BDCP UPDATE SCVWD

JANUARY 27, 2014

Presentation Purpose

Specific request for a focused discussion on Conservation Measure 1.

AGENDA

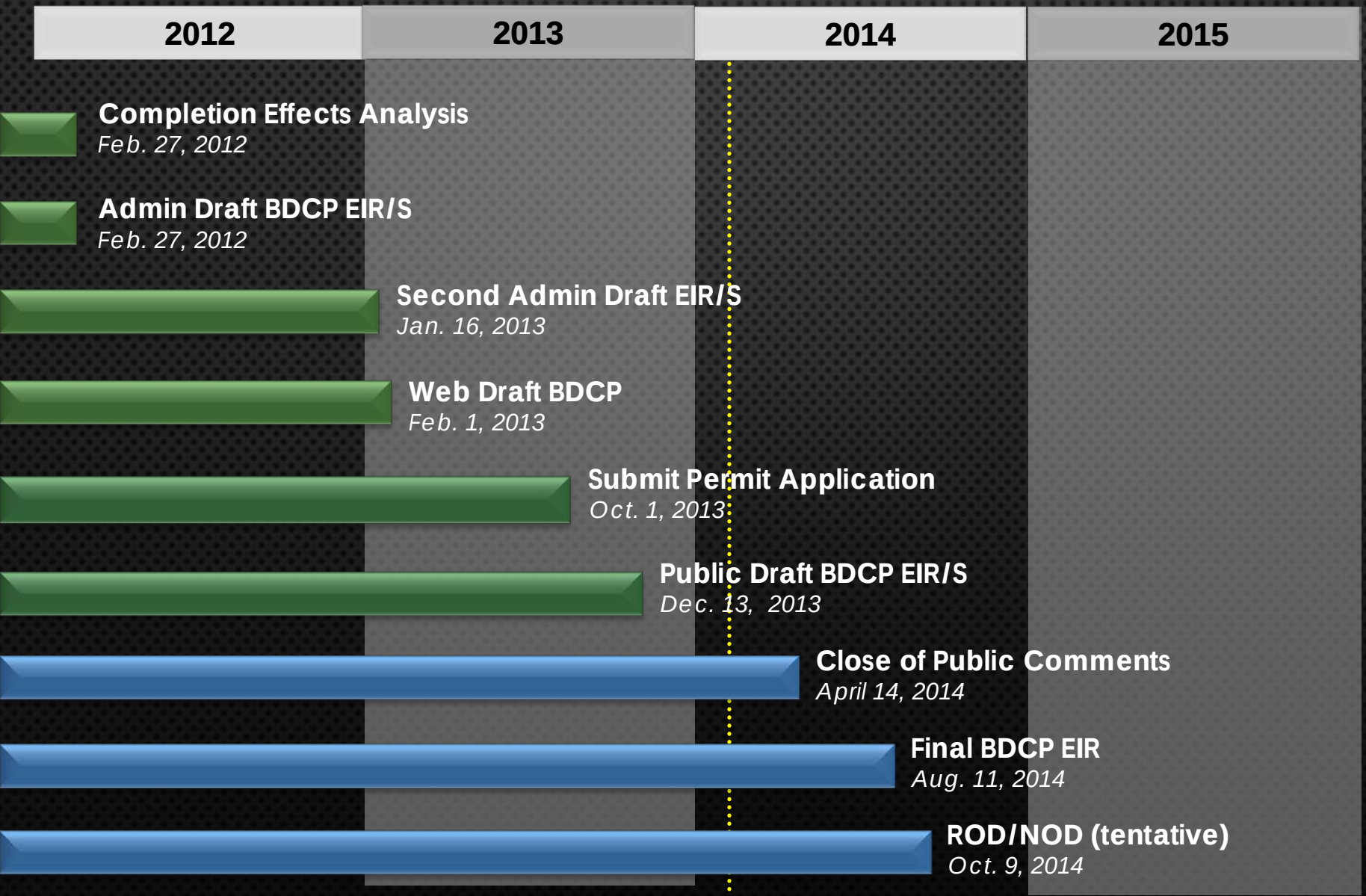
- Program Update
- Optimization
- CM1 Management
- Challenges
- Best Practice
- Design and Construction Enterprise

