



# Lean 6-Sigma Program



## *State Water Resources Control Board Division of Water Rights*

***Justine Herrig***  
**(Project Greenbelt)**

***Matthew McCarthy***  
**(Project Champion)**

***Barbara Evoy***  
**(Executive Sponsor)**

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# *Reduction in Time in Processing Minor Protested Water Right Applications*

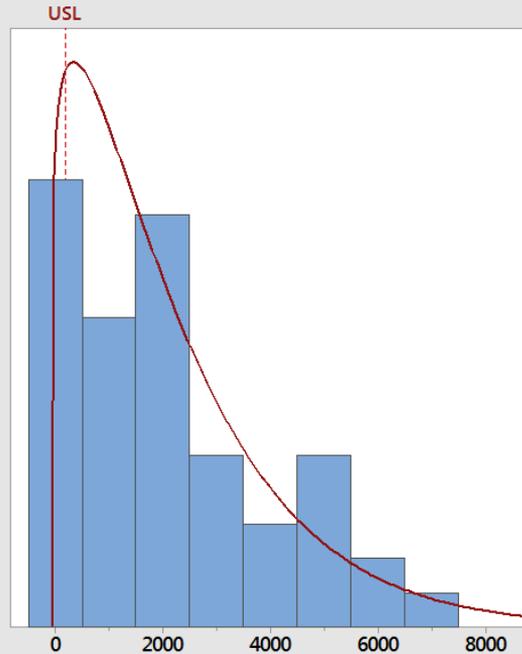
- ❖ **Problem Statement:** Making a decision on a minor protested application for a water right permit has become an extremely lengthy process.
- ❖ **Objective:** 95% of the time make a decision on a minor protested application within 180 days of the date that the State Water Board intervenes in the protest process.
- ❖ **Project Team:**
  - ❖ *Justine Herrig – Greenbelt*
  - ❖ *Matt McCarthy – Champion*
  - ❖ *Amanda Montgomery – Process Owner*
  - ❖ *Barbara Evoy – Executive Sponsor*
  - ❖ *Nathan Weaver – Legal*
  - ❖ *Kate Gaffney – Engineer*
  - ❖ *Austin Hall – Engineer*
  - ❖ *Gesenia Hernandez – Clerical*
- ❖ **Part-Time Team Members:**
  - ❖ *Angela Nguyen-Tan*
  - ❖ *Jennifer Dick-McFadden*
  - ❖ *Darren Tran*
  - ❖ *Mark Matranga*
  - ❖ *Mitchell Moody*

# Baseline Capability

Process Capability Report for Minor Apps with Extended Protest Resolution  
Calculations Based on Weibull Distribution Model

Process Data	
LSL	*
Target	*
USL	180
Sample Mean	2157.88
Sample N	50
Shape	1.1551
Scale	2346.68
Threshold	-73.4325

