



November 11, 2021

Ms. Leedara Zola
Truro Housing Authority
P.O. Box 2030
Truro, MA 02666

Re: Engineering Review of Proposed Affordable Housing Neighborhood
181 Route 6, Truro MA

Dear Ms. Zola:

As you requested, the Horsley Witten Group, Inc. has reviewed the site plans for the proposed affordable housing project located at 181 Route 6 in Truro, MA. The purpose of our review was to provide independent recommendations on potential improvements or updates to the project design. HW's review was based on the design plans prepared by J.M. O'Reilly & Associates dated April 21, 2014.

Summary of Existing Design

The property extends east from Route 6 with the land sloping down to the south. The current design involves the construction of three homes on separate lots, with one three-bedroom and two two-bedroom homes. The homes are designed to take advantage of the sloping hillside with a walkout basement on the south side of each house. Access to the site is from Route 6 up a steeply sloped road that runs to the northeast of the homes. Two separate undeveloped lots are included in the design. These are used as "credit areas" needed to comply with the Truro Board of Health Nitrogen Loading Limitations Regulation (Article 13 of the Board of Health Regulations) that requires a minimum of 10,000 square feet of land area for each bedroom on a property. Overall, the 7 bedrooms in the three homes require 70,000 square feet of property area to meet this regulation, and the two credit land properties provide the necessary area to comply with the regulation.

Drinking water for each home is provided by separate private wells located near each other on Lot 6 on the plans, close to Route 6. The wells must be installed more than 100 feet from any septic system leaching facility.

The current design includes the grading of the land around each home to accommodate the walkout basement and includes a reasonably flat back yard where the individual septic systems are proposed. The grading of the back yards results requires a fill condition which creates a steeply sloped area (2:1) beyond the back yards that extends close to the southern property line. A retaining wall is proposed on each lot between the front and back yards to accommodate the significant grade changes required based on the topography of the site.

Drainage from the roadway, driveways and roofs is collected by catch basins and a closed pipe system. The runoff is directed to subsurface, concrete recharge basins for infiltration. No pre-treatment for the collected stormwater runoff is provided, except for sediment capture in the deep sum catch basins.

The proposed project was initially approved by the Zoning Board of Appeals (ZBA) but was then appealed by an abutting property owner. The Judge hearing the appeal remanded the case to the ZBA to further evaluate the site grading and drainage issues. The ZBA evaluated the project and proposed updates to the stormwater management practices proposed for the site and approved it a second time. It was appealed again and the Judge upheld the appeal. One primary reason for this decision was the steep, 2:1 slope (45-degree angle) behind the three houses. The decision pointed out that the ZBA did not grant a waiver to the local requirements that the final grading of disturbed areas on the property had to meet a slope of 10:1.

Design Considerations

HW's evaluation of the site includes a set of discussion items related to the overall design concept for the project and specific recommendations for the design of the site based on the current proposal for three individual homes. These recommendations are based on the challenges that the site presents for development with the long linear configuration of the lot and the steeply sloped land. The property is located on the side of a kettle hole depression. The elevation ranges from 94 feet at the northern corner of the property to 30 feet at the southeast corner. There is also a steep slope rising from Route 6 onto the property where the access road/driveway must be constructed to enter the property. The significant change in elevation across the property presents design and construction challenges and cost implications with any of the proposed options. A balance between the proposed design options and the associated costs will need to be considered prior to any design changes.

Alternative Design Concepts

As mentioned above, the primary issue for developing the property is the grading of the site and the finish grade slopes that are required to accommodate the proposed development layout. Potential design options that could be considered to reduce the impacts related to grading the site include the following:

- One multi-family residential building could be constructed providing three housing units as is currently proposed in the individual homes. This option could reduce the size of the roadway and the grading on the site. In doing so it would reduce the amount of stormwater that needs to be managed and simplify the scale of any necessary retaining walls. This approach would also consolidate the wastewater into one on-site septic system and only one private well would be needed, simplifying their locations and setbacks. The property is located in a single-family residential neighborhood, so a multi-family residence may not be in keeping with the character of the neighborhood.
- The proposed two-bedroom home on the eastern end of the property could be relocated closer to Route 6 and placed on the north side of the proposed roadway. One possible location is just to the east of where the three private wells are currently proposed. Noise from Route 6 could be a potential issue in this location. The proposed home currently located at the eastern end of the property could be the one relocated as it is in the area of the steepest slopes on the property. The two other homes could stay in the same general area, and the overall land disturbance would be reduced. In addition, these two homes could potentially be moved slightly to the north to increase the separation from the southern property line, reducing the impact of the site grading on the abutting

properties to the south. This option would reduce the length of the road, the extent of stormwater disturbance and general infrastructure costs. The locations of the proposed septic systems and wells would have to be adjusted to ensure the proper setbacks are met.

Recommendations for the Current Design Concept

HW offers the following comments and suggestions for the current design of the property which includes three houses located to the south of the access road.

- Further evaluation of the backyard design could be helpful to minimize the steep slope near the property boundary. The area that is currently being graded to a 2:1 slope could be redesigned with a set of terraces or short retaining walls that could help prevent long term erosion and better control runoff flowing in this direction during a storm event. The areas between the retaining walls could be planted with trees and shrubs to provide a buffer from the abutting property. The terraced areas could be planted using permaculture techniques that promote the long-term health of the vegetation, support wildlife habitat and potentially provide food for the community if fruit tree clusters were included in the design. Infiltration trenches could be installed along each terraced area to prevent runoff down the slope.
- A swale could be installed along the southern edge of the proposed road to capture runoff and provide treatment before it is infiltrated into the ground. The swale would direct the stormwater to catch basins that would discharge the collected runoff to subsurface concrete recharge basins similar to those shown on the current plans.
- A similar swale could be considered at the edge of the flatter portions of the backyards to capture runoff that might otherwise cause erosion on the steeper slope further downhill. The swale could direct water to the infiltration systems installed in the roadway.
- Three individual private wells are currently proposed. They are located adjacent to each other on Lot #6 separate from the individual lots where the houses will be located. It is possible to install just one well and have it serve all three homes, minimizing construction costs. It would still be considered a private well as it is serving less than 25 people. There are seven bedrooms in the three homes and assuming two people would occupy each bedroom, there would be 14 people in the community.
- The proposed septic system leaching facilities are located at the edge of the proposed 2:1 slope in the back yards of the three houses. According to the State Environment Code, Title 5 (310 CMR 15.00) there must be a 15-foot setback between the leaching facility and any slope with more than a 3:1 gradient. The current plans do not provide details on the septic system design, so it is unclear if this setback has been incorporated into the design. If the setback is not met, the septic design needs to be adjusted and this could affect the final grading of the property.
- Please note the proposed reserve areas for the onsite septic systems are located in the area with the 2:1 slope beyond the back yards of the three homes. The reserve areas are identified as locations where a replacement leaching facility could be constructed if

Ms. Leedara Zola
November 11, 2021
Page 4 of 4

the primary leaching facility fails at some point in the future. If any of these reserve areas were used to build a new leaching facility, the slope of the area would have to be leveled to comply with the Title 5 slope setback requirements discussed above. This would require additional grading or the construction of retaining walls to meet the design requirements in Title 5. Alternate locations for the reserve areas should be considered.

Thank you for the opportunity to work with you on this project and please let me know if you have any questions regarding the material provided above.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mark Nelson", written in a cursive style.

HORSLEY WITTEN GROUP, INC.
Mark E. Nelson, P.G., Principal

Town of Truro, Truro Housing Authority - Request for Qualifications Housing Needs Assessment and Housing Production Plan, November __, 2021

1. Introduction

The Truro Housing Authority seeks consulting services to update the 2015 Truro Housing Needs Assessment and the 2018 Truro Housing Production Plan with sufficient scope and detail to assist the Local Comprehensive Plan Committee and the Walsh Property Community Planning Committee in their work, and to receive renewed approval of the Truro Housing Production Plan from the Department of Housing and Community Development (DHCD) under Planned Production regulations.

