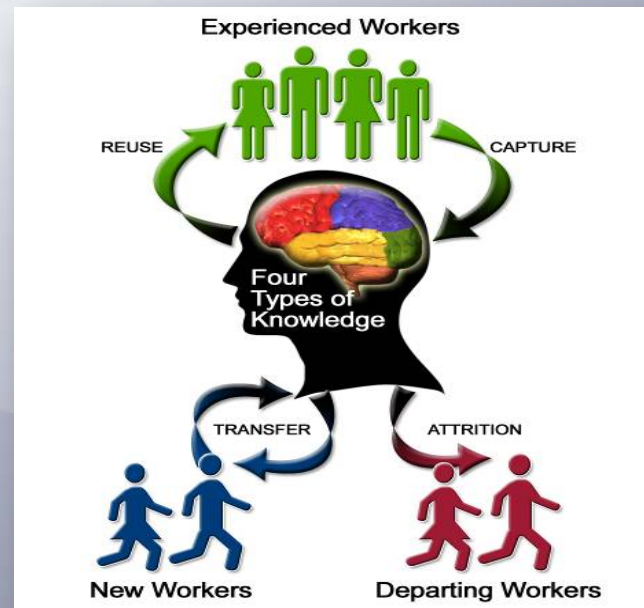




Ensuring Effective MV Knowledge Management

Combining Skill Sets to get the Best Products



February 2015



Outline

- Program context
- Deliverables demonstration
- Success & Challenges
- Q&A



What is Utility Specific Knowledge?

- Technical knowledge documented in design reports and drawings – *much of this has not been kept up-to-date or was never documented*
- Knowledge of MV systems and equipment that staff have ‘in their heads’
- Knowledge transfer traditionally done verbally by experienced staff while supervising the work
 - Learn as you go
 - Learn as it breaks
 - “Ask Fred”



MV Retirement Statistics

Department	Potential Retirements over next 9 yrs (2015-2023)		Total
	Age 62	Factor 90	
	(%)	(%)	
Liquid Waste Services [545]	23%	17%	40%
Water Services [381]	18%	18%	36%

~ 38% of utilities staff are eligible to retire in the next 9 years.

Factor 90: Full pension when age + years of service = 90
 Age 62: Average retirement at MV



