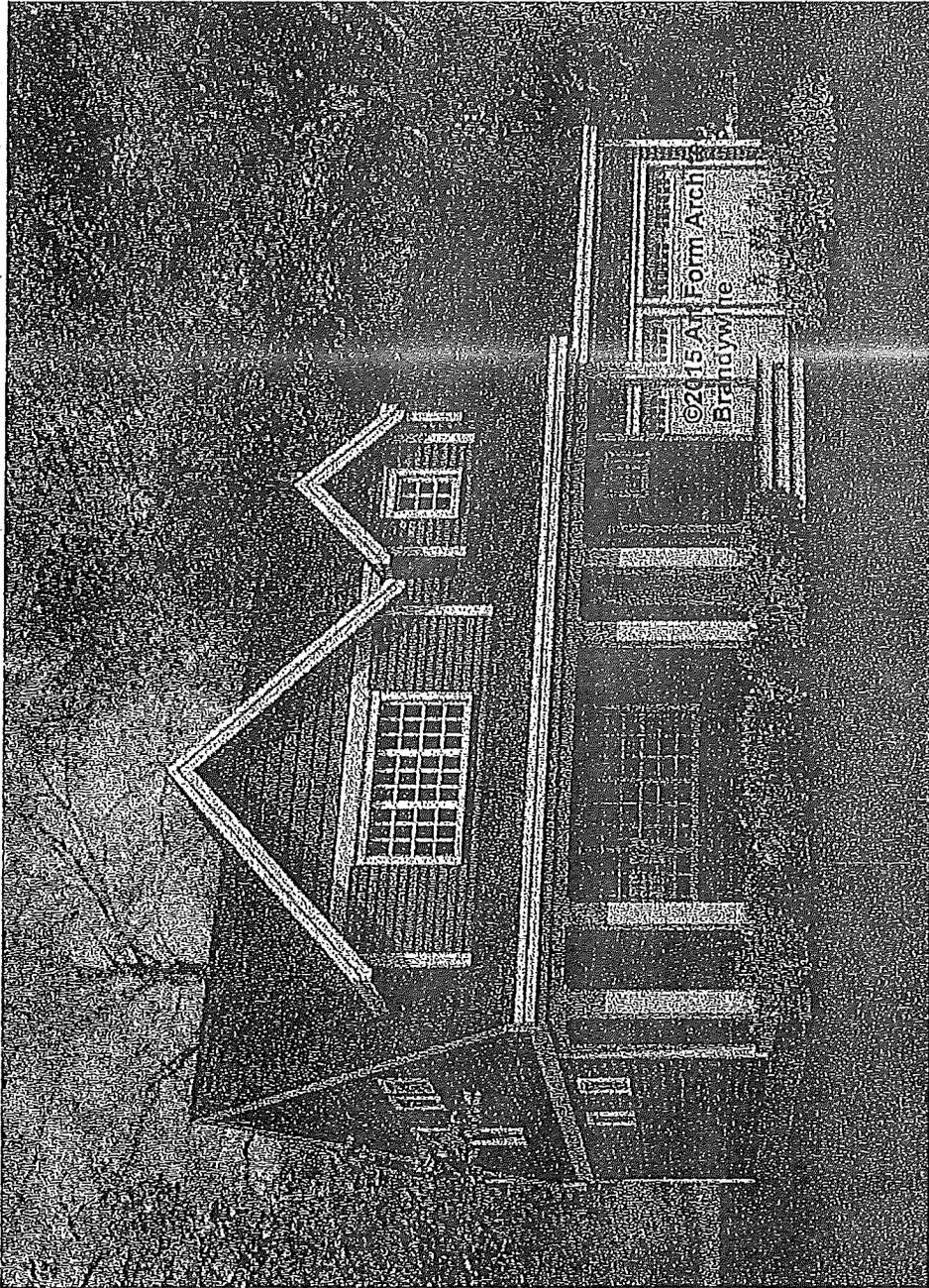
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1. Gas fireplace and it's surround or mantel
2. Kitchen - island, cabinet style & trim, countertop material, etc.
3. Door styles and trim
4. Window grilles and trim, window treatments
5. Stair balusters or low walls at stairs
6. Lighting
7. Material selections (flooring, siding, roofing, paint colors, etc.)
8. Other furnishings
9. Landscaping, paving and walkways
10. Gutters, shutters and other exterior trim components
11. Deck size, railing style, stair location, etc.
12. Amount of exposed basement and/or wood framed walls at basement.

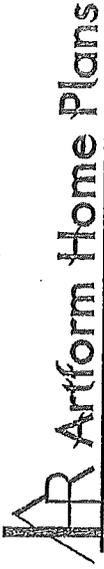
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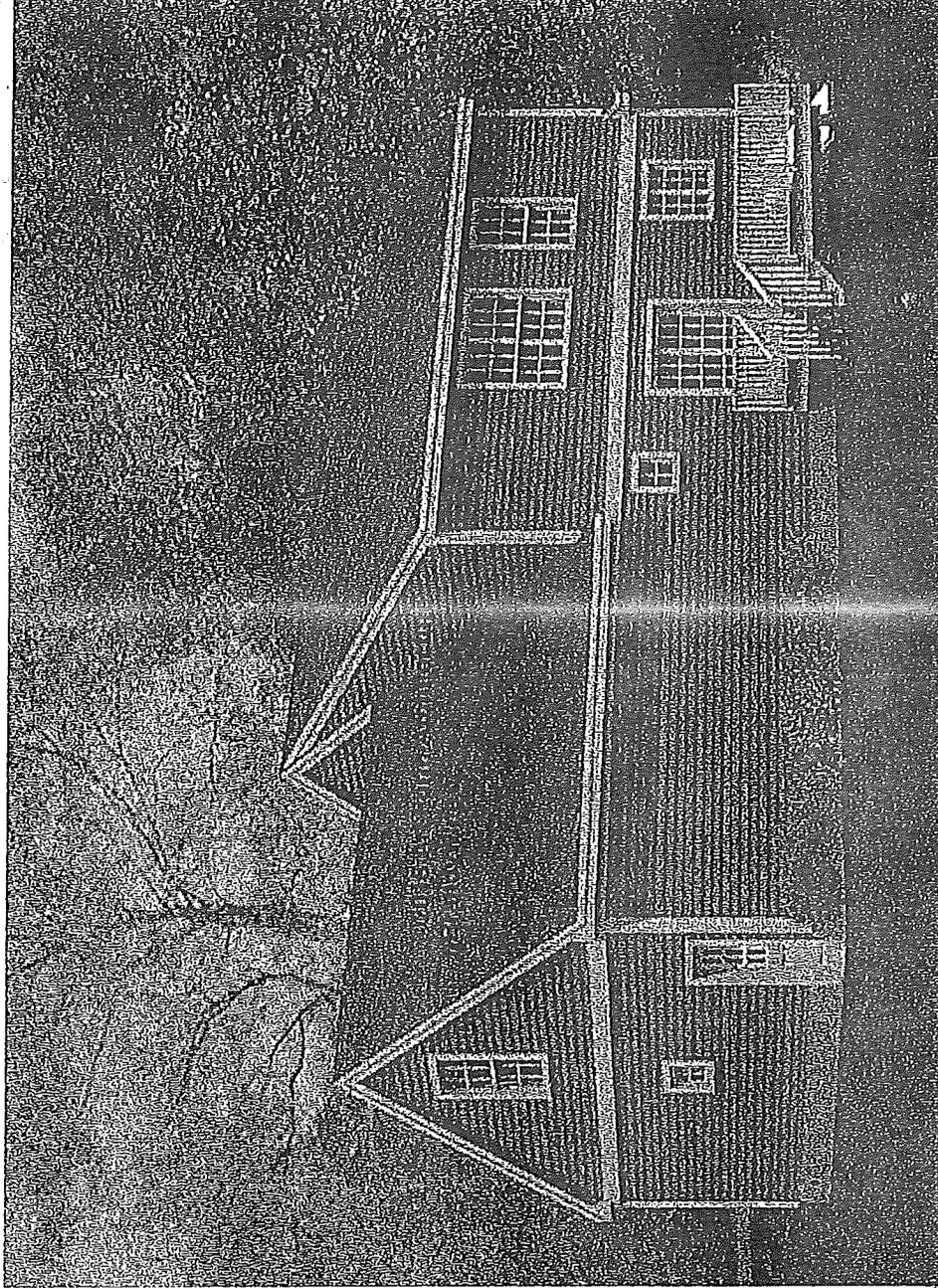
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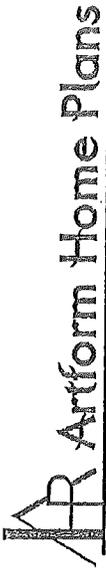
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CHARLES R. STY. 19.5 E

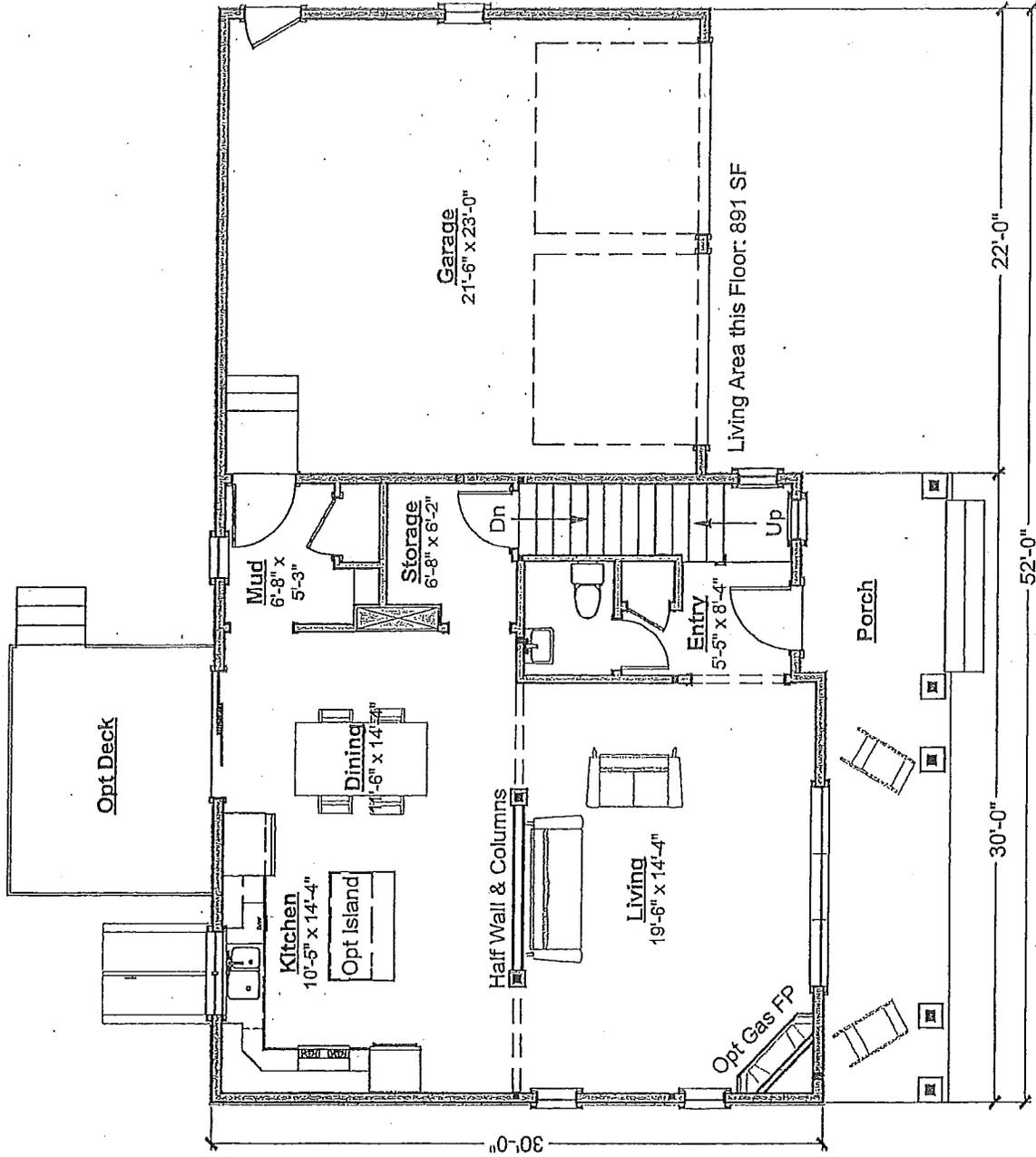
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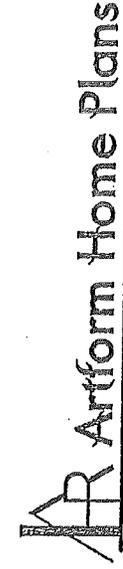
TOWN CLERK-CARLISLE
CHARLENE H. HANTON

