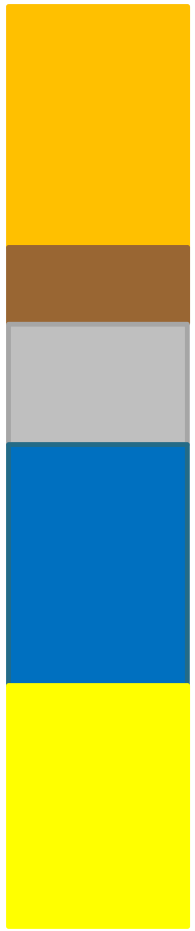
HARKINS SLOUGH RECHARGE AND RECOVERY FACILITY IMPROVEMENTS HISTORY

- 2019: *Update numerical groundwater-flow model to better represent subsurface conditions.*
  - Incorporate new geologic information on subsurface layering.
  - Extend 2007-2010 model simulation period through 2012.
  - Evaluate timing and movement of recharge mound.
- 2020-2021: *Evaluate historical recovery system performance to better understand sources and fate of basin recharge.*
  - Collate and assess historical water level, water quality, and extraction data.
  - Employ groundwater-model to determine water sources extracted by recovery wells.
  - Support Struve Slough diversion permit for project expansion.
- 2022: *Implement tests designed to increase recovery system yield*

HARKINS SLOUGH RECHARGE AND RECOVERY FACILITY IMPROVEMENTS – AMENDMENT NO. 3

75% of the Recovered Water is Extracted from the Gravel Layer
Reduce Uncertainty by Collecting More Data from the Gravel



Most monitoring wells are screened in the sand layer above or within the brown clay.

Project recovery wells are screened below the brown clay (3 wells), both above and below the clay (9 wells), and one (1) where the clay was not encountered.

- **Task 1**: Collect and Analyze Data from Existing Infrastructure.

  Test existing recovery wells for additional pumping capacity

- **Task 2**: Plan, Construct, and Document New Wells

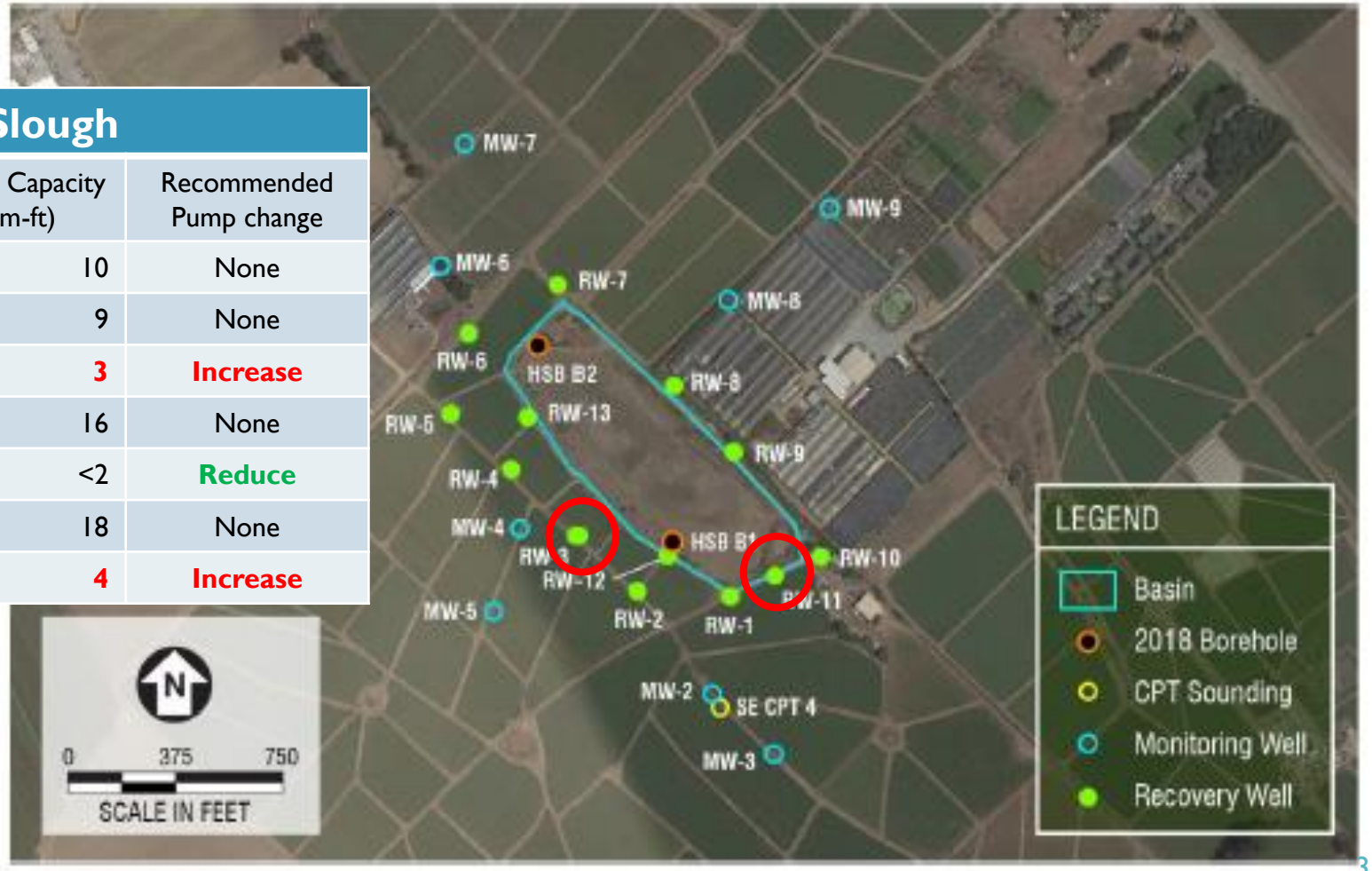
  Improve understanding of gravel layer yield.

