

**Willamette Water Supply**  
*Our Reliable Water*



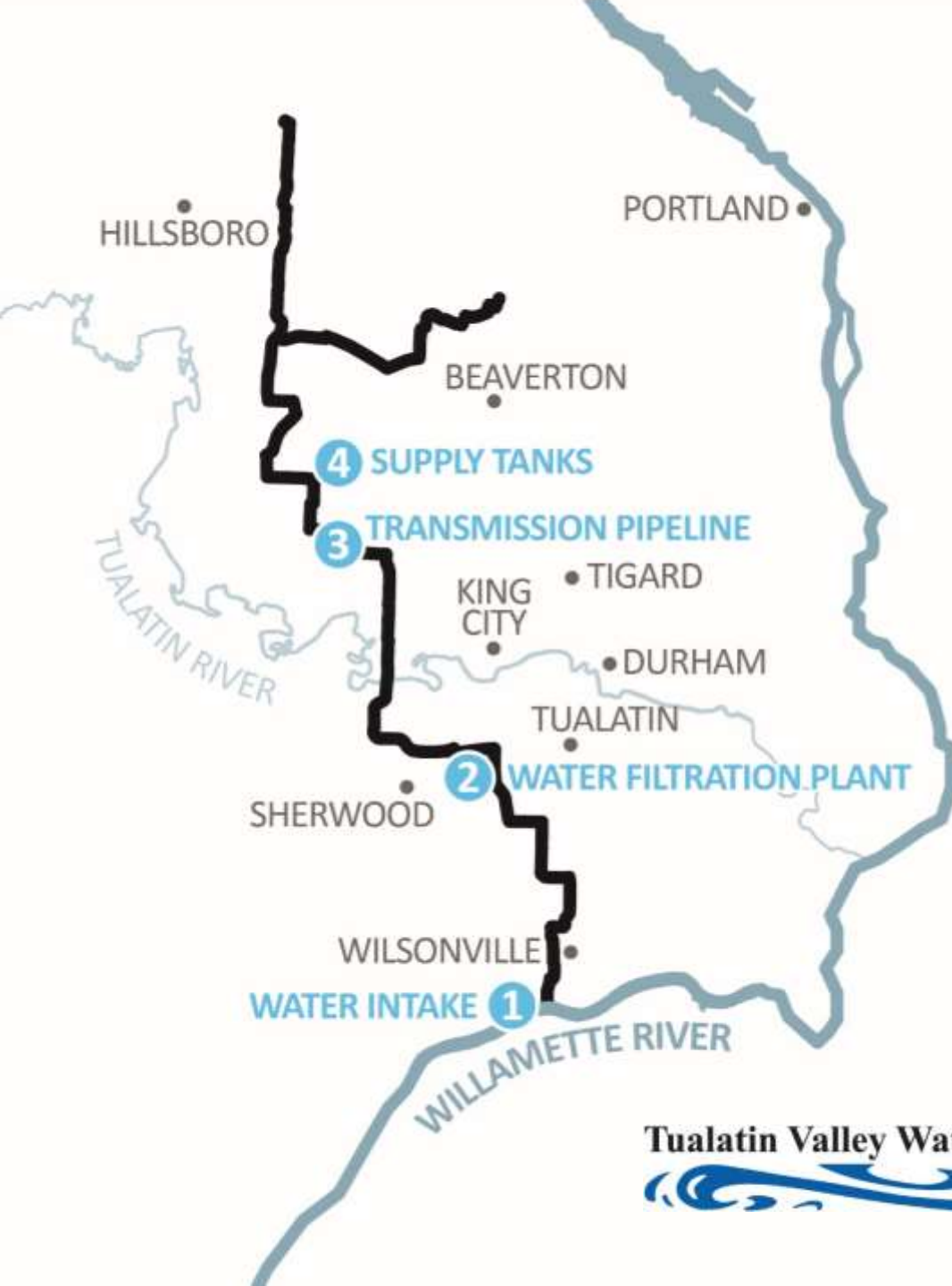
2018 TACOMA PNWS-AWWA

***Willamette Water Supply's  
Approach to  
Health and Safety***

**April 26, 2018**

# Water Supply Program

- Modified water intake
- New water filtration plant
- Water reservoirs
- 30+ miles of large diameter pipeline
- Tualatin Valley Water District: 60% City of Hillsboro: 40%
- Scheduled completion: 2026



