



Lean 6-Sigma Program



Department of Toxic Substances Control

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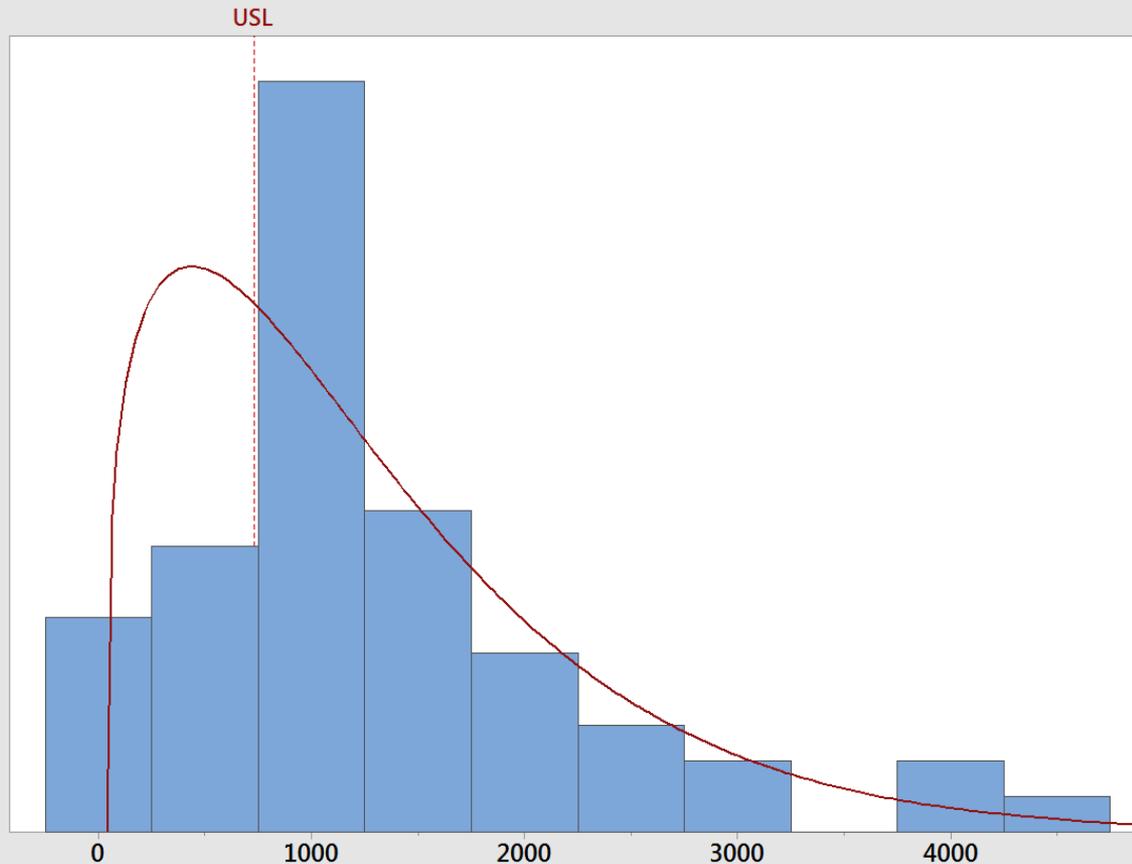
July 27, 2016



Reducing time for Remedy Selection in the RCRA Corrective Action process

- ❖ **Problem Statement:** *Although DTSC has implemented best management practices, it still takes too long to achieve Remedy Selection.*
- ❖ **Objective:** *To achieve 80% completion of the Remedy Selection process within 2 years for a selected group of sites.*
- ❖ **Project Team:**
 - ❖ *John Bystra – Team Green Belt, RCRA Corrective Action expert*
 - ❖ *Laura Kaweski – Senior Environmental Planner/CEQA expert*
 - ❖ *Riz Sarmiento – Toxicologist/data quality objectives expert*
 - ❖ *Laszlo Saska – Senior Hazardous Substances Engineer/CERCLA expert*
- ❖ **Extended Team Members:**
 - ❖ *Ryan Batty, Martin Herrmann, Ray LeClerc, Noel Shrum, Dan Ward*