Observed Performance	
% < LSL	*
% > USL	96.00
% Total	96.00

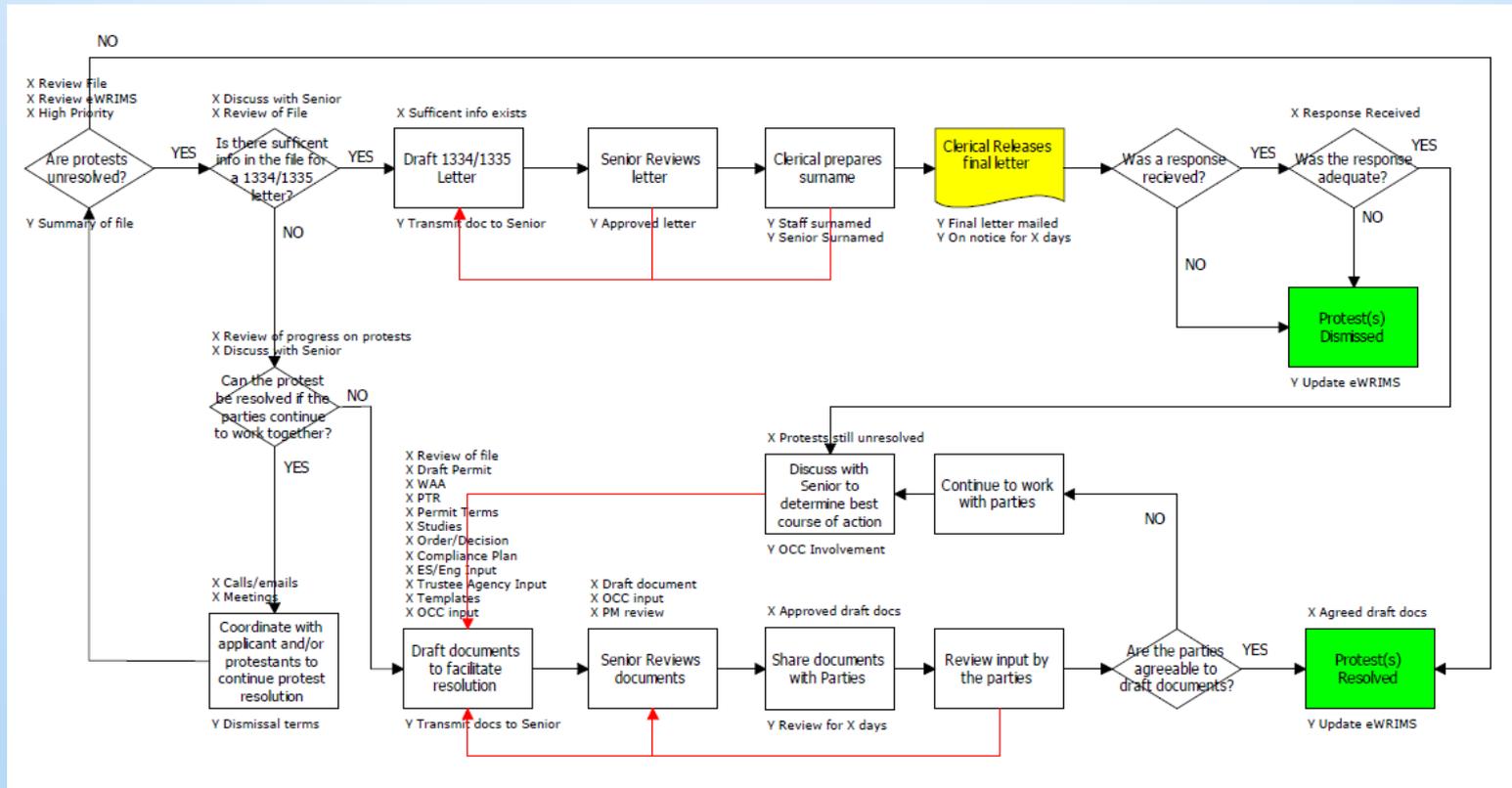


Overall Capability	
Pp	*
PPL	*
PPU	-0.14
Ppk	-0.14

Exp. Overall Performance	
% < LSL	*
% > USL	92.64
% Total	92.64

- ❖ Current processing time averages 6 years.
- ❖ Current maximum to process is 19.3 years.
- ❖ 50 samples. Only 1 sample was processed within the target goal of 180 days.

# Initial Process Map



- ❖ Only two Value-Added steps.
- ❖ Multiple levels of review and rework loops.
- ❖ Some steps had no clear direction on moving forward which exacerbated Non-Value-Added steps.

