# 3. Subdivisions

Whole subdivisions cover large parcels of land that often contain wetlands. There may be a need to include a crossing or some other type of encroachment into these areas. Very seldom is a subdivision planned, designed and constructed without in some way affecting nearby wetlands. Large projects may include a number of small encroachments, which may accumulate to create larger overall impacts to wetlands that could be avoided. Following are many ways to avoid and minimize impacts to wetlands through alternative designs by considering the following items:

## Lot Design

- Configure the lots to completely avoid wetland encroachment.
- Reduce the number of lots to avoid wetland disturbance.
- Provide adequate yard space for future homeowners to add a deck, shed, or pool to their property without impacts to adjacent wetlands.
- Avoid subdividing lots such that they create a self-imposed hardship.

## Driveways and Roads

- Design roads and driveways to be as narrow as possible.
- Avoid or limit the number of wetland crossings. If a crossing is unavoidable, design it so that the narrowest section of wetland is traversed or so that it crosses in a previously destroyed or degraded area. (See Chapter 9 for Crossing BMPs).
- Consider shared driveways for entrance and exit to small subdivisions.
- Avoid illumination, or use lamps that deflect light away from the wetland.

## Screens and Plantings

- Increase plantings along roadsides within the Limits of Clearing and Disturbance to reduce noise and disturbance, especially along wetland crossings, and to provide replacement habitat for wildlife.