The update process shall include an enhanced local data collection process and an enhanced civic engagement process. The Housing Needs Assessment should include an examination of the economic impact of the lack of availability of attainable housing on Truro, including examining what type of housing is needed to ensure Truro's employers including the Town of Truro are able to attract and retain the employees needed to operate successfully. While it is envisioned that the 2020 Census data when released will provide useful demographics, the small number of Truro residents who completed the census questionnaire and the relatively small population of Truro makes it extremely important that the Housing Needs Assessment look at more than Census data and reach out to various community stakeholders and groups to directly collect data. Additionally, community outreach and participation are of critical importance to this process, both in the data collection facet and in the formulation of housing goals and the adoption of strategies / tactics to achieve the goals.

2. Scope of Services

Task One – Traditional Housing Data Collection and Analysis

- Analysis of existing plans, studies, surveys, regulatory requirements, demographic and census data, housing market, existing housing stock, existing affordable housing and other pertinent housing-related materials;
- Analysis of regional and local housing trends, existing housing programs, development constraints, and other challenges

Task Two – Enhanced Housing Data Collection and Analysis

- Based on a plan to be developed between the consultant and the Truro Housing Authority, and in consultation with the Local Comprehensive Plan Committee and the Walsh Property Community Planning Committee, local data collection may include group meetings, individual interviews, surveys and other means of primary data collection

Task Three - Community Engagement

- To develop a community vision for housing development via an engagement process that includes all stakeholders – business interests, applicable Town Boards and or Committees, year-round residents, part-time residents, workforce, conservation and historic groups, and other groups that may be identified as part of the planning process. The Truro Housing Authority will partner with the consultant on community engagement and will work together on a plan to ensure as complete engagement as is practical, whether via workshops, small meetings, interviews or focus groups.

Task Four – Draft Housing Needs Assessment

- Based on data collection, analysis, and civic engagement as appropriate, prepare a Draft Housing Needs Assessment that defines the housing needs for the Town of Truro

Task Five – Draft Housing Production Plan

- Based on data collection, analysis, and community engagement as appropriate, develop housing production goals, implementation strategies and a plan of action to achieve incremental results over the 5 year span of a Housing Production Plan

Task Six – Presentation of Draft to Community and Finalization of Housing Needs Assessment and Housing Production Plan

- Includes working closely with Truro Housing Authority and Town staff as applicable, as well as a minimum of two (2) Community Workshops

Task Seven – Approval of Housing Production Plan and Submission to DHCD

- Present to and gain approval from Planning Board, Select Board and submit to and gain approval from the Department of Housing and Community Development

3. Funding Availability

The proposal shall not exceed budget of \$30,000 for the completion of all tasks necessary to execute community data collection and/or engagement and production of the Housing Needs Assessment and/or Housing Production Plan.

4. Deadline for Completion

The Housing Needs Assessment, the Housing Production Plan, and community engagement shall be completed within nine (9) months of contract execution date.

5. Proposal Submission Requirements

Proposal to include the following:

- a. Plan of Work: provide a narrative detailing the approach to each of the tasks as outline above.
- b. Timetable: provide a timeline for performing the scope of work.
- c. Cost: submit a budget for the project that itemizes costs for each task described in the Scope of Services section.
- d. Qualifications: A brief narrative describing the proposer’s qualifications and experience in completing similar types of studies/analyses, with a focus on small town work. Include resumes of key staff, and indication of the individual who will be lead for the project.
- e. References: Names and contact information for a minimum of three recent references from organizations/individuals for which the proposer has provided comparable services within the last five (5) years.
- f. Work Sample: Copies of comparable work completed within the last five (5) years.

6. Quote Submittal Deadline:

Detailed proposals are to be submitted to the address stated below no later than
XXXXXXXXXXXXXXXXXXXXX. *NOTE: The Truro Housing Authority may select to hire for
all or some of the tasks as outlined above.*