# Analysis Tools

- ❖ Fishbone Diagram
- ❖ Failure Modes and Effects Analysis (FMEA)
- ❖ Hypothesis Testing (Mood's Median Test)
- ❖ Lean Analysis Tools:
  - ❖ Process Step Time
  - ❖ Work-in-Progress Analysis
  - ❖ Work Activity Charts
- ❖ Value Stream Diagram

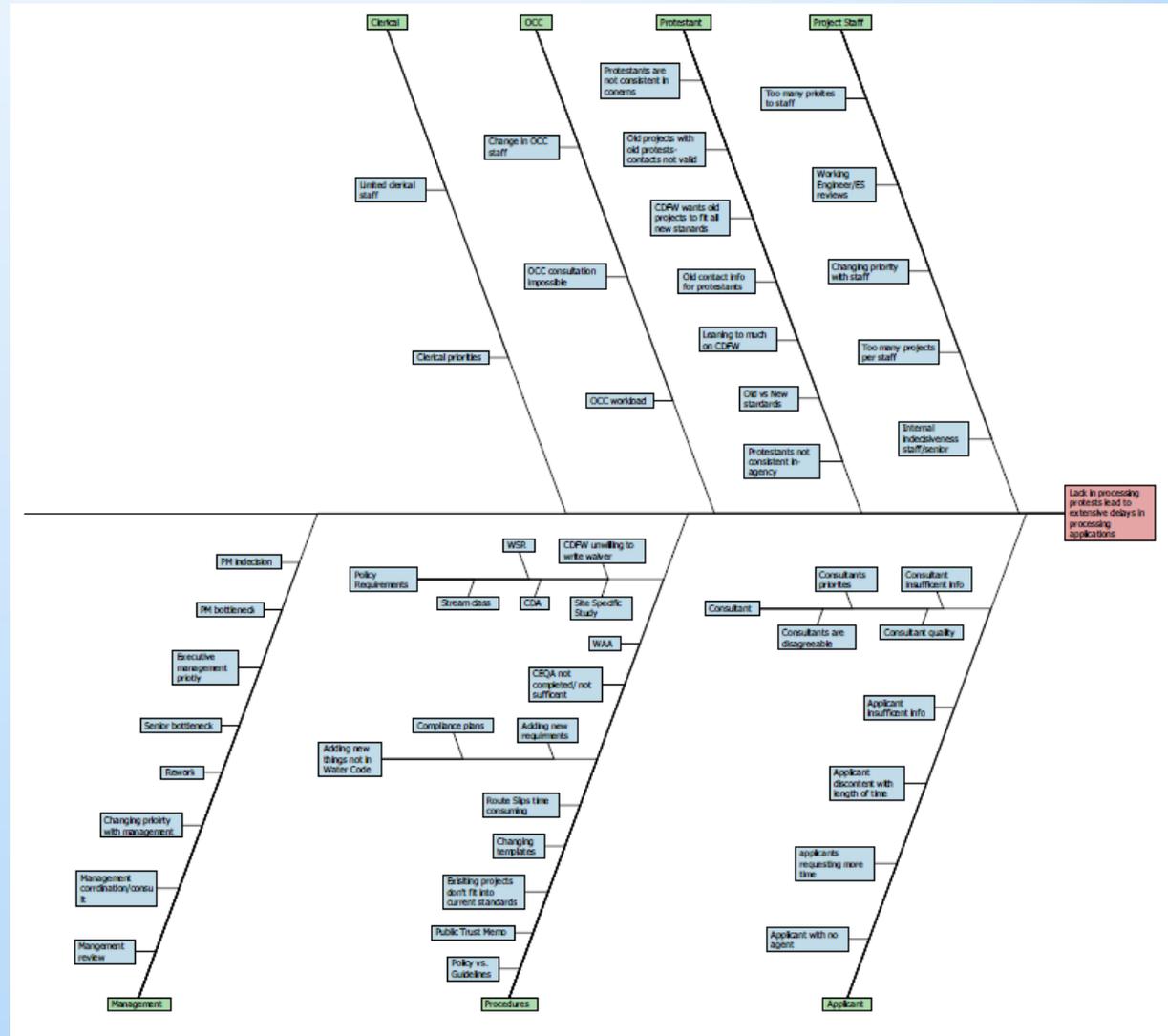


# Key Analytical Finding 1 – Fishbone Diagram

❖ Stems of the fishbone include:

- ❖ Applicants
- ❖ Protestants
- ❖ Project Staff
- ❖ Management
- ❖ Procedures
- ❖ Legal (OCC)
- ❖ Clerical

❖ Determined that variability occurs throughout the entire process between all levels of involvement.