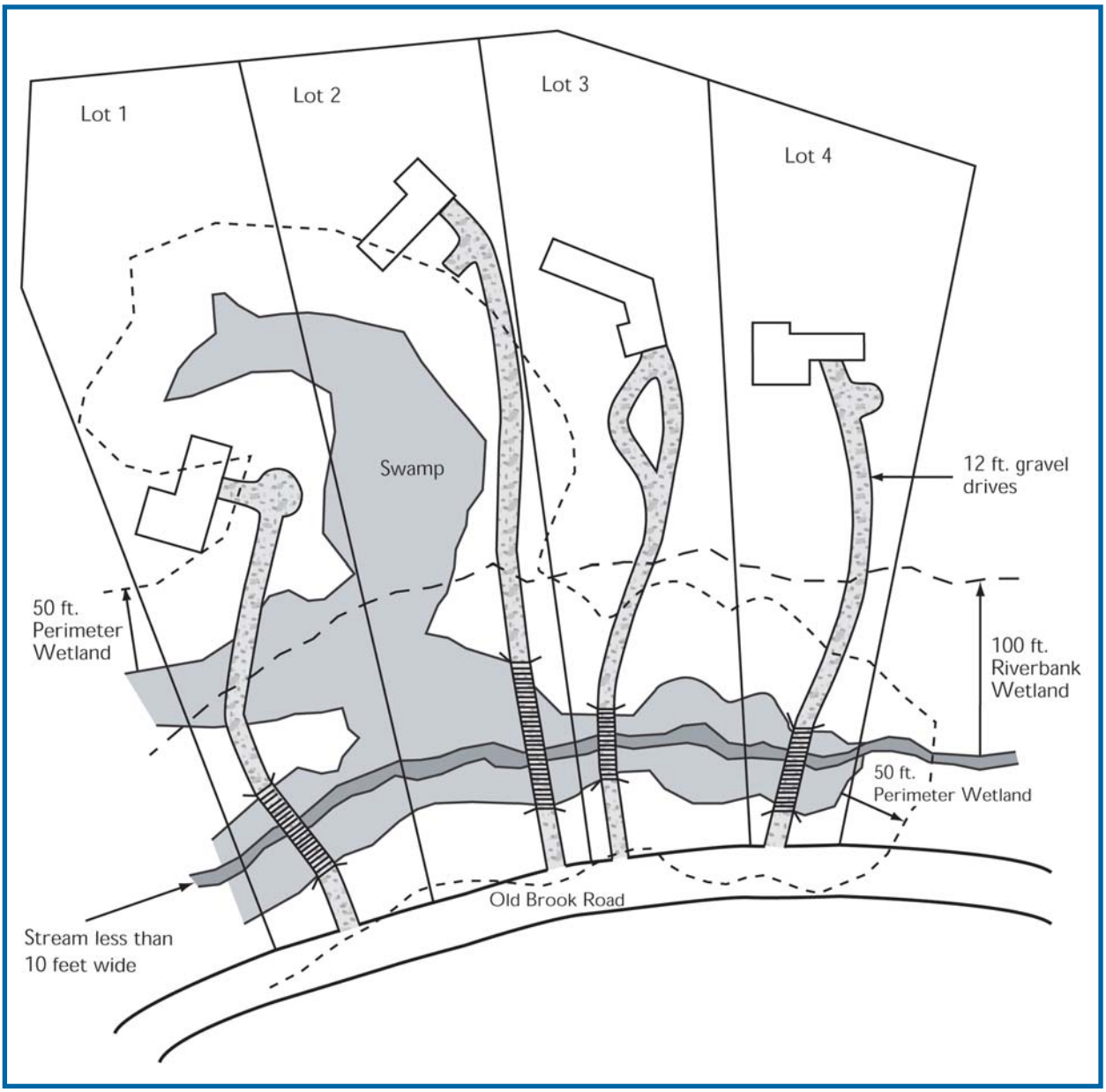
## Engineering Considerations

- Work with the grade of the land to avoid or minimize earthwork and to maintain the natural topography and hydrology.
- Decrease impervious surfaces and maintain existing drainage patterns.
- Reduce stormwater runoff from impervious surfaces, and infiltrate to compensate for loss of groundwater recharge.
- Place detention basins and other stormwater controls completely outside of all regulated wetland areas.
- Avoid filling in the 100-year floodplain of any nearby streams or rivers.