Tualatin Valley Water District

Hillsboro  
OREGON

**CORNELIUS PASS PIPELINE PROJECT**  
 FRANCES RD TO HIGHWAY 26  
 PLW\_2.0 (PIPELINE WEST)  
**3.4 MILES**

CONSTRUCTION: 2021 - 2023

**SOUTH BEAVERTON AREA WATER STORAGE TANKS**  
 STORAGE TANKS  
 RES\_1.0

CONSTRUCTION: 2022 - 2024

**TUALATIN-SHERWOOD AREA PIPELINE PROJECT**  
 SW 124TH AVE TO NORTH OF BEEF BEND RD  
 PLM\_4.0 (PIPELINE MAIN)  
**5.3 MILES**

PLM\_A.1 HIGHWAY 99 CROSSING (WASHINGTON COUNTY)  
 CONSTRUCTION: 2000 - 2021

PLM\_A.2 TUALATIN-SHERWOOD ROAD (WASHINGTON COUNTY)  
 CONSTRUCTION: 2000 - 2022

PLM\_A.3 RDT ROGERS ROAD  
 CONSTRUCTION: 2022 - 2023

**124TH AVENUE PARTNERSHIP PROJECT**  
 SW 124TH AVE EXTENSION  
 PLM\_3.0 (PIPELINE MAIN)  
**2.7 MILES**

CONSTRUCTION: 2016 - 2018 (WASHINGTON COUNTY)

