



OPTIONS WORKBOOK HILLSIDES AND RIDGELINES PROJECT

Town of Moraga
September 2015

Prepared by:



The Hillsides and Ridgelines project is an effort by the Town of Moraga to clarify and improve regulations for hillside and ridgeline development. This workbook presents options for how the Town can address key issues associated with these regulations.

The Town will host a workshop on September 17, 2015 to receive public input on these options. Prior the workshop, please review the contents of this workbook to familiarize yourself with the material. You can find additional detail about existing regulations in the project background report available on the project web page: www.moraga.ca.us/hillsides.

The following issues are presented in this workbook:

1. Non-MOSO Ridgeline Definition And Map
2. Ridgeline Protection
3. Steep Slope Limitations in MOSO Open Space
4. High Risk Areas Map
5. Remediation of High-Risk Areas
6. Viewshed Protection
7. Building Size on Large Lots

There are four additional issues that will not be discussed at the September 17th workshop due to time limitations and the nature of these issues. These additional issues are presented at the end of this workbook. If you would like to provide input on these issues you may submit comments to the Town or participate in the Town's Open Town Hall on-line discussion forum at www.moraga.ca.us/hillsides.

Thank you for your participation in this important process. If you have any questions please contact Ellen Clark, Planning Director, at (925) 888-7041 or eclark@moraga.ca.us.

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ISSUE 1: NON-MOSO RIDGELINE DEFINITION AND MAP

Moraga’s General Plan defines Major and Minor Ridgelines in MOSO Open Space and identifies the location of these ridgelines (see Figure 1). The General Plan does not contain a general ridgeline definition that applies town-wide. Because of this, some believe that Town policies to protect ridgelines from development do not apply to non-MOSO ridgelines, or apply in different ways. Clarifying the meaning of Moraga’s ridgeline protection policies requires establishing a clear town-wide definition of ridgelines and identifying the location of all these ridgelines on a map.

Check your preferred options below:

Option 1-A: Add a general ridgeline definition to the General Plan and Municipal Code.

Amend the General Plan and Municipal Code to add a general ridgeline definition that applies throughout the town. “Ridgeline” could be defined to mean “the upper-most portion of a hill that is at or above 800 feet in elevation, is in an undeveloped area, and which rises to a crest.”

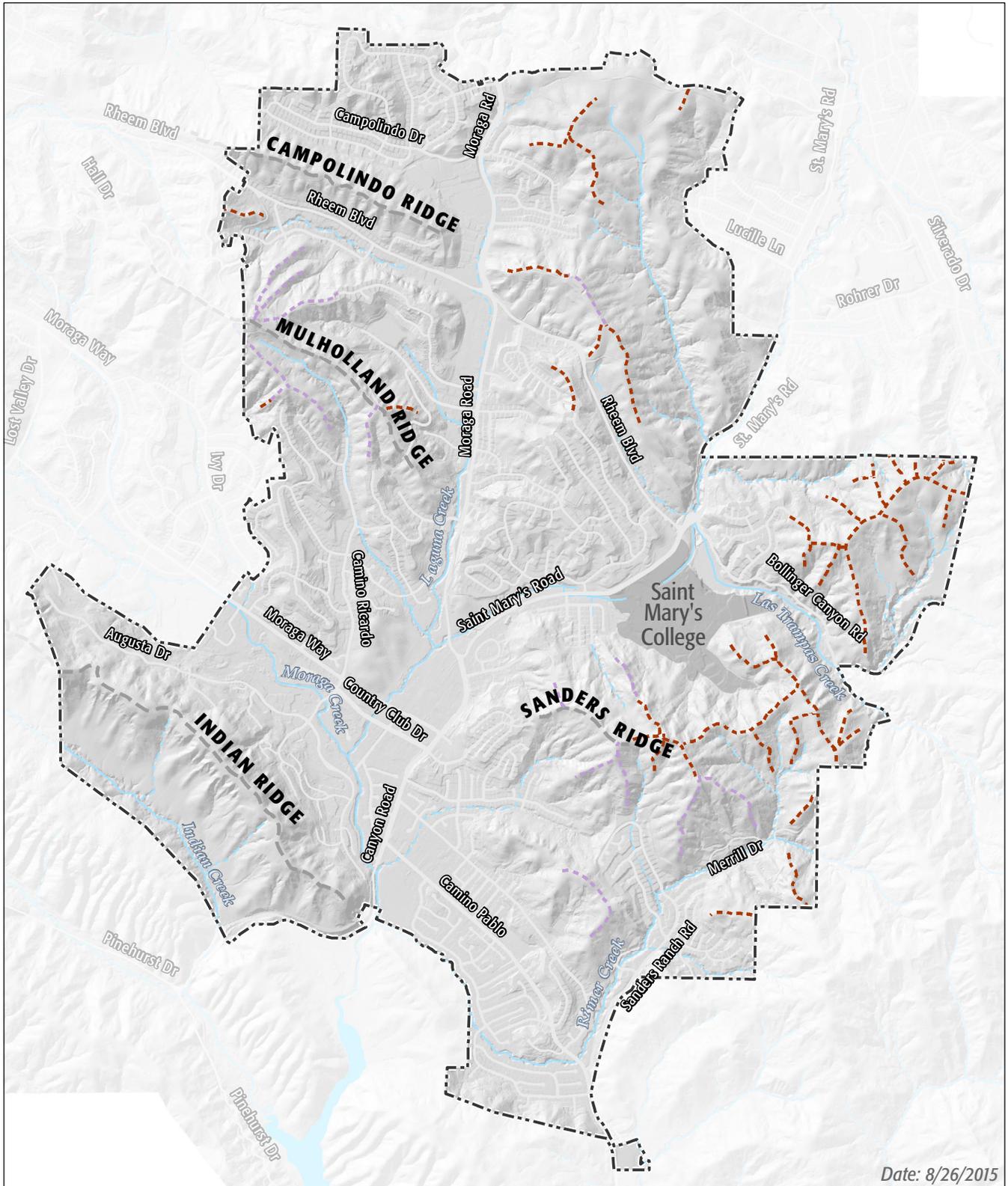
Option 1-B: Add a map of all ridgelines to the General Plan.

Adopt a map of all ridgelines in Moraga above 800 feet in elevation. The map would show the location of all ridgelines, including ridgelines outside of MOSO Open Space (see Figure 2). The map would show subsets of ridgelines, such as Major and Minor MOSO Ridgelines, for which specific policies and regulations apply.

Option 1-C: Clarify that “ridgeline” means only MOSO ridgelines.

Determine that the term “ridgeline,” when used in the Town’s regulations, means only designated MOSO ridgelines. Landforms with ridgeline-like properties outside of MOSO Open Space would not be subject to the Town’s ridgeline policies and regulations.

Other Options:



Date: 8/26/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

- Town Boundary
- Town-identified MOSO Minor Ridgelines
- Non-MOSO Ridgelines Above 800 feet
- Town-identified MOSO Major Ridgelines
- Major/Permanent Stream
- Minor/Intermittent Stream

FIGURE 2
EXAMPLE RIDGELINE MAP FOR OPTION 1-B



ISSUE 2: RIDGELINE PROTECTION

General Plan Policy CD1.5 calls for the Town to “protect ridgelines from development.” It is unclear how this policy applies to ridgelines outside of MOSO Open Space, if at all.

Check your preferred options below:

- Option 2-A: Allow development on and near non-MOSO ridgelines consistent with improved design guidelines.**

Clarify that development is permitted on and adjacent to non-MOSO ridgelines as shown in Figure 2. Add detail to the Town’s Design Guidelines to ensure that this development is attractively designed, minimizes visual impacts, and mitigates hazards (see Figure 3).

- Option 2-B: Prohibit development on non-MOSO ridgelines. Allow development near non-MOSO ridgelines consistent with new development standards.**

Clarify that development is prohibited on Non-MOSO ridgelines as shown in Figure 2, but allowed near these ridgelines if they comply with new development standards. New standards would be objective and measurable and would primarily address the height, size, and placement of structures located in proximity to ridgelines (see Figure 4).