First Floor Plan

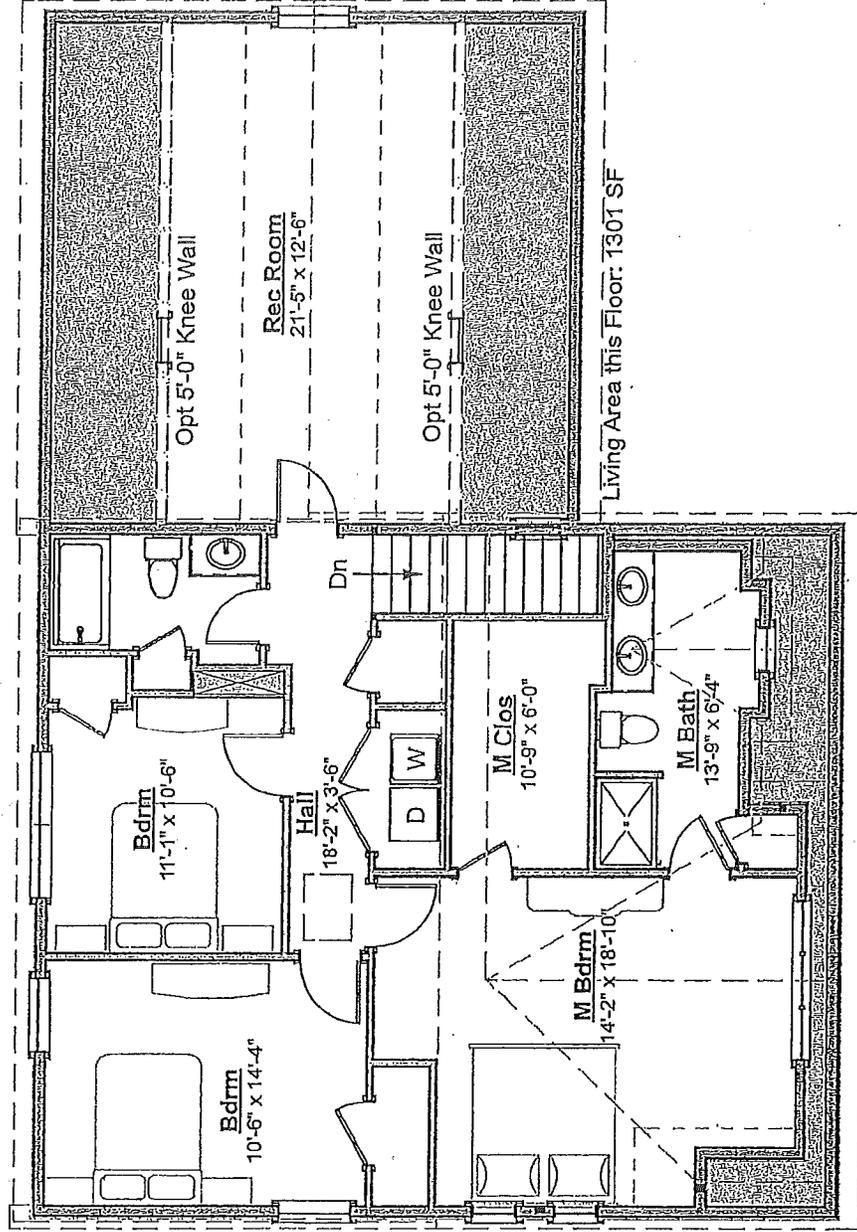
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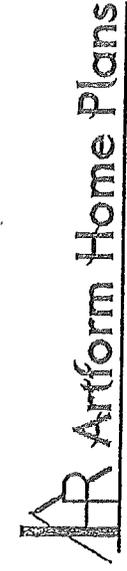
TOMMY PERKINS
CHARLES W. HIRTON

Second Floor Plan

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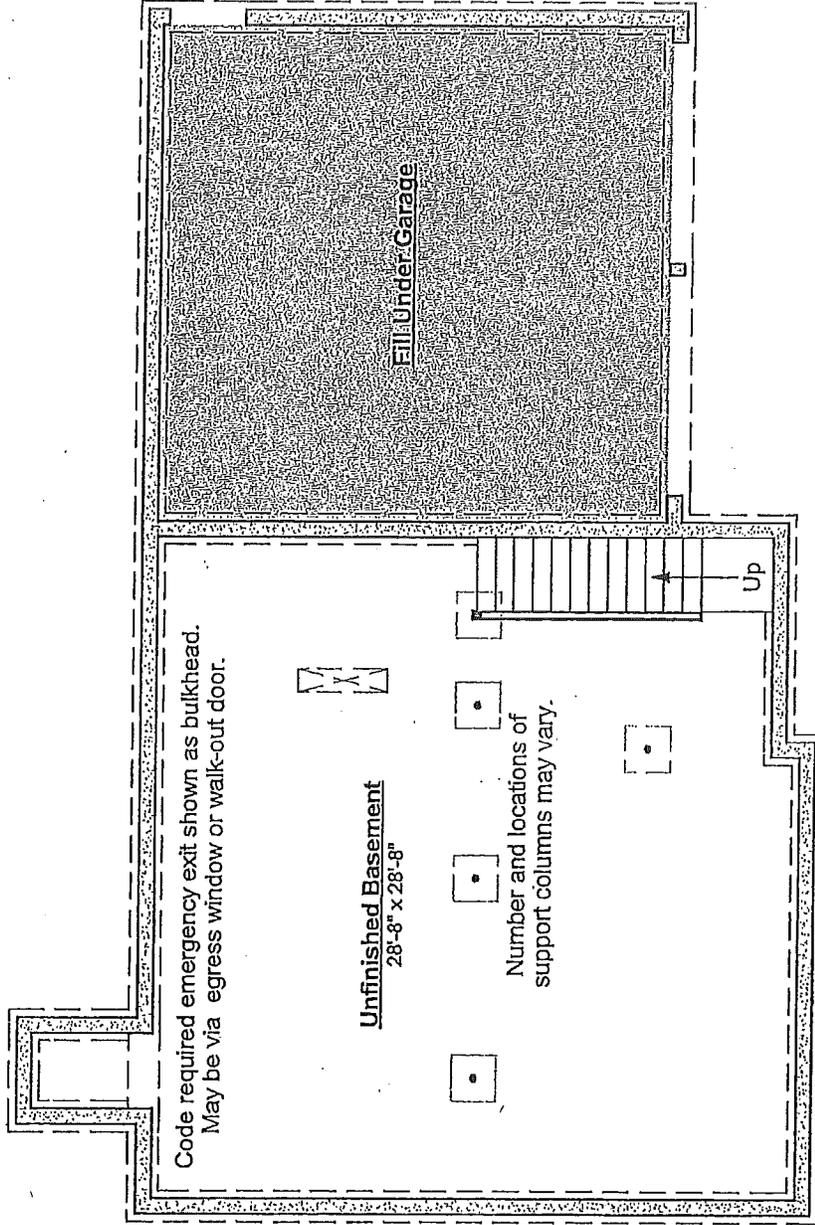
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(A) (B) (C)



Unfinished Living Area this Floor: 1224 SF

(D) (E) (F) (G) (H)

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TOWN CLERK CASHELLE
CHARLENE HAYTON

Foundation Plan

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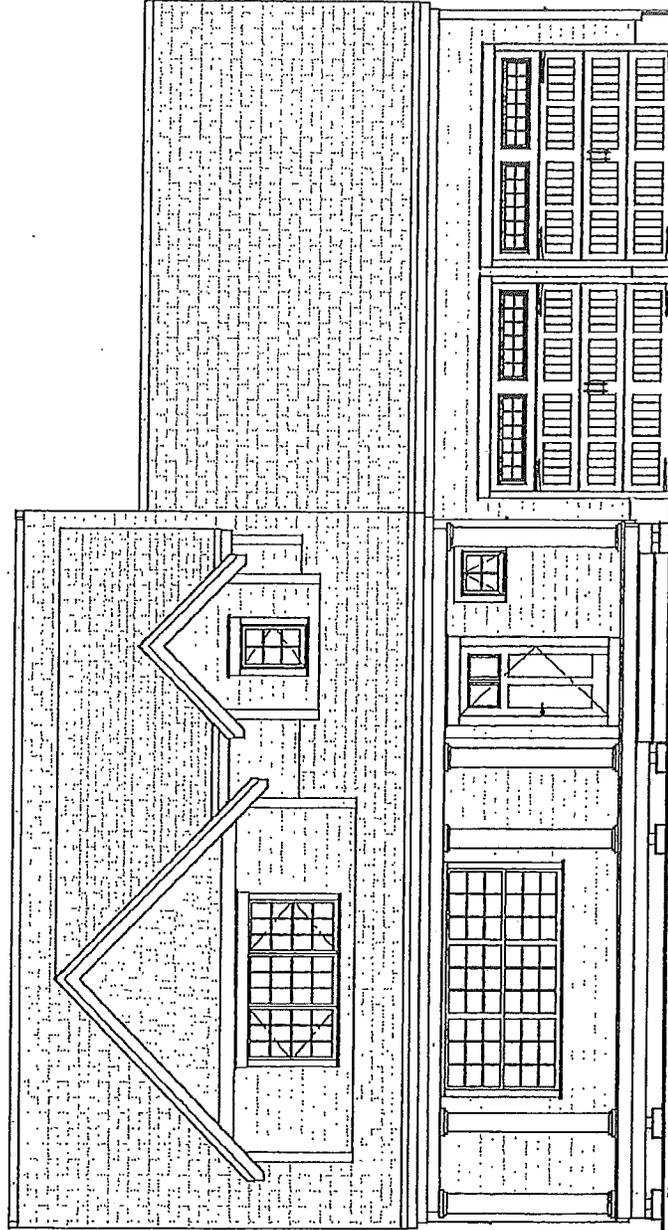
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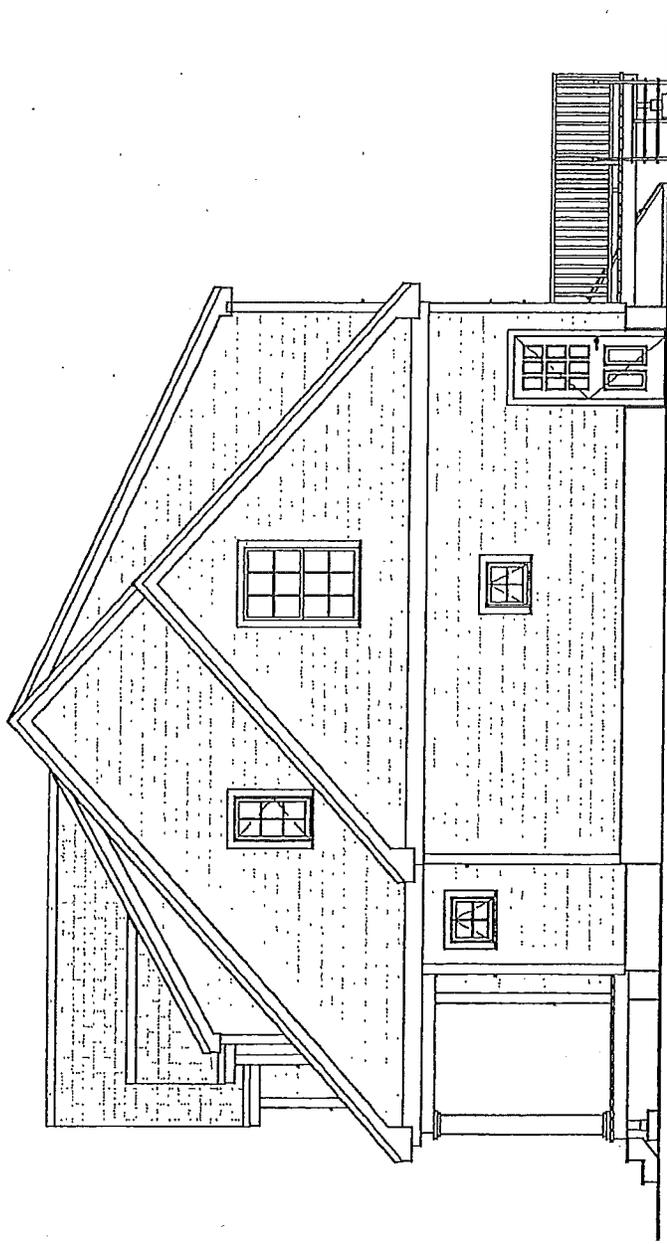
TOWN CLERK-CARLISLE
CHARTER TOWN
Front Elevation

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TOWN OF CARLISLE
CHALLENGE ALHINTON