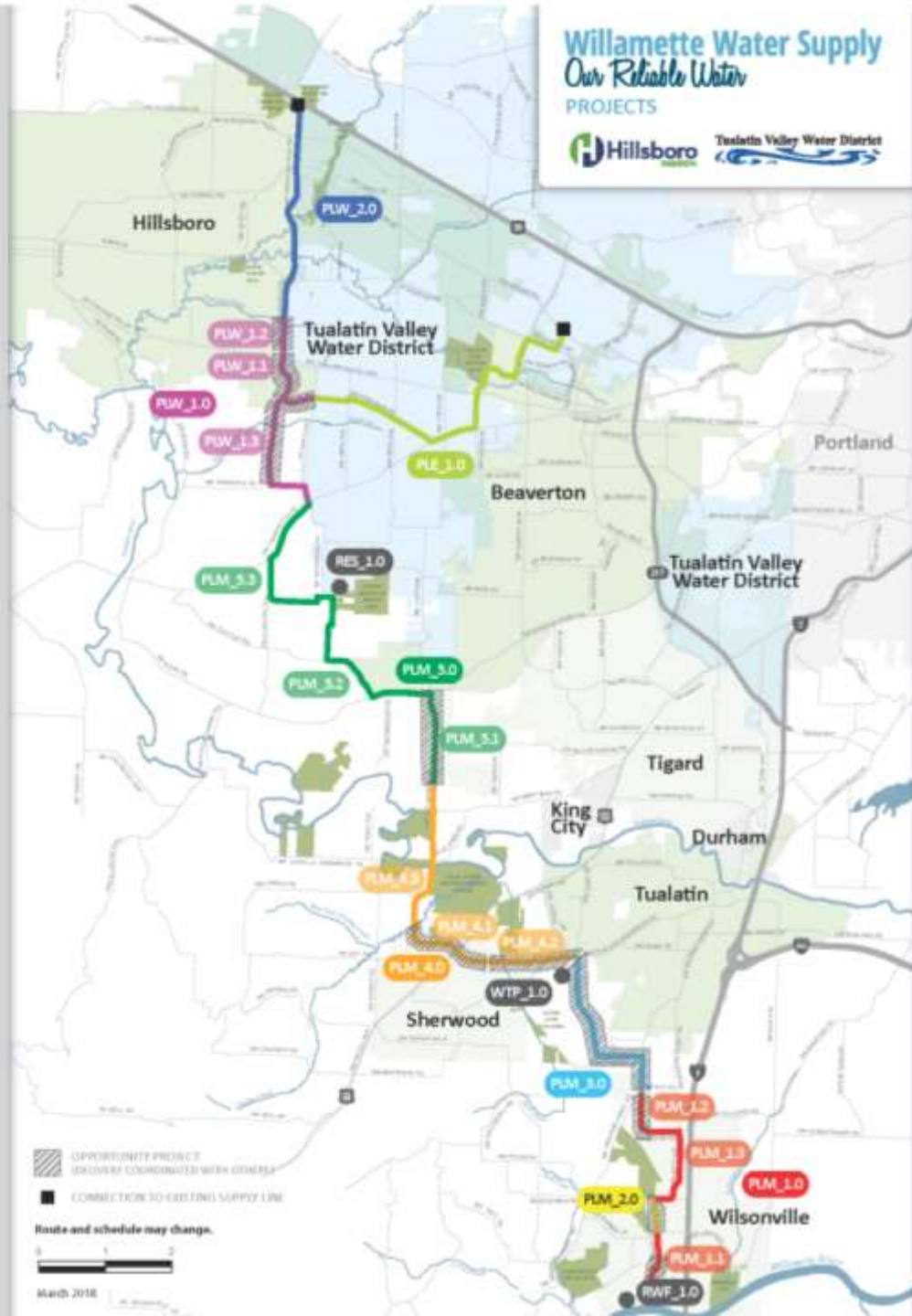
**WATER TREATMENT PLANT**  
 WATER TREATMENT PLANT (WTP)  
 WTP\_1.0

CONSTRUCTION: 2022 - 2025  
 INCLUDES FINISHED WATER PUMP-STATION PROJECT (EPL\_3.0)  
 INCLUDES DISTRIBUTED CONTROL SYSTEM PROJECT (ECS\_3.0)

**RAW WATER FACILITIES**  
 RAW WATER FACILITIES (RAW)  
 RWF\_1.0

CONSTRUCTION: 2020 - 2024

**Willamette Water Supply**  
*Our Reliable Water*  
 PROJECTS



**SOUTH HILLSBORO AREA PIPELINE PROJECT**  
 FARMINGTON RD TO FRANCES RD  
 PLW\_1.0 (PIPELINE WEST)  
**3.9 MILES**

PLW\_1.1 BLANTON TO TV HWY (SOUTH HILLSBORO DEVELOPMENT)  
 CONSTRUCTION: 2022

PLW\_1.2 TV HWY TO FRANCES (CITY OF HILLSBORO)  
 CONSTRUCTION: 2020 - 2024

PLW\_1.3 FARMINGTON TO BLANTON (SOUTH HILLSBORO DEVELOPMENT)  
 CONSTRUCTION: 2020 - 2022

**BEAVERTON AREA PIPELINE PROJECT**  
 SW 209TH AVE TO WALAER RD  
 PLE\_1.0 (PIPELINE EAST)  
**5.5 MILES**

CONSTRUCTION: 2021 - 2023

**SCHOLLS AREA PIPELINE PROJECT**  
 NORTH OF BEEF BEND RD TO FARMINGTON  
 PLM\_5.0 (PIPELINE MAIN)  
**7.2 MILES**

PLM\_5.1 NORTH OF BEEF BEND TO SCHOLLS (WASHINGTON COUNTY)  
 CONSTRUCTION: 2018 - 2020

PLM\_5.2 SCHOLLS TO GRABHORN RD  
 CONSTRUCTION: 2020 - 2020

PLM\_5.3 GRABHORN RD AT TILE FLAT TO FARMINGTON  
 CONSTRUCTION: 2022 - 2024

**WILSONVILLE AREA PIPELINE PROJECT**  
 WTP TO DAY RD  
 PLM\_1.0 (PIPELINE MAIN)  
**3.0 MILES**

PLM\_1.1 WILSONVILLE RD (CITY OF WILSONVILLE)  
 CONSTRUCTION: 2020 - 2020

PLM\_1.2 GARDEN ACRES TO 124TH (GARDEN ACRES DEVELOPMENT)  
 CONSTRUCTION: 2020 - 2020

PLM\_1.3 WILSONVILLE RD TO GARDEN ACRES  
 CONSTRUCTION: 2020 - 2022

**KINSMAN ROAD PARTNERSHIP PROJECT**  
 KINSMAN RD EXTENSION  
 PLM\_2.0 (PIPELINE MAIN)  
**0.5 MILES**

CONSTRUCTION: 2016 - 2018 (CITY OF WILSONVILLE / ODOT)

OPPORTUNITY PROJECT (SHOWN COORDINATED WITH OTHERS)  
 CONNECTION TO EXISTING SUPPLY LINE  
 Route and schedule may change.  
 0 1 2  
 March 2018