- Option 2-C: Prohibit development within 250 feet of non-MOSO ridgelines (see Figure 5).**

- Option 2-D: Prohibit development within 500 feet of non-MOSO ridgelines (see Figure 6).**

- Option 2-E: Add an “escape clause” to Options 2-B, 2-C, and 2-D to allow exceptions if regulation would result in an unconstitutional “taking” of property.**

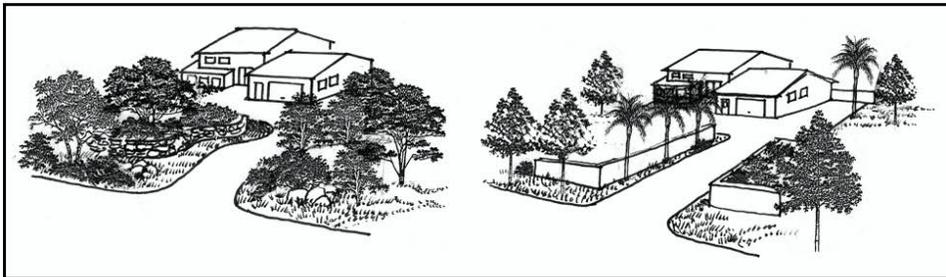
Add language to the Town’s Municipal Code stating that the Town Council may approve exceptions to non-MOSO ridgeline development regulations if the enforcement of these regulations would result in a violation of property rights protected by the U.S. Constitution.

- Other Options:**

FIGURE 3: EXAMPLE DESIGN GUIDELINES TO PROTECT RIDGELINES

Below are examples of design guidelines to help minimize visual impacts from development on or near non-MOSO ridgelines.

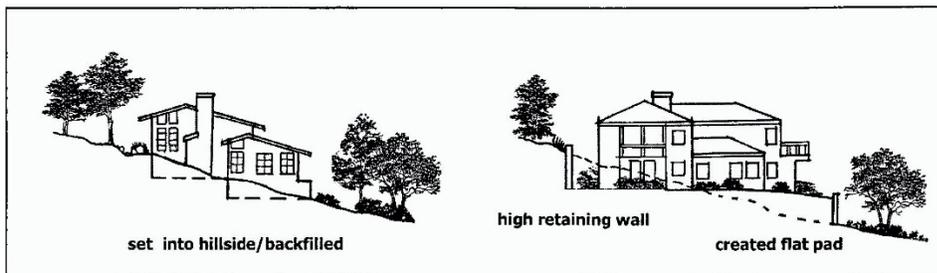
Landscaping. Plants visible from a public street should be clustered informally to blend with the natural vegetation. Trees and shrubs should not be planted in a straight lines to define property lines, driveways, or edges.



Do this

Don't do this

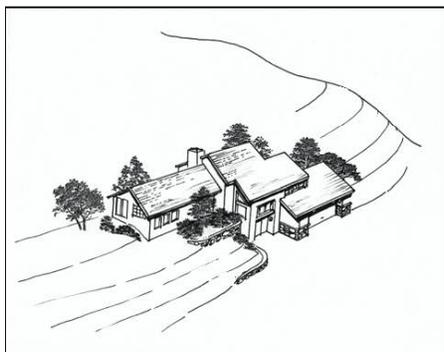
Restoration of Original Topography. After placing development the site should be restored as closely as possible to its original topography.



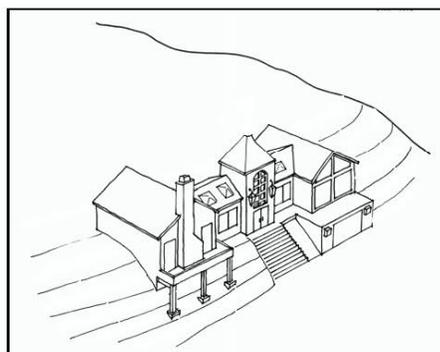
Do this

Don't do this

Prominent Architectural Features. The use of architectural features that increase visual prominence, such as two-story entries, turrets, and large chimneys, should be avoided.



Do this

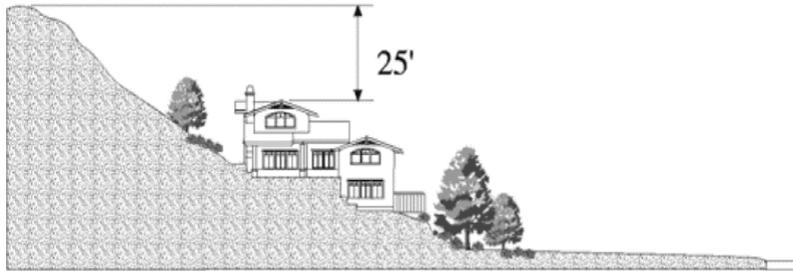


Don't do this

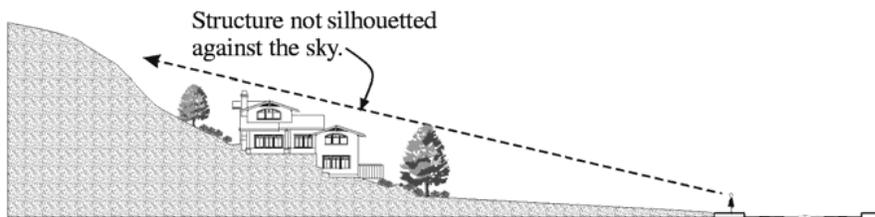
FIGURE 4: EXAMPLE STANDARDS TO PROTECT RIDGELINES

Below are examples of mandatory standards to minimize visual impacts from development near non-MOSO ridgelines.

Placement below Ridgeline. Structures shall be located below the ridgeline so that a vertical separation of at least 25 feet is provided between the top of the structure and the lowest point on the portion of any ridgeline within 100 feet of the proposed structure.