- Avoid concentrating flow where possible.
- Consider the use of stone riprap channels to guide stormwater flow over steep or erosive slopes.
- Mitigate peak runoff rates and volumes of stormwater that will reach wetlands. This will help prevent erosion and negative water quality impacts to wetlands.
- Consider flood elevations from the100-year and lesser flood events when deciding on road location and placement of other structures. (See the overtopping paragraph in Chapter 9).

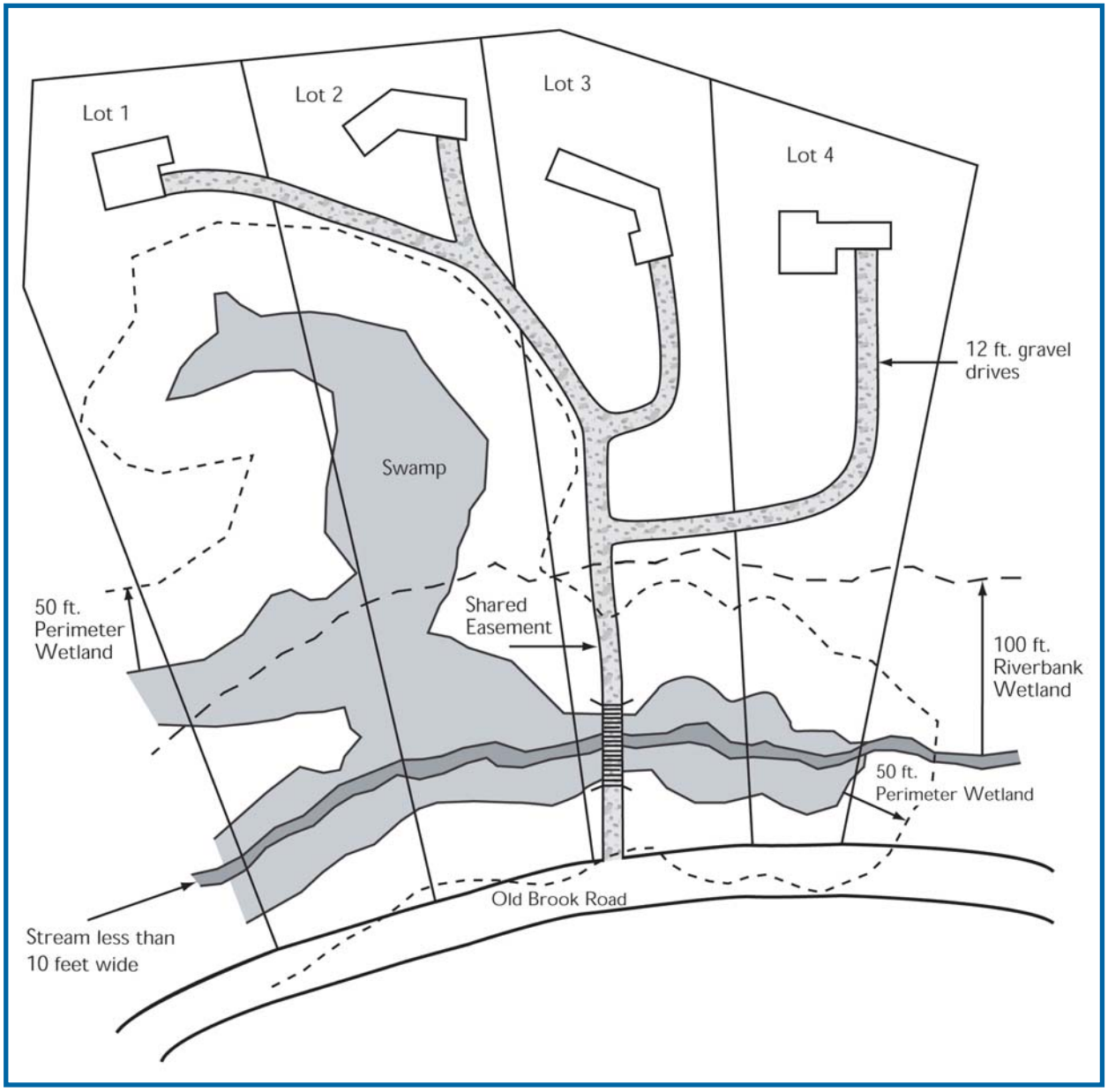
## *Example 5a:* Original Subdivision Plan