C. GARDNER

PROGRAM UPDATE

PROJECT MAJOR MILESTONES

JANUARY 16, 2014



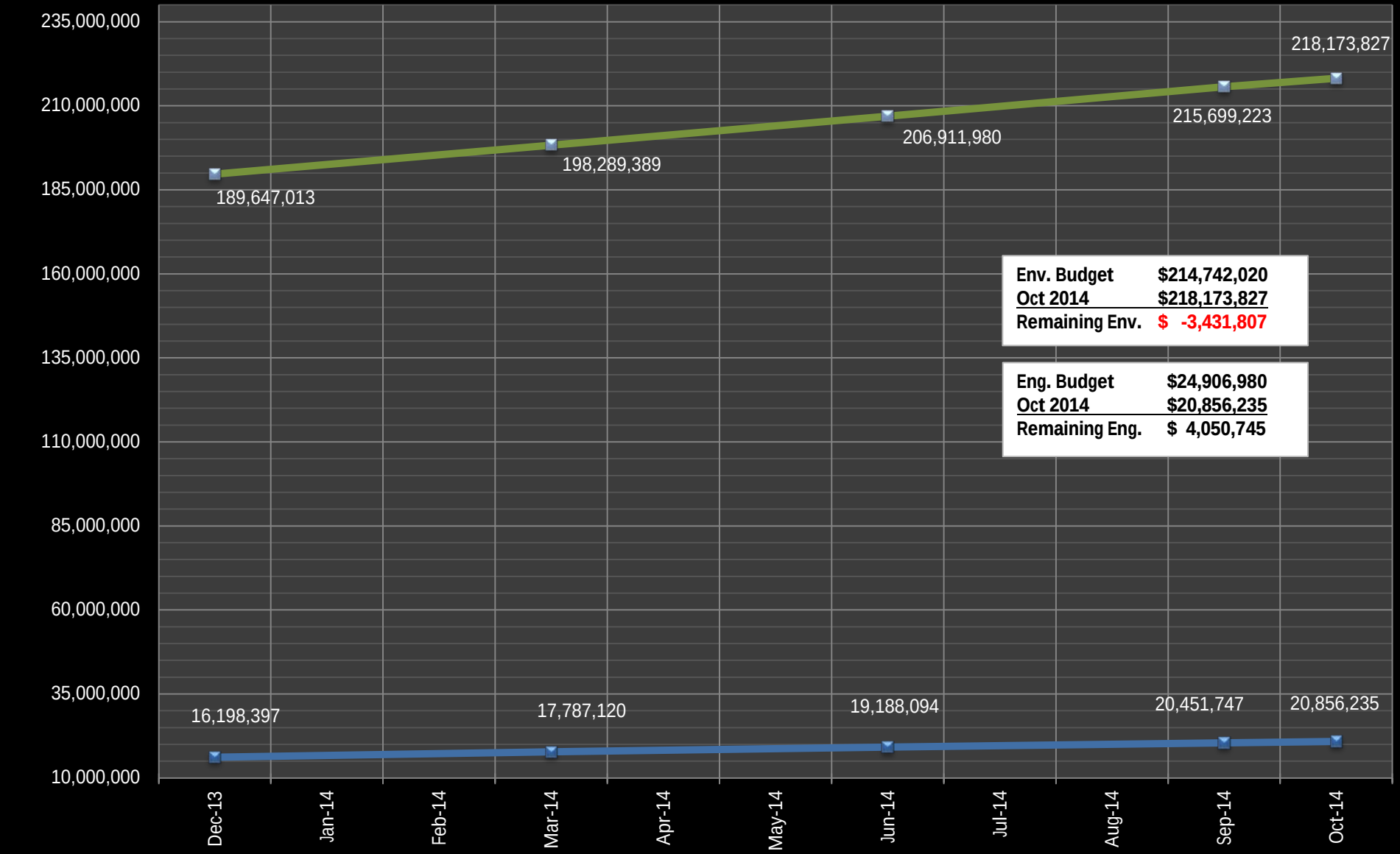
BUDGET UPDATE

Commitments by Project	
DHCCP	176,987,093
BDCP	35,045,466
Total Committed by Project	**212,032,559**

Commitments by Funding Phase				
Phase	**Original Amount of Phase**	**Current Amount of Phase**	**Amount Committed**	**Remaining to Commit**
Original Budget	139,649,000	139,649,000	139,649,000	-
Admin Phase	12,165,353	8,901,920	8,901,920	-
Public Phase - Milestone 2	5,481,600	44,161,146	44,161,146	-
Final Phase - Milestone 3	22,029,954	22,029,954	2,626,006	19,403,948
Engineering	48,653,562	24,906,980	16,694,487	8,212,493
Contingency	11,669,531	-	-	-
Total Committed by Phase	**239,649,000**	**239,649,000**	**212,032,559**	**27,616,441**

Projected Incurred Costs Through Oct 2014- No Change in Current Level of Effort

Current Staffing Maintained



Env. Budget	$214,742,020
Oct 2014	$218,173,827