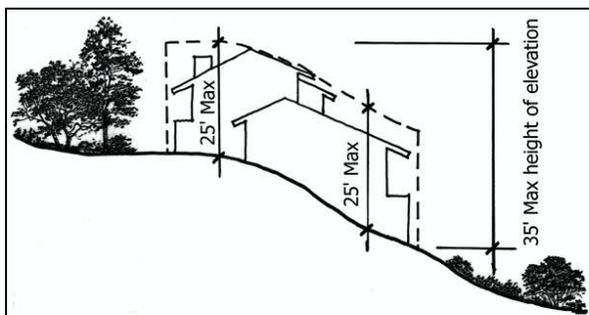


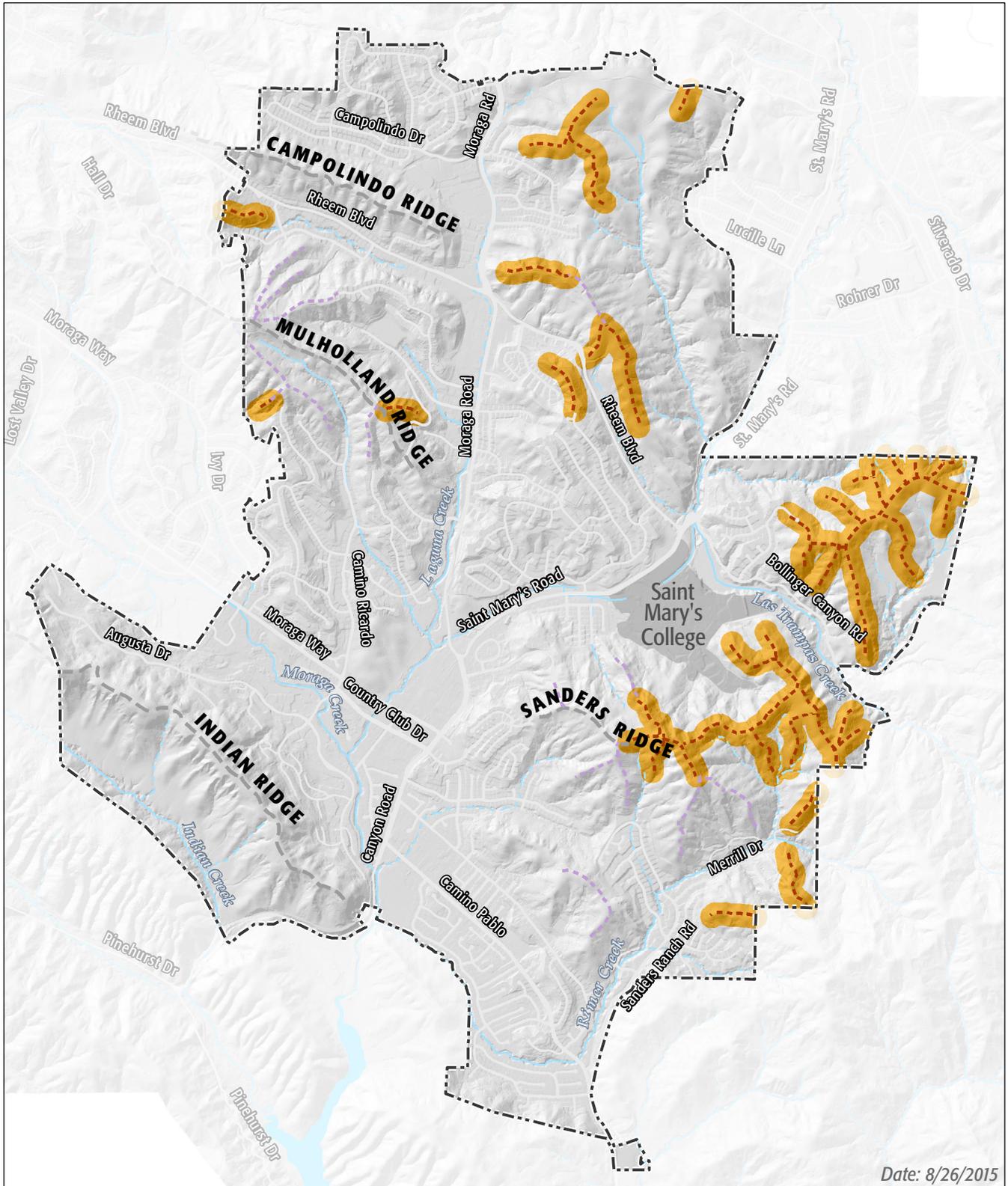
Silhouetting. Structures may not be placed so that they are silhouetted against the sky when viewed from a public street.



THIS

Building Height. Within 100 feet of a ridgeline the maximum allowed height for homes in hillside areas shall be 25 feet. The maximum height of a building's tallest elevation shall not exceed 35 feet measured from the lowest part of the building to the highest part.





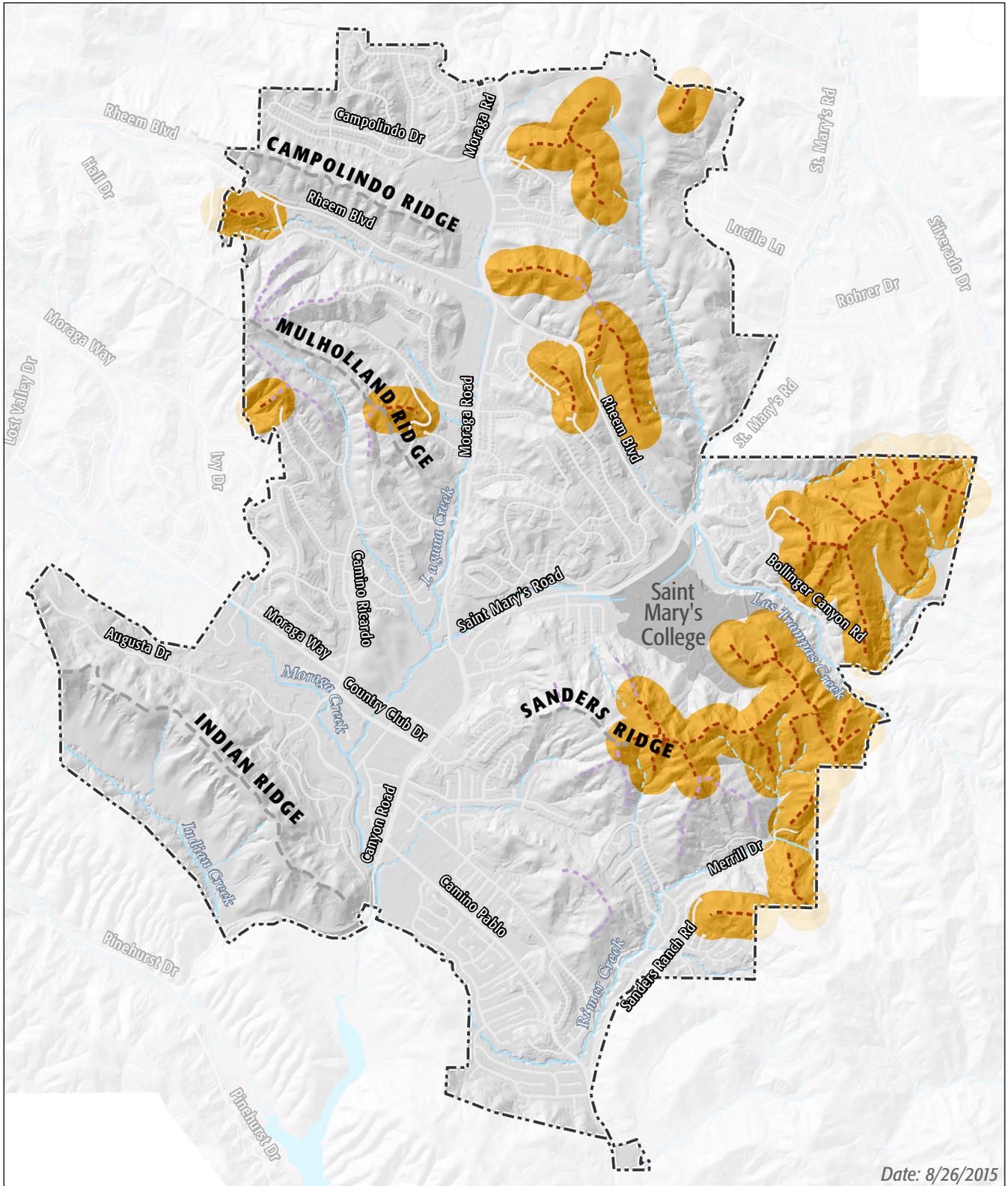
Date: 8/26/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

- Town Boundary
- Town-identified MOSO Minor Ridgelines
- Town-identified MOSO Major Ridgelines
- Major/Permanent Stream
- Minor/Intermittent Stream
- 250-foot buffer of non-MOSO ridgelines
- Non-MOSO Ridgelines Above 800 feet

FIGURE 5
250-FOOT BUFFER OF NON-MOSO
RIDGELINES FOR OPTION 2-C





Date: 8/26/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

- Town Boundary
- Town-identified MOSO Minor Ridgelines
- Town-identified MOSO Major Ridgelines
- Major/Permanent Stream
- Minor/Intermittent Stream
- Non-MOSO Ridgelines Above 800 feet
- 500-foot buffer of non-MOSO ridgelines

FIGURE 6
500-FOOT BUFFER OF NON-MOSO RIDGELINES FOR OPTION 2-D

0 0.5 1 Miles

ISSUE 3: STEEP SLOPE LIMITATIONS IN MOSO OPEN SPACE

In MOSO Open Space, development is prohibited in areas with an average existing slope of 20 percent or more. There is concern that some applicants circumvent the intent of this limitation by calculating average slope for a very large or irregularly shaped area (“a cell”). The Town also needs to clarify if development is allowed in particularly high-slope areas in a cell if the average slope is less than 20 percent.

Check your preferred options below:

Option 3-A: Create general policy statement for cell boundaries.

Maintain the use of cells to calculate average slope in MOSO areas, but add a general statement that clarifies the desired shape and location of cells. For example, the Town could add a statement to the MOSO Guidelines which states that a cell shall feature regular boundaries and generally contain the expected area of disturbance.

Option 3-B: Create objective standards for cell boundaries.

Maintain the use of cells to calculate average slope in MOSO areas, but add new requirements for drawing cell boundaries. These requirements would be quantifiable and measurable, so compliance would not be subject to interpretation and debate. Example new cell requirements are shown in Figure 7.