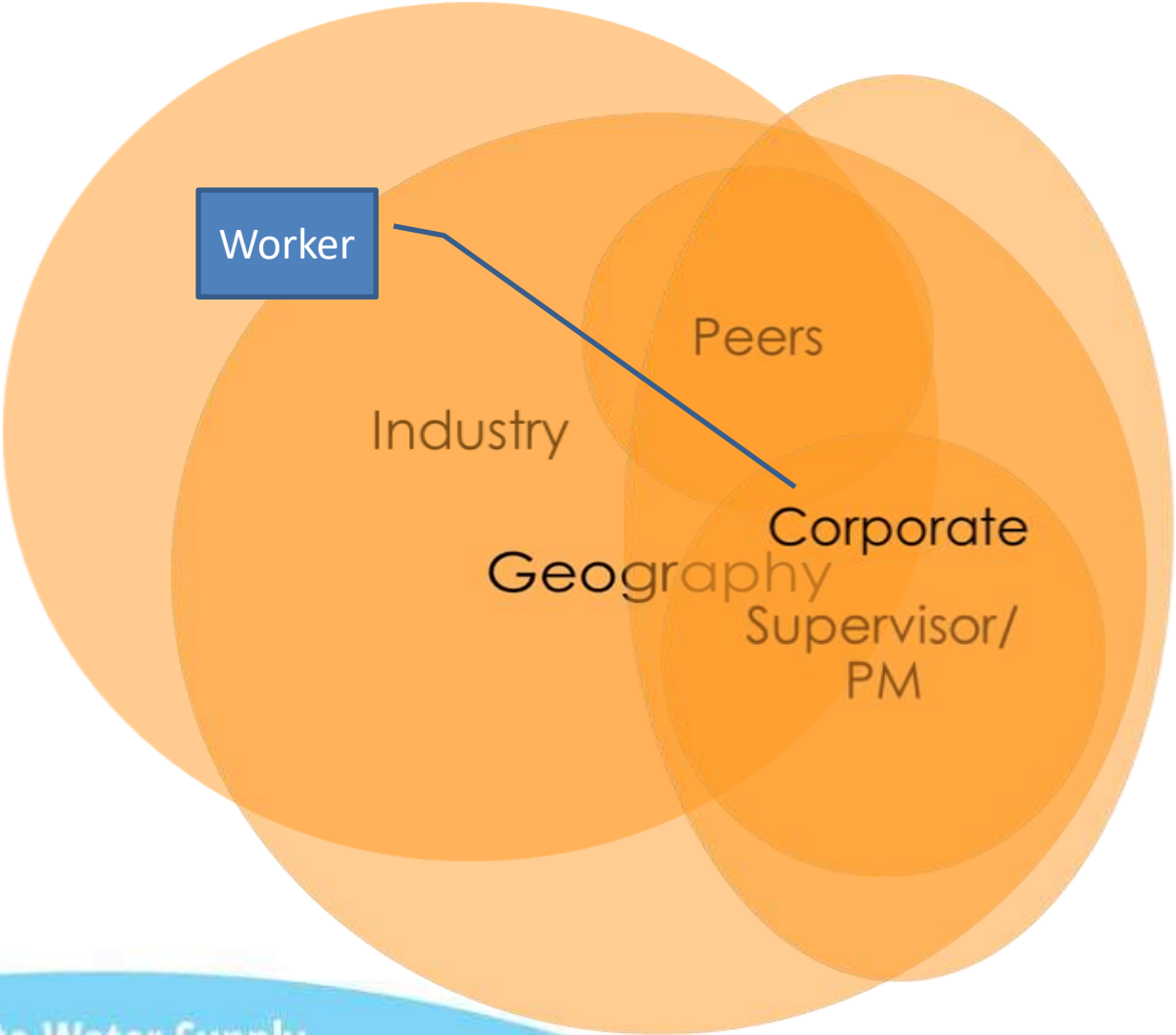


**Program Goal:**

**Protect People and the Environment –  
Enhance the health and safety culture  
of all organizations involved in  
delivering WWSP and demonstrate  
environmental stewardship.**



