CSAP
Society of Contaminated Sites Approved Professionals of British Columbia

The Contaminated Sites Approved Professionals Society

Fall Professional Development Workshop
AGENDA

November 17, 2022

8:30am – 9:00am	Registration
9:00am – 9:05am	**Welcome** Duncan Macdonald, P.Eng., CSAP, PGL Environmental CSAP President
9:05am – 9:40am	**CSAP Performance Assessment Committee Update** • Focused review process and examples • Contaminant migration communications Chuck Jochems, P.Eng., CSAP, Active Earth Engineering Chair, CSAP Performance Assessment Committee
9:40am – 10:15am	**CSAP Technical Review Committee Update** **PCOC refinement project** • Karey Dow, P.Ag., Legacy Environmental • Lora Paul, P.Eng., CSAP, Thurber Engineering **Making Contaminated Sites Climate Ready** Christine Thomas, R.P.Bio., CSAP, Golder/WSP Chair, CSAP Technical Review Committee
10:15am – 10:30am	Morning break with refreshments
10:30am – 11:10am	**Stage 14 Amendments Recap** Travis Deeter, P.Ag., CSAP, Thurber Engineering **Stage 14 – Anticipated Real World Impacts** • Travis Deeter, P.Ag., CSAP, Thurber Engineering • Steve Boyce, B.A. (Env), Active Earth Engineering
11:10am – 11:45am	**Economic Impacts from Remediated Contaminated Sites** Ed Mansfield, Ph.D., Mansfield Consulting
11:45am – 1:00pm	Lunch break
12:15pm – 12:45pm	**Excess Soils to Construction Aggregate** Peter Reid, P.Eng., CSAP, Global Remediation Technology

1:00pm – 1:05pm	**Introduction to afternoon session** David Mitchell, P.Eng., CSAP, Active Earth Engineering Chair, CSAP Professional Development Committee
1:05pm – 1:35pm	**Ministry of Environment and Climate Change Strategy** • Director's update • Approval in principle updates Carrie Nugent, Director, Land Remediation
1:35pm – 2:30pm	**Developing a Compliance Strategy for the Stage 14 Amendments – An Industry Perspective** with summary by SLR Consulting of the implications of soil vapour requirements • Brenda Hatch, P.Eng., BC Hydro • Michael Gill, P.Eng., CSAP, SLR Consulting **Soil Salt Contamination: Challenges and Considerations** • Steve Boyce, B.A. (Env), Active Earth Engineering • Paul Savinkoff, P.Geo., Senior Geoscientist, Ministry of Transportation and Infrastructure
2:30pm – 2:45pm	**CSAP Review Services Committee Update** David Newton, P.Geo., CSAP, SNC-Lavalin Chair, CSAP Review Services Committee
2:45pm – 3:00pm	**Lunch and Learn Series** Brainstorming session and topics David Mitchell, P.Eng., CSAP, Active Earth Engineering Chair, CSAP Professional Development Committee
3:00pm – 3:15pm	Afternoon break with refreshments
3:15pm – 3:55pm	**Panel Discussion – Stage 14 Amendments** • Kerri Skelly, Acting Manager of the Site Identification Unit, Ministry of Environment and Climate Change Strategy • Brenda Hatch, P.Eng., BC Hydro • Travis Deeter, P.Ag., CSAP, Thurber Engineering • Jason Wilkins, P.Ag., CSAP, Legacy Environmental • J. David Ross, P.Eng., Hall Constructors Moderator: David Mitchell, P.Eng., CSAP, Active Earth Engineering Chair, CSAP Professional Development Committee
3:55pm – 4:00pm	**Closing Remarks** Duncan Macdonald, P.Eng., CSAP, PGL Environmental CSAP President

CSAP members will earn six (6) PD hours for attending the full day

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Performance Assessment Committee Update