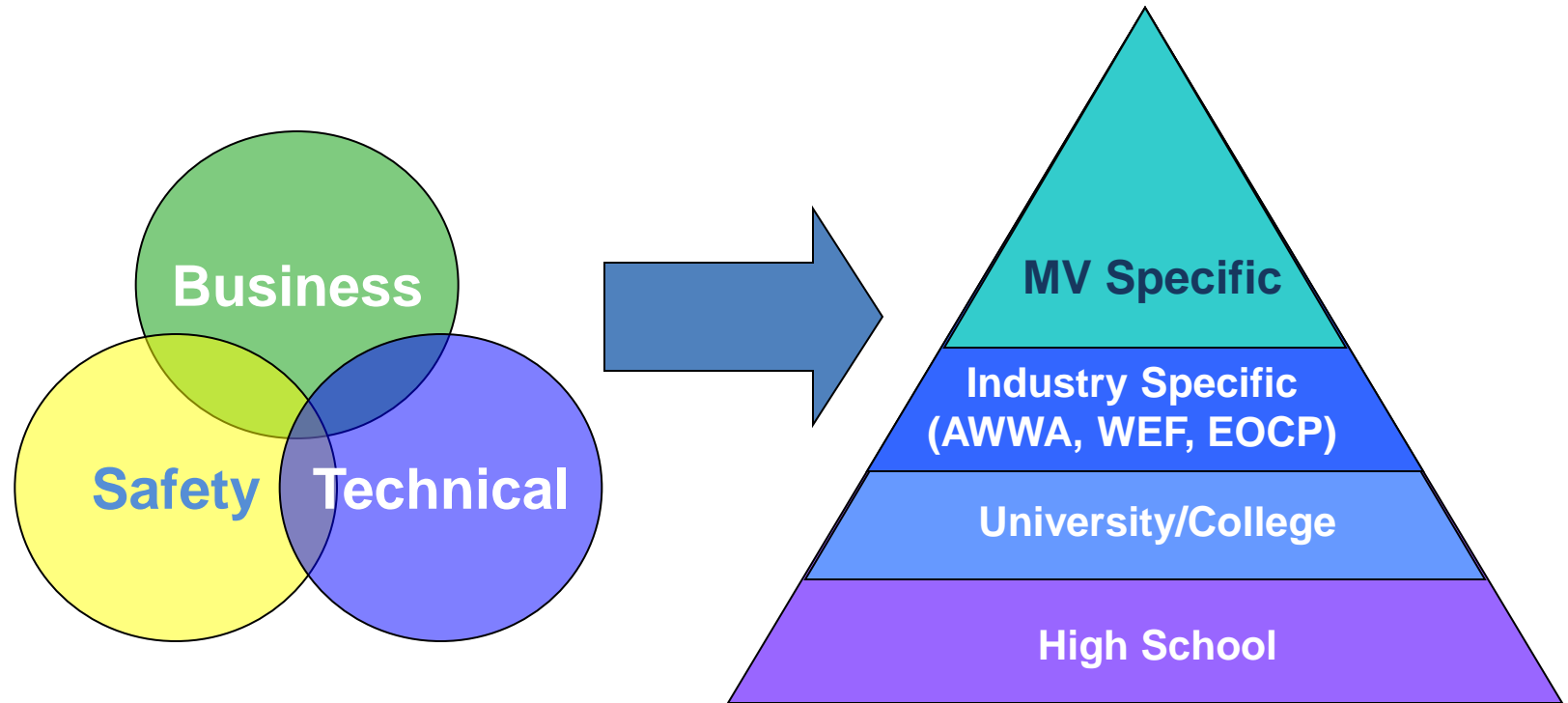


Minimizing the Impact of this Loss

- All O&M divisions recognized the impact of the dependence on knowledge in people's heads and inconsistent and incomplete learn-as-you go training
- Recognition of the linkage with effective safety management programs, performance management and asset management
- The formal training and procedures development projects in water treatment have shown to be a proven model for capturing and transferring this knowledge and it was agreed to move forward with this approach



MV Technical Knowledge





TAP in Brief

- The Technical Training and Procedures (TTAP) Program is a multi-year technical knowledge management program which started in 2013.
- This program is a key element of succession planning and is strongly linked to safety programs as well as performance management.
- Key aspect of the program is to put the work processes and resources in place to ensure ongoing access, support and maintenance of the deliverables



Consulting Services

- Developing this type of program relies heavily on experienced MV staff resources
- To optimize involvement of MV staff *we needed to partner* with a technical training consultant on multi-year contract(s). Partnership provides:
 - Complementary utility process knowledge
 - Adult learning and instructional design expertise
 - Consistency in content development
 - Learning management system programming
 - Facilitation, writing and editing resources
 - Graphics development expertise





Program Valuation

“Best practice indicates that complete operator training and documentation for a water or wastewater facility may be .25% to .75% of the total project capital cost”

Gerry Stevens (AECOM), BCWWA 2007

The actual spending ratio at SCFP was 0.33 %; approximately \$1M for a facility with a capital construction cost of \$300 million.