Option 3-C: Prohibit development in areas of a cell with a slope of 20 percent or greater when the cell overall has an average slope of less than 20 percent. (See Figure 8)

Option 3-D: Eliminate use of cell to calculate average slope.

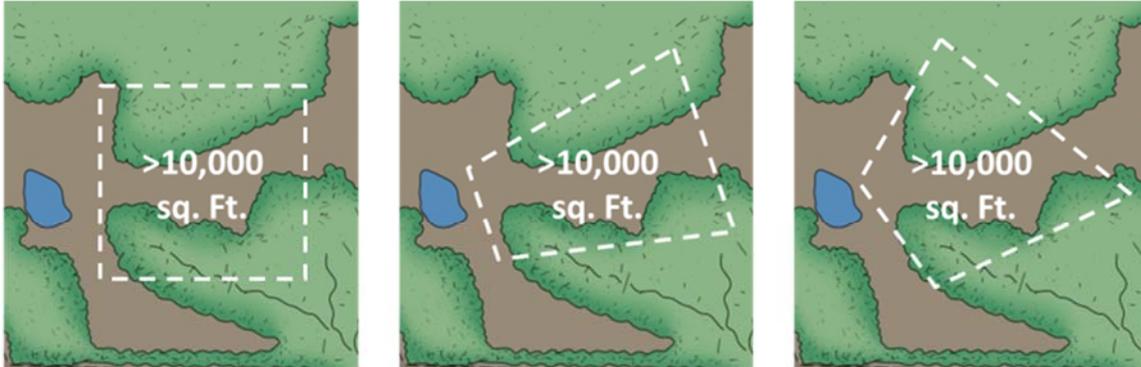
Eliminate the cell concept from MOSO regulations. Instead, require project applicants to prepare a slope category map that shows the location of areas on a property with slopes of 20 percent or more (see Figure 9). In MOSO Open Space, development would be prohibited in all areas with a mapped slope of 20 percent or more, regardless of the average slope of the site or a defined development area. As part of this option, the Town could allow the Town Council to approve exceptions to steep slope restrictions if the enforcement of these regulations would result in a violation of property rights protected by the U.S. Constitution.

Other Options:

FIGURE 7: EXAMPLE NEW CELL REQUIREMENTS

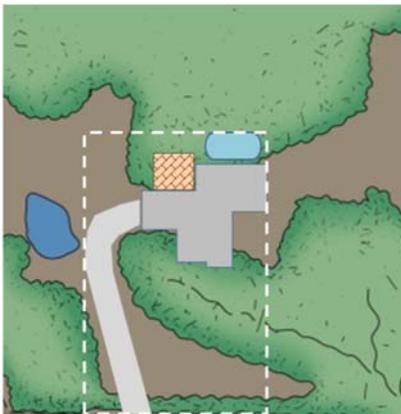
Below are examples of new standards for drawing cell boundaries in MOSO Open Space.

Objective Standard Example 1: A cell is a four-sided polygon of at least 10,000 sq. ft.



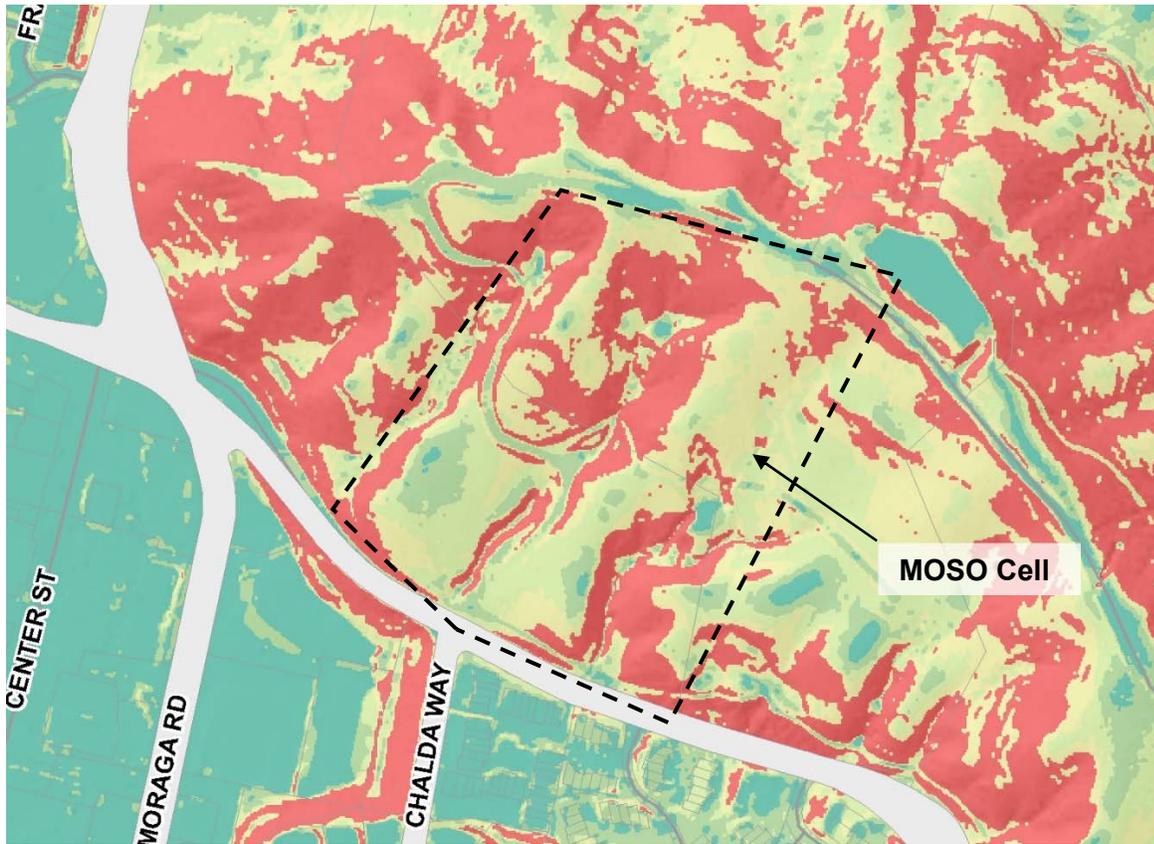
Acceptable cell configurations.

Objective Standard Example 2: A cell is the minimum four-sided polygon containing the area of disturbance.



Creation of minimum cell to contain disturbed area

FIGURE 8: STEEP SLOPE LIMITATIONS IN MOSO OPEN SPACE: OPTIONS 3-C



In **Option 3-C**, development is prohibited in areas of a cell with a slope of 20 percent or greater (pink and red on map).

Draft Slope Categories (For Illustration Only)

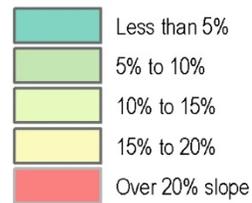
-  Less than 5%
-  5% to 10%
-  10% to 15%
-  15% to 20%
-  Over 20% slope

FIGURE 9: STEEP SLOPE LIMITATIONS IN MOSO OPEN SPACE: OPTION 3-D



In **Option 3-D**, the concept of average cell slope is eliminated. Instead, development is prohibited anywhere on a property or site in areas with a slope of 20 percent or more. Development is allowed elsewhere on the property if it complies with other regulations (e.g., development prohibited within 500 feet of a major ridgeline)

Draft Slope Categories (For Illustration Only)



ISSUE 4: HIGH RISK AREAS MAP FOR MOSO OPEN SPACE

MOSO Guidelines Exhibit D (Development Capability Map), adopted in 1989, establishes a preliminary determination of high risk areas in MOSO Open Space (see Figure 10). High risk areas are limited to a maximum density of 1 unit per 20 acres. Project applicants may request a final determination of high risk status on a property based on a site-specific geologic study. The findings of these geologic studies frequently differ from the preliminary determination of high risk status in the Development Capability Map. Discrepancies also were found between the Development Capability Map and landslide hazard mapping prepared for the Hillside and Ridgelines project.

Check your preferred options below:

- Option 4-A: Continue to use the existing Development Capability Map and acknowledge its limitations.**

Notes would be added to the Development Capability Map, MOSO Guidelines, and General Plan emphasizing that the high risk determination may not reflect actual conditions on the ground.