Chuck Jochems, P.Eng., CSAP
Active Earth Engineering

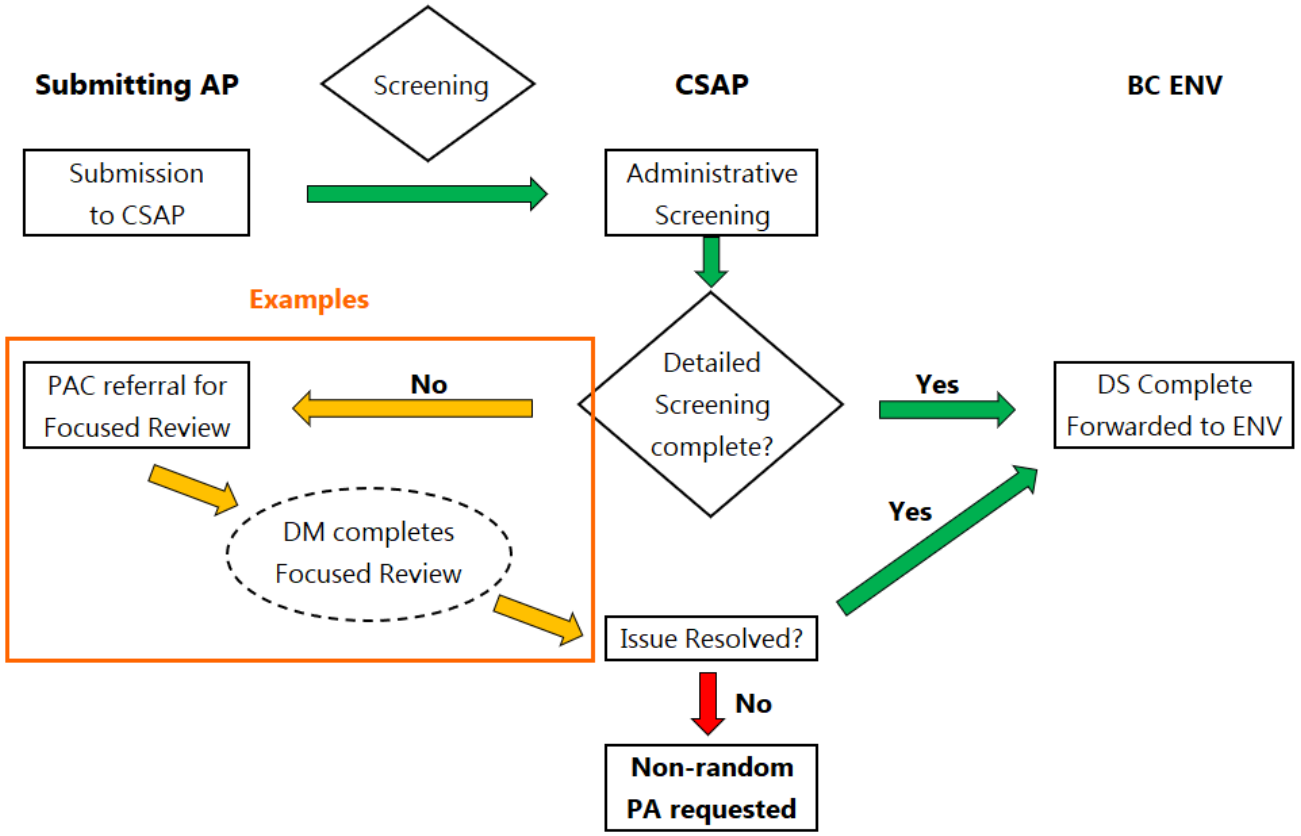
Submission Metrics to Date

- For Fiscal Year 2022-23 (Apr 1 to Nov 4, 2022 [7 months])
- 92 Submissions Received
  - 15 Performance Assessments (PAs)
  - 2 Focused Reviews (FRs)
  - 3 Non-random PA (NRPAs)
- 2 FRs:
  - 1 ended in NRPA, other still being resolved
- 3 NRPAs:
  - 1 from FR, 1 from PA measures, 1 at request of ENV

CSAPSOCIETY.BC.CA

Review of PA Process – Focused Reviews (FRs)

- Members may not be familiar with FRs in the CSAP Process
- Examples of FRs and Outcomes



Review of PA Process – Focused Reviews

1) When Identified?