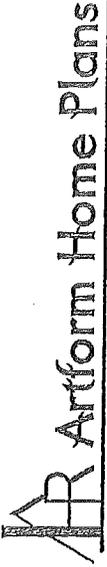
Right Elevation

5/28/2015

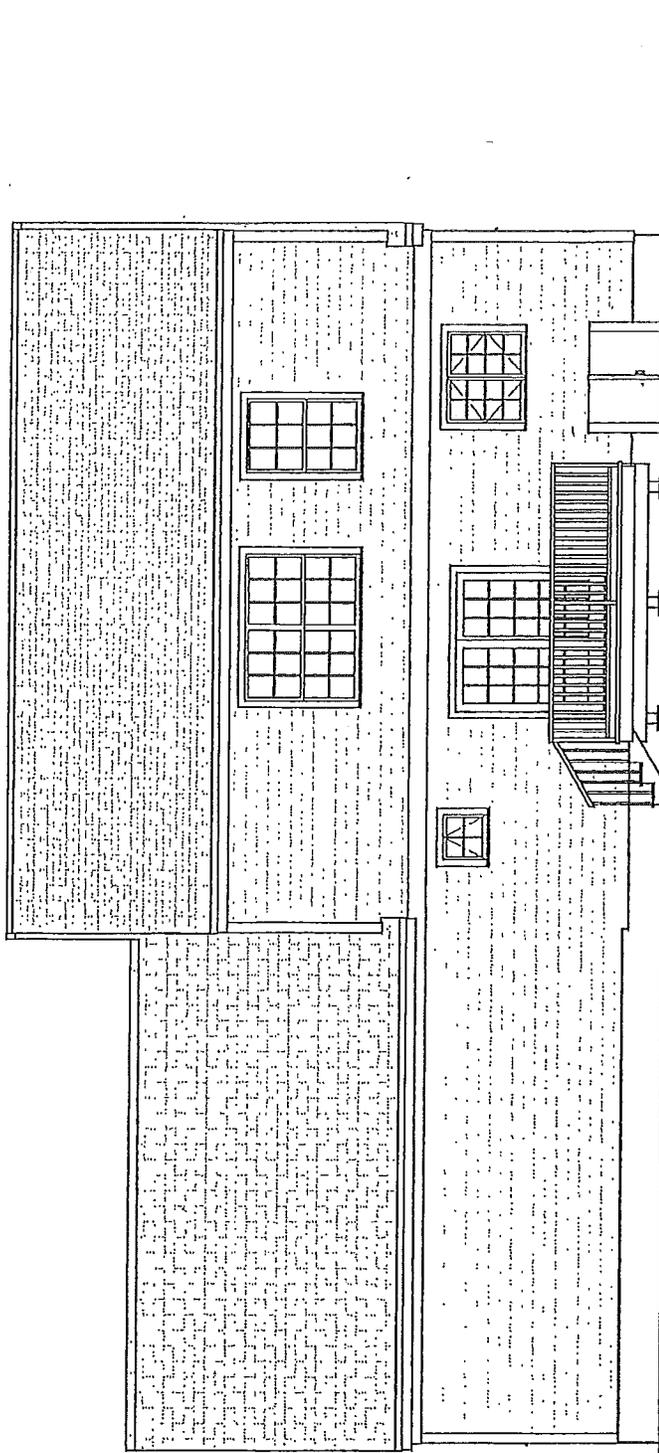
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TOWN CLERK CAROL SE
CHARLENE M HANTON

Rear Elevation

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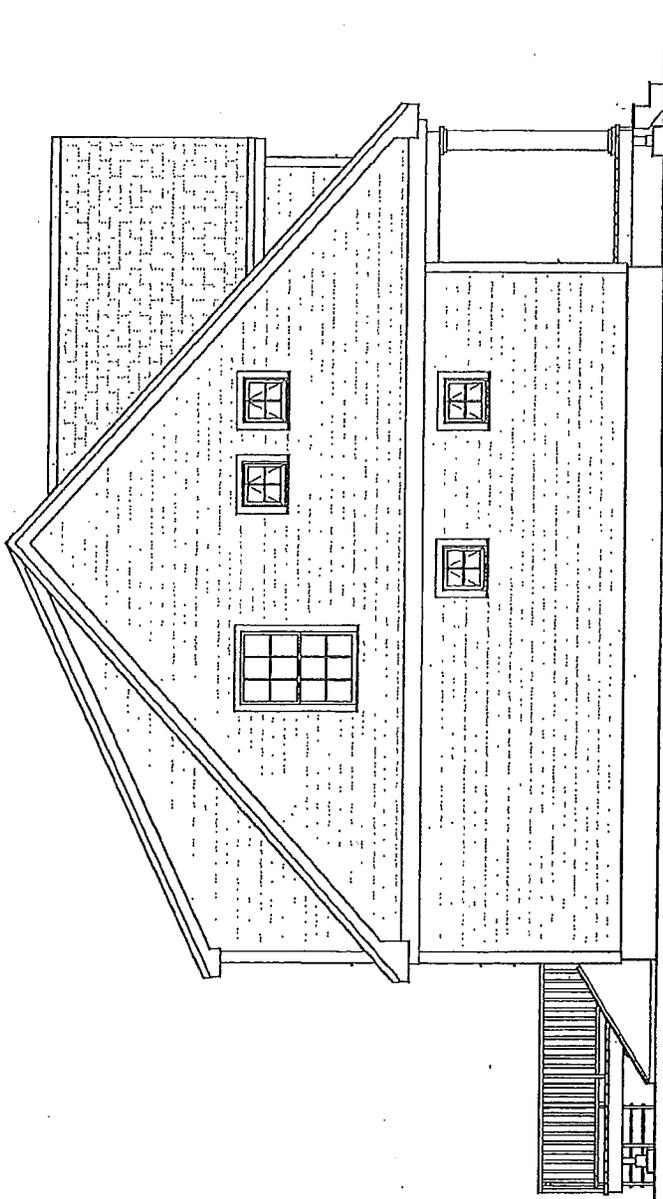
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CHARLENE M. HINTON

Left Elevation

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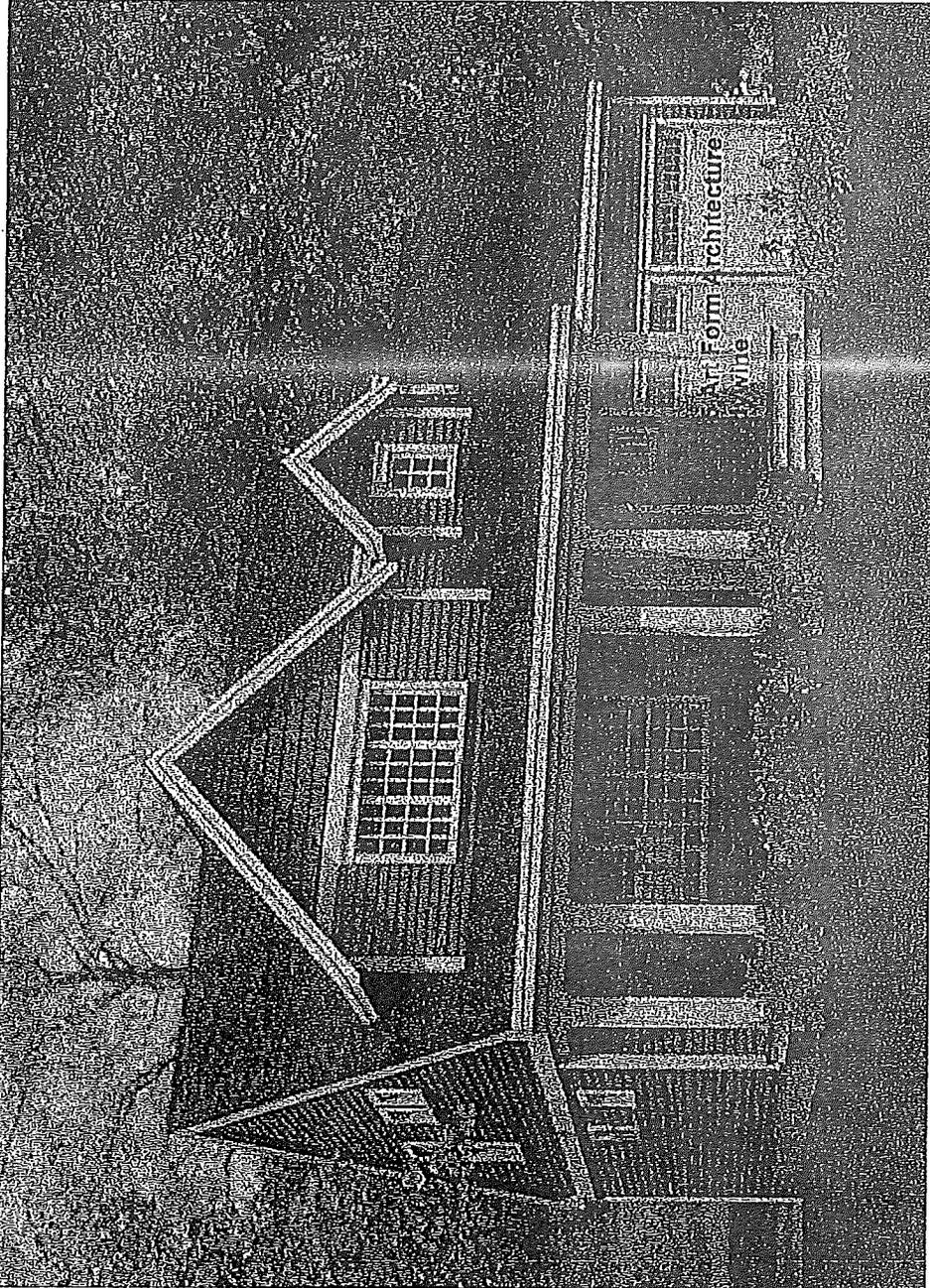
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Artform Home Plans

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2. Kitchen - island, cabinet style & trim, countertop material, etc.
3. Door styles and trim
4. Window grilles and trim, window treatments
5. Stair balusters or low walls at stairs
6. Lighting
7. Material selections (flooring, siding, roofing, paint colors, etc.)
8. Other furnishings
9. Landscaping, paving and walkways
10. Gutters, shutters and other exterior trim components
11. Deck size, railing style, stair location, etc.
12. Amount of exposed basement and/or wood framed walls at basement.

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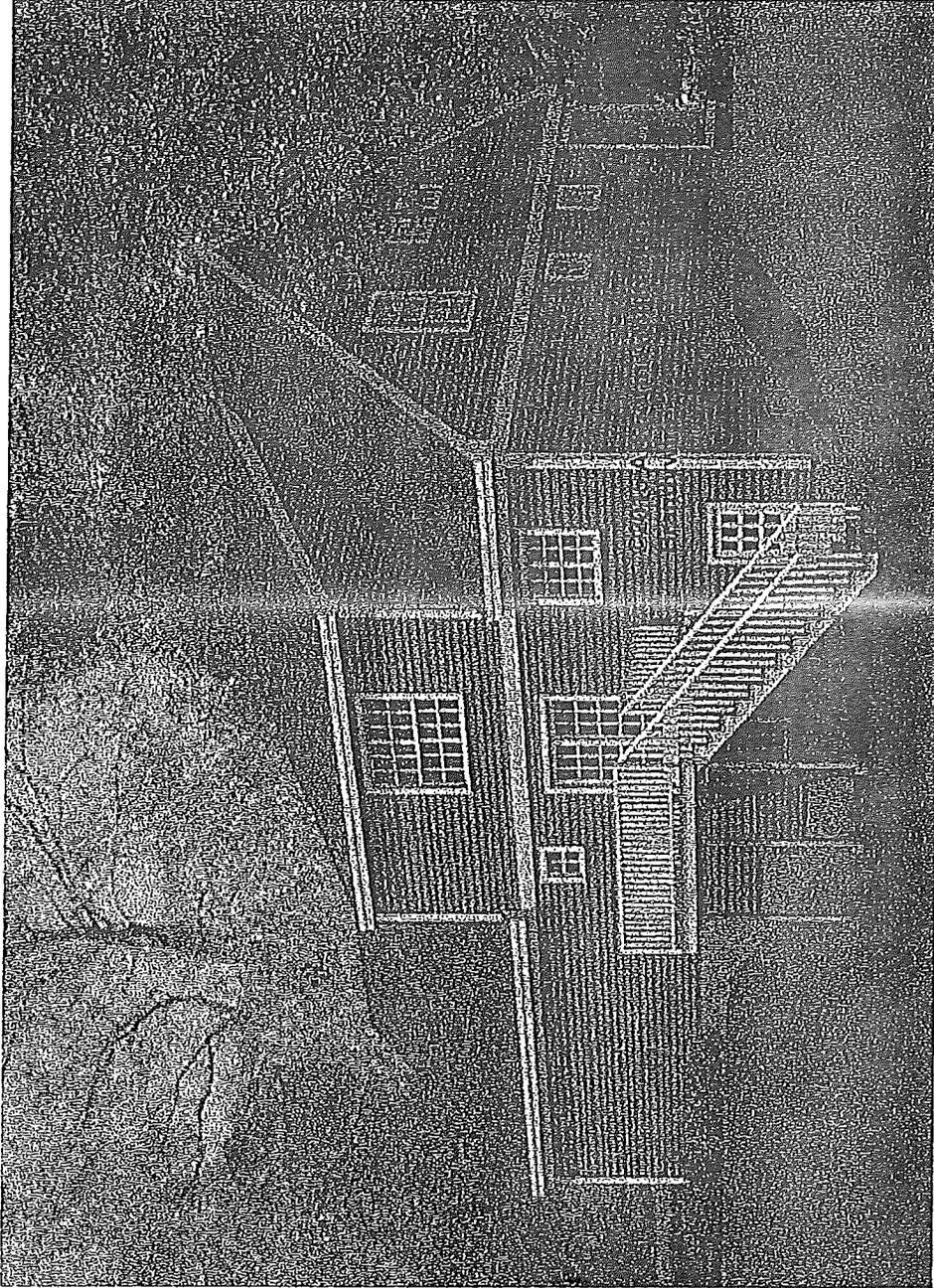
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AR Artform Home Plans