This subdivision was purchased as one large lot and subdivided as illustrated. The original plan was designed with four separate wetland and stream crossings. The proposed driveways in all four lots disturb the Stream, Swamp, Perimeter and Riverbank Wetlands.




Example 5a

## *Example 5b:* Revised Subdivision Plan with Avoidance & Minimization (Option 1)

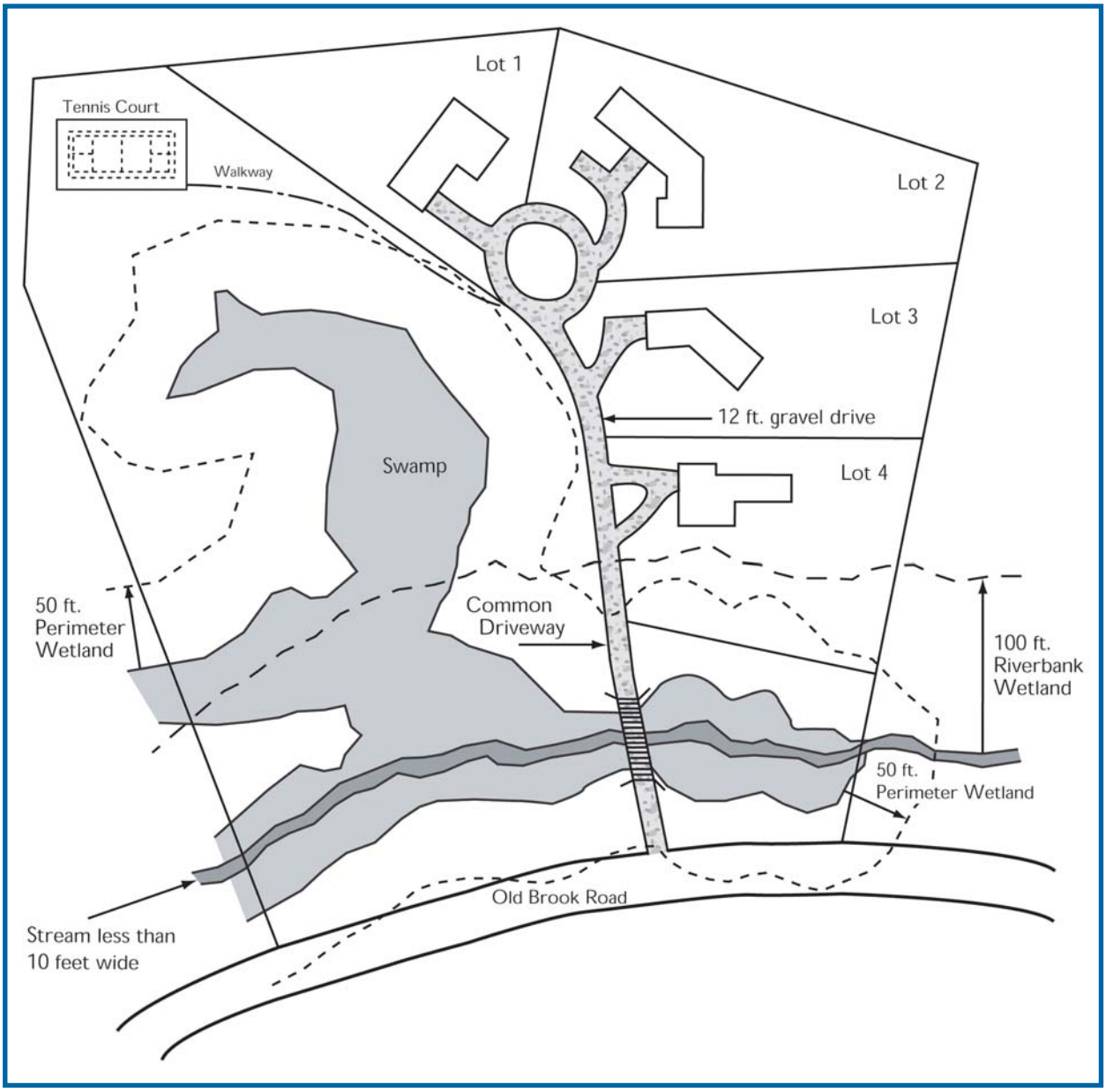



Example 5b

### *How wetland impacts were minimized:*

- ✓ The developer designed a shared easement, reducing the number of crossings from four to one.
- ✓ The house on Lot 1 is no longer sandwiched between areas of wetland thus eliminating all encroachment into Swamp and Perimeter Wetlands and allowing for a more realistic and useful yard.
- ✓ The house on Lot 2 was moved back farther from the Swamp and Perimeter Wetlands.

