Issue #16482: Pyplot hlines and vlines do not use the 'lines.color' property in rcParams by default

Justification for Bug Selection:

This bug was selected to be worked on because it seemed like it would be an appropriate level. When doing the first phase, requirements and definitions, this bug was well understood at a high level and we had an idea of where the bug would be in the code (among hlines, vlines, and the update functions called within). We expect that the hardest part of fixing these bugs, will be finding them in the code so a bug that wouldn't take long to find is the ideal.

The only risk associated with this bug is that it is a frontend issue that likely originates from the backend. This means it will involve classes/functions from pyplot, artist, and the backend. This means even if the bug is easy to find, it might be difficult to understand how the different parts work together.

Source of the bug:

The source of the bug is the default argument values in the functions.

In pyplot.py:

The functions hlines and vlines

$def\ hlines(y, xmin, xmax, colors = 'k', linestyles = 'solid', label = '', *,$
$\quad data = None, ** kwargs):$
$def\ vlines(x, ymin, ymax, colors = 'k', linestyles = 'solid', label = '', *,$
$\quad data = None, ** kwargs):$

In _axes.py:

The functions hlines and vlines

$def\ hlines(self, y, xmin, xmax, colors = 'k', linestyles = 'solid', label = '',$
$\qquad ** kwargs):$
$def\ vlines(self, x, ymin, ymax, colors = 'k', linestyles = 'solid', label = '',$
$\qquad ** kwargs):$

In collections.py:

Code snippet from class LineCollections

$if\ colors\ is\ None:$
$\quad colors\ =\ mpl.rcParams['lines.color']$

As shown above, the issue is when no value is given for the argument colors, it defaults to 'k' (the color black). But when the argument colors is given None, in LineCollections, it is set to the default.

Work Estimate:

Software Design Phase []
This bug was chosen because we had a general idea for where the bug would be, so it is estimated to take less time than other phases.

Implementing and Unit Testing Phase []

Integration and System Testing Phase []
This bug is very isolated, so this phase is expected to go quickly.

Operation and Maintenance []