



# Lean 6-Sigma Program



## *California Department of Food and Agriculture*

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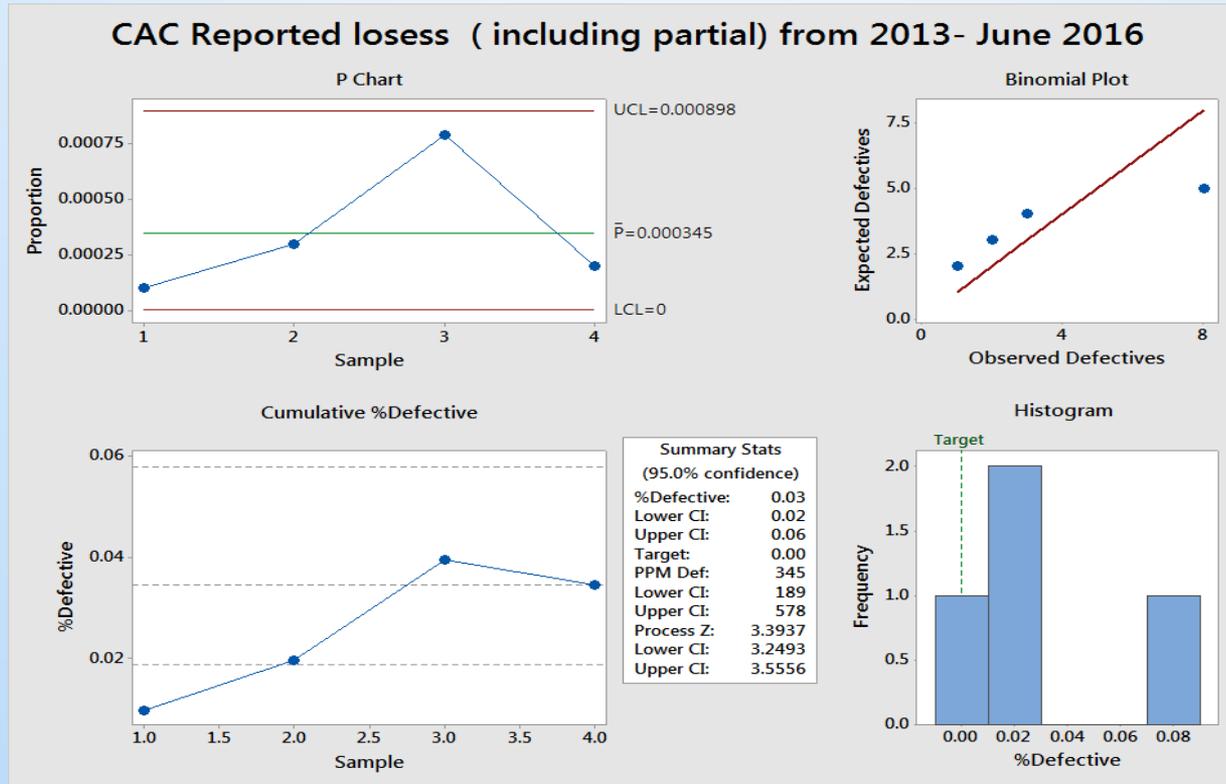


# *Standardization and Implementation of Chain of Custody Protocols*

- ❖ **Problem Statement:** Standardization and Implementation of Chain of Custody Protocols - From Sample Receipt to Sample Disposal.
- ❖ **Objective:** *To eliminate sample loss or premature disposals in the Center to a minimum of a six sigma defect level (<4 losses per million samples*
- ❖ **Project Team:**
  - ❖ *Sarva Balachandra– Green Belt*
  - ❖ *Jim Echelberry– Team Member - Laboratory Technician*
  - ❖ *Stephen Siegel – Team Member – Senior Environmental Scientist*
  - ❖ *Stan Kobata – Team Member – Senior Environmental Scientist*
  - ❖ *Todd Yee- Team Member- Environmental Scientist*