Detailed Screening or at request of ENV

Referral made to PAC

2) Who completes them?

A Delegated Member that sits on the PAC

3) How long do they typically take?

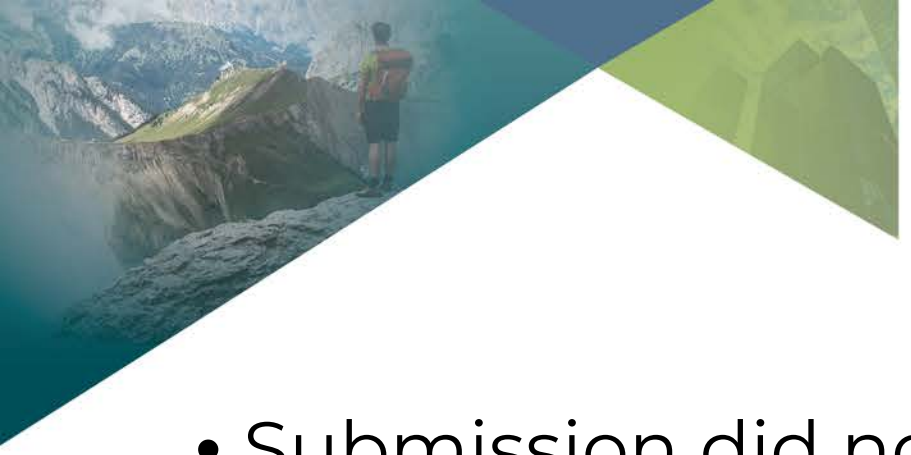
5 – 10 business days depending on the issues and the potential need for ENV involvement

CSAPSOCIETY.BC.CA

FR – Example 1 Submission

- Risk-based COC Submission with off-site Affected Parcel
- Source Parcel in fee simple under Provincial jurisdiction
- Off-site Affected Parcel on VFPA land under Federal jurisdiction
- Submission included email communication with VFPA that a COC would not be required for their property, given it was characterized, risk assessed and on federal land

CSAPSOCIETY.BC.CA



FR – Example 1 Issues Identified

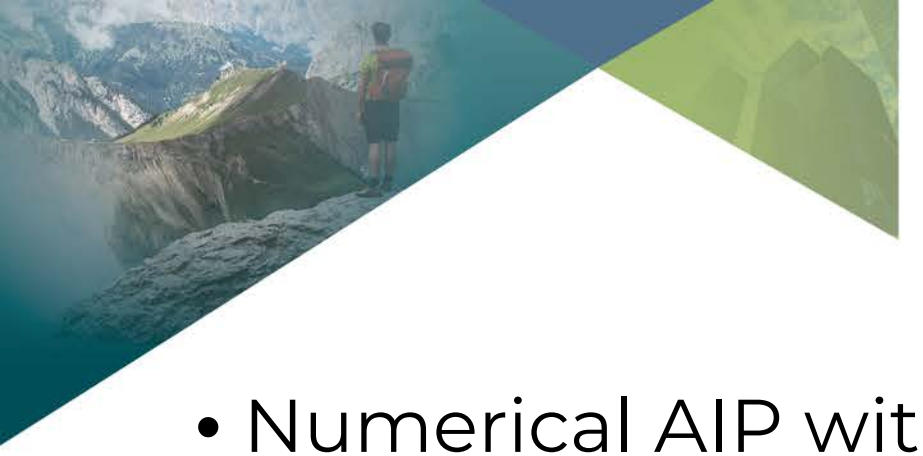
- Submission did not include the entire extent of contamination as per P6
- Required a P6 Pre-Approval from ENV
- FR prompted during Detailed Screening
- To understand the off-site issue, DSI was reviewed
- Questions raised on TG8-level delineation of groundwater contamination
- Submission was ‘Deficient’ and required re-submission with NRPA

