CORNWELL
ENGINEERING GROUP

CREST HILL CCT STUDY

Cornwell Engineering Group, Inc.

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The City of Crest Hill (PWSID IL1970250) provides treated groundwater (GW) from seven current entry points: TP01 (Well 1), TP05 (Well 7), TP03 (Well 4), TP06 (Well 8), TP07 (Well 9&12), TP08 (Well 10), and TP09 (Well 11). The future supply of City of Chicago treated surface water via the Grand Prairie Water Commission (GPWC) will be via the existing TP08 (Well 10) site on Caton Farm Road and at 2305 Caton Farm Road.

TP07 (Wells 9 and 12), TP08 (Well 10), and TP09 (Well 11) do not serve areas of the system with homes older than 1986 in the Crest Hill system. In fact, these wells do not serve areas of the system with homes older than 2000. The Stateville Correctional Center (IL1977910), which does have some LSLs, is a wholesale water customer of the City. They are expected to perform their own CCT evaluation separate from the Crest Hill study, but using Crest Hill's TP09 (Well 11) water for the acclimation phase.

The remaining water sources [TP01 (Well 1), TP05 (Well 7), TP03 (Well 4), and TP06 (Well 8)] supply the southern parts of the system. These wells all have similar water quality. Wells 4 and 8 supply some older homes but Crest Hill staff have confirmed that there are no CuLS in areas served by these wells. Wells 1 and 7 supply the only areas in Crest Hill with CuLS. These two wells have nearly identical water quality, except for a higher dose of blended phosphate at Well 1. Harvested pipes will be collected in areas served by TP01 (Well 1) and TP05 (Well 7), with some pipes used for scale analysis and others used for flow through stuidies as outlined in the August 22, 2023, Crest Hill Desktop Report submitted to IEPA. The water used in flow through testing will be from TP01 (Well 1) from chlorinated water prior to blended phosphate addition.

The proposed CCT study for Crest Hill is outlined in Figure 3 and includes a revised desktop study submitted for review to IEPA. Task 3b (identification of "unknown" service lines) has already been completed by the City. The remainder of the tasks, once the test plan is approved by IEPA, will include the tasks outlined in the desktop study (summaried in Figure 1Figure 3to be conducted in parallel:

- collect distribution system WQP samples (principally orthophosphate (o-PO_4) and total phosphate (t-PO_4) residual measurements
- collect CuLS specimens for scale analysis