# Baseline Capability



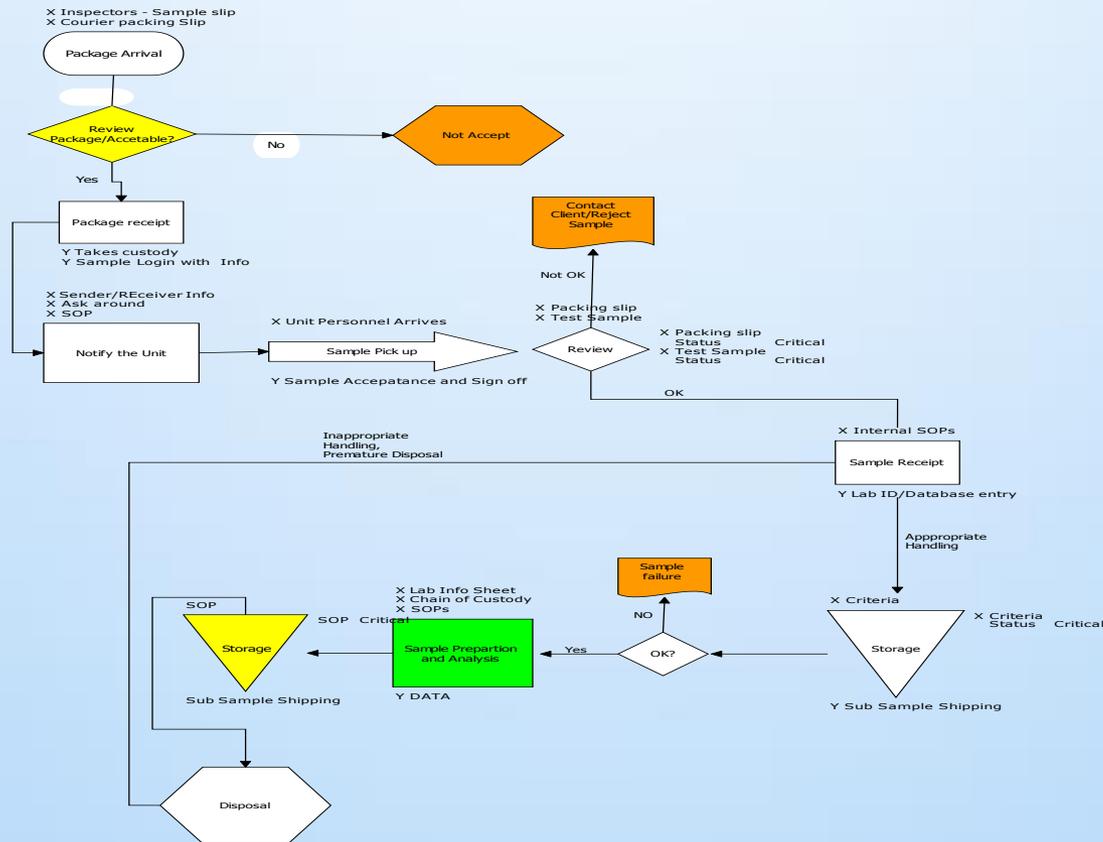
- Overall loss rate is 0.03% with a lower CI of 0.02 and an upper CI of 0.06 % respectively.
- Process depicted is stable - within limits.

# *Analysis Tools*

- ❖ Capability Analysis
- ❖ Process roadmap
- ❖ Fishbone Diagram
- ❖ Pareto chart
- ❖ Failure Mode and Effects Analysis
- ❖ Corrective Action Reports