CSAPSOCIETY.BC.CA

FR – Example 1 Outcome

- P6 Pre-Approval obtained from ENV
- Additional groundwater investigation completed
- Re-submission
- ‘Additional Information Required’ at Stage 1
- All Stage 1 Findings were addressed with an updated Risk Assessment
- NRPA Final finding was ‘Sufficient’

CSAPSOCIETY.BC.CA



FR – Example 2 Submission & Issues

- Numerical AIP within a numerical COC area
- AIP included future remediation after building was to be demolished
- No contamination identified within COC area
- Submitting AP was unfamiliar with submission requirements and expected the COC area to be a conservative approach
- During Detailed Screening, the incorrect Instrument was identified
- FR recommended

CSAPSOCIETY.BC.CA

FR – Example 2 Outcome

- Data within COC Area supported an application for a Preliminary Determination instead
- Submitting AP was contacted to revise recommendation to a Preliminary Determination
- Went through Detailed Screening with revised ENV documents and correct draft Instruments
- NRPA not recommended

CSAPSOCIETY.BC.CA

FR – Example 3 Submission & Issues

- Numerical COC application
- During Detailed Screening, vapour attenuation factors (VAFs) were found not to have been included in Section 4.4 of the SoSC
- Through email correspondence, vapour investigation for future use was questioned
- FR recommended

CSAPSOCIETY.BC.CA

FR – Example 3 Outcome

- Additional vapour investigation completed but found not to be required
- No residual vapour source remained onsite
- Previous vapour source was within contaminated fill that had been removed from Site
- No vapour source in native soil identified
- Issues resolved in Detailed Screening
- NRPA not recommended

CSAPSOCIETY.BC.CA

FR – Example 4 Submission & Issues

- Numerical COC application
- DW not applicable to the Site
- Insufficient information provided in Section 4.2 of the SoSC to confirm inapplicability
- Not resolved during Detailed Screening
- FR recommended for applicable water use standards

CSAPSOCIETY.BC.CA

FR – Example 4 Outcome

- Hydrogeology section of DSI reviewed
- Sufficient information provided in DSI report
- Submitting AP requested to revise SoSC
- Detailed Screening completed
- NRPA not recommended

Focused Reviews Takeaways

- Issues typically identified during Detailed Screening, but can be requested by ENV
- Reports and supporting information relevant to the issues raised are reviewed by a DM
- CSAP strives to make it a learning opportunity for members
- Most issues are resolved through Detailed Screening, but exceptions can result in an NRPA

CSAPSOCIETY.BC.CA

Focused Reviews as part of CSAP's Process

QUESTIONS?

CSAPSOCIETY.BC.CA

Contaminant Migration Communications

- Members are reminded of Communication Expectations for Affected Parcel Owners
- Similar to previous Administrative Guidance 11
- Information can be found under the '*Contamination Migration*' tab on ENV's webpage
- Checklist for Source Parcel Responsible Persons and Affected Parcel Owners
    - Emails for cooperative affected parcel owners
    - Registered mail recommended for uncooperative affected parcel owners

CSAPSOCIETY.BC.CA

Contaminant Migration Communications

- Requirements and Expectations for Source Parcel Responsible Persons
  - Delineate and remediate full extent of contamination
  - Provide NOMs, SRCRs, and NIRs
  - Communicate remedial strategy, plan and schedule
  - Where Instruments are sought for Affected Parcels provide communication record to ENV
  - Provide copies of any Instruments obtained to the Affected Parcel Owners

CSAPSOCIETY.BC.CA

Contaminant Migration Communications

- Advice and Expectations for Affected Parcel Owners
  - Obtain legal and technical advice with professional familiar with BC contaminated site requirements
  - If you are aware of migrating contamination, but have not been contacted by the Source parcel owner, contact them and request information
  - Review information on your rights, obligations and liability exposure
  - Undertake an independent review of investigation and remediation work at your affected parcel for verification

CSAPSOCIETY.BC.CA

Contaminant Migration Communications

- REMINDERS
  - ENV reviews communications under the lens of Administrative Fairness
  - Communication Record is to be included in the list of reports within the SoSC and in Schedule D of the draft Instrument
  - Issues that are perhaps not resolved during Detailed Screening are deferred to ENV

CSAPSOCIETY.BC.CA

Contaminant Migration Communications

QUESTIONS?