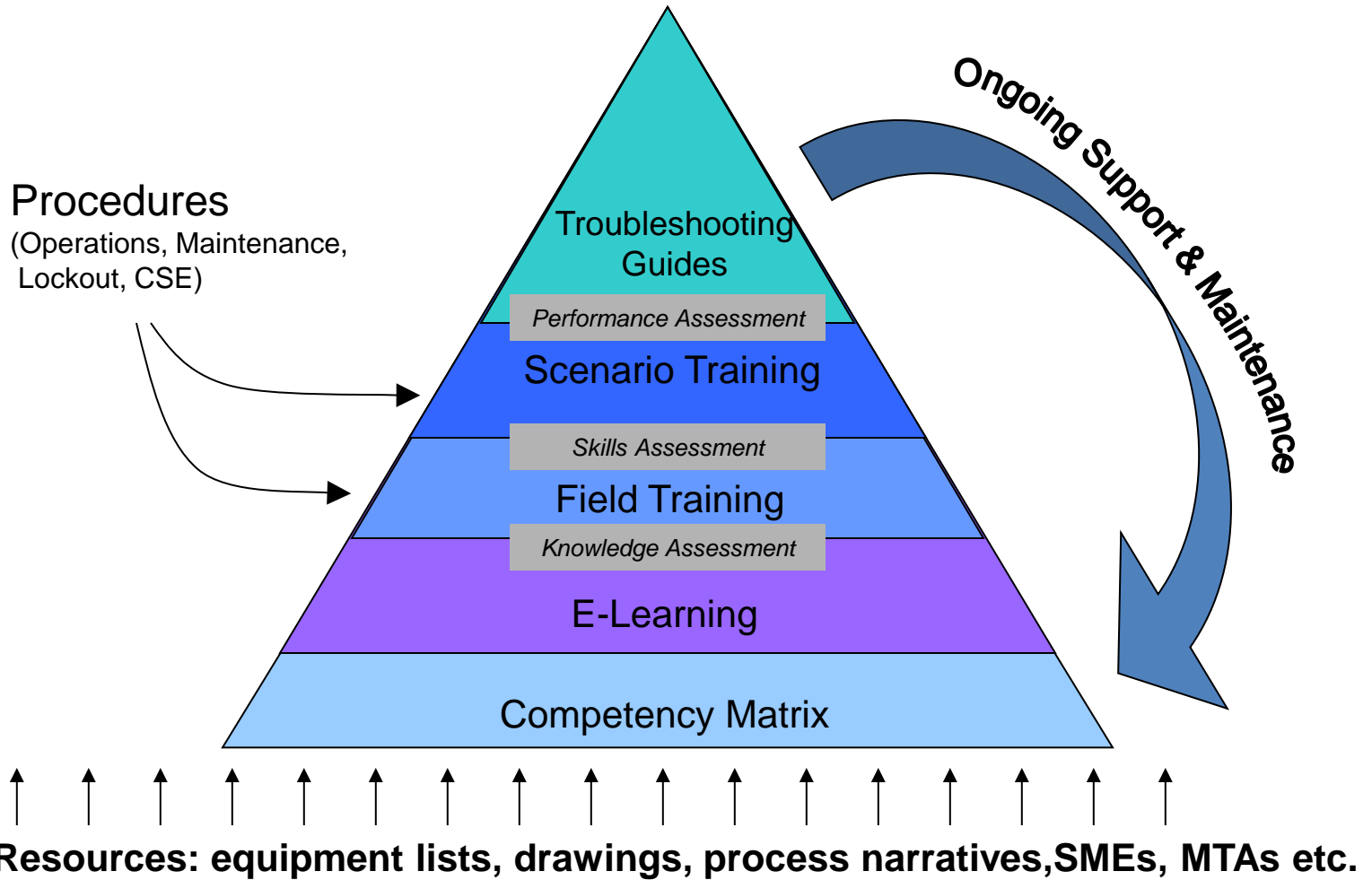
Estimated value of MV water and liquid waste infrastructure (does not include WWTPs):

*“The current replacement value of the GVWD assets is estimated at **\$2.4 B** and the GVS&DD assets is estimated at **\$3.1 B.**”*

Asset Register Memo from Matthew Walker to A.Van Roodselaar, Aug. 23, 2013



MV's Blended Approach



Project Planning and Implementation

Phase 1: Assessment

- Equipment verification
- Task analysis
- Maintenance task analyses
- Competency mapping
- Gap analysis
- Curriculum development
- Prioritization
- Development plan and schedule