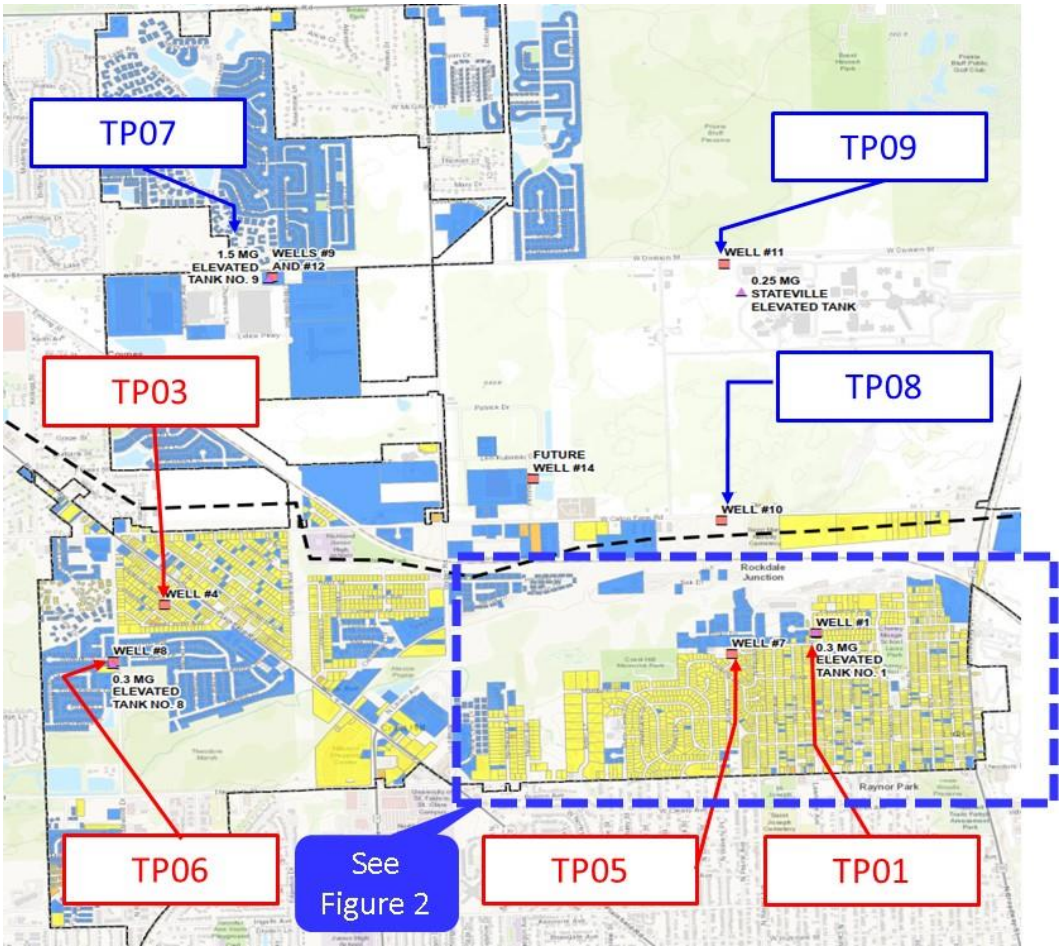

Figure 1. Map of System and Entry Points

Figure 2. Southest Area of System Where Confirmed CuLS Present

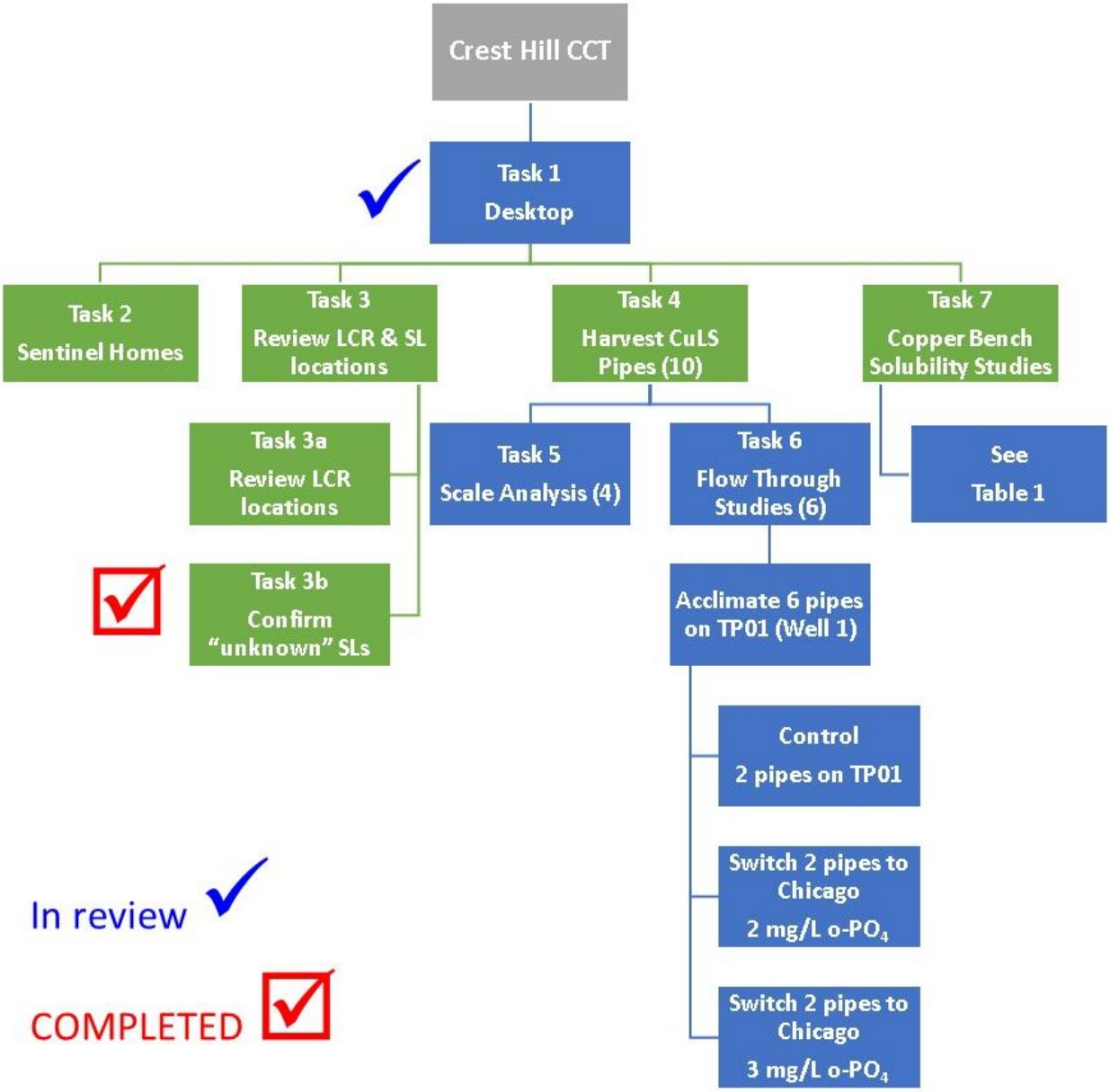

Figure 3. Summary of Phase I Tasks

Table 1. Batch copper solubility studies, in duplicate (12 coupons), using Well 1 and Chicago source water.

Water source	pH adjustment	o-PO4 adjustment	HOCl/NH_2Cl	Notes
Well 1	None	None	Match HOCl	Represents all other wells
Well 1	Increase to 7.1†	None	Match HOCl	
Well 1	None	1 mg/L o-PO_4	Match HOCl	
Well 1	None	2 mg/L o-PO4	Match HOCl	
Well 1	None	3 mg/L o-PO4	Match HOCl	
Chicago	None	2 mg/L o-PO4	Match HOCl	Switch to Chicago

PROJECT MANAGEMENT AND MEETINGS

Intermediate updates will be held with the city and IEPA as needed. The budget includes some labor for these meetings, as well as other meetings with city or IEPA not included in the budget for the above tasks.

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The cost breakdown per task is summarized below.

Description	Total
Phase I	
Desktop Study (in Review by IEPA)	$0
Phase II	
Verify CuLS for Type "1A" LCR sites	City tasks
Verify Materials at "Unknown" SLs	City tasks
Harvest CuLS specimens	City tasks
Document areas with no CuLS	City tasks
Pipe Scale Analysis (areas served by TP06)	$28,000
Harvested Pipe Study - acclimate to TP06	$56,000
Harvested Pipe Study - Switch to Chicago	$107,000
Lead bench solubility study	$61,000
Report	$32,000
Total	**$284,000**