# Van Stone Mine cleanup options

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Toxics Cleanup Program
Eastern Region

DEPARTMENT OF ECOLOGY
State of Washington

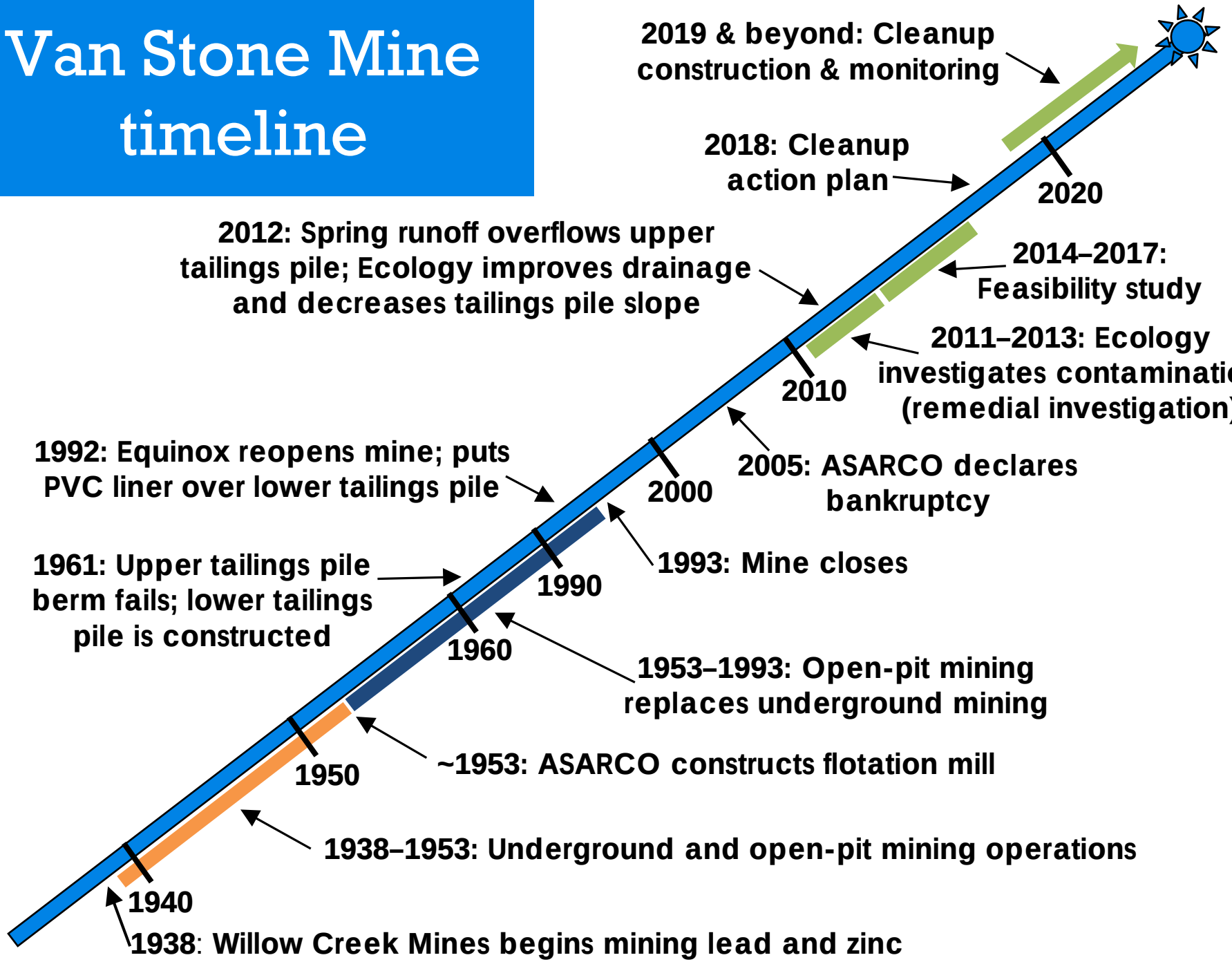
# Agenda

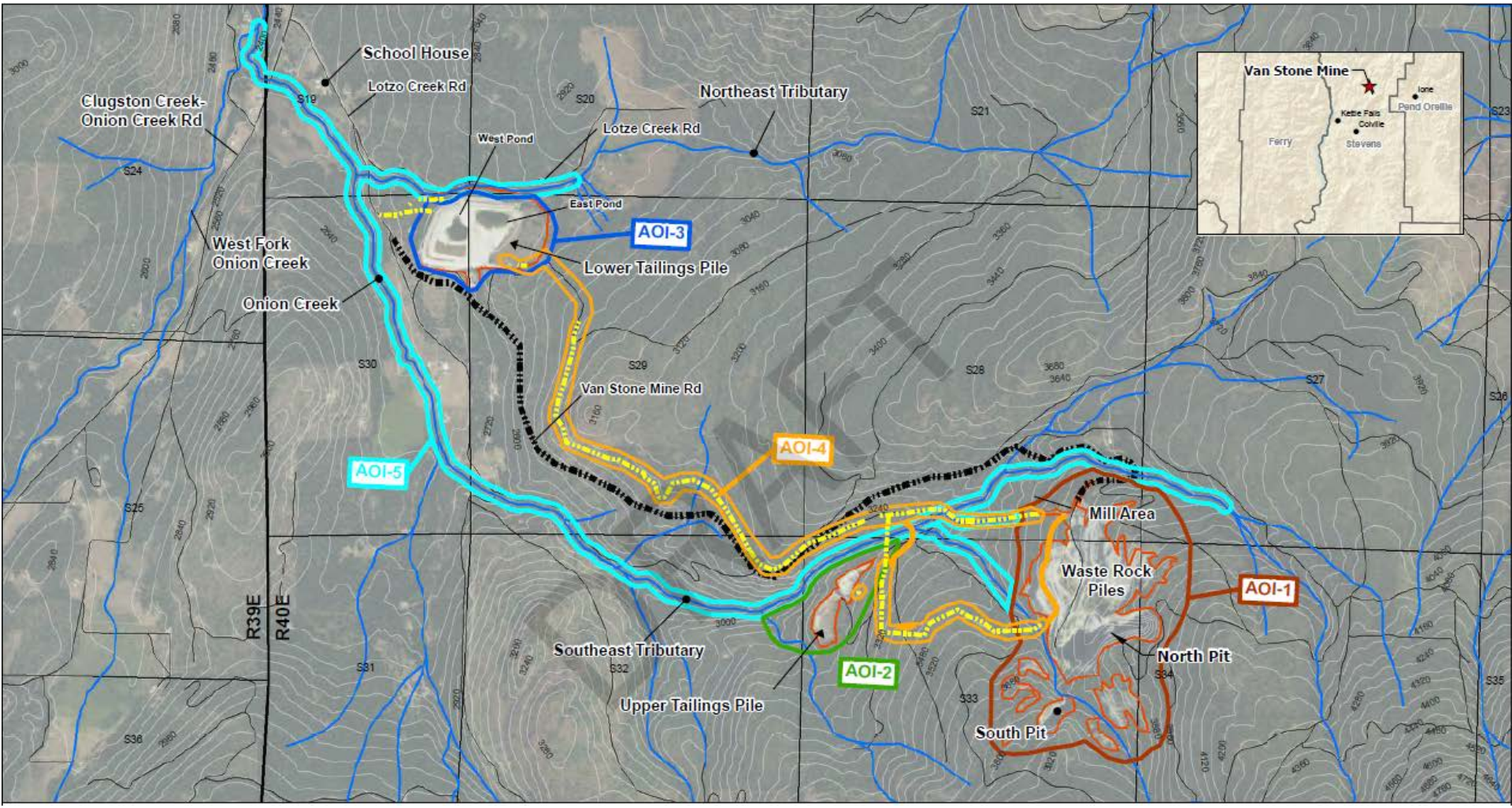
- Mining and cleanup history
- Mine map, photos, and contamination issues
- WA's cleanup law
- Overview cleanup options
- Explain next steps
- Questions & answers; discussion

# Who is involved in cleanup?

- WA Dept. of Ecology
  - GeoEngineers, our consultant
- WA Dept. of Health
- WA Dept. of Natural Resources
- Stevens County
- Potentially liable persons

# Van Stone Mine timeline




School House
Lotzo Creek Rd
Clugston Creek-
Onion Creek Rd
Northeast Tributary
Lotze Creek Rd
West Pond
East Pond
AOI-3
Lower Tailings Pile
West Fork
Onion Creek
Onion Creek
Van Stone Mine Road
AOI-4
AOI-5
Mill Area
Waste Rock
Piles
AOI-1
North Pit
South Pit
Southeast Tributary
AOI-2
Upper Tailings Pile
R39E
R40E
S19
S20
S21
S23
S24
S25
S26
S27
S28
S29
S30
S31
S32
S33
S34
S35
S36
Van Stone Mine
Ione
Pend Oreille
Kettle Falls
Colville
Ferry
Stevens

# Waste rock and mine/mill area

# Upper tailings pile


# Lower tailings pile

## Production

- ASARCO – 7.5 million tons mined
- Equinox – 1.27 million tons mined

## Tailings pile sizes

- Upper – 9.6 acres (780,000 tons)
- Lower – 35.1 acres (1.8 million tons)

**Waste rock pile** – 53 acres

# Contaminants of concern

- Arsenic
- Cadmium
- Lead
- Zinc

# Feasibility Study

## Develop and evaluate cleanup options

Final cleanup plan usually selected from these options

## Major elements

- Cleanup levels
- Evaluate options based on WA's cleanup law
- Suggest preferred cleanup option

# Model Toxics Control Act (MTCA) requirements

- Protect human health and environment
- Meet cleanup standards
- Meet applicable state and federal laws