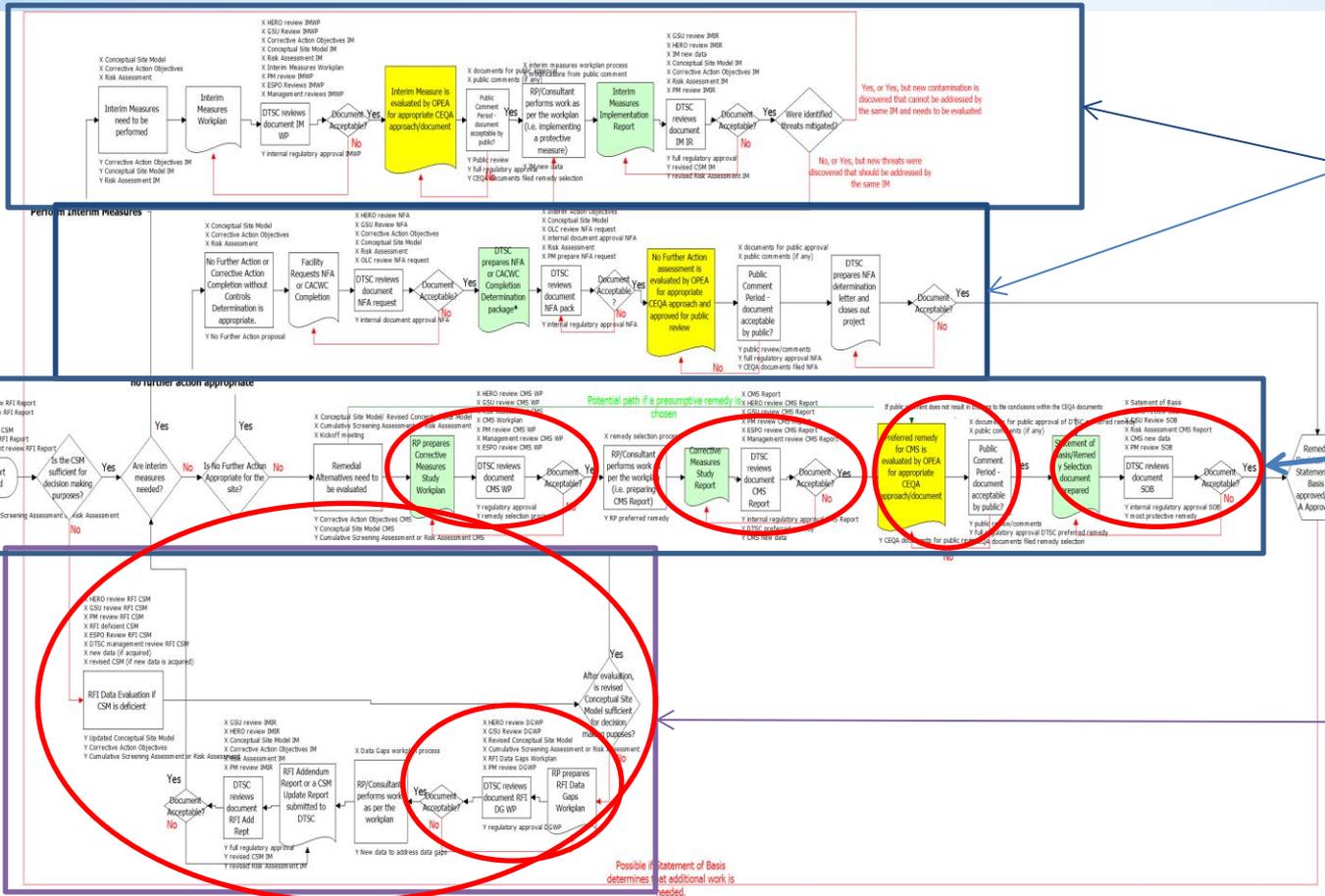
Baseline Capability



- ❖ Current average time – 1263 days (3.5 years)
- ❖ Current maximum time – Over 4000 days (10.9 years)