# Safe Decision Influences

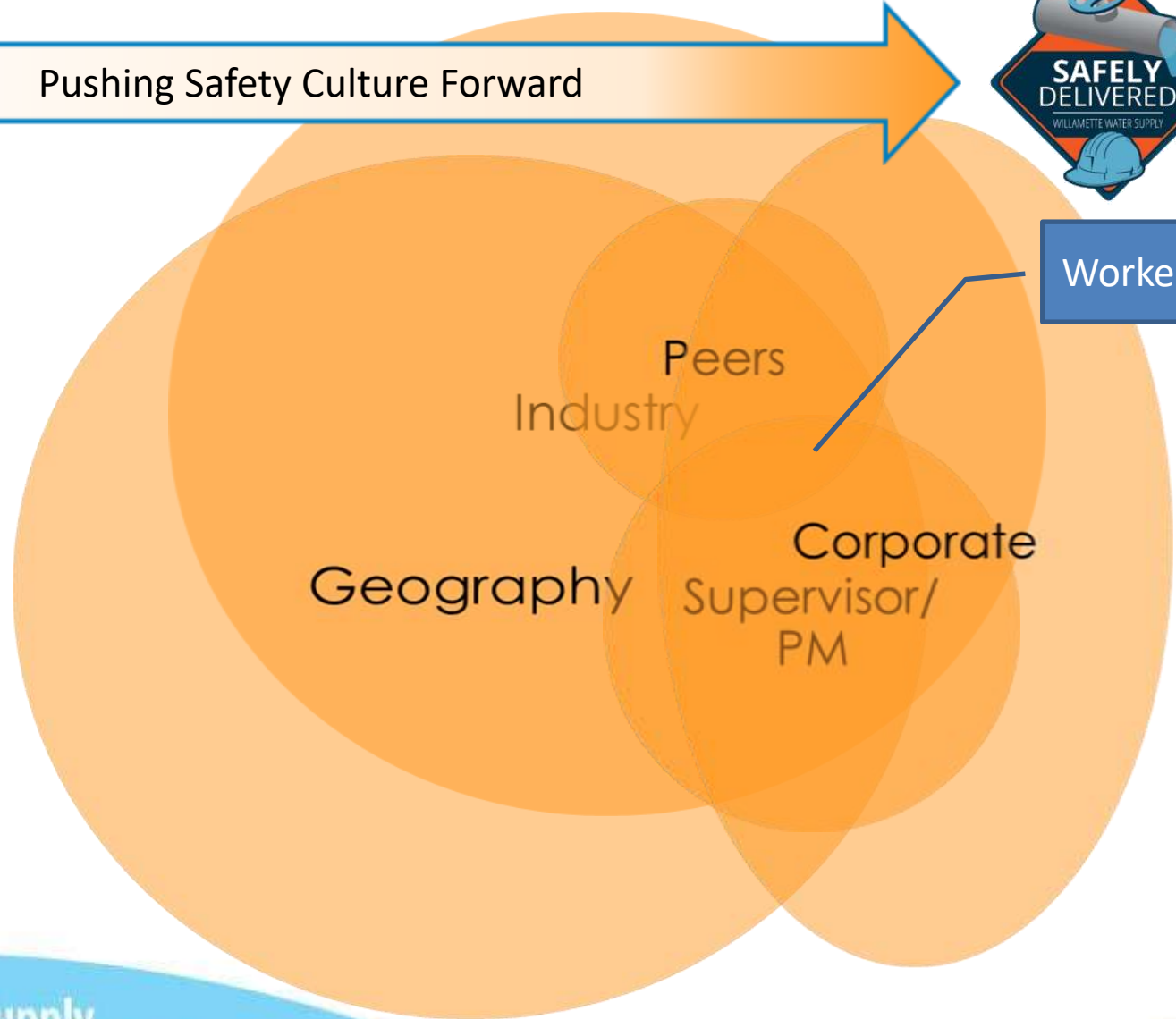


# Goal, Enhancing the Safety Culture

Pushing Safety Culture Forward



Worker

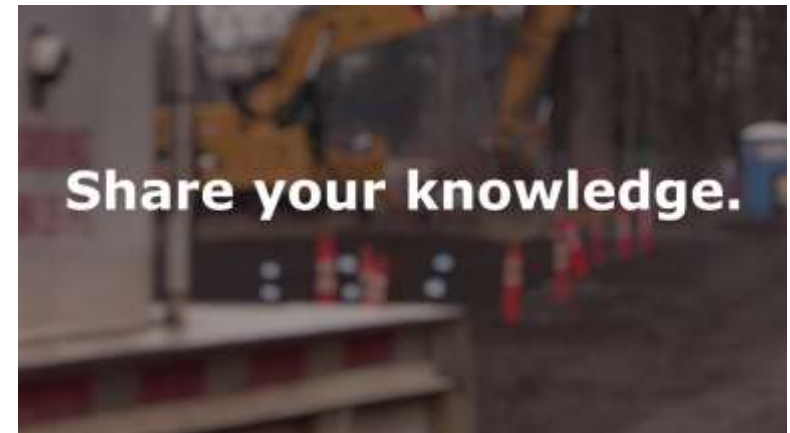


# Comprehensive Program Health and Safety Plan

- Part of the Program Management Plan
- Provides framework for managing safety across multiple employers
- Utilizes highest common denominator
- Promote shared safety values



Orientation Video



# Prequalification of Contractors

- Review lagging indicators (TRIR/EMR)
- Verify compliance history
- Verify firm experience
- Verify firm resiliency
- Verify safety personnel who can provide support
- Understand their program

The screenshot shows the OSHA website's Establishment Search interface. The header includes the United States Department of Labor logo and navigation links. The main content area displays search filters for 'Establishment Search' with a date range of 'Reflects inspection data through 04/06/2018'. The search results for 'Lockton' are shown, including the date 'May 8, 2017', a redacted name, and the title 'Insurance Manager'. The results are summarized as 'RE: Workers' Compensation Insurance NCCI Experience Modification Rate'.