  Design wells for ultimate use as recovery wells.

TASK 1: TEST EXISTING RECOVERY WELLS FOR ADDITIONAL CAPACITY

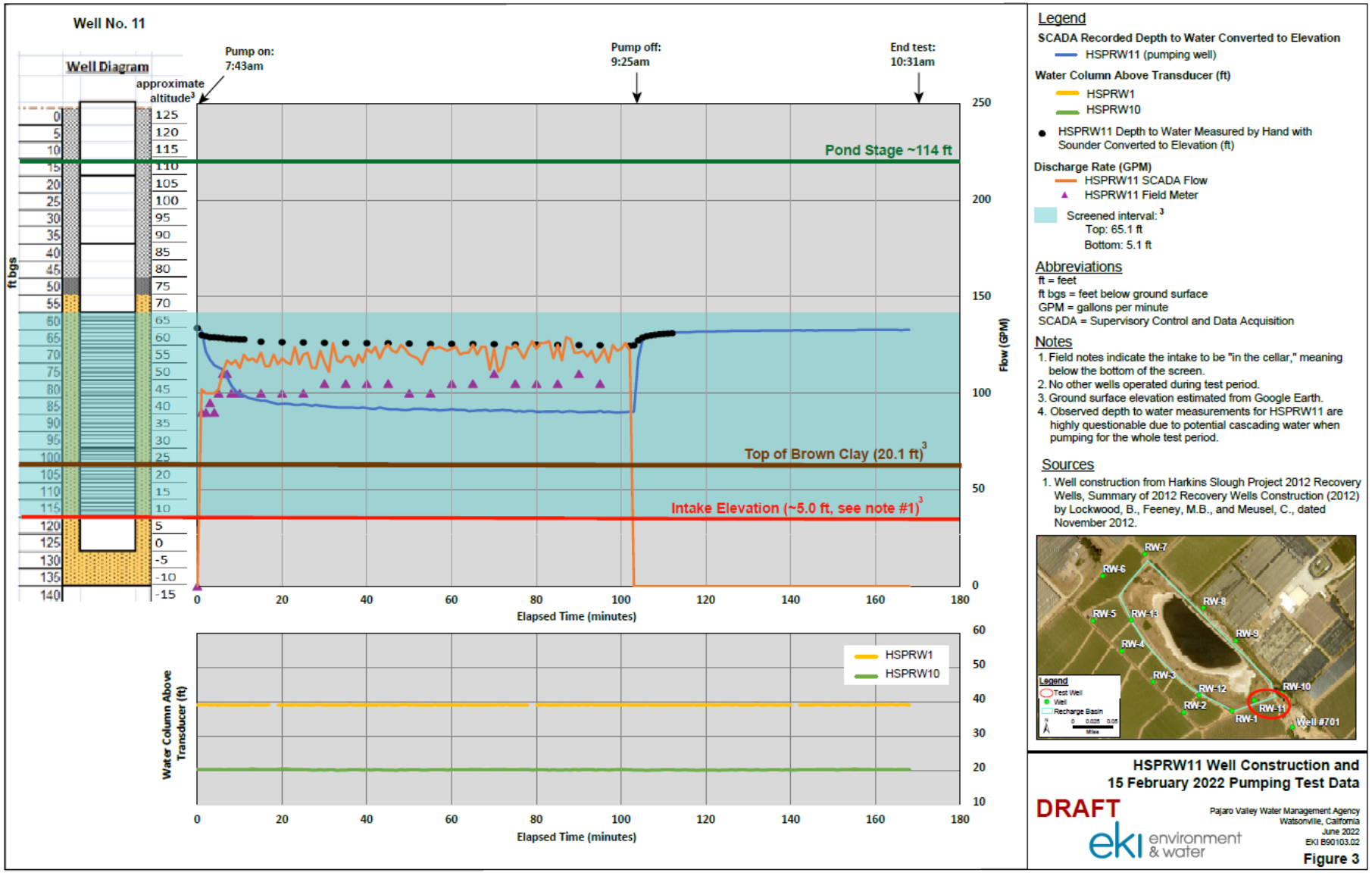
Estimated combined yield increases from 630 gpm to 760 gpm (+20%)