- Option 4-B: Develop a new and improved Development Capability Map.**

This new map would be based on landslide hazards mapping already begun for the Hillside and Ridgelines Project and must take into account soil stability, history of soil slippage, slope grade, accessibility, and drainage conditions as required by the MOSO Initiative. See Figures 11A and 11B.

- Option 4-C: Discontinue use of the Development Capability Map and eliminate the preliminary risk determination.**

Add information to the General Plan that generally describes the characteristics of high risk areas consistent with the MOSO Initiative, but do not map these areas. Determine the location of high risk areas as part of a development application based on site-specific geological studies.

- Other Options:**



Date: 9/10/2015

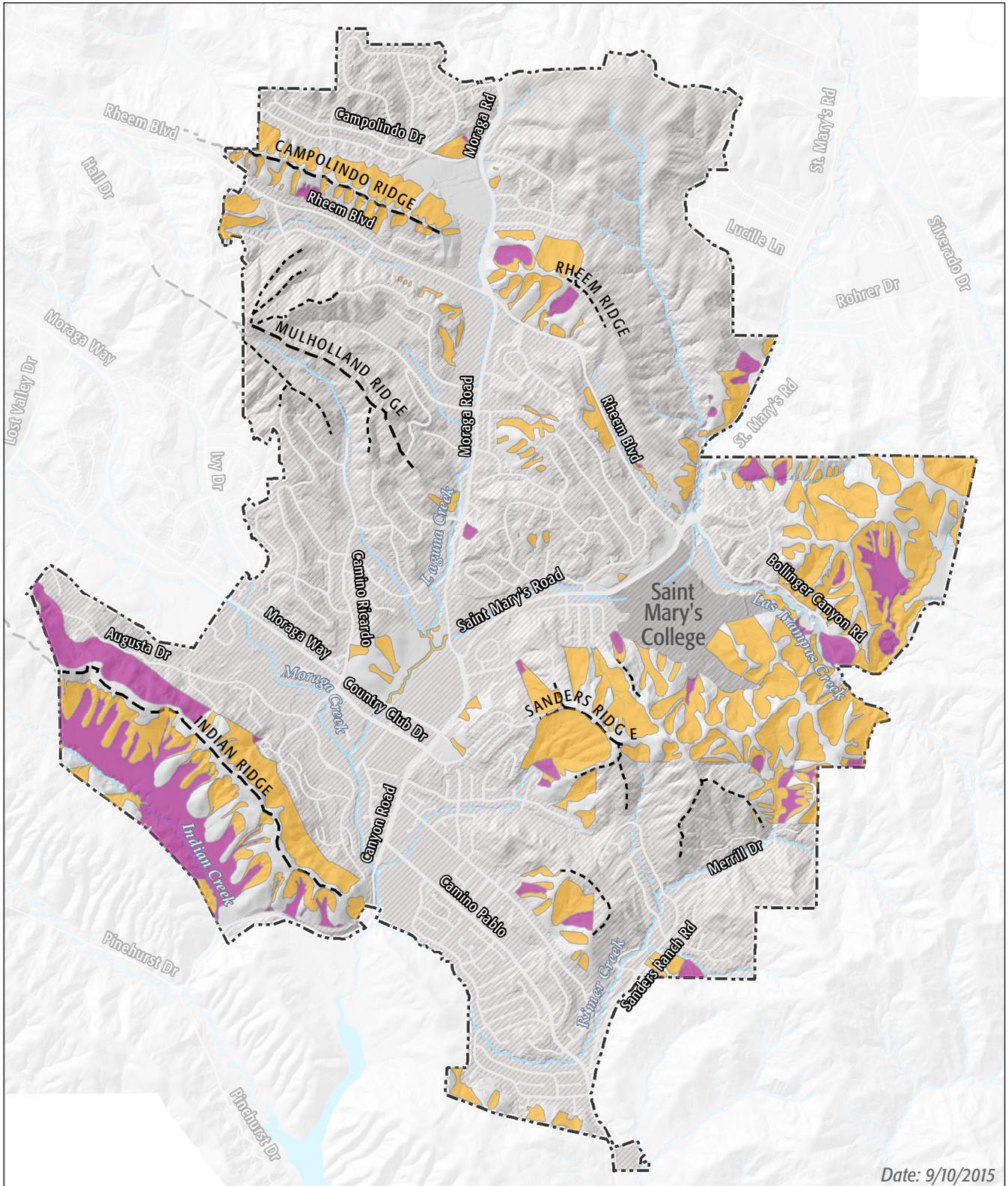
Data Sources: Town of Moraga, 2013; Cotton Shires, 2014; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

1989 Development Capability

 High Risk Areas

FIGURE 10
EXAMPLE 1989 DEVELOPMENT CAPABILITY MAP





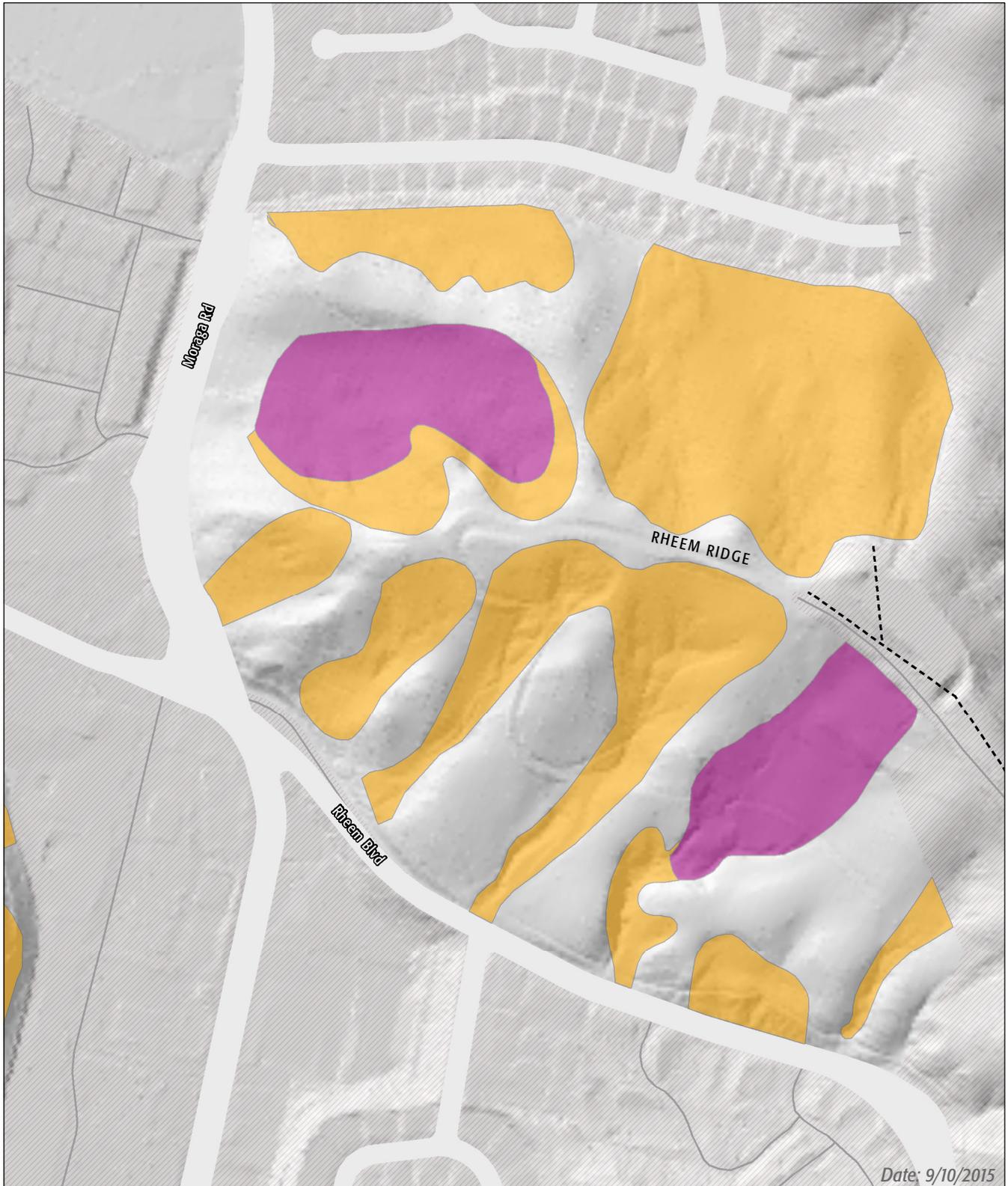
Date: 9/10/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

- Town Boundary
- MOSO Minor Ridgelines
- MOSO Major Ridgelines
- Major/Permanent Stream
- Minor/Intermittent Stream
- Areas not included in landslide mapping
- Areas with Significant Potential for Landsliding**
 - Shallow unstable, unconsolidated material on gentle to steep slopes, commonly less than 10 feet in thickness, subject to shallow landsliding (includes identified shallow landslides and potentially unstable colluvium).
 - Deep unstable, unconsolidated or detached materials on moderate to steep slopes, commonly more than 10 feet in thickness, subject to more significant landsliding (includes identified deep landslides and earth materials susceptible to deep failure).