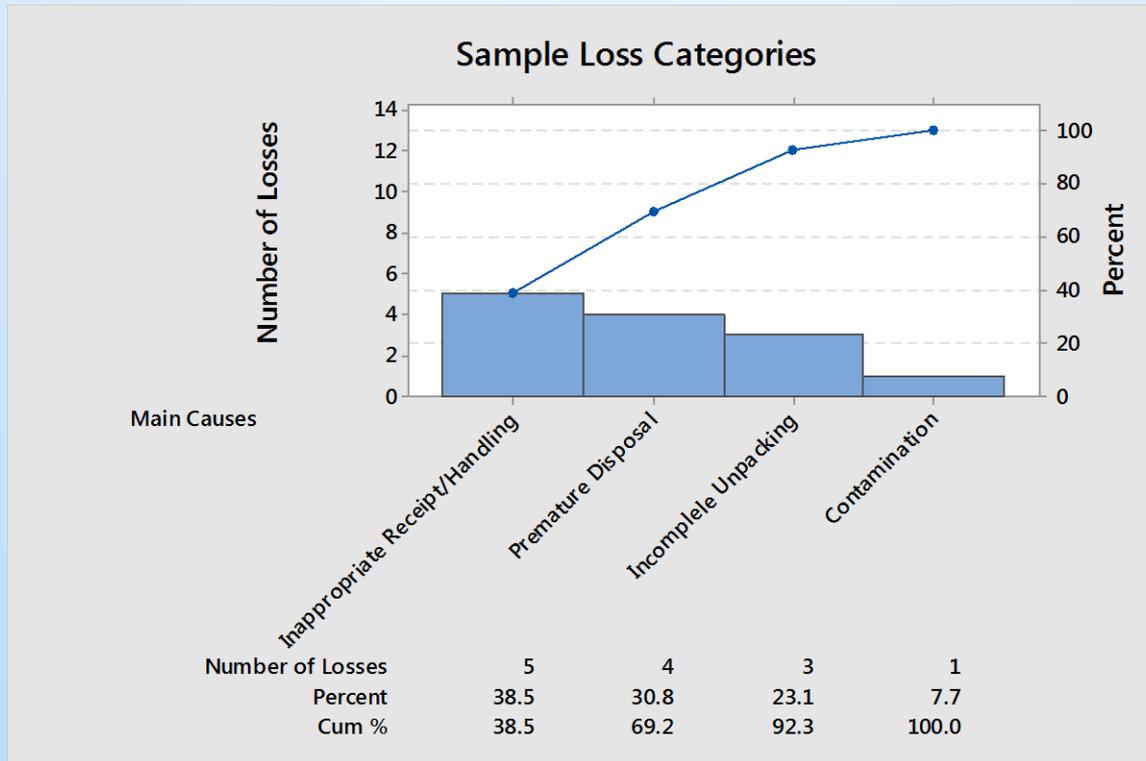


# Initial Process Map



❖ Steps of sample movement requiring multiple reviews until the sample reaches the value added step.

# Pareto chart for Sample Losses



Even though losses are sporadic and rare

- ❖ 40 % of the loss resulted because of insufficient standards or not applying the standards appropriately.
- ❖ 30 % resulting from disposing the samples prematurely.

# *Critical X's (root causes of problems)*

- ❖ Not applying the protocols as required
- ❖ Inadequate procedures
- ❖ Lack of dedicated Receiving Room Assistant
- ❖ Delayed sample receipt
- ❖ Storage equipment failure
- ❖ Sample Preparation and Analysis related losses

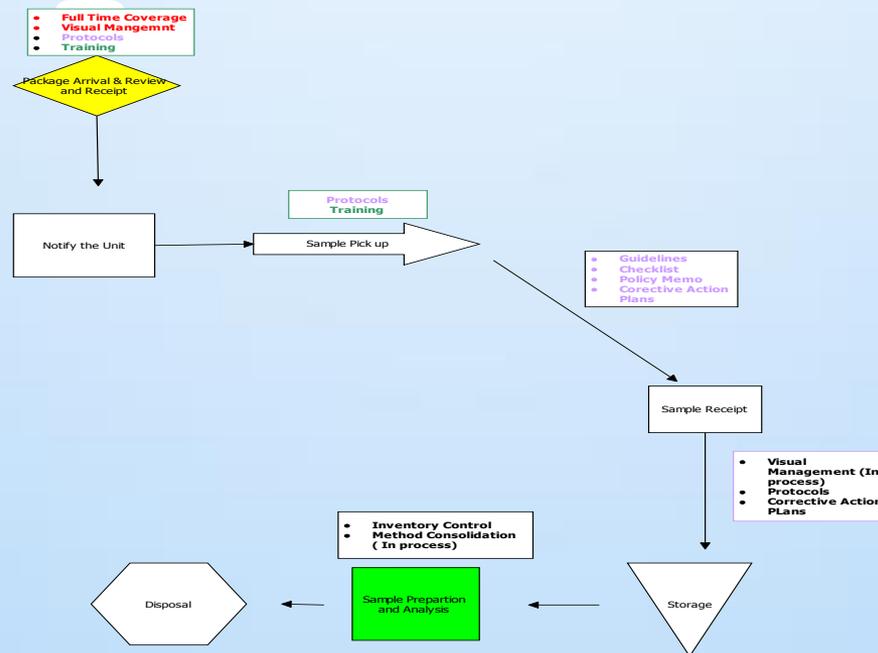


# *Improvement Techniques*

- ❖ CAC Policy to document all events related to sample viability
- ❖ Sample Receiving and Handling Standards
- ❖ Training
- ❖ Staffing in the Receiving area ( includes lunch break)
- ❖ Visual Management (in progress)
- ❖ Checklists
- ❖ Corrective Action Plans



# Updated Process Map Highlighting the areas of Improvement



# *New Capability Analysis*

- ❖ New capability analysis will take a year at least
  
- ❖ The improvements will significantly eliminate the loss events due to the categories
  - Inappropriate sample receipt/handling
  - Premature disposal
  - Incomplete packing
  - Contamination
  - Any potential Sample Preparation and Analysis issues



# Control Plan

- ❖ Monitoring improvement effectiveness on a quarterly basis
- ❖ Periodical review of Sample Management guidelines (Branch/Section specific)
- ❖ Training plan
- ❖ Staffing
- ❖ Corrective Actions - Feedback review
- ❖ Scheduled Audits
- ❖ Laboratory inventory control and efforts to consolidate methods
- ❖ Possibility of upgrading the storage equipment as resources become available



# *Additional Benefits*

- ❖ Ability of provide effective laboratory service
- ❖ Improved quality standards
- ❖ Increased customizer satisfaction
- ❖ Increased client confidence and service opportunities
- ❖ Opportunities to apply lean principles in other areas of laboratory operations



# *Green Belt Contact Information*

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