Remaining Env.	$ -3,431,807

Eng. Budget	$24,906,980
Oct 2014	$20,856,235
Remaining Eng.	$ 4,050,745

	31-Dec-13	31-Mar-14	30-Jun-14	30-Sep-14	31-Oct-14
Engineering	16,198,397	17,787,120	19,188,094	20,451,747	20,856,235
Environmental	189,647,013	198,289,389	206,911,980	215,699,223	218,173,827

OPTIMIZATION

OPTIMIZATION - BACKGROUND

OPTIMIZATION EFFORT AROSE FROM

- NEED TO REDUCE IMPACTS TO DELTA LANDOWNERS
- NEED TO REDUCE IMPACTS TO STONE LAKES WILDLIFE REFUGE
- NEED TO FIND BETTER USE FOR REUSABLE TUNNEL MATERIAL

PROCESS

- MET WITH LANDOWNERS DIRECTLY IMPACTED BY THE FACILITY
- STARTED IN THE NORTH AND WORKED SOUTH
- RECEIVED LANDOWNER RECOMMENDATIONS FOR BETTER SITES
- MANY SECONDARY BENEFITS TO CHANGING ALIGNMENT

OPTIMIZATION - RESULTS

NEW OPTIMIZED ALIGNMENT

- USES PUBLIC LAND FIRST
- BETTER INTEGRATES CONSTRUCTION WITH RESTORATION
- DOES NOT CHANGE WATER OPERATIONS OR IMPACTS TO COVERED FISH