Only 24% of sites presently complete remedy selection within 2 years

Initial Process Map



❖ These sub-processes were found not to greatly impact remedy selection process time

❖ This is our main remedy selection process

❖ Analysis confirmed a rework loop causing additional delays that should have been addressed upstream

❖ Rework loops and waiting in our process are causing significant delays



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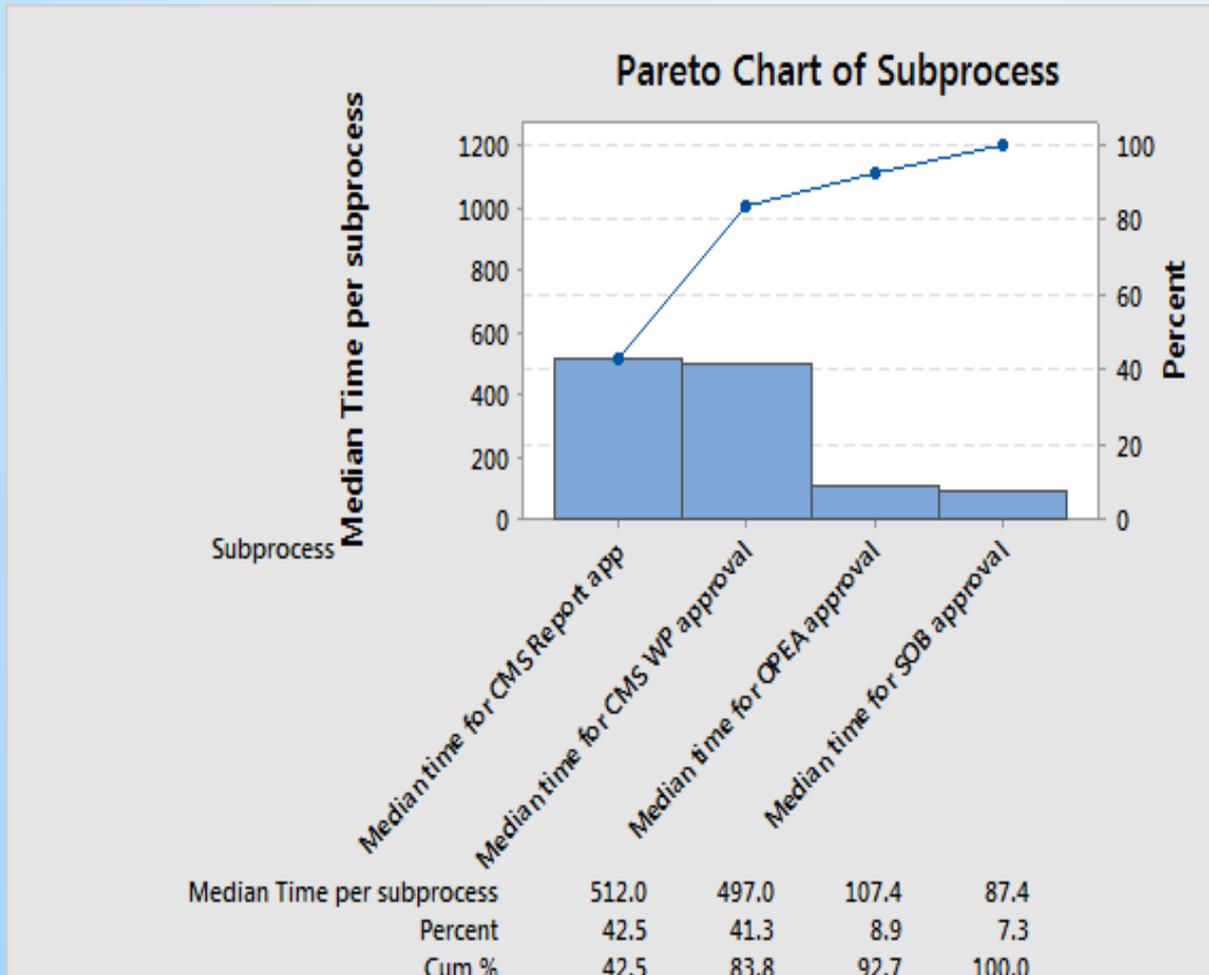