2022 Pumping Test Results, Harkins Slough				
well	Hp	gpm	Specific Capacity (gpm-ft)	Recommended Pump change
HSPRW-1	15	100	10	None
HSPRW-2	10	90	9	None
HSPRW-3	**10**	**95**	**3**	**Increase**
HSPRW-4	10	110	16	None
HSPRW-9	**15**	<80	<2	**Reduce**
HSPRW-10	10	88	18	None
HSPRW-11	**10**	**100**	**4**	**Increase**



TASK 1: TEST EXISTING RECOVERY WELLS FOR ADDITIONAL CAPACITY

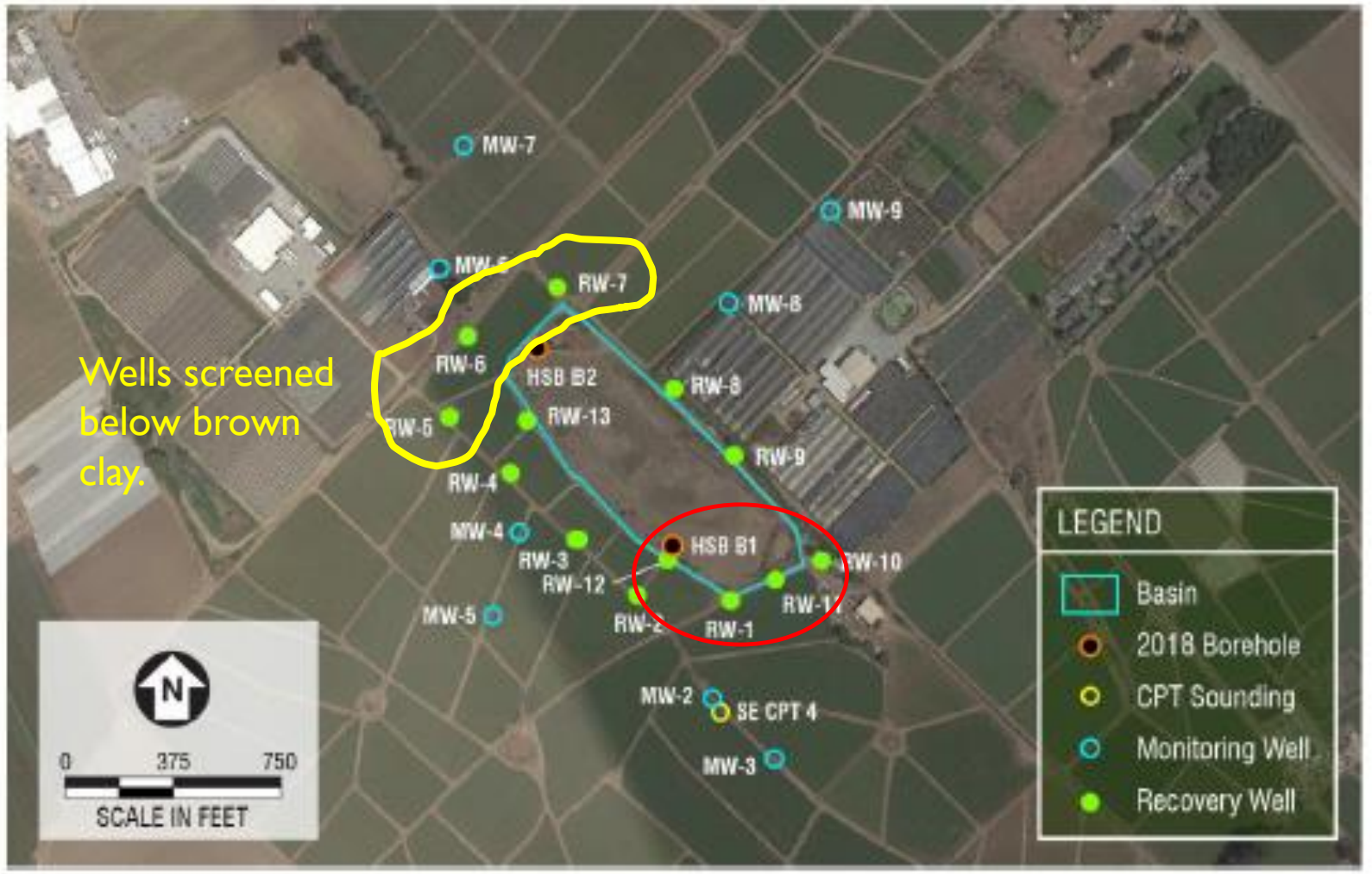
No measured water level decline in nearby recovery wells in response to test well pumping



TASK 2: PLAN, CONSTRUCT AND DOCUMENT NEW WELLS

Increase quantitative understanding of gravel layer's water storage and transmitting properties

- Utilize existing inactive recovery wells (5, 6 and 7) to measure conditions northwest (up-gradient) of basin.
- Construct new wells near southeast (down-gradient) edge of basin.
- New wells designed for eventual conversion to recovery wells.



PROPOSED NEW WELL LOCATIONS