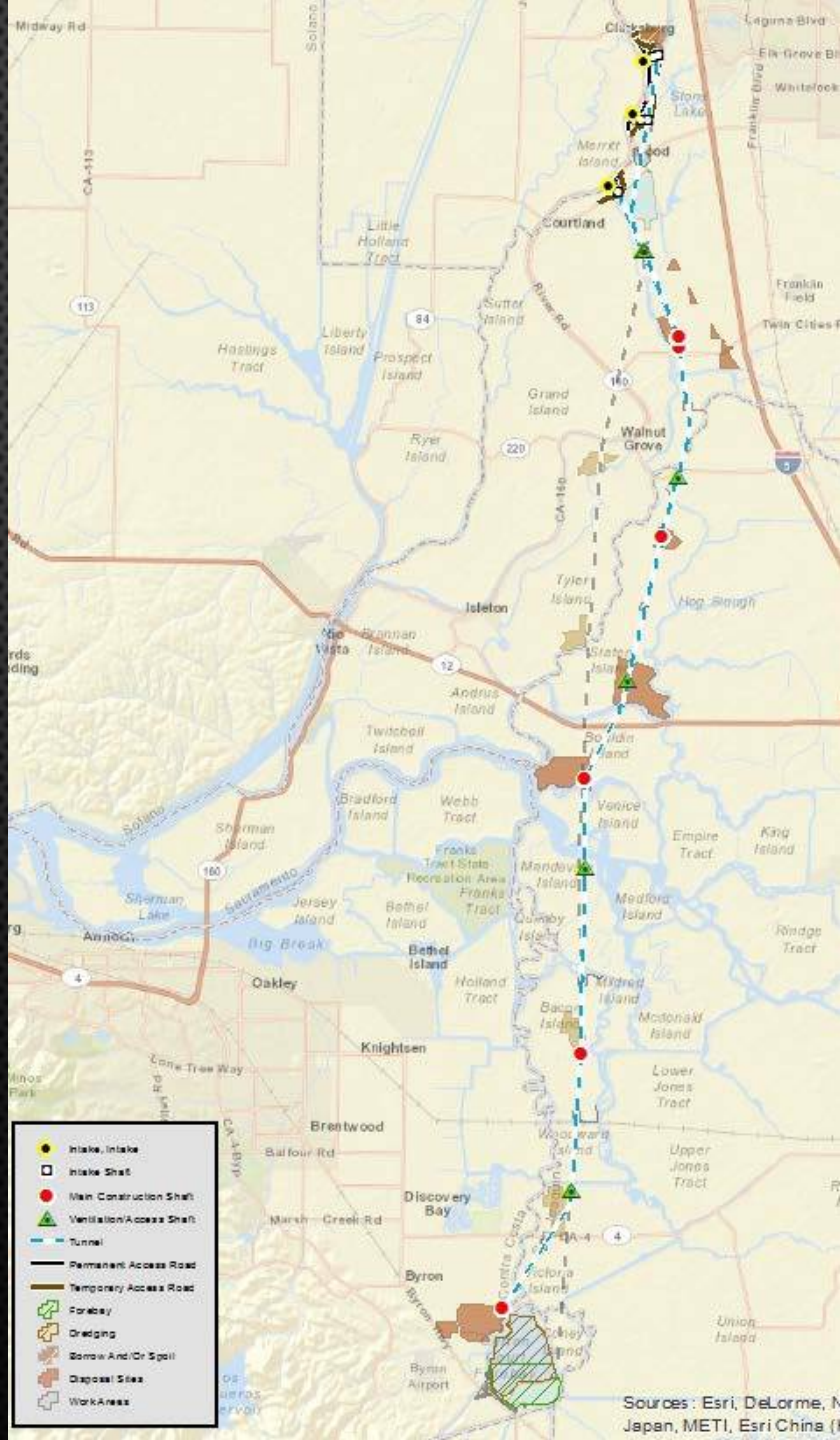


Photo: WSDOT

REUSABLE TUNNEL MATERIAL (RTM)

DEFINED

- TUNNEL BORING MACHINES (TBM) WILL FOLLOW STATE OF THE ART PROCESSES FOR EXCAVATING THE TUNNELS TO BE CONSTRUCTED AS PART OF THE BDCP WATER CONVEYANCE FACILITIES
- EXCAVATED SOIL IS MIXED WITH NON-TOXIC, BIODEGRADABLE CONDITIONERS TO CREATE A TOOTHPASTE-LIKE MATERIAL COMMONLY KNOW IN THE TUNNELING INDUSTRY AS "TUNNEL MUCK"
- TUNNEL MUCK WILL BE TRANSPORTED TO THE SURFACE WHERE PHYSICAL AND CHEMICAL TESTS WILL BE PERFORMED TO CONFIRM SUITABILITY FOR BENEFICIAL REUSE