CSAPSOCIETY.BC.CA

PAC Update

Questions? Please contact **PAC Chair**
PAC@csapsociety.bc.ca

CSAP

CSAPSOCIETY.BC.CA

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

CSAP Guidance for PCOCs

LEGACY ENVIRONMENTAL & THURBER

Karey Dow, P.Ag., PMP, Legacy Environmental
Lora Paul, P.Eng., CSAP, Thurber Engineering

Outline

Why

- Create updated guidance for BC practitioners to use as a basis for determining PCOCs

How

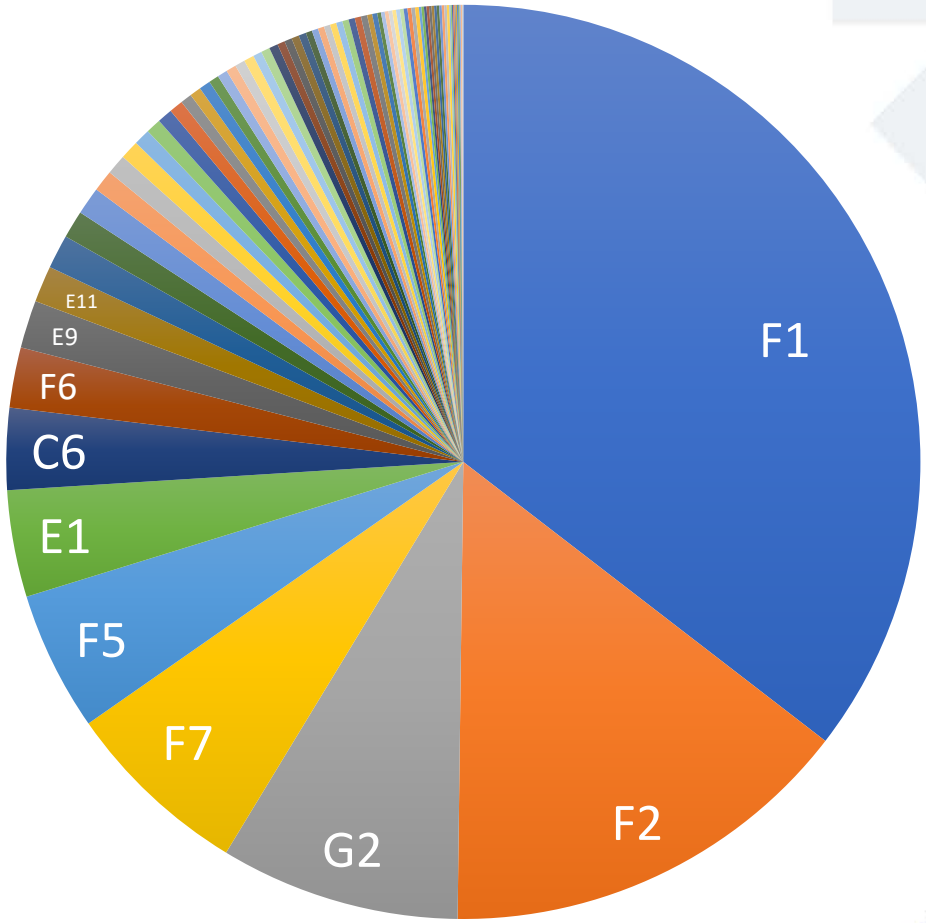
- Identify common Schedule 2 Uses and conduct an updated jurisdictional scan