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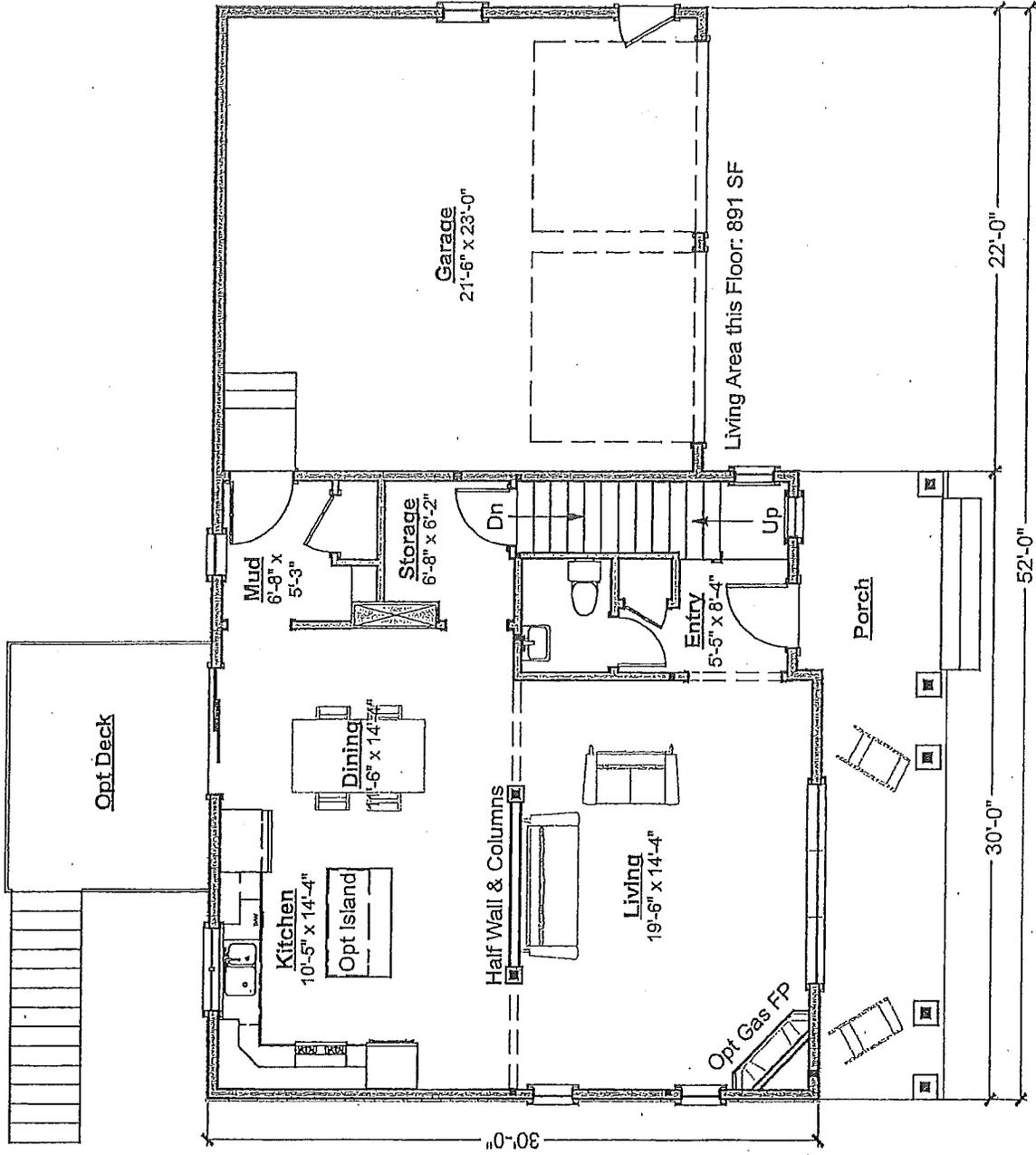
TO: MR. CAROLISLE
OFFICE OF THE TOWN

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Art Form Home Plans

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TOWN OF CARLISLE
CHARLENE HUNTUN

First Floor Plan

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Art Form Home Plans

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Living Area this Floor: 1234 SF

The floor plan shows a rectangular layout. On the left side, there is a 'Studv/Office' (8'-5" x 8'-10") and a 'Bedrm' (13'-0" x 10'-6"). A '5'-0" Knee Wall' runs along the top edge of the office. A central 'Hall' (20'-0" x 3'-6") contains a staircase labeled 'Dn'. To the right of the hall is a 'D' (Dressing Room) and a 'W' (Walk-in Closet). Further right is a 'M Bdrm' (14'-2" x 18'-10") with an attached 'M Clos' (10'-9" x 6'-0") and 'M Bath' (13'-9" x 6'-4"). At the far right is a large 'Rec Room' (21'-5" x 12'-7") with another '5'-0" Knee Wall' along its top edge.

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CHARLOTTE, NC

Second Floor Plan

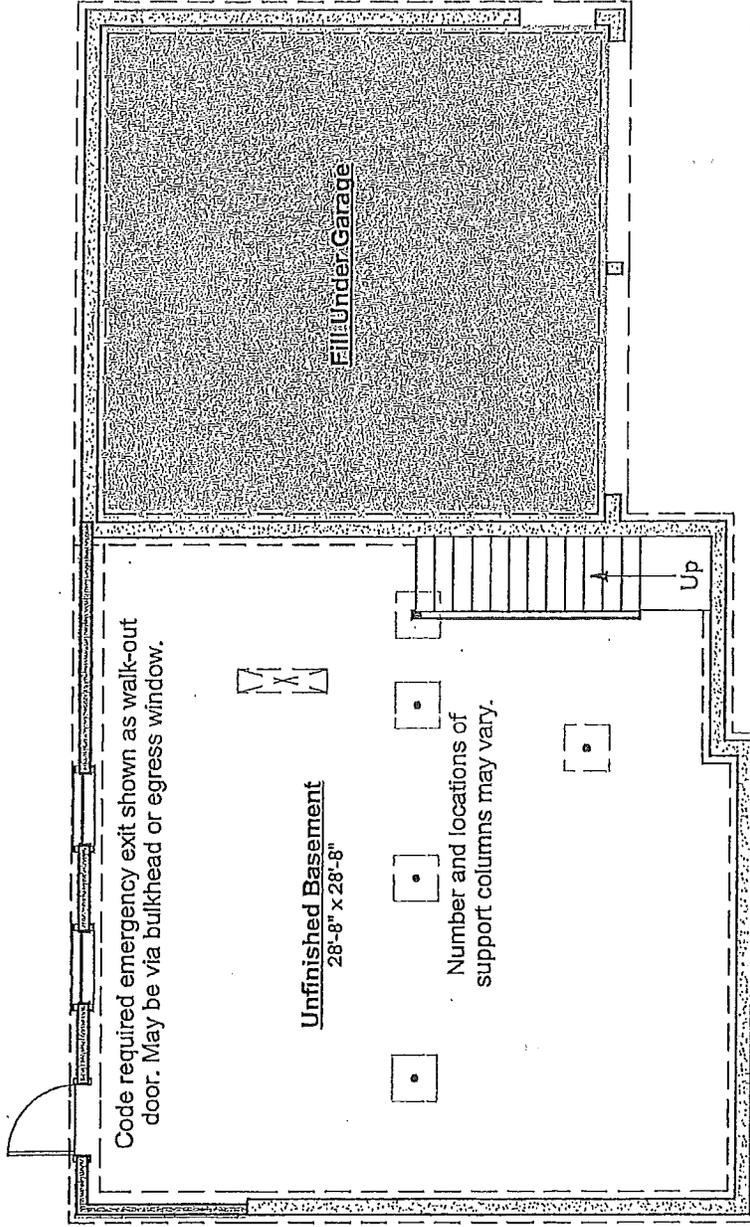
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Code required emergency exit shown as walk-out door. May be via bulkhead or egress window.

Unfinished Basement
 28'-8" x 28'-8"

Number and locations of support columns may vary.

Fill Under Garage

BRANDYWINE
 AUG 12 2015

TOWN CLERK, CARLISLE
 CHARLENE M. HINTON

Unfinished Living Area this Floor: 1224 SF



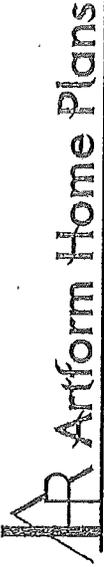
Foundation Plan

3/28/2015

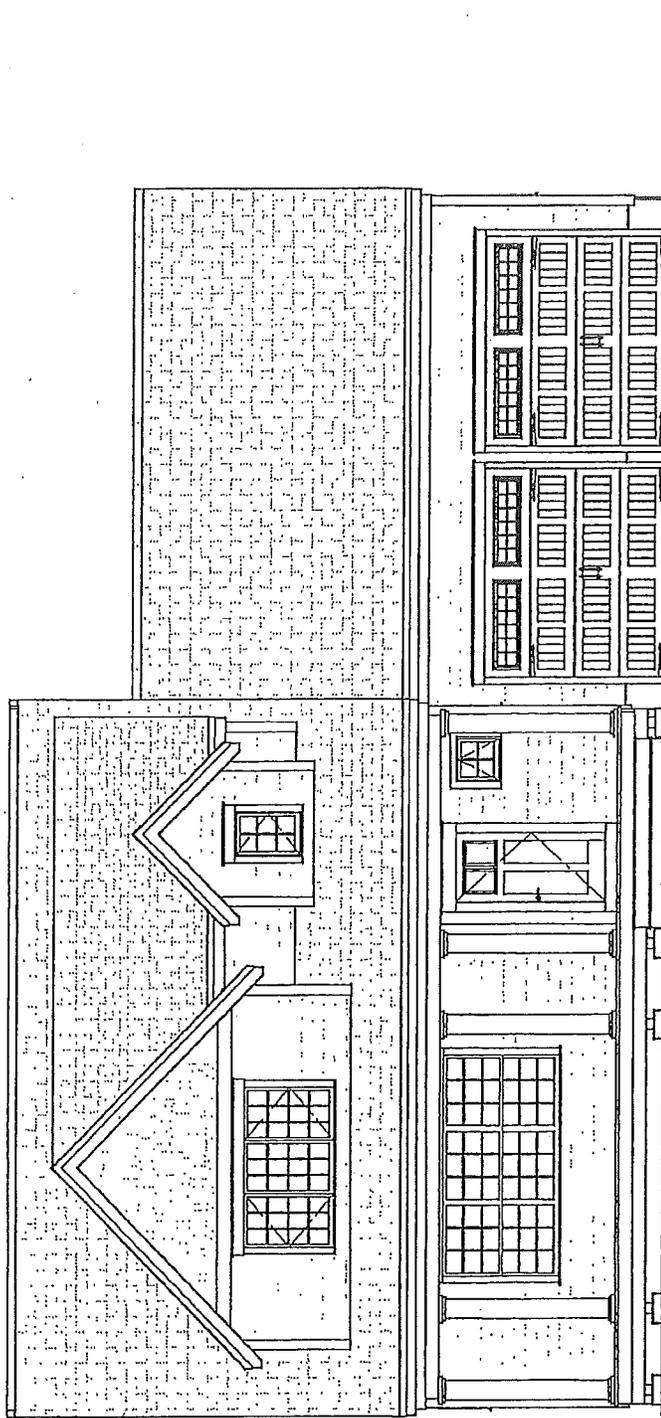
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TOMMY CLETK-CARLISLE
CHARLENE M. HINTON

Front Elevation

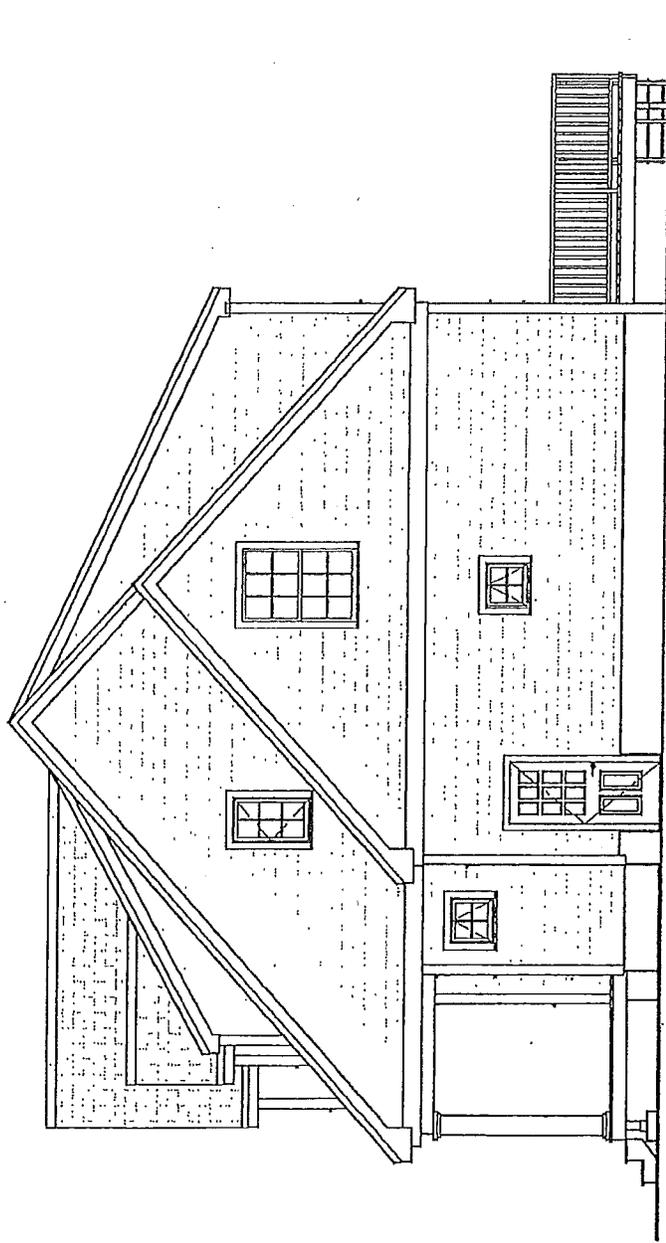
3/28/2015

Brandywine Gold 260.126 KL

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BRANDYWINE GOLD
AUG 12 2015

TO: [unreadable]
FROM: [unreadable]