Dear Ms. Lyttle:

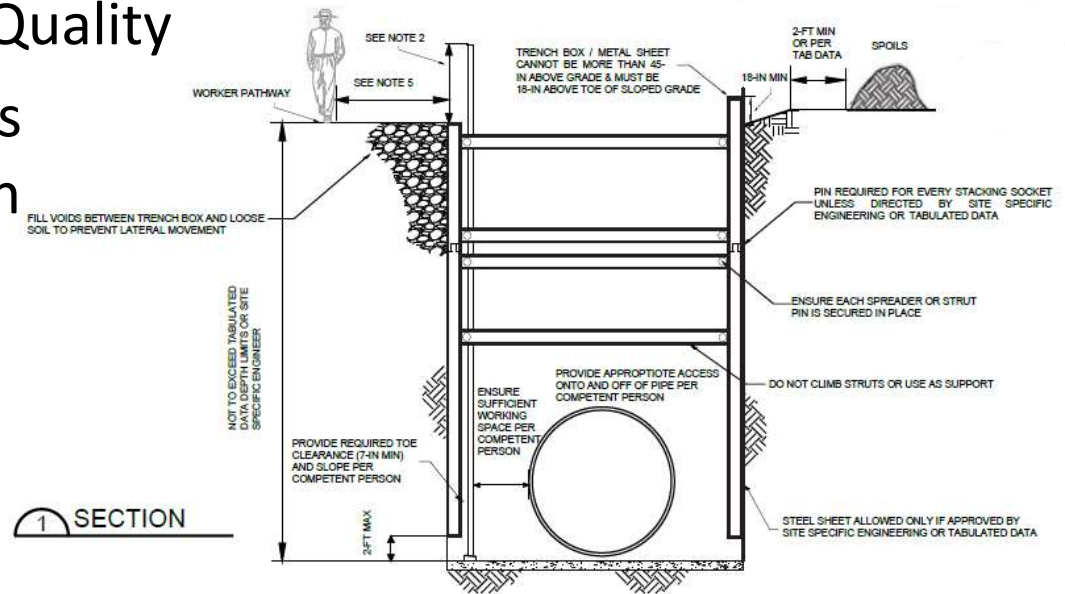
The Workers' Compensation Experience Rating as promulgated by NCCI for [REDACTED] is summarized below:

05/01/2017 – 05/01/2018	.61
05/01/2016 – 05/01/2017	.86
11/01/2015 – 11/01/2016	.84



# Health and Safety Specifications

- Detailed Div. 1 Specifications enforced by Health & Safety and Quality
- Demonstrative details integrated into design
- Partner projects



# Branding the Safety Program



## HEALTH AND SAFETY PRINCIPLES

- ✓ There is no job so important that you cannot take the time to do it safely
- ✓ All hazards must be promptly reported and abated
- ✓ Everyone is responsible for safety
- ✓ Everyone has stop work authority
- ✓ All incidents must be reported and investigated to root cause
- ✓ Employee involvement and recognition are required to develop a proactive safety culture
- ✓ Leadership must consistently demonstrate a commitment to health & safety
- ✓ Safety knowledge is meant to be shared
- ✓ Everyone goes home safely at the end of the day



SAFETY SUGGESTION  
OR OBSERVATION?



SAFET@DOC.E-BUILDER.NET  
503-848-3048



# Building a Safety Culture

- Everyone is encouraged to talk about safety and share lessons learned.
- Everyone has “stop work” authority
- Incentivize involvement
- Start meetings with a safety moment
- Monthly safety meetings/awareness training



## Lessons Learned - Confined Space Entry

### Incident Description

**Type of Incident:** Multiple Non-Compliance  
**Operation:** Interior Inspection and Pipe Grouting  
**Location, Date/Time of Incident:** Washington County, Oregon  
September 8, 2017, 10:40 a.m. (Inspection Coating Fumes)  
September 13, 2017, 2 p.m. (Entry without Attendant/Ventilation)

### What Happened?

**Event 1:** Two pipeline inspectors entered a section of pipe south of TV Highway to conduct inspections. Both team members entered under alternate entry conditions with a contractor provided attendant, forced air ventilation and continuous air monitoring. Following pipe entry personnel noted a paint odor from coating operations on the section of pipe running under TV Highway. Ventilation equipment was drawing air from coating operations into the launch shaft, and from there into the southern pipe section where the inspectors were present. The inspectors immediately exited the pipe and there were no injuries.

**Event 2:** WWSP Safety Inspector observed a ladder exiting a manhole and heard personnel working inside. Adjacent to the manhole was a ventilation fan which was turned off, although the generator was running which to the casual observer may have suggested that the fan was on. No attendant was observed. Inspector walked south along the alignment to determine if another entry point was present with an attendant/ventilation system. Seeing none, inspector returned to original location and informed foreman to remove personnel from the pipe until ventilation and an attendant was in place.