FIGURE 11A
LANDSLIDE HAZARD MAP





Date: 9/10/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

FIGURE 11B

LANDSLIDE HAZARD MAP - COMPARISON ZOOM

-  Town Boundary
-  MOSO Minor Ridgelines
-  MOSO Major Ridgelines
-  Major/Permanent Stream
-  Minor/Intermittent Stream

-  Areas not included in landslide mapping
- Areas with Significant Potential for Landsliding**
 -  Shallow unstable, unconsolidated material on gentle to steep slopes, commonly less than 10 feet in thickness, subject to shallow landsliding (includes identified shallow landslides and potentially unstable colluvium).
 -  Deep unstable, unconsolidated or detached materials on moderate to steep slopes, commonly more than 10 feet in thickness, subject to more significant landsliding (includes identified deep landslides and earth materials susceptible to deep failure).

0 250 Feet 

ISSUE 5: REMEDIATION OF HIGH-RISK AREAS

Geologic hazards, such as landslides, on a hillside site can often be remediated through earthmoving, excavation, and the installation of engineering structures. The MOSO guidelines allow for remediation to justify reclassification of high risk areas and allow for increased residential density (either 1 unit per 10 acres or 1 unit per 5 acres). There is disagreement within the community over whether this practice of allowing increased density as a result of remediation should continue.

Check your preferred options below:

Option 5-A: Conditionally allow increases to residential density as a result of remediation.

Continue to allow for increases to residential density on a case-by-case basis if the applicant demonstrates that geologic hazards have been effectively abated through remediation measures.

Option 5-B: Prohibit remediation for the sole purpose of increasing residential density.

Allow for increases in residential density in high risk areas only as a by-product of remediation that was necessary to support a physically feasible project at 1 unit per 20 acres. Remediation for the primary purpose of supporting a project at a higher density is not allowed.

Option 5-C: Prohibit any increase in residential density in high risk areas.

The maximum permitted residential density in a high risk area shall always remain at 1 unit per 20 acres regardless of any remediation that occurs as part of a development project on the site.

Other Options:

ISSUE 6: VIEWSHED PROTECTION

Moraga’s General Plan and Zoning Code identify several roadways in Moraga as scenic corridors (see Figure 12). General Plan Policy CD1.3 calls for the Town to “protect” viewsheds along these scenic corridors. It is unclear what “protect” means in the context of proposed projects located in visually prominent hillside areas as viewed from scenic corridors.

Options 6-A, 6-B, and 6-C below would require the Town to identify prominent hillside areas most visible from the Town’s scenic corridors (see Figure 13).

Check your preferred options below:

- Option 6-A: Prohibit development in visually prominent hillside areas as viewed from the Town’s scenic corridors.**

Prohibit all new development in high visibility areas.

- Option 6-B: Strengthen development standards to limit development in visually prominent hillside areas as viewed from the Town’s scenic corridors.**

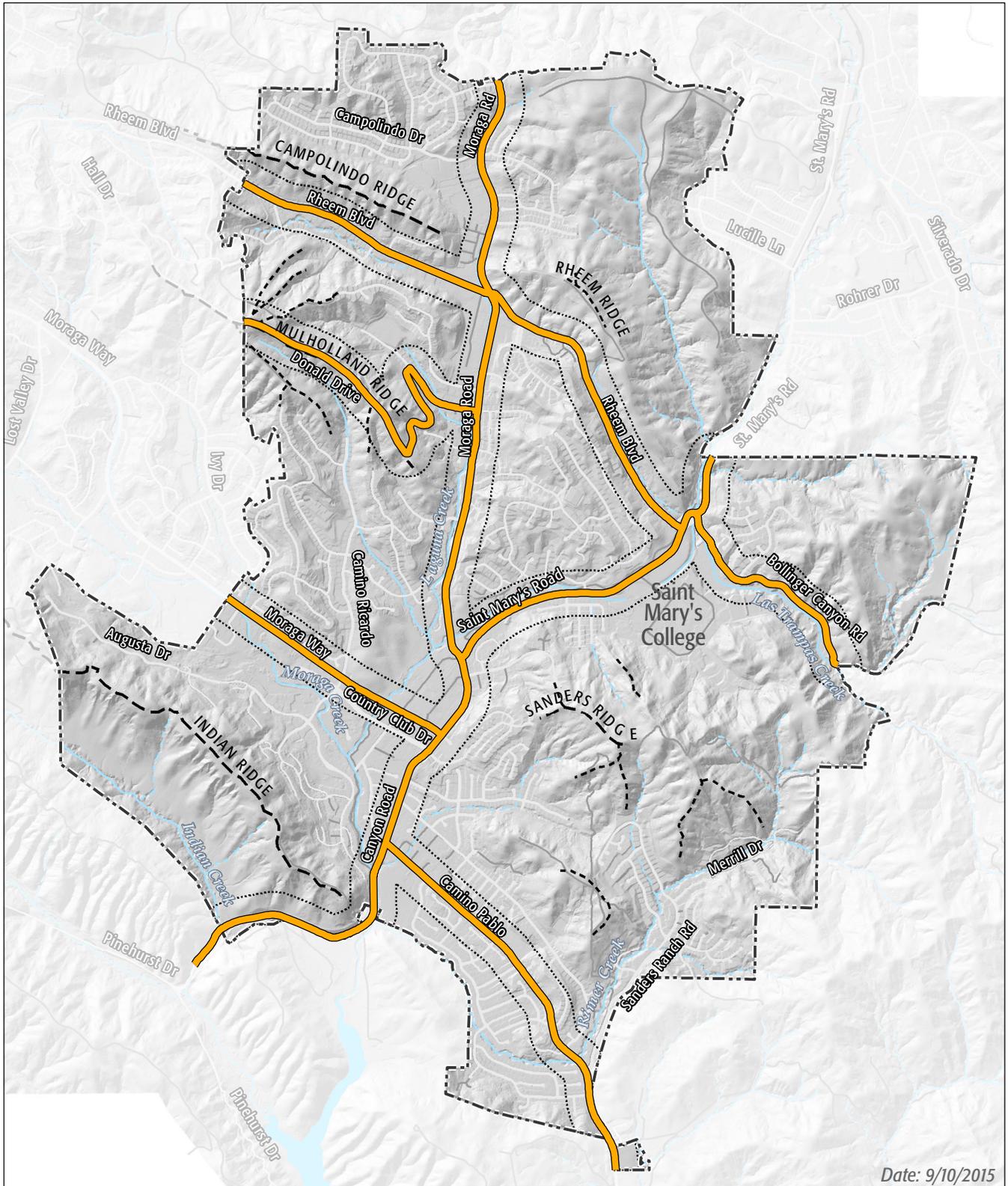
Allow new development in high visibility areas shown only if they comply with new development standards. See Figure 16 for example development standards.

- Option 6-C: Expand and improve design guidelines that apply to visually prominent hillside areas as viewed from the Town’s scenic corridors.**

Prepare new design guidelines to minimize visual impacts from development in visually prominent hillside areas as viewed from the Town’s scenic corridors. See Figure 14 for example design guidelines.