Right Elevation

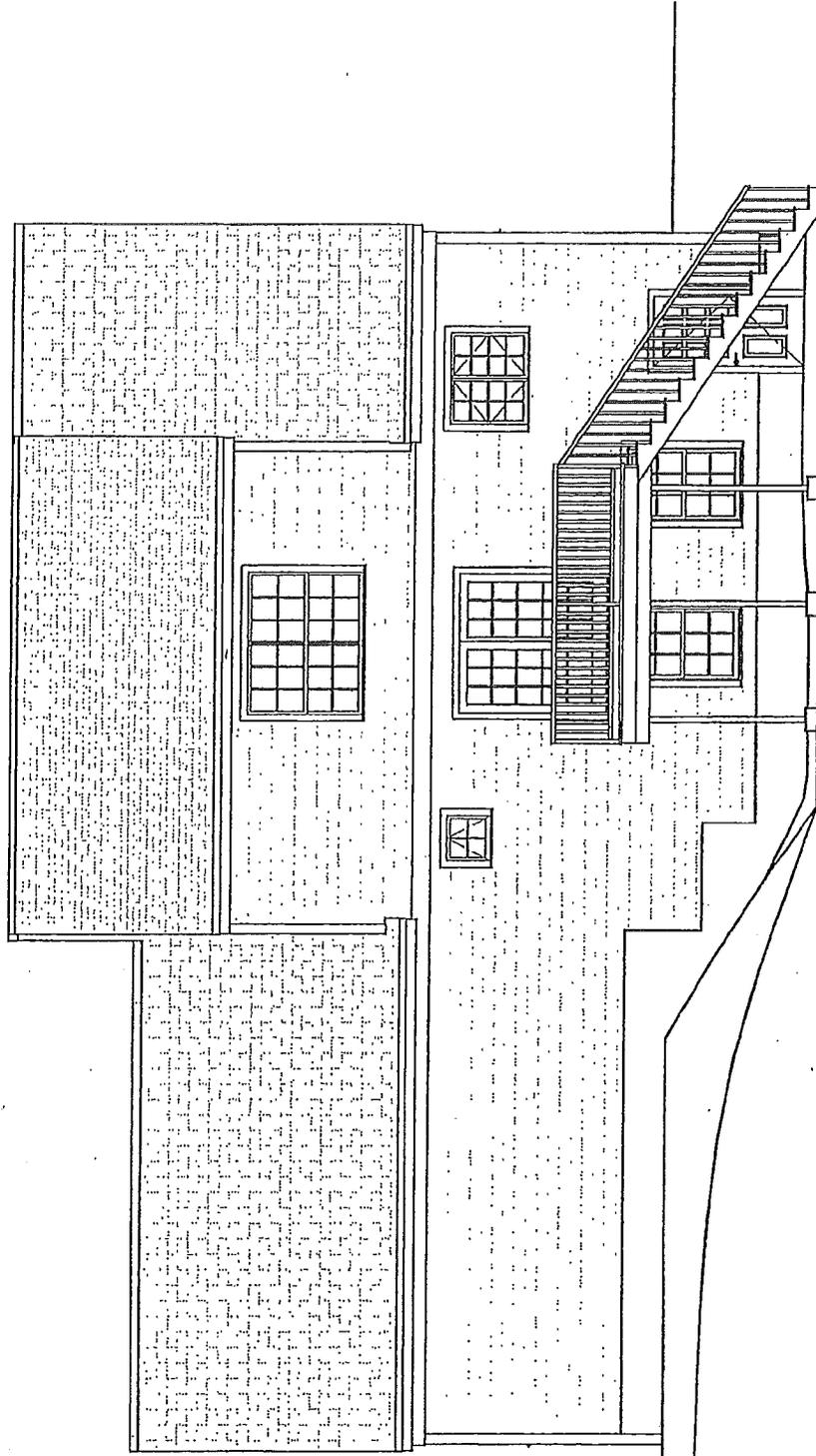
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THOMAS CARLISLE
MANAGEMENT HINTON

Rear Elevation

5/28/2015

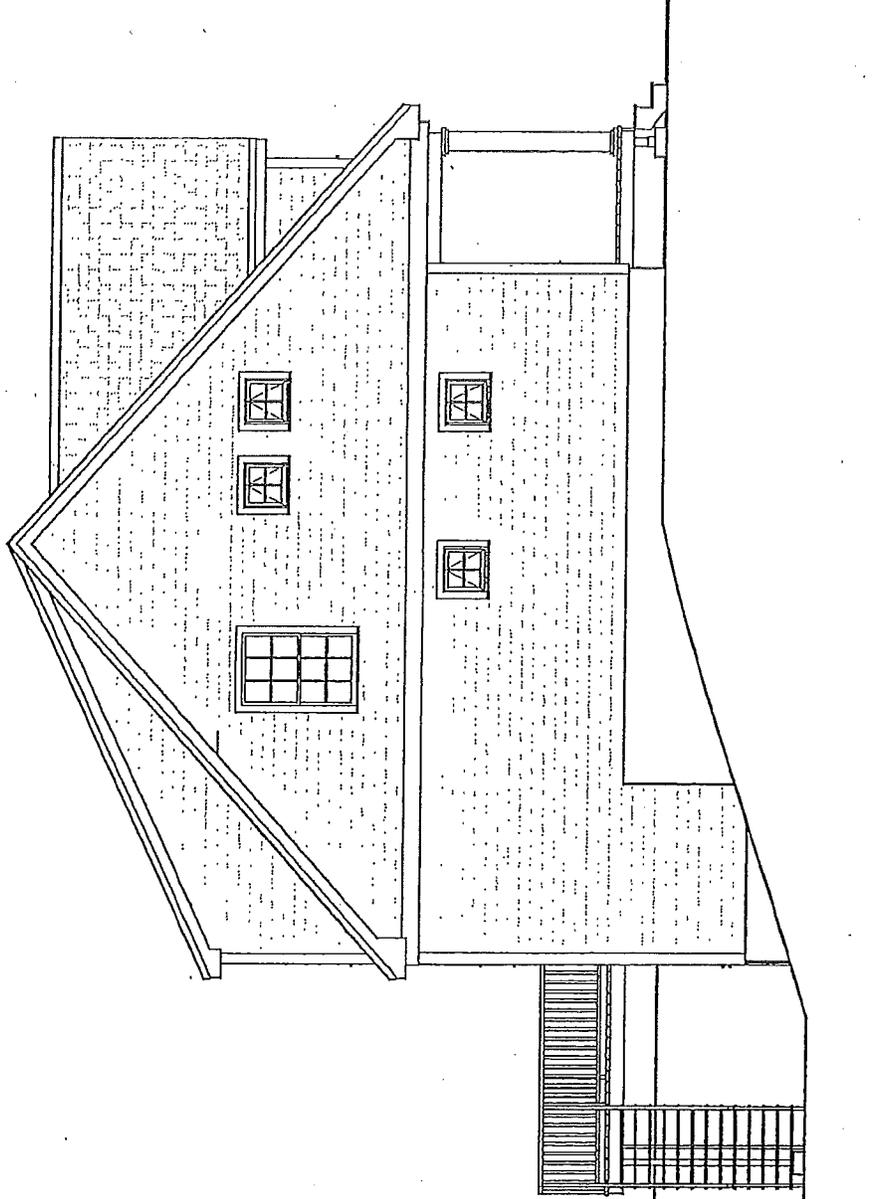
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260.126 KL

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BRANDYWINE
260.126 KL

PAUL O. FERRARIS
ARCHITECTURAL FIRM

Left Elevation

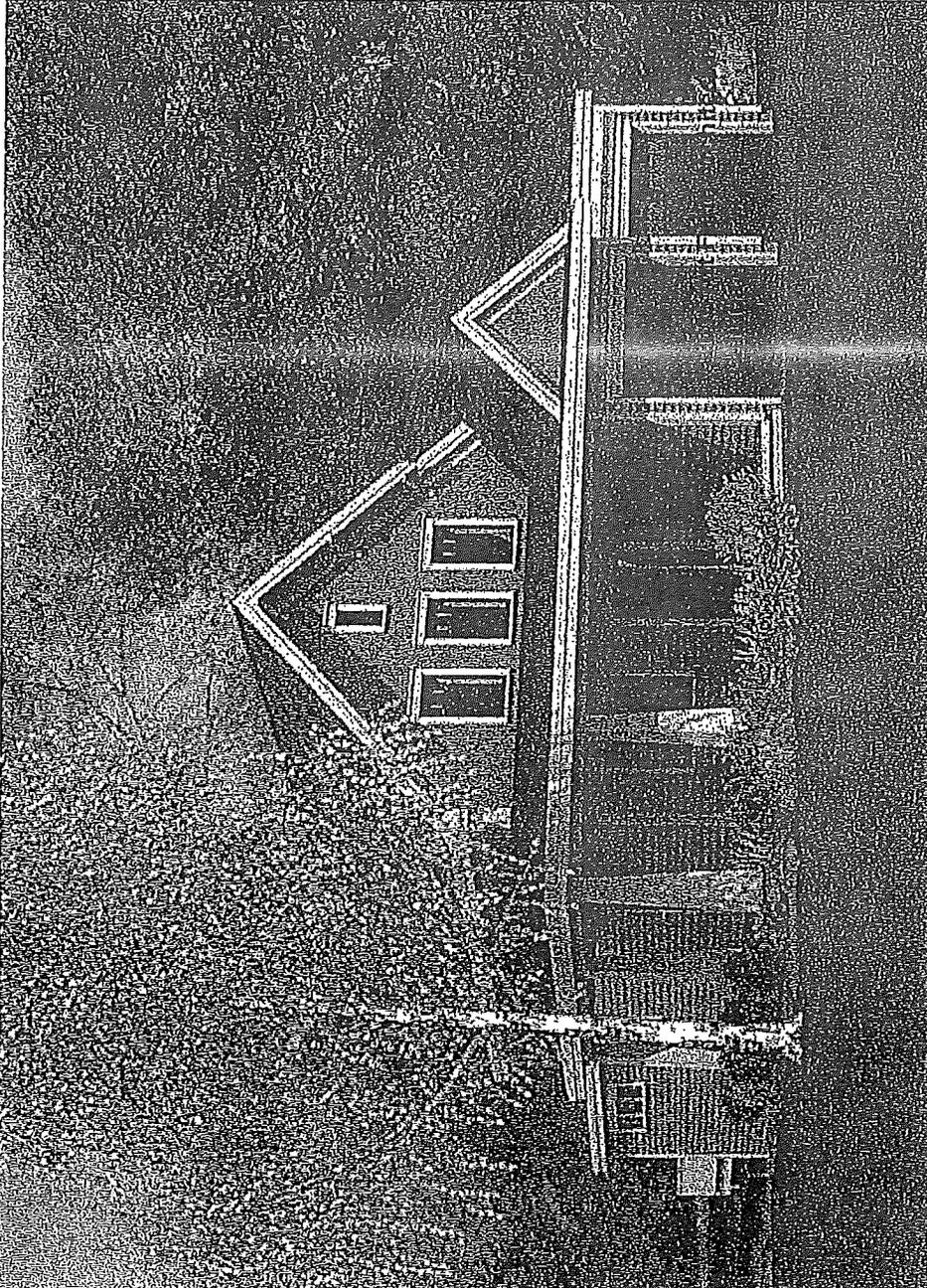
Calinda
616.126

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AR Artform Home Plans

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2. Kitchen - island, cabinet style & trim, countertop material, etc.
3. Door styles and trim
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5. Stair balusters or low walls at stairs
6. Lighting
7. Material selections (flooring, siding, roofing, paint colors, etc.)
8. Other furnishings
9. Landscaping, paving and walkways
10. Gutters, shutters and other exterior trim components
11. Deck size, railing style, stair location, etc.
12. Amount of exposed basement and/or wood framed walls at basement.

These images are not of any specific building site. Sun and view through windows will vary, as will the site around the house on the exterior and the slope of the land.