REUSABLE TUNNEL MATERIAL (RTM)

POTENTIAL FOR USE IN BDCP

- ANTICIPATED THAT OVER 99% OF THE TUNNEL MUCK WILL BE CLASSIFIED AS "REUSABLE TUNNEL MATERIAL"
- MAY BE SUITABLE FOR USE IN LEVEE STRENGTHENING, TIDAL MARSH RESTORATION, FLOOD CONTROL, OR TO RAISE ROADWAYS IN THE DELTA
- RTM FROM THE SFPUC BAY TUNNEL PROJECT WAS USED BY THE USFWS AT BAIR ISLAND TIDAL MARSH RESTORATION PROJECT
- EXPECTED 25 MILLION CUBIC YARDS OF AVAILABLE RTM

Table 8-5. Cost Estimate for Water Facility Construction

Conservation Measure Cost Items	Average Annual Expenditure by Plan Implementation Period (Millions)			50-Yr Permit Term Total Expenditure (Millions)
	Near Term (Yrs 1–10)	Early Long-Term (Yrs 11–15)	Late Long-Term (Yrs 16–50)	
Capital Costs				
Land Acquisition				
Surface footprint, staging, borrow sites	$8.6	$0.0	$0.0	$85.5
Subsurface easements	$0.4	$0.0	$0.0	$4.3
Mineral rights and gas well relocation	$3.2	$0.0	$0.0	$32.3
Due diligence & transaction costs	$1.2	$0.0	$0.0	$12.2
Subtotal	**$13.4**	**$0.0**	**$0.0**	**$134.3**
Contingency (20%)	$2.7	$0.0	$0.0	$26.9
Total Land Acquisition	**$16.1**	**$0.0**	**$0.0**	**$161.2**
Construction				
River intake #2 with pumping plant	$34.9	$0.0	$0.0	$348.8
River intake #3 with pumping plant	$27.1	$0.0	$0.0	$270.7
River intake #5 with pumping plant	$30.3	$0.0	$0.0	$303.2
Intermediate forebay & flow control structures	$7.1	$0.0	$0.0	$70.9
Byron Tract Forebay & flow control structures	$61.9	$0.0	$0.0	$619.4
North tunnels & shafts	$101.8	$0.0	$0.0	$1,017.9
Main tunnels & shafts	$622.0	$0.0	$0.0	$6,219.6
Access, power delivery & utility relocations	$31.7	$0.0	$0.0	$316.5
Communications & control	$2.3	$0.0	$0.0	$23.4
Subtotal	**$919.0**	**$0.0**	**$0.0**	**$9,190.4**
Tunneling contingency	$264.2	$0.0	$0.0	$2,641.7
All other contingency	$65.8	$0.0	$0.0	$657.7
Construction w/ Contingency Subtotal	**$1,249.0**	**$0.0**	**$0.0**	**$12,489.8**
Project management, construction management, and final design	$192.0	$0.0	$0.0	$1,919.9
Total Construction	**$1,441.0**	**$0.0**	**$0.0**	**$14,409.7**
Total Capital	**$1,457.1**	**$0.0**	**$0.0**	**$14,570.9**

CM1 MANAGEMENT

"HOPE IS NOT A STRATEGY. WE HAVE TO PLAN."
- DR. JULIE GERBERDING

BENCHMARKING

Programs Visited

- Bay Tunnel Project - SFPUC
- Seattle SR99 Alaskan Way Viaduct - WSDOT
- Southern Delivery System – Colorado Springs Utilities
- Port of Miami Tunnel Project
- California High Speed Rail Authority
- Combined Sewer Outflows – Seattle
- Downtown Seattle Transit Tunnel
- Combined Sewer Outflows – Portland
- Central Subway Tunnel – San Francisco
- Lake Mead Intake #3 – Southern Nevada