- Option 6-D: Maintain existing policies and regulations.**

- Other Options:**



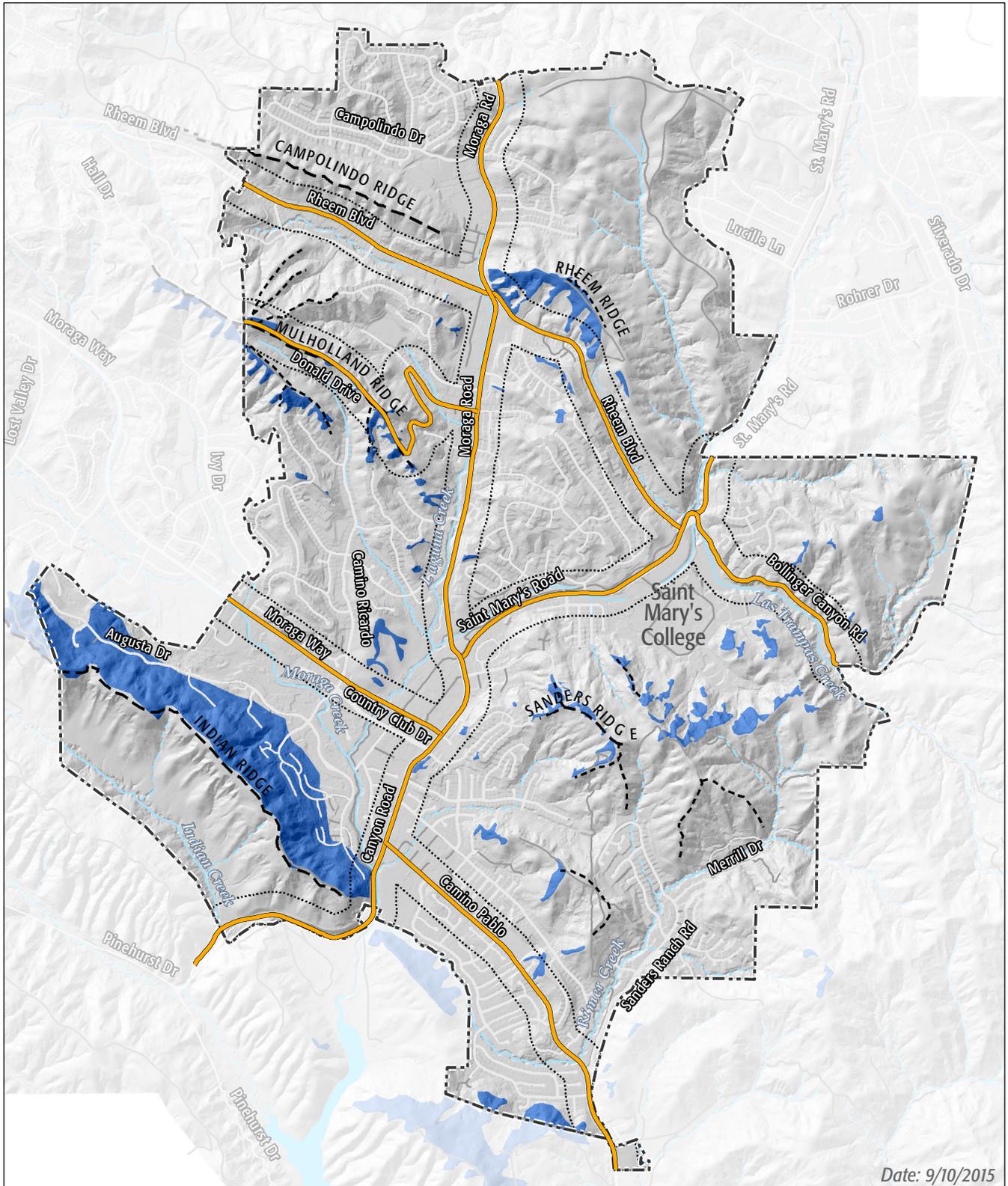
Date: 9/10/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

-  Town Boundary
-  MOSO Minor Ridgelines
-  MOSO Major Ridgelines
-  Major/Permanent Stream
-  Minor/Intermittent Stream
-  Town-designated Scenic Corridors
-  500-foot Buffer of Scenic Corridors

FIGURE 12
SCENIC CORRIDORS

0 0.5 1 Miles 



Date: 9/10/2015

Data Sources: Town of Moraga, 2013; Contra Costa County, 2013; USGS, 2006, 2013; PlaceWorks, 2014.

- Town Boundary
- MOSO Minor Ridgelines
- MOSO Major Ridgelines
- Major/Permanent Stream
- Minor/Intermittent Stream
- Town-designated Scenic Corridors
- 500-foot Buffer of Scenic Corridors
- Example Draft High-Visibility Area

FIGURE 13
SCENIC CORRIDORS AND HILLSIDE VISIBILITY

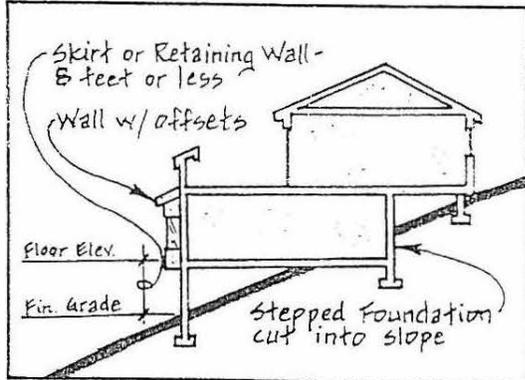
Visibility determined using view-points every 200 feet along Town-designated scenic corridors.



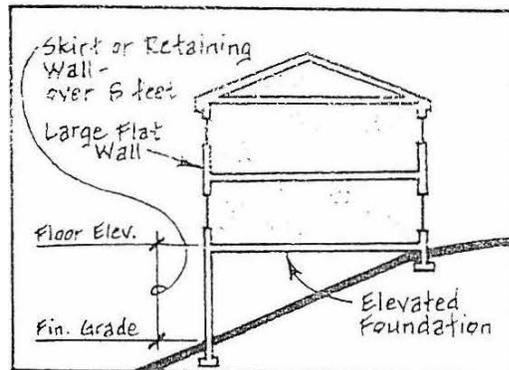
FIGURE 14: EXAMPLE STANDARDS TO PROTECT SCENIC VISTAS

Below are examples of mandatory standards to minimize view impacts from scenic corridors.

Stepped Design. Where existing slope is 15 percent or steeper, dwellings shall exhibit a stepped design that follows the natural terrain and does not stand out vertically from the hillside. The lower or ground floor elevation of a dwelling should not exceed eight feet above the adjacent exterior finish grade.

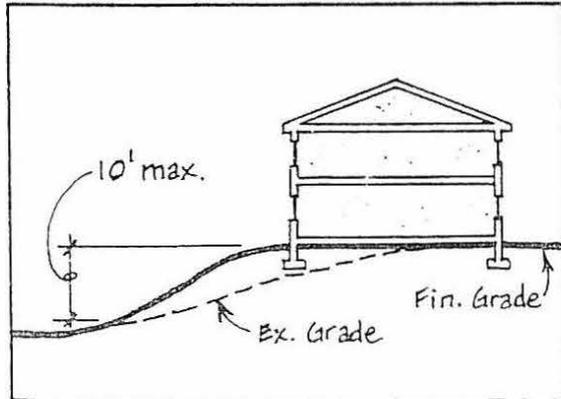


YES



NO

Single-Level Padded Lots. On padded lots the vertical height of any resulting graded slope or combination retaining wall and slope shall not exceed 10 feet.