Analysis Tools

- ❖ Process Map
- ❖ Capability Analysis
- ❖ Fishbone Diagram (not shown)
- ❖ Pareto Chart
 - ❖ Take-away: Distribution of time spent (Analytical Finding 1)
- ❖ Takt-Time and Cycle Time Analyses
 - ❖ Take-away: Backlog build-up (Analytical Finding 2)
- ❖ Failure Modes and Effects Analysis (FMEA)
 - ❖ Take-away: Critical inputs (Critical X's)



Key Analytical Finding 1: Identifying process steps with long completion times



- ❖ CMS Workplan takes 41.3% of remedy selection process time
- ❖ CMS Report takes 42.5% of remedy selection process time
- ❖ Remaining 2 subprocesses only take 16.2% of total time.

Key Analytical Finding 2 – Comparison of takt time with cycle time

- ❖ Document completion time measurements were taken
 - ❖ Historically, we receive more documents in our process than we complete, creating backlog
 - ❖ DTSC continues to have backlog for the first two sub-processes in our overall process
- ❖ Without a significant way in how we change the way we work...
 - ❖ We will not be able to take care of problems in a timely fashion
 - ❖ We will not be able to take on new duties without letting our current duties languish



Critical X's (root causes of problems)

Critical Input	Description	Process Impact
Conceptual Site Model	This is a description of the site contaminants and how and where they might be going over time	Crucial: this is the basis for our remedy.
Remedial Action Objectives/Cleanup Objectives	Cleanup goals to ensure that a) human health and the environment are being protected, and; b) That the source(s) of release are being controlled.	High: Without these, an appropriate remedy cannot be chosen.

Additionally, the process is too complex, and this leads to two issues:

- ❖ Communication failures and rework: Issues not resolved and documented at the beginning of the remedy selection process cause significant rework
- ❖ Inability to effectively track where we are in the process due to incomplete resolution at each process step, which increases communications complexity and rework loop issues