# Key Analytical Finding 2 – FMEA

Step#	Process Map - Activity	Key Process Input	Potential Failure Mode	Potential Failure Effects	SEV	Potential Causes	OCC	Current Controls	DET	RPN
7	Process Map - Senior Review	Staff Document for review	change in direction by mgt w/o adequate inclusion of project staff	Rework/staff-mgt delay	8	Mgt Style	10	none	10	800
6	Draft documents to facilitate resc	Trustree agency input	Differing priorities/no response	Time delay	8	Not decisive	10	none	10	800
7	Process Map - Senior Review	Staff Document for review	change in direction by mgt w/o adequate inclusion of project staff	Rework/staff-mgt delay	8	Mgt Style	9	none	10	720
3	1335 Letter	clerical processing	workload	time	7	backlog	10	none	10	700
7	Process Map - Senior Review	Staff Document for review	Not enough info/not correct info	Rework	8	Info does not exist	8	None	10	640
6	Draft documents to facilitate resc	Staff input	No template	extensive review	8	No template exists	8	none	10	640
6			Lack of knowledge/confidence/support	Bad quality	8	Indecision	8	none	10	640
6		Templates	No set templates	time/rework	8	Not updated	8	none	10	640
6		Trustree agency input	Differing internal policies	Time Delay	8	DFW policy	8	None	10	640
2	Is there sufficient info in the file f	Discuss with Senior	controversial; need input by management	increased time/delays	8	Public/political interest	8	none	10	640
2					8	Location	8	none	10	640
2			Senior differs in opinion	rework/time delay	6	Lack SOP	10	none	10	600

## ❖ Common Failures:

- ❖ Indecision
- ❖ No template or insufficient templates
- ❖ Lack of knowledge, experience, or direction

## ❖ Common Effects of Failures:

- ❖ Time delays
- ❖ Rework



# Critical X's

- ❖ Indecision by staff, senior, and management due to the project-specific nature of applications.
- ❖ Lack of accountability for staff, senior, management, applicant, protestant, or anyone else involved.
- ❖ Lack of clear direction on making decision internally and externally.
- ❖ Lack of communication, lack in sharing of knowledge, lack of training.

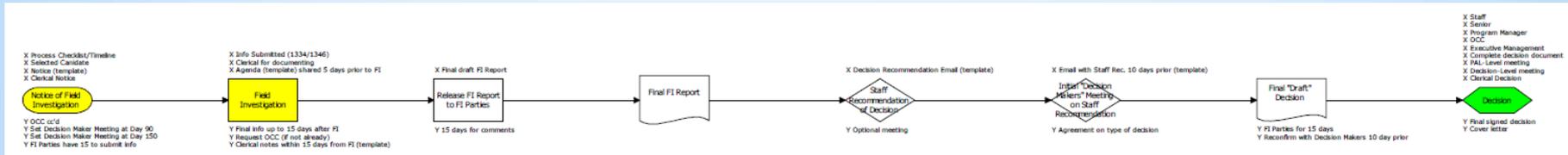


# *Improvement Techniques*

- ❖ Clear and concise process map and route slip.
- ❖ Implementation of timeline milestones.
- ❖ Inclusion of staff, senior, and management early on within process.
- ❖ Visual management to track status of projects moving through the process.
- ❖ Templates and guidance documents.
- ❖ Staff training.