What

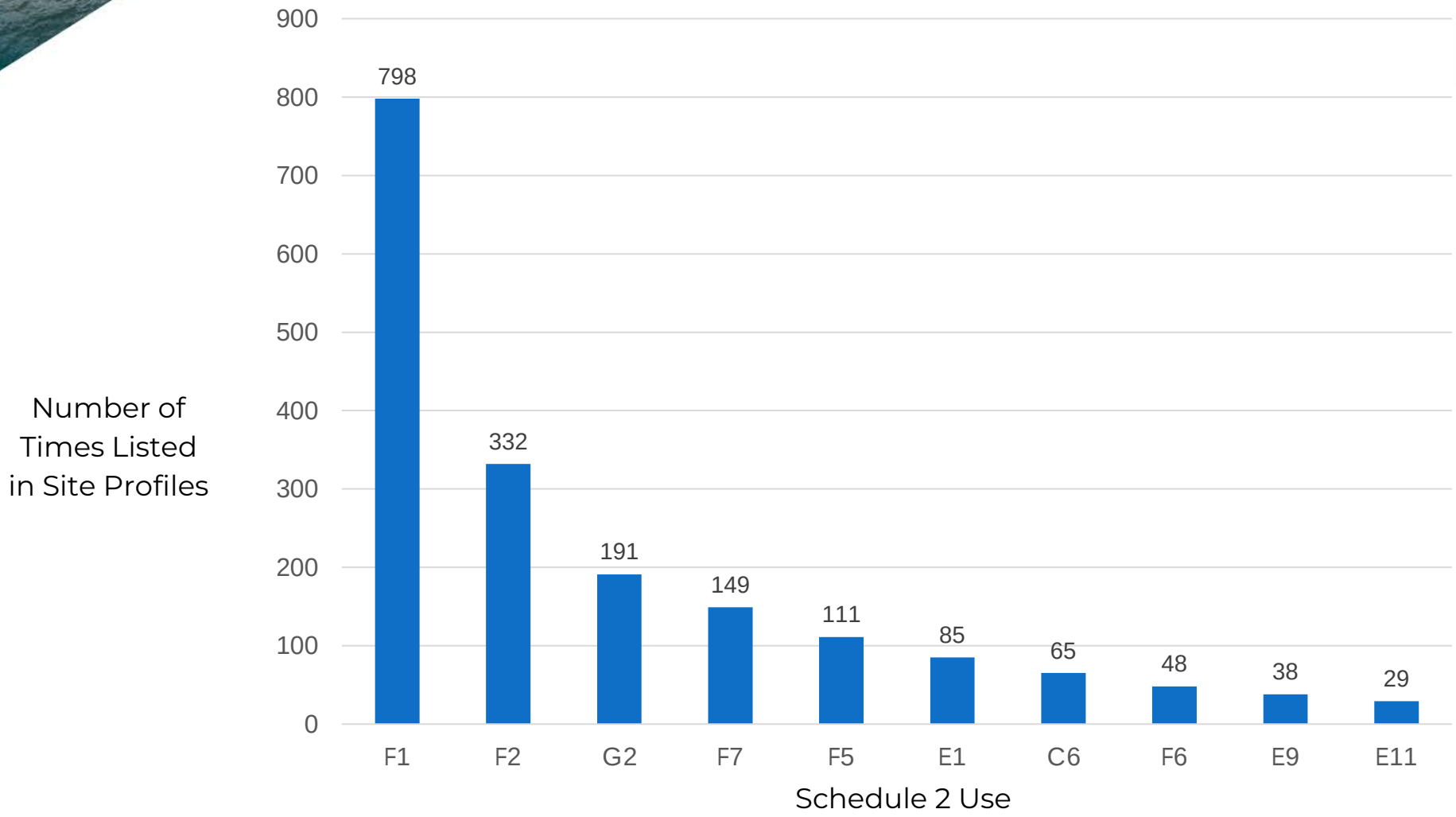
- Prepare a one-stop PCOC guidance document for 37 Schedule 2 Uses and a list of common APECs