### What Casual Factors Were Identified?

**Event 1:** Inspection personnel and attendant did not anticipate coating fumes would travel across open launch pit from the pipe north of the pit into the pipe south of the pit. Air monitoring equipment did not alarm as the isocyanates in the coating, though toxic, would not register as a VOC or flammable gas.



Unattended manway.

**Event 2:** Personnel did not understand that the manway was a confined space. Attendant had entered the manway to better hear the worker in the pipe as radios were not provided. Personnel did not understand 100% forced air requirement for entry procedures and had shut down ventilation to better hear and avoid dust being blown into the air.

### What Lessons Were Learned to Prevent Incidents like this in the Future?

**Event 1:** Always validate the source of makeup air and understand limitations of air monitoring equipment.

**Event 2:** Remain diligent when working in confined spaces. Always complete pre-entry checklist/permit to ensure all equipment necessary for the completion of work is available. Ensure an entry supervisor reinforces entry procedures and validates equipment use during the entry event.

### What Has Been Done?

Retraining of personnel on entry requirements and isocyanate hazards.

### What Will Be Done?

Harmonization of employer entry process and checklist.

### Want More Information?

Call: 503-848-3048 Email: [safeit@docs.e-builder.net](mailto:safeit@docs.e-builder.net)





# Tools to Promote Safety Every Day



## Willamette Water Supply Our Reliable Water

### Construction Safety Critical Trenching Controls



#### Safe It – Trenching

No one enters an unstable trench or a trench greater than 5-foot deep without a protective system in place (Shoring, Benching, Shield, Shoring).

No one enters a trench deeper than 4-feet without a means of egress within 25-feet.

No one enters a trench unless a competent person has inspected it and any associated shoring system there are no signs of hazards (e.g., cracks, sloughing, bulging, damaged shoring).

No one uses protective shoring or shielding unless it has been inspected, tab data is available and it is fit for purpose.



#### Safe It – Caught Between

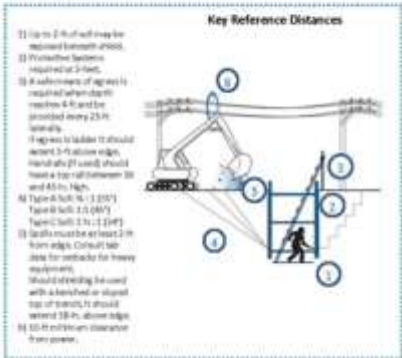
No one enters a trench along a roadway without vehicle protection. No one works within the swing area of heavy equipment.

Personnel stay clear of the line of fire.



#### Safe It – Electrocutation

Maintain a minimum of 10-foot clearance from overhead power lines. Always conduct utility clearance prior to start of work.



- 1) 10 ft to 2 ft of wall may be required for trench walls.
- 2) Protective system required at 3-feet.
- 3) If wall height of system is required between 4 and 5 feet, it should be provided every 25 ft vertically.
- 4) If system is taller it should extend 3-5 ft above edge.
- 5) If system is taller it should extend a top rail between 30 and 45 ft high.
- 6) Type B shoring (3,000 lbs per sq ft) or Type C shoring (1,500 lbs per sq ft) should be used.
- 7) Shields must be at least 2 ft from edge. Shields for heavy equipment should be designed with a horizontal or sloped top of shields to avoid upward 30 ft above edge.
- 8) 10 ft minimum clearance from power.



#### Safe It – Struck By

No one works underneath loads (e.g., buckets, suspended loads). No one works beneath loose rock faces without barriers or controls. Spoils and equipment is kept at least 2-feet from edge.



#### Safe It – Falls

Unattended trenches are secured or covered. Adequate barriers or warnings are in place to prevent falls.



[www.OurReliableWater.org](http://www.OurReliableWater.org)