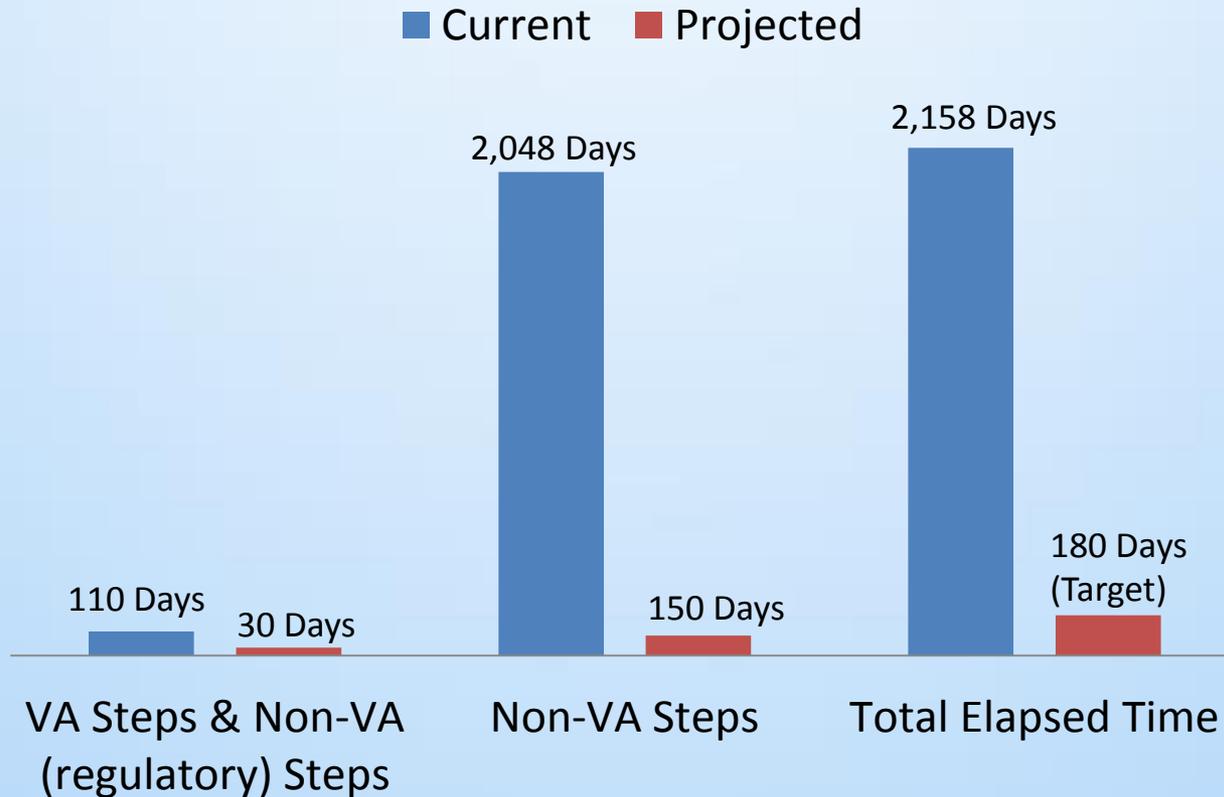
# New Process Map



- ❖ One uniform pathway for all applications that fit within the scope.
- ❖ Clear and concise pathway for projects moving through process.
- ❖ Non-Value-Added steps have been reduced and the remaining have been enhanced to be more efficient.
- ❖ Upper management involvement is earlier in the process.



# New Capability Analysis (Expected)



❖ Continual evaluation of process capability as new data is gathered.

# *Control Plan*

- ❖ Track progress of projects using visual work plans.
- ❖ Annual staff training on the process with review of completed projects.
- ❖ Annual review of process documents.
- ❖ Monthly review of active projects using visual tracking sheets.
- ❖ Annual audits with statistical monitoring.
- ❖ Maintain candidate database for past, present, and future projects.



# *Additional Benefits*

- ❖ Improved morale for project staff.
- ❖ Improved customer satisfaction for applicants.
- ❖ Improved implementation of permit terms and conditions to protect environmental resources and other lawful users of water.
- ❖ Helps to reduce the total time to process minor applications.
  - ❖ Utilize an implementation plan to elevate current pending applications in order to reduce the existing backlog.



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