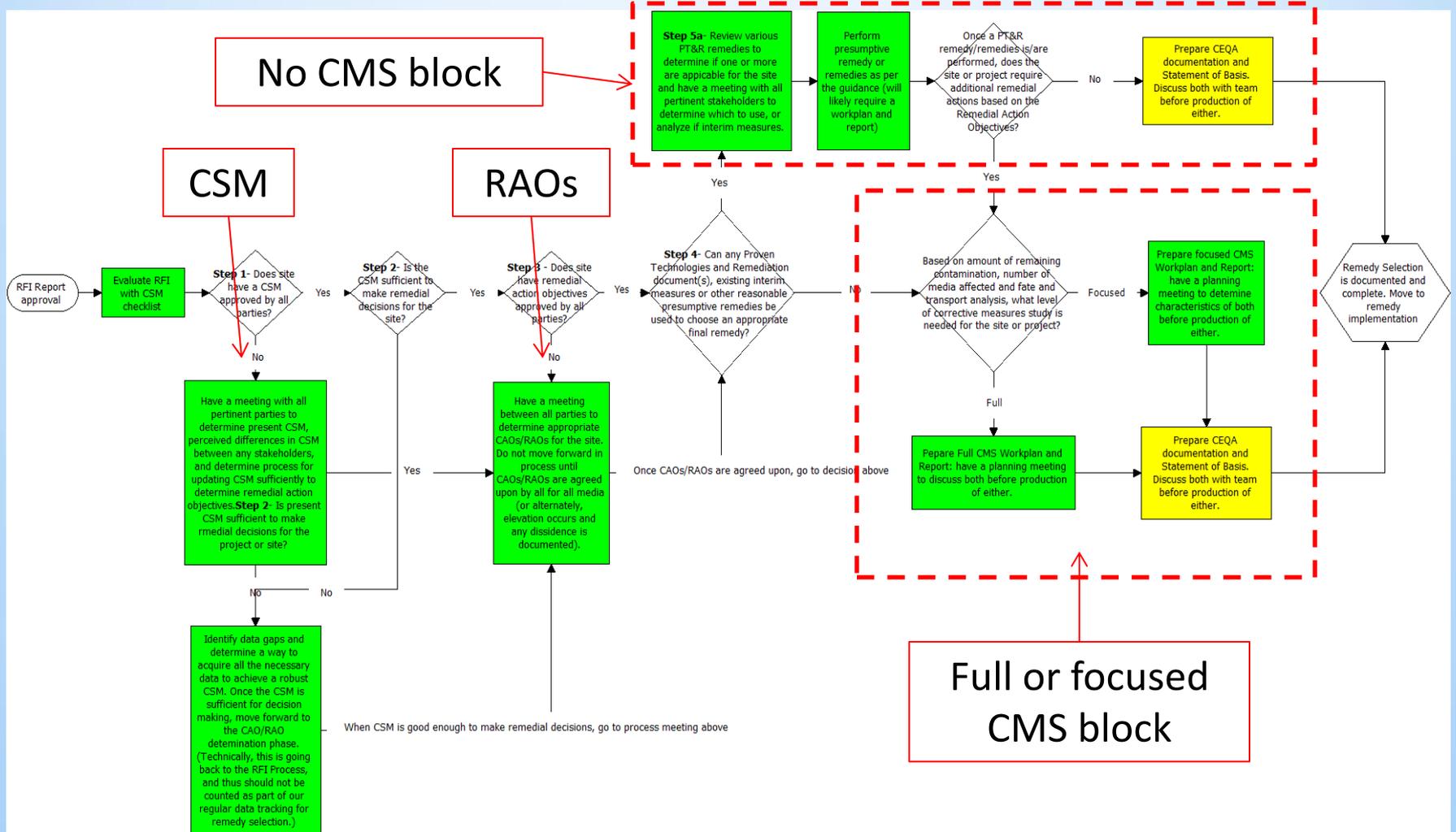
Improvement Techniques

DTSC's Corrective Action Program will implement the following

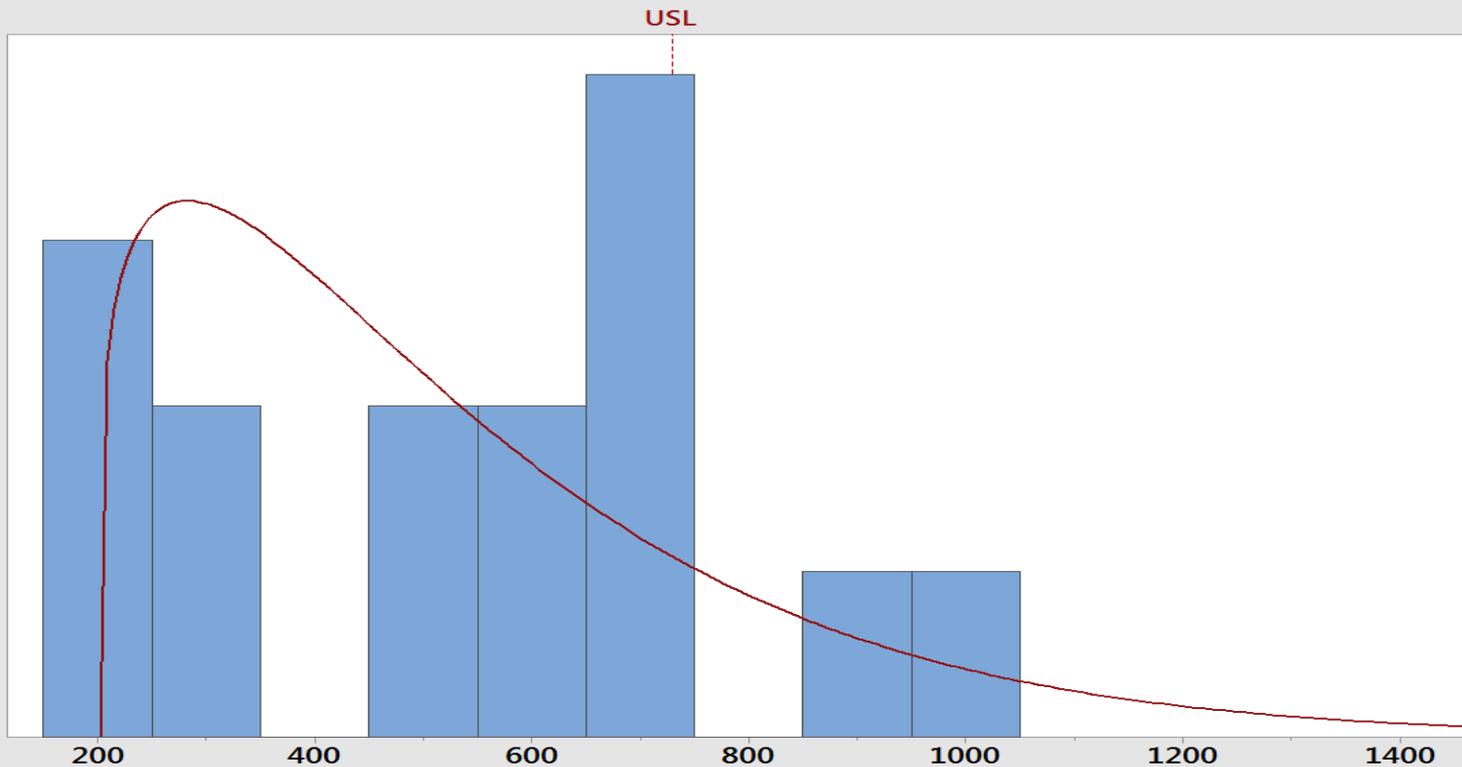
- ❖ Create:
 - ❖ An improved process map
 - ❖ A checklist to track our critical Xs
 - ❖ A visual planning tool
- ❖ Front end process discussions and reviews
- ❖ CMS Workplans and CMS Reports – streamline or remove
- ❖ Training
- ❖ Control plan
- ❖ Promote elevation of informal disputes



New Process Map



New Capability Analysis



- ❖ Expected average remedy selection time – 534 days
- ❖ Expected remedy selection completion: ~80% within 730 days

Control Plan

- ❖ Using our Environmental Database (i.e. Envirostor) to track remedy selection projects
- ❖ Setting up visual planning to allow each office, each unit, and each project manager and support staff to see current status of these projects occurring in their area
- ❖ Monthly remedy selection process update meetings with all stakeholders to make ensure Standard Operating Procedures are being followed and that projects are meeting performance objectives
- ❖ Next Six Sigma project recommended will be to address upstream problems that may affect some projects mistakenly in the remedy selection process



Additional Benefits

- ❖ More satisfied customers
- ❖ Appropriate remedies will be performed far faster
- ❖ Government Performance and Results Act 2020 goals
- ❖ Reducing backlog:
 - ❖ No longer contributing to backlog due to more efficient process
 - ❖ New process will be applied to existing sites to further reduce backlog



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