## *Example 5c:* Revised Subdivision Plan with Avoidance and Minimization (Option 2)



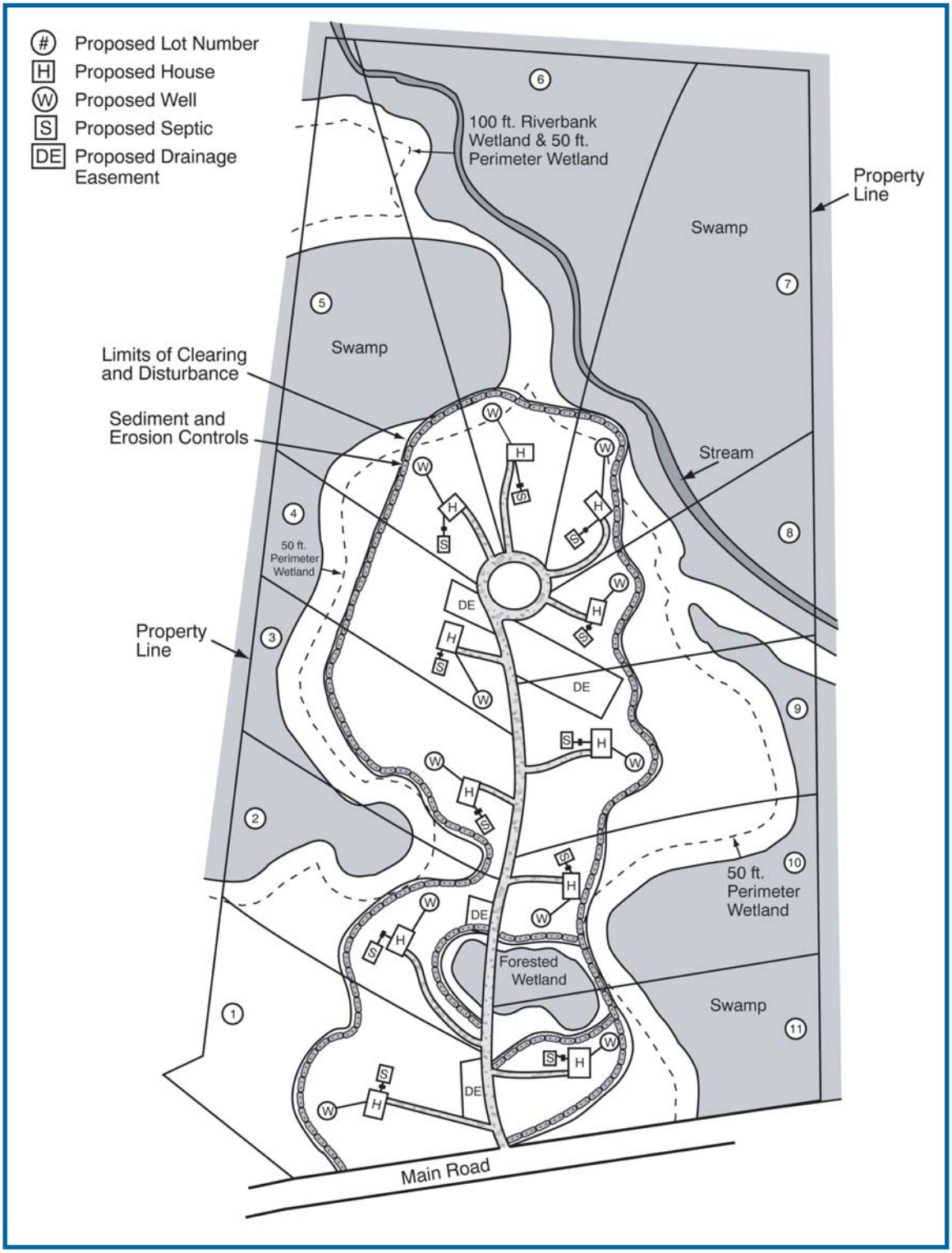

Example 5c

### *How wetland impacts were further minimized:*

- ✓ This is a better, and more realistic, example of impact avoidance and minimization because it incorporates techniques of cluster development and open space preservation, thereby disturbing less land.
- ✓ The lots are now rearranged to limit encroachment into vegetated wetlands with one narrow crossing instead of several crossings.
- ✓ The amount of land disturbed was also partly reduced by using shorter driveways.