Phase 2: Development & Delivery

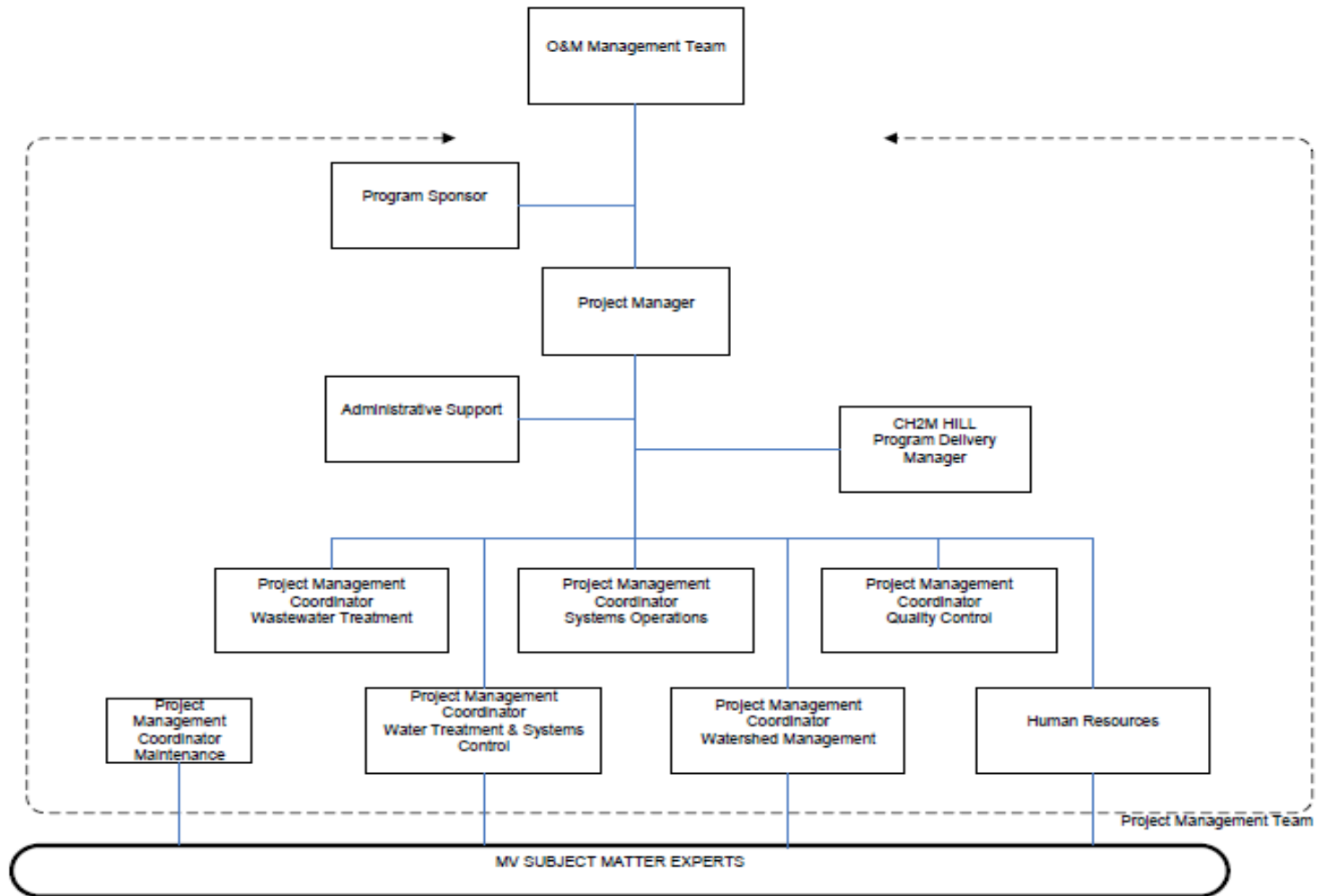
- Procedure development
- E-learning development
- Field guides
- Scenario training
- Troubleshooting guides

Phase 3: Continuous Improvement

- Ongoing support model



Project Communication



Maintenance Task Analyses (MTA)

MTAs are needed to move toward reliability centered maintenance. Process involves:

- identifying the criticality of each piece of equipment
- reviewing possible failure modes
- developing the appropriate maintenance strategy

[COQ UV MTA](#)

[Sapperton PS MTA](#)



metrovancouver

SERVICES AND SOLUTIONS FOR A LIVABLE REGION


Procedures

Maintenance Procedures

[IIWWTP – Bar Screen Overhaul](#)

Operations Procedures

[CRWPS Isolate and Remove a Pump From Service](#)

		Facility, Area and/or RTU: CRWPS, Area 1, W-CAP	
Standard Maintenance Procedure		Procedure Type: Maintenance, Mechanical	
Procedure Title: Bar Screen Overhaul		Rev Number: 0	
A. General Information			
Created By: Paul Bourdon, Melodie Hobbs, Geoff Cole, Chris Lang, Senja Kymala, Kevin Brown, Joe Jacques	Date: July 22, 2014	July 30, 2014, June 12, 14, October 30, 2014 and November 26, 2014	
Revised By:	Date:	PN-21-004, I-SCRN-21-005, Bar Screen Overhaul) and verified by operations	
Checked By:	Date:	Canada Comp 68	
Approved By:	Date:	arduous location power 0 VAC, job-specific tools, pulic jack	
Associated Equipment: Pump Series, MCC (x4), VFD (x4)	screens		
Purpose: To isolate and remove a pump from service for lockout.	References: PFS 22-1 Capilano Raw Water Pump Station		
Material Requirements:	Safety: PPE	Other:	
Potential Loss Summary:	People: none	Equipment: none	
Materials: none	Environment: none		
B. HIRA (Hazard Identification & Risk Assessment):			
CRWPS_003 - Isolate and Remove a Pump From Service			
Hazard Identification / Risk Assessment Summary			
Prepared By: Paul Bourdon, Melodie Hobbs			
Technical Information By: Chris Lang, Senja Kymala, Kevin Brown, Joe Jacques			
		Initial	
		Final	
Atmospheric Hazards	Details	P C R	Control Measures
		P C R	P C R



Field & Review Guides

Field Guide

[AIWWTP FE Disinfection System](#)

Review Guides

[AIWWTP FE Disinfection System](#)

December 1, 2014

Annacis Island Wastewater Treatment Plant Operator Training

Final Effluent (FE) Disinfection System

Field Guide

Operator Name: _____

(Please Print)