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TOWN CLERK CARLISLE
CHARLENE M. HINTON

Calinda

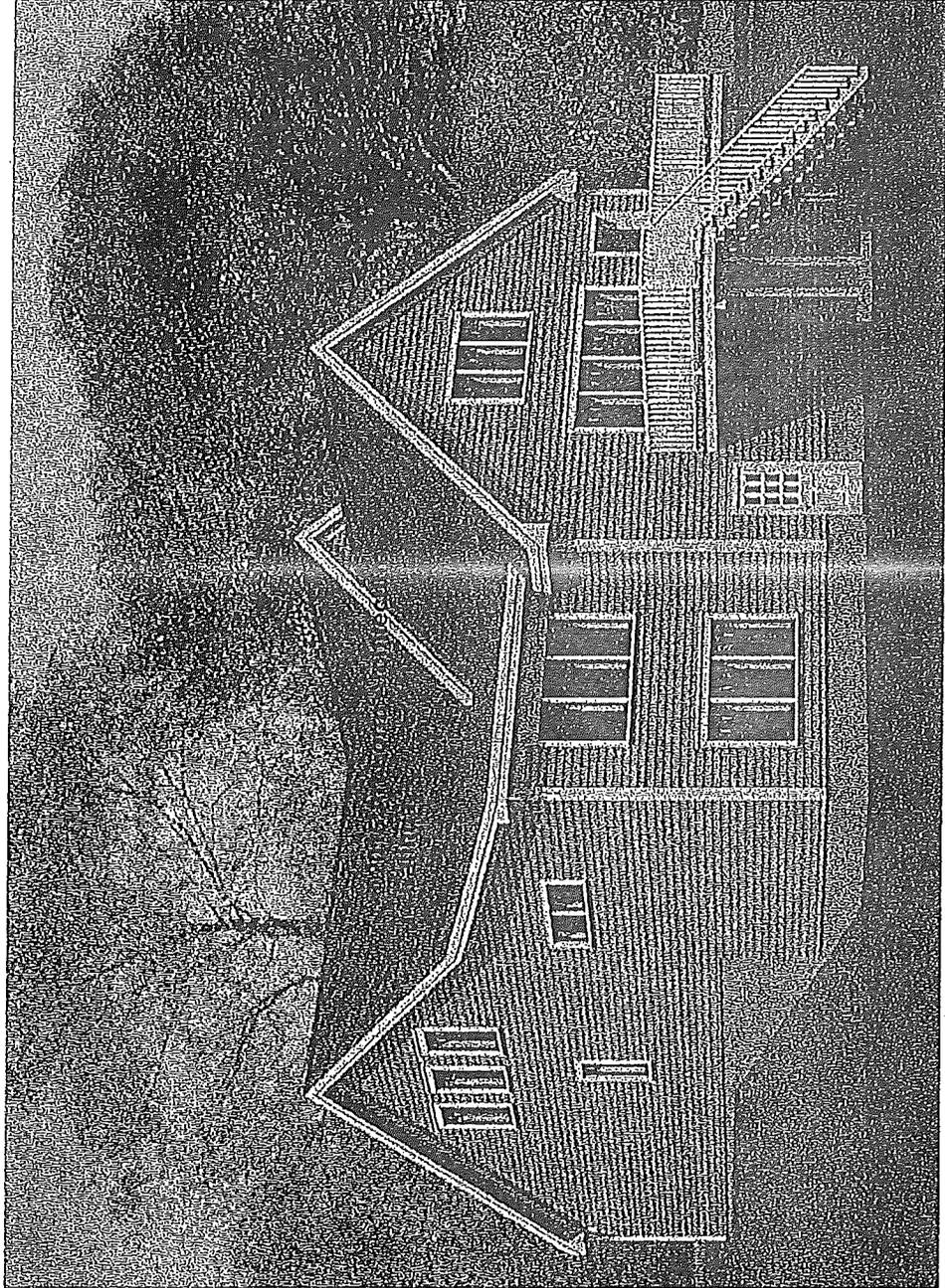
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CARRIE ANN HINTON

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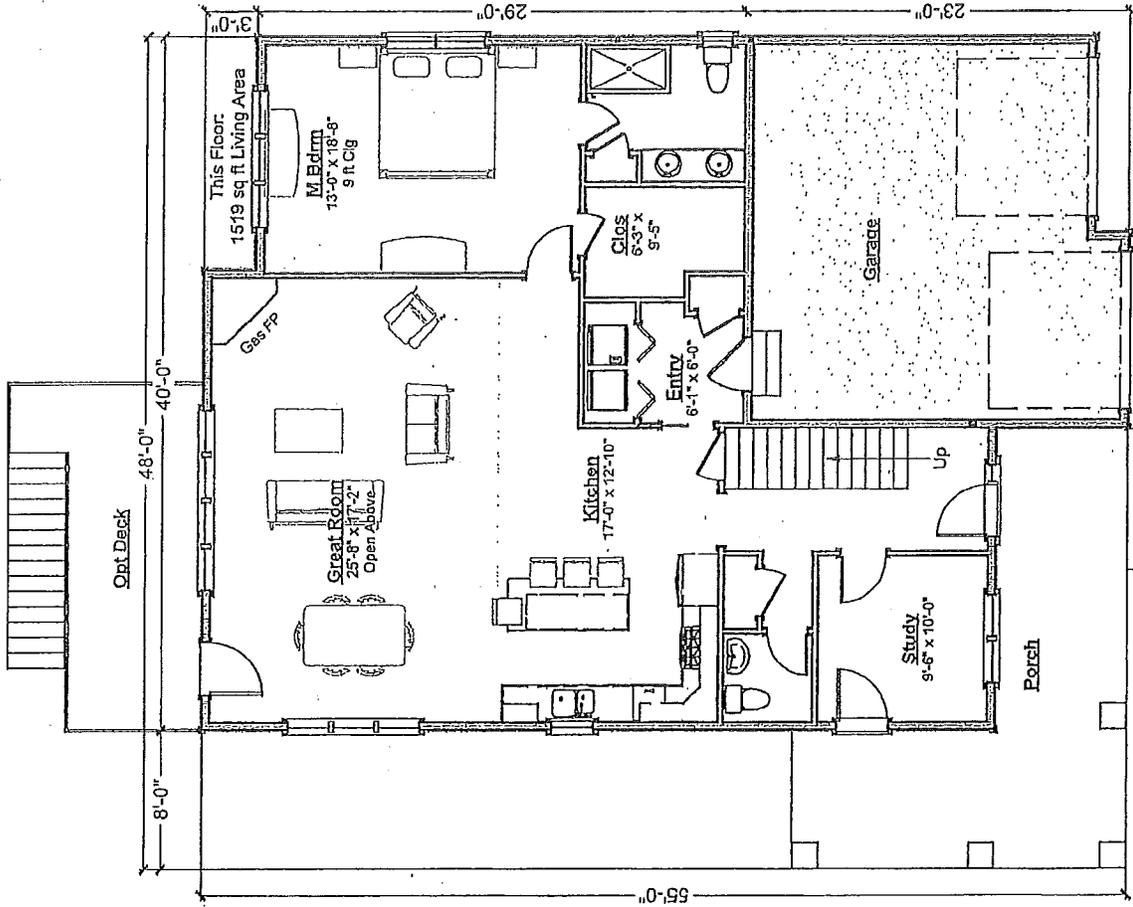
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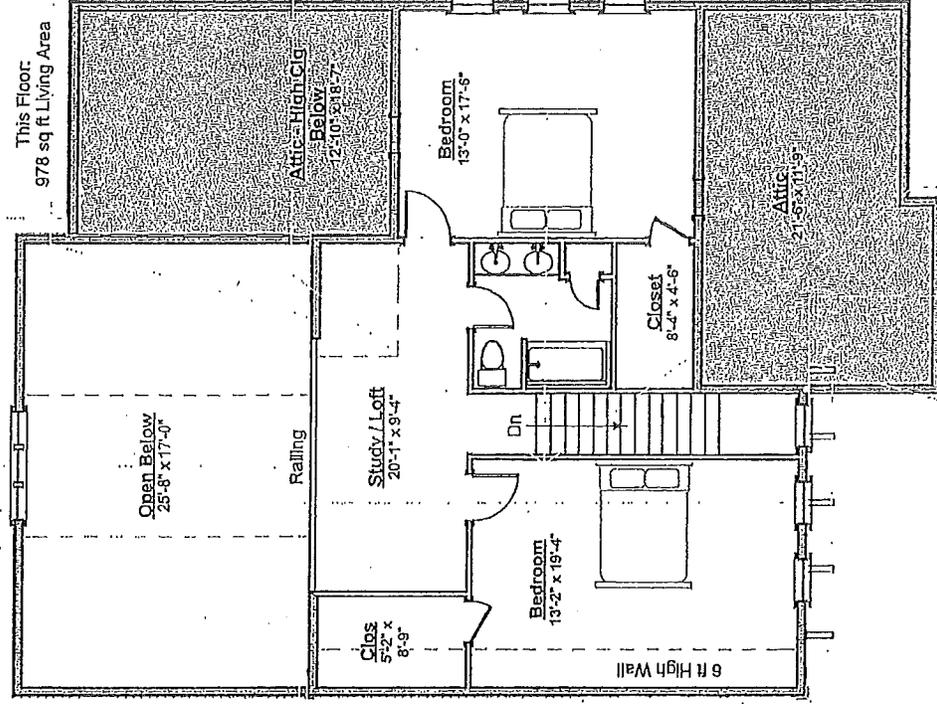


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TOWN CLERK-CARLISLE
CHARLENE M HINTON

First Floor Plan

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Second Floor Plan

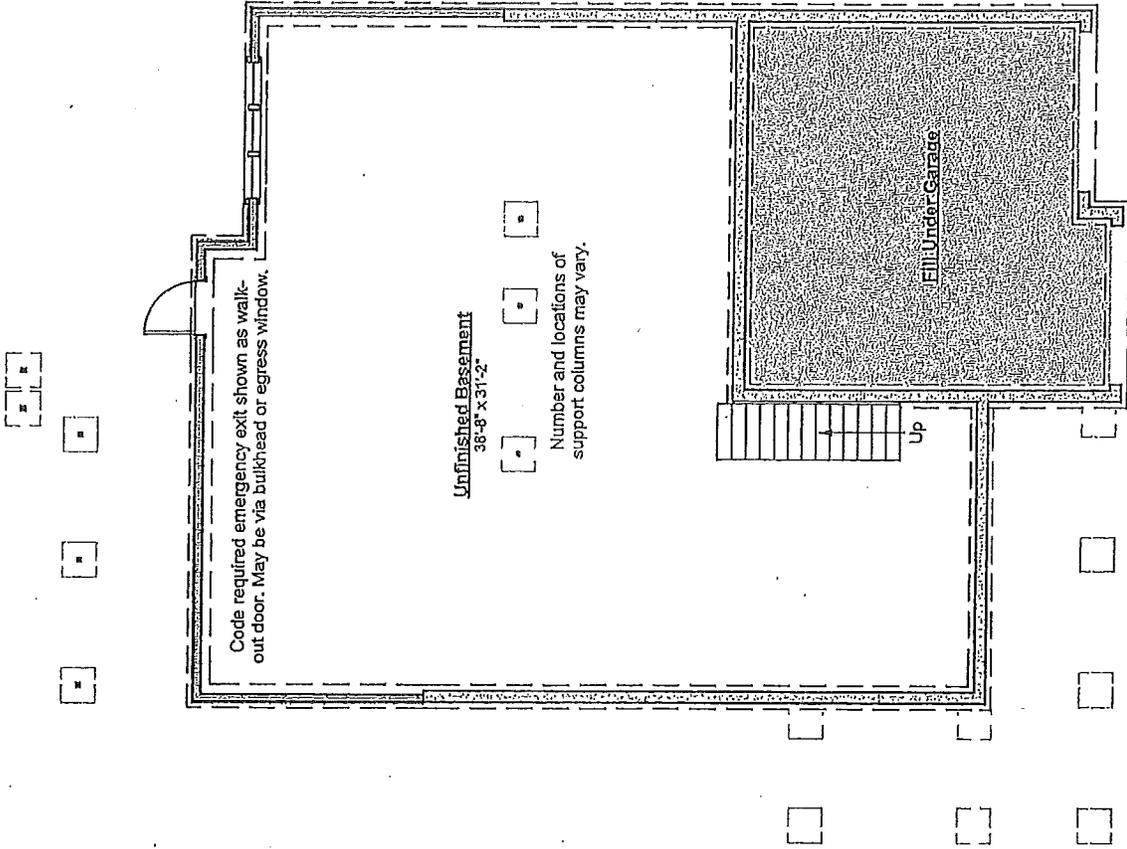
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Foundation Plan

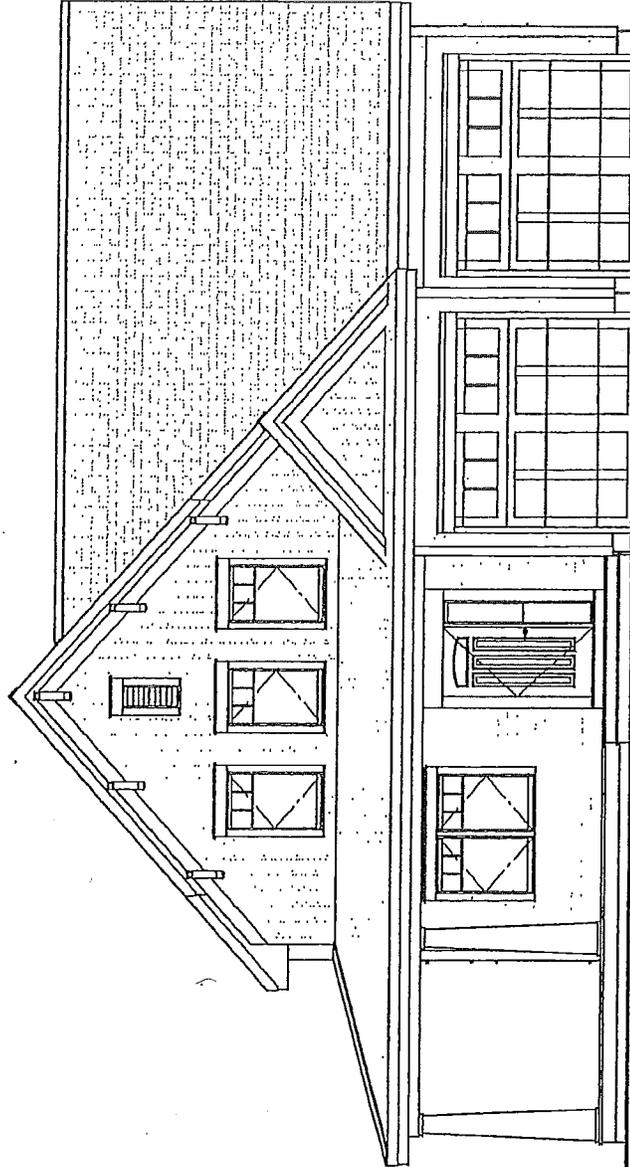
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TRACY THOMPSON
ARCHITECT