Benchmarking

Case Studies

- Central Artery/Tunnel Project (aka "Big Dig")
- Panama Canal Third Lane Locks Project
- Bay Bridge Seismic Safety Project
- Channel Tunnel

CHALLENGES

"MURPHY WAS AN OPTIMIST."
- O'TOOLE'S LAW

COMMON CHALLENGES FACED

- COST OVERRUNS
- POOR COMMUNICATION
- RISK MANAGEMENT
- CHANGING SPECIFICATIONS

Photo: Roger McLassus

COST CONTAINMENT

- COST ESTIMATE
- DIFFUSION OF RESPONSIBILITY: LACK OF ACCOUNTABILITY OVER LONG TIME PERIODS
- DISREGARDING RISK IN PROJECT PLANNING

Photo: WSDOT


Photo: WSDOT

COST ESTIMATE

APPROACH

- CLASS 3 ESTIMATE
- CURBING "OPTIMISM BIAS"
- CONTINGENCY VARIANCE
- REFERENCE CLASS FORECASTING
- CHRISTMAS TREE EFFECT

RISK MANAGEMENT

- IDENTIFY
- ASSESS
- ALLOCATE
- RESPOND
- CONTROL
- LESSONS LEARNED
- OCIP


Photo: http://en.wikipedia.org/wiki/File:Tunnel_collapse_Gerrards_Cross.jpg


Photo: tunneltalk.com


Photo: http://www.chinadaily.com

BEST PRACTICE

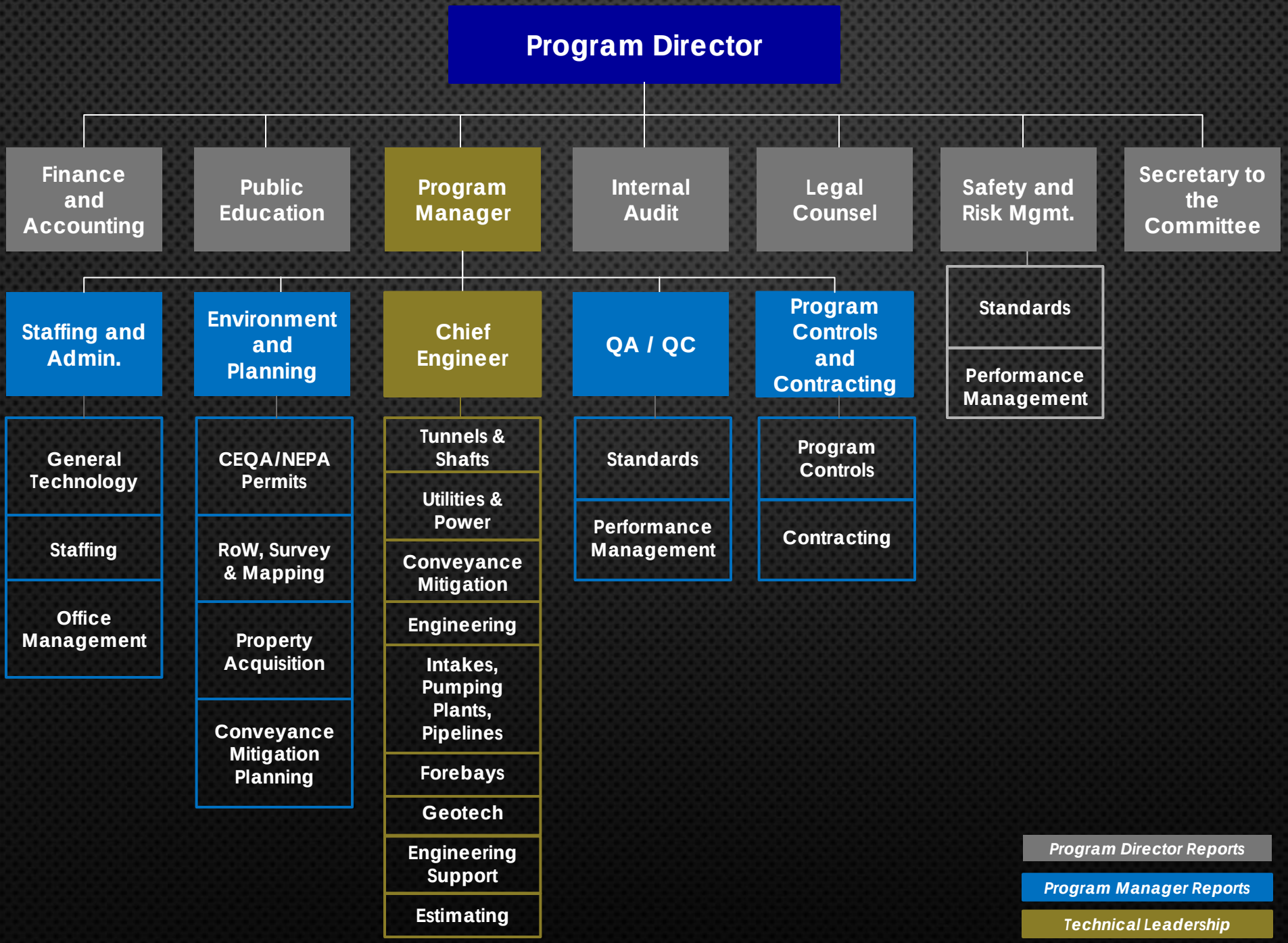
LESSONS LEARNED

- Single point of accountability
- Timely decision making with clear authorities
- Opportunity cost of time
- Stage gate reviews
- Hiring contractors on value not total cost
- Procurement
- Timely and accurate reporting