# MTCA requirements (continued)

- Use permanent solutions as much as possible
- Compliance monitoring
- Reasonable restoration time frame
- Consider public comments

# Permanent solutions

- Cleanup standards can be met without further action
- Permanent to the maximum extent practicable

**Cost and benefits analysis**

If the benefits of two or more alternatives are equal – less costly option is selected if it meets requirements

# Cleanup options

# Option 1:
# No Action

- Leave everything in place
- Does not comply with MTCA
- Only included for comparison purposes
- **Not a choice we will consider**

# Option 2:
# Institutional controls

- Install security fence around two tailings piles
- Post warning signs
- Control future site activities
- File covenants to warn potential owners about contamination
- Educate public about site

# Option 3:
# In-place containment
# (no cover system)

- Remove unstable slopes
- Regrade waste rock and tailings piles to match natural site contours
- Replant to reduce erosion

# Option 4:
# In-place containment with cover

Same as Option 3 with the following cover system over tailings piles/dangerous waste:

- 1 ft. topsoil with vegetation
- 2 ft. borrow material (likely waste rock)
- Geonet drainage textile
- 12-oz. non-woven geotextile
- 60-mil high density polyethylene geomembrane
- 12-oz. non-woven geotextile
- Regraded tailings, waste rock, and soil

# Option 5:
# Centralized tailings repository

- All tailings and dangerous waste consolidated at lower tailings pile
- Regraded to natural site contours
- Capped with Option 4 cover system
- Replanted to reduce erosion

# Option 6:
# Off-site disposal

- Tailings and some waste rock excavated
- Hauled for disposal at Arlington, OR, landfill
- Disturbed areas regraded and replanted

# Common cleanup elements (except Option 1)

- Installing a buttress and emergency spillways at North Pit Lake to stabilize earthen dam
- Grading waste rock areas to match site contours and replanting

# Evaluation of options (see printed handout)

| | Alternative 1 - No Action | Alternative 2 - Institutional Controls | Alternative 3: In-Place Containment without Cover System. | Alternative 4: In-Place Containment with Cover System. | Alternative 5: Centralized Repository at AOI-3 | Alternative 6: Off-Site Disposal |
|---|---|---|---|---|---|---|
| **Alternative Ranking Under MTCA** | | | | | | |
| **1. Compliance with MTCA Threshold** | **No** | **No** | **Yes** | **Yes** | **Yes** | **Yes** |
| **2. Restoration Time Frame** | Immediate for implementation.<br><br>Long-term monitoring expected for 25+ years. | Short timeframe for installation of fence (estimated at 4 weeks).<br><br>Long-term monitoring expected for 25+ years. | Initial restoration timeframe is moderate (estimated at 10 weeks).<br><br>Long-term monitoring expected for 25+ years. | Initial restoration timeframe is moderate to long (estimated at 20 weeks - 2 field seasons).<br><br>Long-term monitoring expected for 10 years. | Initial restoration timeframe is moderate to long (estimated at 20 weeks - 2 field seasons).<br><br>Long-term monitoring expected for 10 years. | Initial restoration timeframe is long (estimated at 25 weeks - 2 field seasons).<br><br>Long-term monitoring expected for 5 years. |
| **3. Disproportionate Cost Analysis Relative Benefits Ranking** | | | | | | |
| Protectiveness | 1 | 2 | 3 | 4 | 4 | 5 |
| Permanence | 1 | 1 | 2 | 3 | 4 | 5 |
| Cost[2] | 5 | 4 | 3 | 2 | 2 | 1 |
| Long-Term Effectiveness | 1 | 2 | 3 | 4 | 4 | 5 |
| Management of Short-Term Risks | 5 | 5 | 4 | 3 | 3 | 1 |
| Implementability | 5 | 5 | 4 | 3 | 3 | 2 |
| Consideration of Public Concerns | 1 | 1 | 2 | 4 | 4 | 3 |
| **Total of Scores** | **19** | **20** | **21** | **23** | **24** | **22** |
| **4. Disproportionate Cost Analysis** | | | | | | |
| | **$0** | **$903,400** | **$4,863,076** | **$14,361,469** | **$13,960,482** | **$448,143,116** |
| Benefits | Yes | Yes | No | No | No | No |
| Practicability of Remedy | Not Practicable | Not Practicable | Low Practicability | Practicable | Practicable | Not Practicable |
| Remedy Permanent to Maximum Extent Practicable | Not Permanent | Not Permanent | Not Permanent | Yes | Yes | Yes |
| **Overall Alternative Ranking** | **6th** | **5th** | **4th** | **2nd** | **1st** | **3rd** |

# Next steps

- Respond to comments
- Revise Feasibility Study if needed
  - Public review and comment if significant changes
- Draft Cleanup Action Plan
  - Public review and comment
- Cleanup construction
- Long-term monitoring

# Questions?

**Submit comments by 6/22 to:**

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**More info:**

https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=461