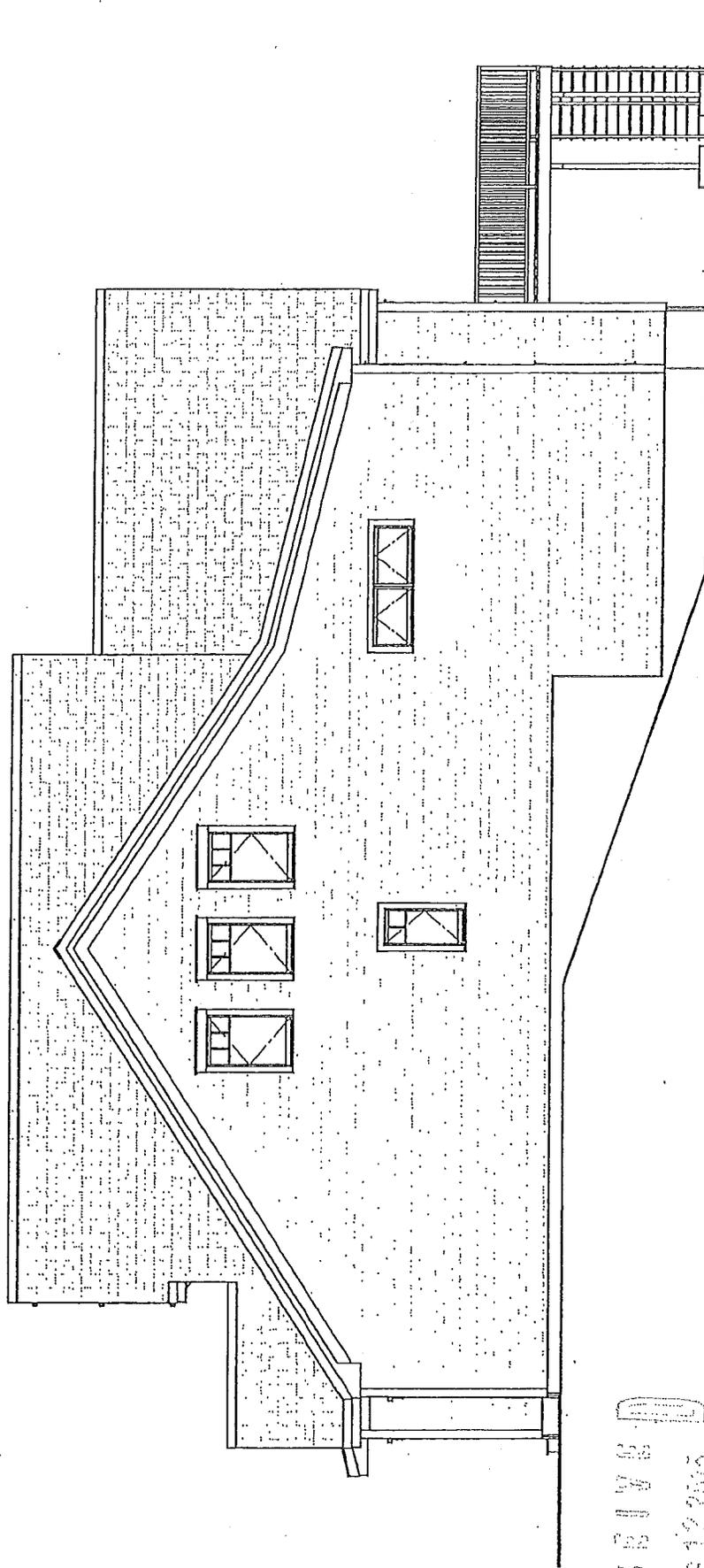
Front Elevation

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TOMMY CARROLL
CHARLESTON, WV

Right Elevation

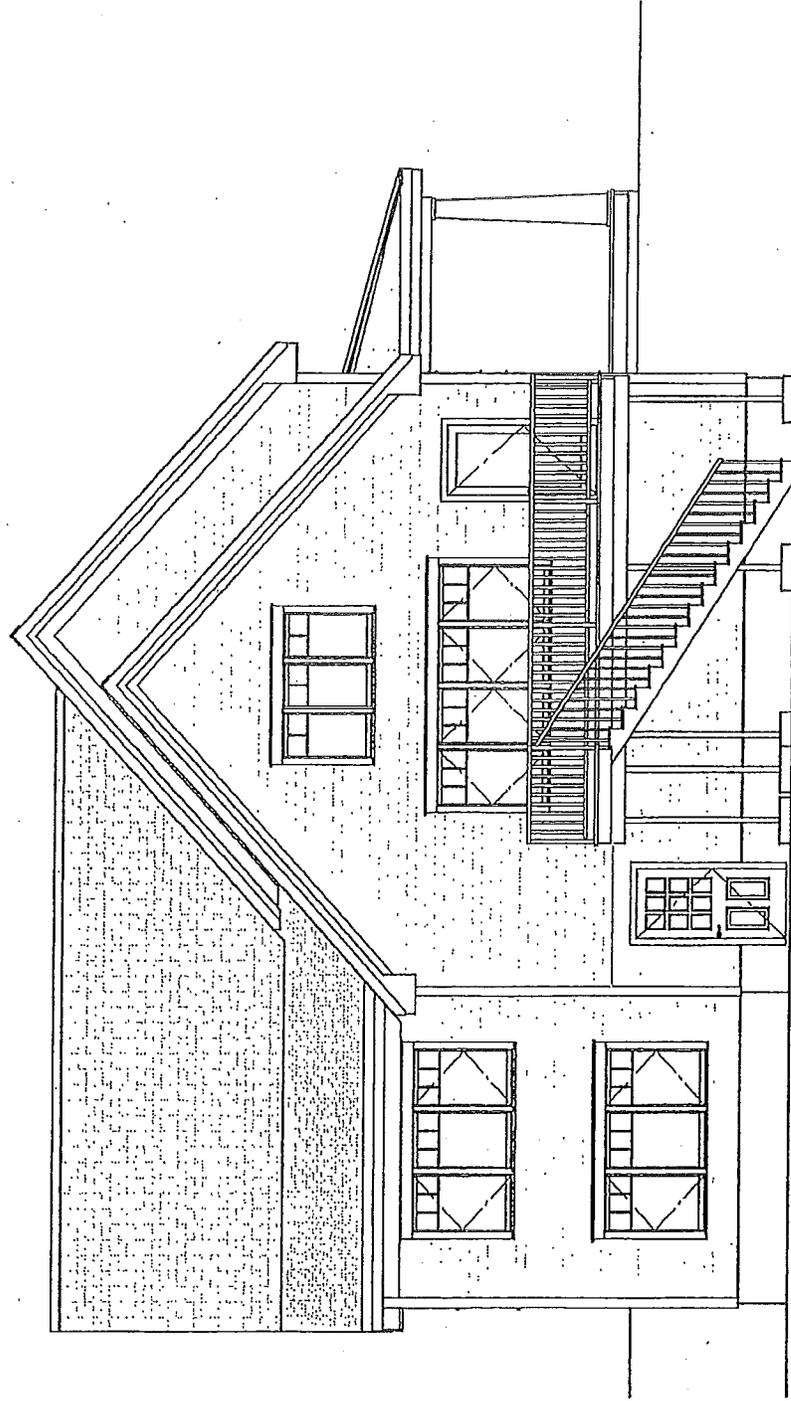
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Artform Home Plans

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TOWN CLERK CARLISLE
CHARLENE M HINTON

Rear Elevation

5/28/2016

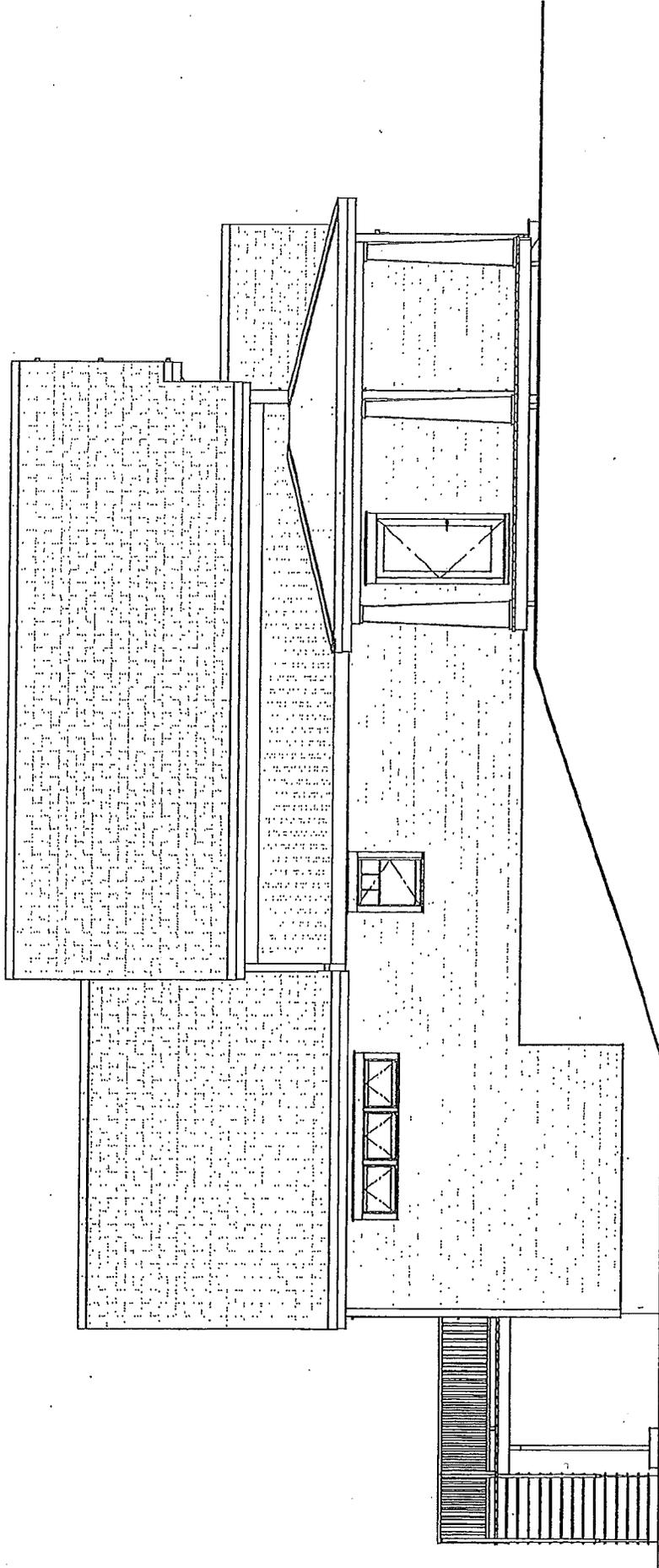
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Left Elevation

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AUG 12 2016

TOWN CLERK-CAROLSE
CHARLERE M. HINTON

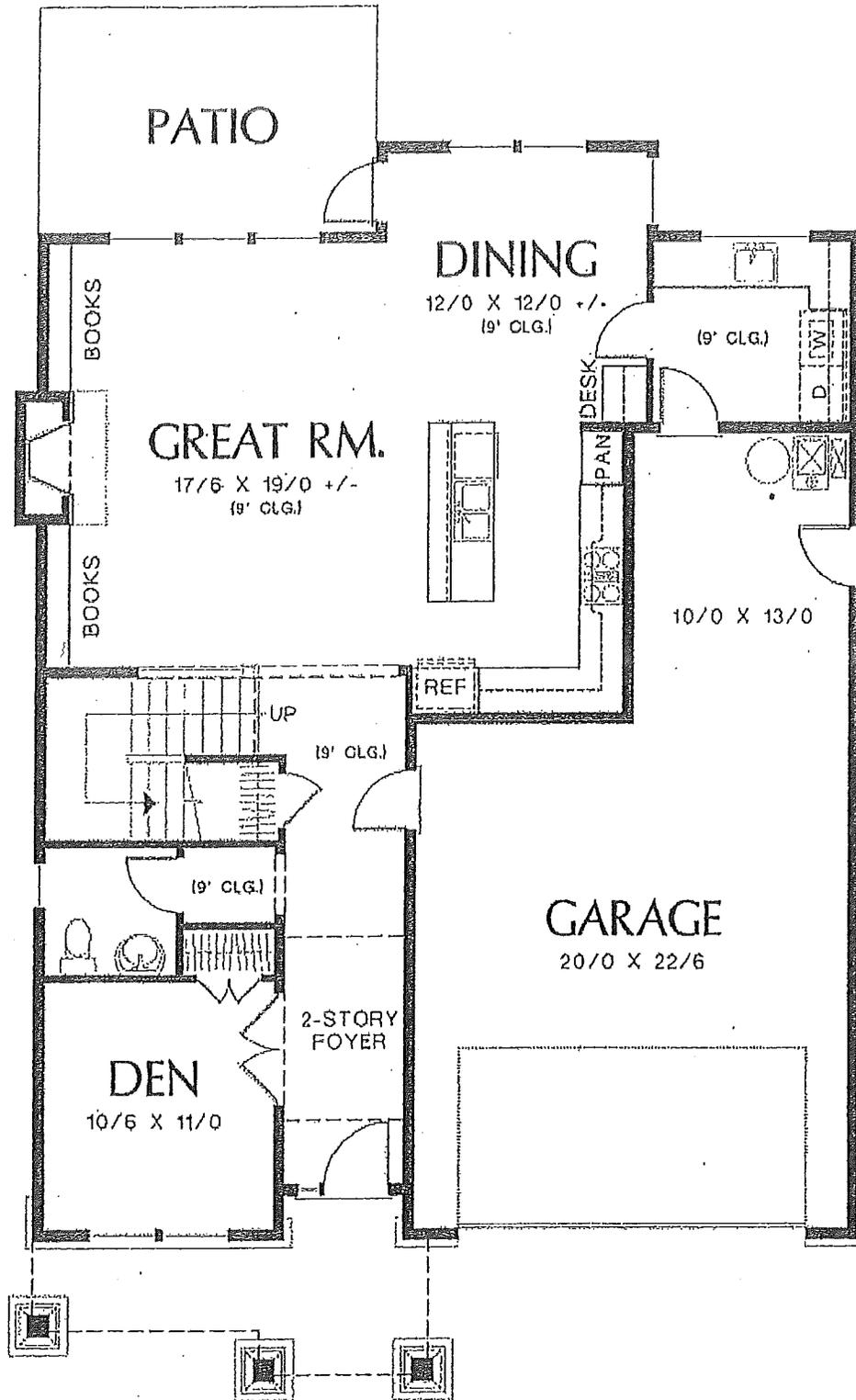


Adjustments to include:

- a. Roof Line – Eliminate Hip
- b. Change Gable Trim with less cantilever and column widths to match other houses
- c. Consistency with Trim Band over 2nd floor windows
- d. Double window to replace triple In MB
- e. Consistency with stone use between all homes
- f. Extend front porch width, if possible
- g. Consistency with roof pitch between units

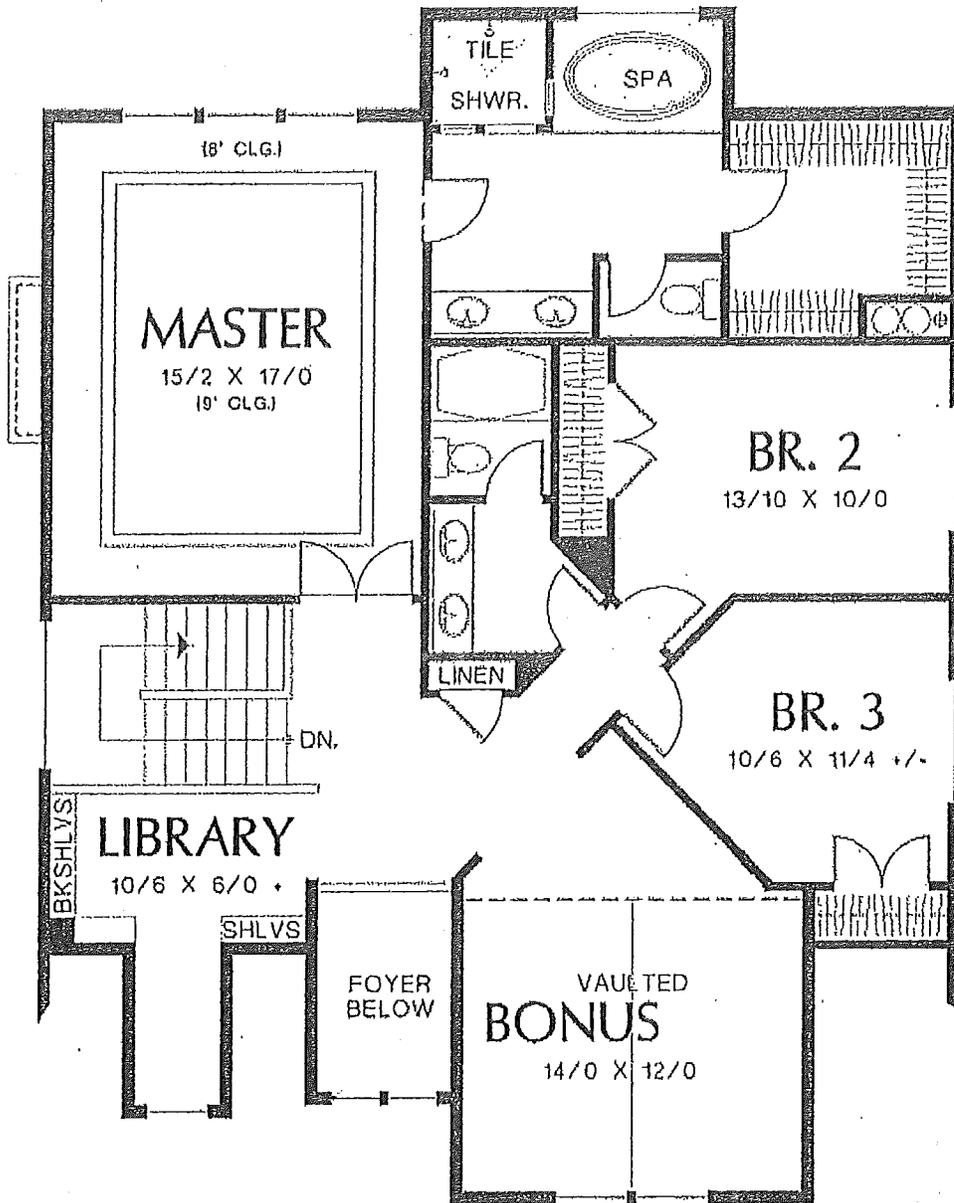
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TOWN CLERK CHARLENE M. HINTON



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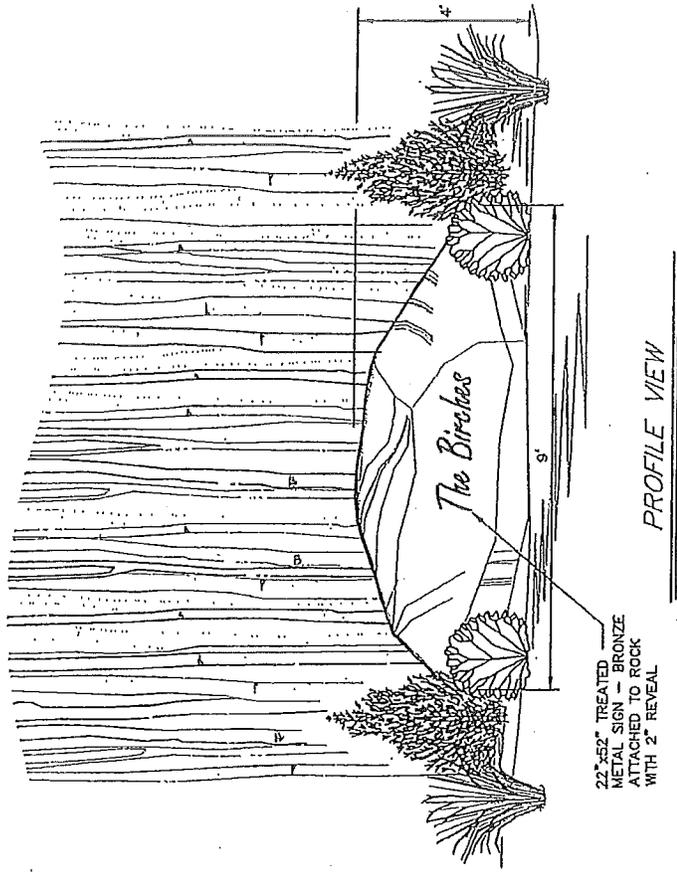
TOWN CLERK TAPSCOTT
CHARLENE W. HAYTON



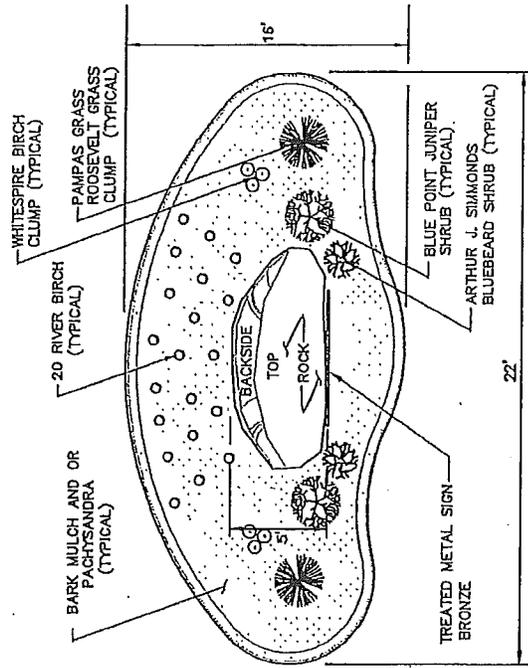
030112
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TOWN CLERK CAROL ISLE
 CHARLENE M. HILTON

EXHIBIT E



PROFILE VIEW



PLAN VIEW

LANDSCAPE SIGN FEATURE
EXHIBIT - "H"

"The Birches"

100 LONG RIDGE ROAD
CARLISLE, MASSACHUSETTS

PREPARED FOR:
LIFETIME GREEN HOMES, LLC
1-42 LITTLETON ROAD
WESTFORD, MA 01886
APRIL 21, 2015
NOT TO SCALE

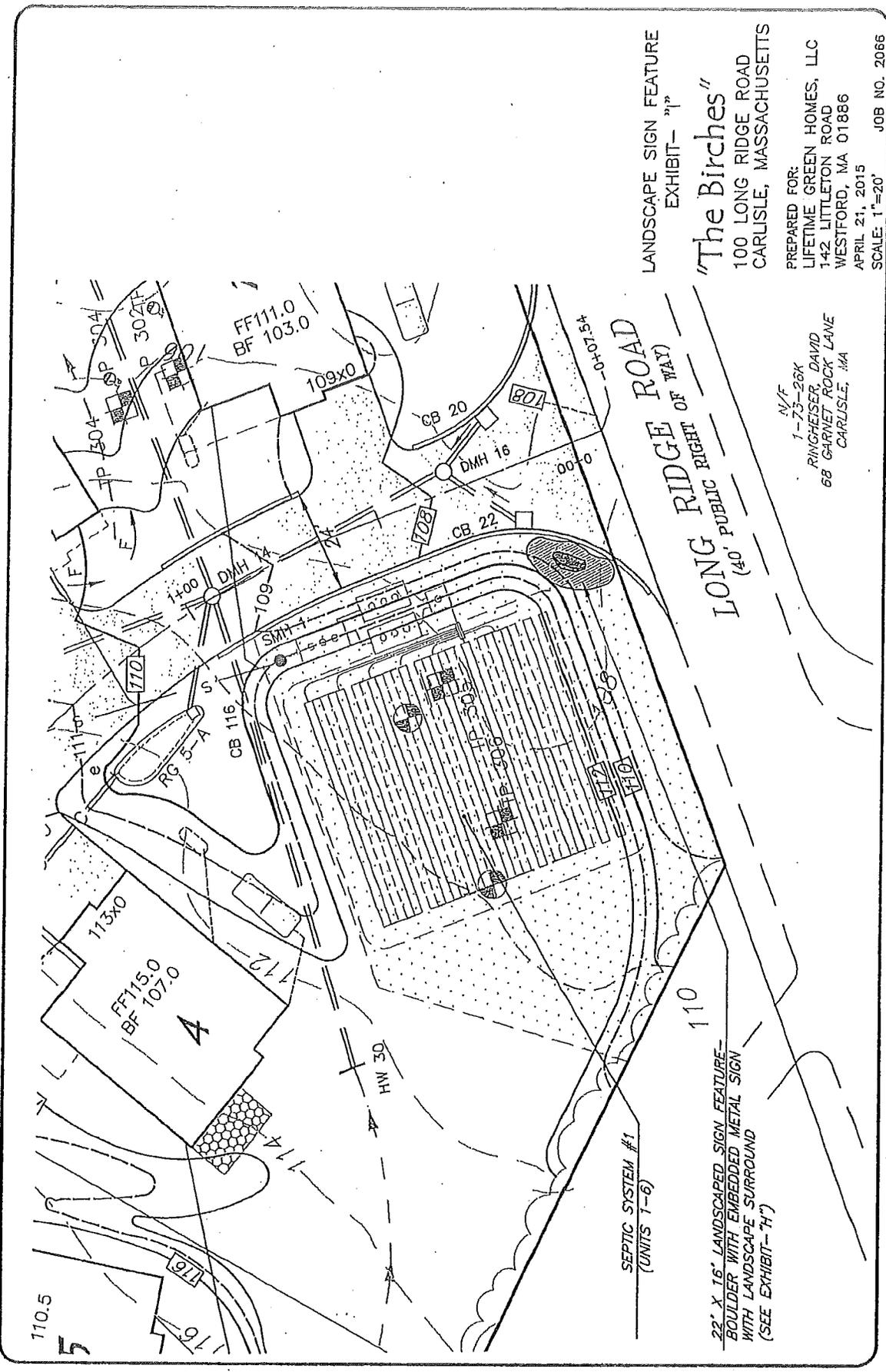
JOB NO. 2066

LANDSCAPE SIGN FEATURE

SEE EXHIBIT-T FOR LOCATION

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TOWN OF CARLISLE
DEPARTMENT OF PUBLIC WORKS



LANDSCAPE SIGN FEATURE
EXHIBIT - "1"

"The Birches"
100 LONG RIDGE ROAD
CARLISLE, MASSACHUSETTS

PREPARED FOR:
LIFETIME GREEN HOMES, LLC
142 LITTLETON ROAD
WESTFORD, MA 01886
APRIL 21, 2015
SCALE: 1"=20'

N/F
1-23-26K
RINGEISER, DAVID
68 GARNET ROCK LANE
CARLISLE, MA

22' X 16' LANDSCAPED SIGN FEATURE -
BOULDER WITH EMBEDDED METAL SIGN
WITH LANDSCAPE SURROUND
(SEE EXHIBIT - "H")

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PLANNING & DESIGN



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CHARLENE M. BOST