- Control tower
- Heat maps

Photo: WSDOT

DESIGN AND CONSTRUCTION ENTERPRISE

"THE ACHIEVEMENTS OF AN ORGANIZATION ARE THE RESULTS OF THE COMBINED EFFORT OF EACH INDIVIDUAL."
- VINCE LOMBARDI


Program Director
Finance and Accounting
Public Education
Program Manager
Internal Audit
Legal Counsel
Safety and Risk Mgmt.
Secretary to the Committee
Staffing and Admin.
General Technology
Staffing
Office Management
Environment and Planning
CEQA/NEPA Permits
RoW, Survey & Mapping
Property Acquisition
Conveyance Mitigation Planning
Chief Engineer
Tunnels & Shafts
Utilities & Power
Conveyance Mitigation
Engineering
Intakes, Pumping Plants, Pipelines
Forebays
Geotech
Engineering Support
Estimating
QA / QC
Standards
Performance Management
Program Controls and Contracting
Program Controls
Contracting
Standards
Performance Management
Program Director Reports
Program Manager Reports
Technical Leadership

Organizational Structure

An Organization Designed for Success

- Cost Control
- Accountability
- Effective decision Making
- Good Community Partner
- Reducing design changes
- Risk control = Cost control
- KPIs assigned at all critical program areas to flag potential overruns
  - Performance vs. Health KPIs