# Focus & Follow Through

Willamette Water Supply Co. 12/14/18

WWSP Safety Requirements Score Card					
Contractor Data		Evaluation Period:	Start	End	
Contractor:		Project Data			
Subcontractor ID:	Title:				
Subcontractor SW:	Work Performance:	Installation of approximately 2 Ponds of 10-15 acres.		Usage of hydrovac.	
Contractor Key Personnel:	Project Manager:	Risk/Exposure Use Being Under Physical Coordinating with Roadwork			
Project Manager:	Supervisor:				
PM Email:	Supervisor Email:				
PM Cell:	Supervisor Cell:				
Phone:	Supervisor Phone:				
WWSP Inspection:	Value:	Period:	Trend:	Notes:	
Value:	Period:	Trend:			
Disturb (previous 12 months):	0	0	↑		
Project incidents (reported/observed):	0	0	↑		
Number of incidents resulting in injury or property damage:	0	0	↑	See tabs for example photos and Safety's Received.	
Number of incidents resulting in a fatality:	0	0	↑		
Number of near or immediate WWSP report actions (scores 1 and 2):	0	0	NA		
WWT: 1 - Exceed Expectations, 2 - Consistently Meet Expectations, 3 - Occasionally Meet Expectations, 4 - Slightly Below Expectations, N/A - Not Applicable, N/D - Not Determined, * Indicates Note					
<b>SCORE CARD GRAND TOTAL:</b>					
Overall Expectations:	NA	1	0	0	0
1. Is the job done for health and safety/Permit as a success?	NA	0	0	0	0
2. Has an official safety and health record been created?	NA	0	0	0	0
3. Does the official safety and health record contain the following as a minimum?	NA	0	0	0	0
4. Was training the work to be performed completed by all?	NA	0	0	0	0
5. Emergency plan provided?	NA	0	0	0	0

Reporting Period: December 7, 2017 – January 11, 2018	WWSP PMO/Staff	Design and Other Consultants	WWSP Construction Contractor
<b>Training Completion</b>	89% <sup>1</sup>	100% <sup>2</sup>	100% <sup>3</sup>
<b>Suggestions/Observations</b>			
Current Month	1	0	0
YTD	13	3	1
<b>Inspection/Audit</b>			
Current Month	0	0	5
YTD	5	0	34
<b>Incidents</b>			
Current Month	0	0	1
YTD	5	3	8
<b>Safety<sup>4</sup></b>			
YTD Identified	23	6	43
YTD Completed	21	6	38
YTD % Completed	91%	100%	88%

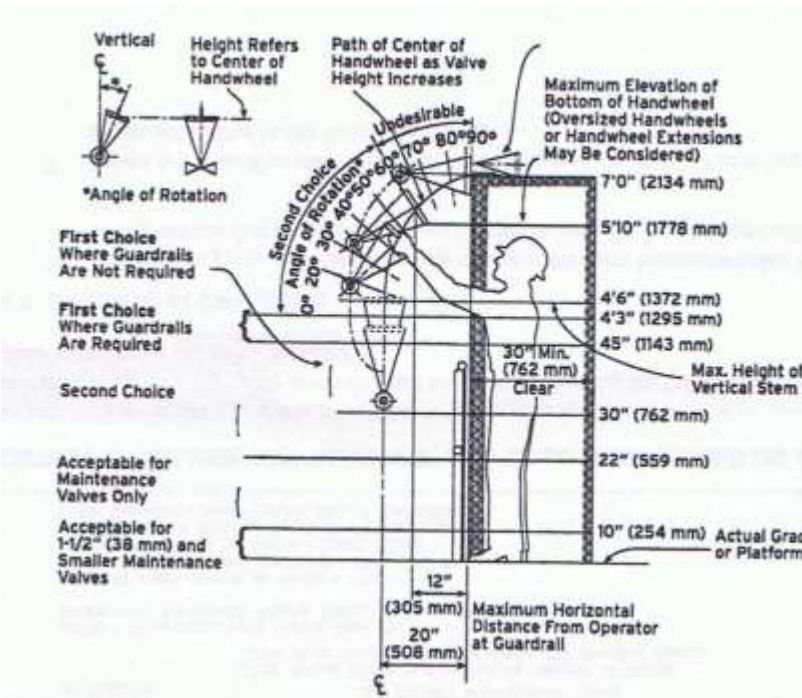
- Construction inspectors looking for safety compliance on a daily basis.
- Health & Safety staff attend construction meetings and conduct audits
- Scorecard/Formal Feedback
- Monitor status of



# Safety by Design

We want to eliminate or reduce workplace hazards associated with;

- Construction
- Operation/Maintenance



# Early Program “Wins”

- Increased manway size
- Relocated power lines to improve construction safety
- Improved River Crossings
- Identified welder manganese exposures
- Instituted positive barriers for road work
- Developed better trench egress and design details
- Better safety plans



# Initial Impressions





**QUESTIONS?**

# Thank you!

**Michael Doherty, CSP**  
**Construction Health & Safety Coordinator**  
**Willamette Water Supply Program**  
**503-220-5434**

**Mike Jacobs**  
**Safety & Security Specialist**  
**Willamette Water Supply Program**  
**503-848-3048**

[info@ourreliablewater.org](mailto:info@ourreliablewater.org)



2018 TACOMA PNWS-AWWA