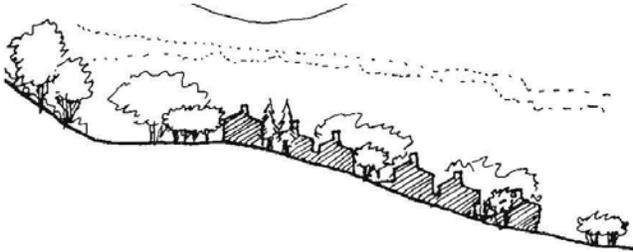


Side Elevation

FIGURE 15: EXAMPLE GUIDELINES TO PROTECT SCENIC VISTAS

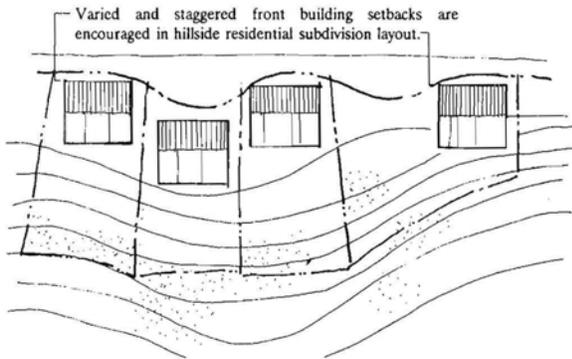
Below are examples of design guidelines to minimize view impacts from scenic corridors.

Height Variation. Buildings should be designed with different floor elevations to achieve height variation and avoid a monotonous wall effect.

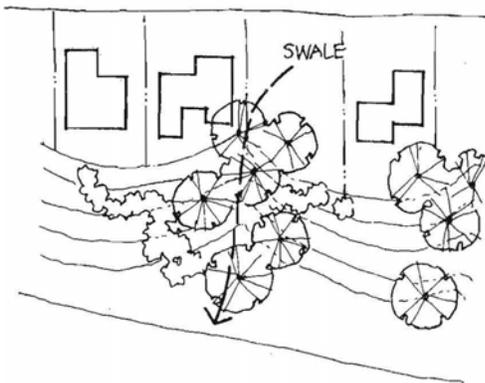


Site units or buildings with different floor elevations to achieve height variation.

Setback Variation. Front building setbacks within subdivisions should be varied and staggered to reflect the natural hillside character and reduce the monotony of repetitive setbacks.



New Trees. Trees should be planted along contour lines in undulating groups to create grove effects which blur the distinctive line of the graded slope. When possible, locate trees in swale areas to more closely reflect natural conditions and gather surface runoff for plant irrigation.



ISSUE 7: BUILDING SIZE ON LARGE LOTS

Floor area ratio (FAR) is a measurement of the size of a building relative to its lot size (see Figure 16). Moraga’s Design Guidelines establish a maximum FAR, which includes living space as well as garages and habitable attic and basement space, for single-family homes up to a maximum lot size of 20,000 sq. ft. The Design Guidelines do not address maximum FAR for lots greater than 20,000 sq. ft., and thus do not limit the size of homes on larger lots in town.

Check your preferred options below:

Option 7-A: Establish a maximum FAR for lots greater than 20,000 square feet.

Amend the Design Guidelines to establish a maximum FAR for lots greater than 20,000 sq. ft. Continue to the existing approach of adjusting the maximum FAR down as lot size increases (See Table 1). For lots greater than 40,000 sq. ft., establish a maximum floor area regardless of the lot size.

Option 7-B: Establish a maximum square-footage for any single-family home regardless of lot size.

Add to the Municipal Code the requirement that no home may exceed a specified floor area (e.g., 5,000 sq. ft.). Maintain the existing FAR limitations in the Design Guidelines for lots 20,000 sq. ft. or less.

Option 7-C: Make no changes to existing regulations.

Other Options:

Figure 16: Floor Area Ratio

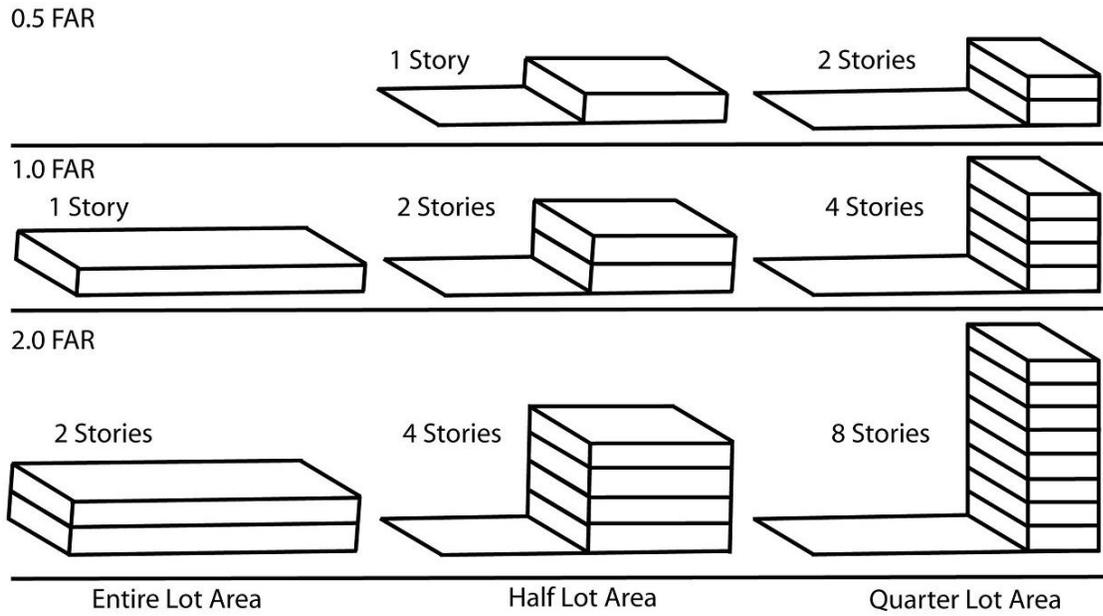


Table 1: Maximum FAR for lots greater than 20,000 sq. ft.

Parcel Area (sq. ft.)	Maximum FAR	Maximum Floor Area (sq. ft.)
20,000	0.230	4,600
22,000	0.227	4,994
24,000	0.224	5,376
26,000	0.221	5,746
28,000	0.218	6,104
30,000	0.215	6,450
32,000	0.212	6,784
34,000	0.209	7,106
36,000	0.206	7,416
38,000	0.203	7,714
40,000	0.200	8,000
Greater than 40,000	N/A	8,000

ADDITIONAL ISSUES

Issues 8 – 11 will not be discussed at the September 17 workshop. If you wish to submit comments on these issues, you may do so in writing or through the Open Town Hall on-line discussion forum. Additional information on these issues can be found in the Issues and Options Memorandum and Steering Committee meeting PowerPoint presentations available on the project website.

ISSUE 8: MOSO OPEN SPACE MAP

Discrepancies exist between different Town maps that show the boundaries of the MOSO Open Space in Moraga. The Steering Committee directed staff to create an updated MOSO Open Space map that accurately reflects the original MOSO boundaries approved by the voters and reconciles differences in the 1986 MOSO Guidelines Exhibit A, the Zoning Map, and the General Plan Land Use Map.

ISSUE 9: MOSO RIDGELINE MAP

MOSO Guidelines Exhibit B identifies the northwest portion of Indian Ridge as a Minor Ridgeline, with the remainder of the ridgeline designated as a Major Ridgeline. Other Town maps show the full extent of Indian Ridge as a Major Ridgeline. The Town needs to resolve this discrepancy.

ISSUE 10: DEFINITION OF DEVELOPMENT

There are minor differences in the definition of “development” in the MOSO Guidelines, General Plan, and Municipal Code. This definition is important because development is prohibited or restricted in hillside areas with certain characteristics. The Steering Committee directed staff to resolve any discrepancies in definitions of “development” but to not make any substantive changes to the types of land uses, structures, alteration of land, or other improvements included in this definition.

ISSUE 11: HILLSIDE DEVELOPMENT PERMITS

A Hillside Development Permit (HDP) is required to “clear, construct upon, or alter” land with a slope of 20 percent or greater. This requirement was established before the MOSO initiative and the adoption of the Grading Ordinance, which also limits or requires special approval of grading activity on steep slopes, including hillsides. There is a need to consider if the Town should modify the Hillside Development Permit requirement given the other regulations and permit requirements that also apply to hillside development projects. The Town also needs to consider if HDPs should continue to be required for minor projects (e.g., retaining walls, small accessory buildings, or additions) on developed single-family lots.