DESIGN AND CONSTRUCTION ENTERPRISE

VISION

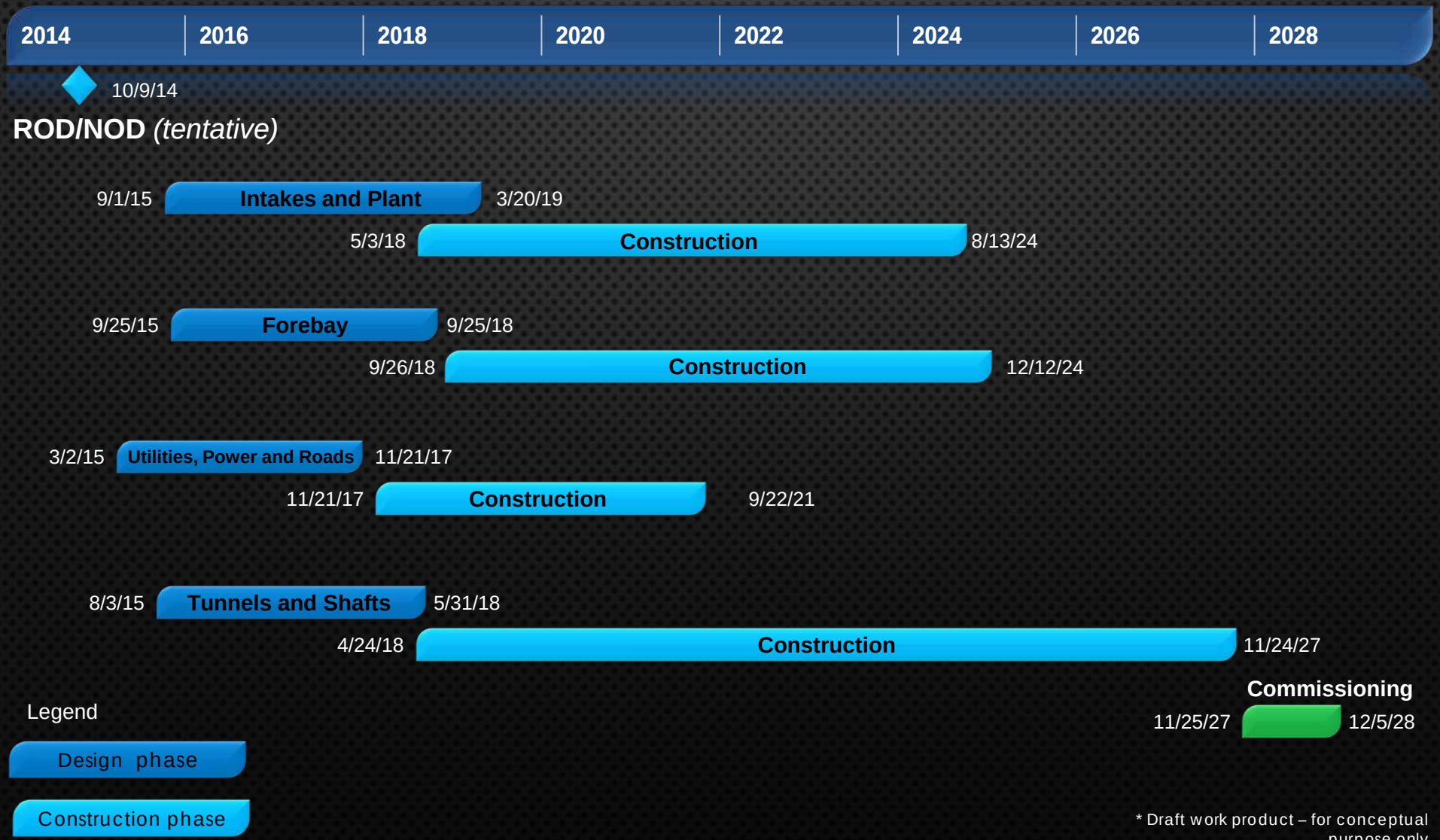
TO BECOME A MODEL ORGANIZATION FOR THE DELIVERY OF WATER RELATED MEGAPROJECTS.

DESIGN AND CONSTRUCTION ENTERPRISE

MISSION

TO SAFELY DESIGN AND CONSTRUCT THE CONVEYANCE FACILITY ON TIME, ON BUDGET, AND WITHIN SPECIFICATIONS WHILE PRUDENTLY MANAGING RISK, IN SUPPORT OF THE BDCP.

PROJECTED DESIGN AND CONSTRUCTION PLANNING SCHEDULE



* Draft work product – for conceptual purpose only

QUESTIONS