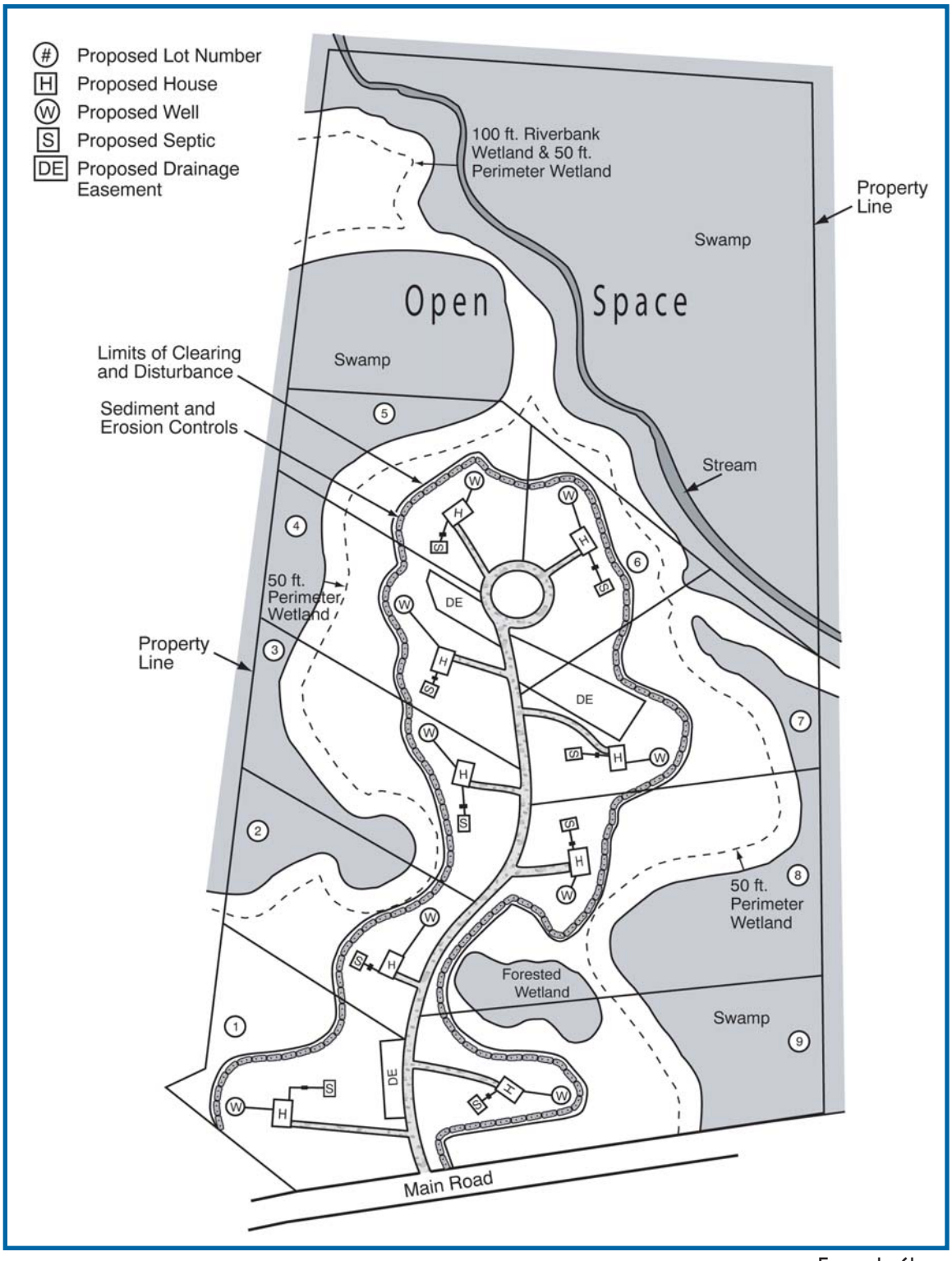
## *Example 6a:* **Subdivision Layout Original Design**

A comparison of examples 6a and 6b illustrates simple ways to avoid and minimize direct impacts to wetlands. In the original example, the main road to the subdivision fragments a Forested Wetland. It is also designed for 11 separate dwellings, many of which have very limited yard space, especially the ones located near the Stream. In addition, one of the drainage easements is directly adjacent to the Forested Wetland.




Example 6a

## *Example 6b*: **Subdivision Layout Revised Design**




Example 6b

### *How wetland impacts were minimized:*

- ✓ The developer received a variance from the town to allow for only one entrance and exit to the subdivision which initially avoided wetland impacts.
- ✓ Fragmentation of the Forested Wetland was completely avoided by curving the main entrance road.
- ✓ The drainage easement closest to the Forested Wetland was eliminated by making the other two easements slightly larger.
- ✓ The developer opted to reduce the Limits of Clearing and Disturbance on lots 3. 4. and 5 to leave a larger natural buffer between the backyard and the wetland.
- ✓ The lot shapes were reconfigured to propose only 9 dwellings, thereby maintaining a vegetated buffer to the left of the Stream and helping to protect wetland functions and values.
- ✓ Open space was dedicated via a municipal land trust on both sides of the Stream, thus helping to protect valuable wetland functions and values.

## Conservation Development

Wetland impacts may be further minimized by adhering to the ten-step Conservation Development Process and associated techniques, as described in *The Rhode Island Conservation Development Manual* (Flinker 2003). The Conservation Development process begins with site analysis and concludes with open space management.