Determine Common Schedule 2 Activities

Number of Sites on the Registry (since Nov 1, 2017)	7034
Number of Schedule 2 uses listed in Site Profiles	2251



Top 10 Schedule 2 Uses



Focused Questions:

- What are the Fuel PCOCs?
  - SLR 2020 document inconclusive
  - CSAP 2009 Soil Vapour Advice and Practice Guidelines
  - Jurisdictional Scan – no new resources identified

Result: Refined PCOC list for Gas and Diesel Fuel

Focused Questions:

- When should TEL be included as a PCOC?
  - Still a component of aviation fuel
  - May be linked to benzene but research is inconclusive
  - No research available to eliminate TEL as a PCOC in soil

Result: Timeline and fuel type only deciding factor

Focused Questions:

- What metals should be PCOCs for the Most Common CSR Schedule 2 Activities?
  - Consulted PCOC lists available from other jurisdictions
    - Able to identify specific metals for some Schedule 2's
    - Focus on waste oil

Result: Refined PCOC list for Waste Oil

Parameter Groups (Draft)

PARAMATER GROUP	INDIVIDUAL PARAMETERS
Dry cleaning VOC	1,1,1-trichloroethane
	1,1-dichloroethane
	1,1-dichloroethylene
	1,2-dichloroethane
	carbon tetrachloride
	chloroethane
	chloroform
	cis-1,2-dichloroethylene
	methylene chloride (dichloromethane)
	tetrachloroethylene
	trans-1,2-dichloroethylene
	trichloroethylene
	vinyl chloride

Goal: create lists of regulated parameters that can be tested at an accredited laboratory

Likely vs Possible PCOCs

Likely PCOCs - commonly identified contaminants for any given Schedule 2 Use regardless of the circumstances or specific activities that have occurred or are occurring

Possible PCOCs - may be identified at any given Schedule 2 Use if certain circumstances or activities have occurred

Likely vs Possible PCOCs (Draft)

Schedule 2 Use	Likely PCOCs	Possible PCOCs	
		Possible Parameter	**Related Activity/Source**
E9. Dry cleaning facilities or operations and dry cleaning chemical storage, excluding	Drycleaning VOC	VPH	if Stoddard solvent was used, primarily before 1970
		LEPH	
		BTEX	

- 37 Schedule 2 Uses included
- Relied heavily on work done in 2018 and 2020
- Consulted literature sources, as needed
- Leveraged experience from the LEGACY/Thurber team

Common APECs (Draft)

APEC	Likely PCOCs	Possible PCOCs	
		Possible Parameter	**Related Activity/Source**
Fill	LEPH, HEPH, PAH, Metals	BTEX	If there is a known hydrocarbon source or if field screening or observations indicates a volatile hydrocarbon source
		VPH	

- 11 Common APECs included
- Leveraged experience from the LEGACY/Thurber team

Next Steps

- Draft will be available the week of November 21st for CSAP member comments
- CSAP comments due – December 15, 2022
- Comments to be submitted to TRC@csapsociety.bc.ca


Questions?
CSAP
CSAPSOCIETY.BC.CA

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Technical Review Committee - Climate Change Discussion Paper

Christine Thomas, R.P.Bio., CSAP
Golder / WSP

CSAPSOCIETY.BC.CA

Impacts of Climate Change

CSAPSOCIETY.BC.CA

Discussion Paper – Making Contaminated Sites Climate Ready

- Paper released in support of ENV updating contaminated sites policies to prepare for impacts of climate change
- Purpose of paper:

1. Summarize recent work
2. Report on key messages from Indigenous groups
3. Communicate key concepts and potential actions to incorporate climate change in BC's contaminated sites policies
4. Seek comment on above

ENV Seeking Input on Key Outcomes

Purpose: inform and generate discussion on appropriate means of assessing and remediating contaminated sites in a changing climate, while protecting human health and the environment

Seeking input on 6 key outcomes:

1. Incorporate engagement with Indigenous Peoples as a component of remediation plans
2. Incorporate climate change adaptation in the contaminated sites framework
3. Incorporate remediation alternatives evaluation more fully in the contaminated sites framework
4. Incorporate periodic review of remedial actions for sites with risk assessment or risk management approaches
5. Establish remediation requirements for viable groundwater aquifers
6. Incorporate financial security for sites with risk assessment or risk management provisions

What you can do

- Attend upcoming ENV webinars on this topic
- Provide comments to ENV on the discussion paper
- Share your comments with the TRC
- TRC will send email to members regarding how and when to provide comments to TRC once ENV confirms dates

Copies of the discussion paper can be found at this link


Thank you!
CSAP
CSAPSOCIETY.BC.CA

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Stage 14 Amendments Recap

Travis Deeter, P.Ag., CSAP
Thurber Engineering

Stage 14 Amendments Recap – Outline

- Residential Low Density vs High Density Changes
- Site Disclosure Statement Exemptions
- Schedule 2 Uses Modifications
- Soil Relocation

CSAPSOCIETY.BC.CA

Stage 14 Amendments RLD vs. RHD

- Section 1.2 amended:
  - "...a land use that would otherwise be a high density residential land use is to be considered to be a **low** density residential use if the land is also used
    - to grow plants for human consumption, or
    - as a playground, sports field, picnic area or other use that involves frequent contact with the soil by children."

CSAPSOCIETY.BC.CA

Stage 14 Amendments SDS Exemptions

- Section 4.2 amended:
  - Exempt from the requirement to provide an SDS to a municipality if the land use is a waste management facility that is:
    - operated under a permit or operational certificate, and
    - actively accepting or processing waste.

CSAPSOCIETY.BC.CA

Stage 14 Amendments SDS Exemptions

- Section 4.2 amended:
  - Exempt from the requirement to provide an SDS to a municipality if the development permit or building permit is for only one or more of the following purposes:
    - Installing or replacing posts for decks;
    - Installing footings, pads, or other concrete structures at or near the surface of the ground;

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Schedule 2 Use Changes

- Shipping **and/or** handling removed from 20 different uses.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Schedule 2 Use Changes

- Repeal of E 10 – contamination resulting from migration

- Repeal of E 12 – spills greater than spill reporting reg.

Stage 14 Amendments
Soil Relocation

PROVINCE OF BRITISH COLUMBIA

REGULATION OF THE MINISTER OF ENVIRONMENT AND CLIMATE CHANGE STRATEGY AND MINISTER RESPONSIBLE FOR TRANSLINK

Environmental Management Act

Ministerial Order No. M164

I, George Heyman, Minister of Environment and Climate Change Strategy and Minister Responsible for TransLink, order that, effective March 1, 2023, the Contaminated Sites Regulation, B.C. Reg. 375/96, is amended as set out in the following sections of the attached Appendix:

(a) sections 1, 3, 4 and 6;

(b) section 7, as it enacts section 43 (3), 46 and 46.1 (1) to (6);

(c) section 8, 9, 12 and 14.

May 31, 2022
Date

Minister of Environment and Climate Change Strategy and Minister Responsible for TransLink

(This part is for administrative purposes only and is not part of the Order.)

Authority under which Order is made:

Act and section: *Environmental Management Act*, S.B.C. 2003, c. 53, ss. 63 and 139

Other: OIC 1480/96, 723/2004

R20591817

page 1 of 163

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation

- Soil relocation process → when does it apply?
- EMA, Section 55 (1.1)
  - If you have a Schedule 2 land use; and,
  - Moving more than 30 m^3

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation - Notification

- Still requires one week notice, filed on a new public registry.
- Form provided as part of Ministerial Order.

CSAPSOCIETY.BC.CA

SCHEDULE 8

SOIL RELOCATION NOTIFICATION FORM

Is this soil relocation notification form an update to a previous soil relocation submission? *

- ◯ Yes
- ◯ No

Has the source site been used for any industrial or commercial uses described in SCHEDULE 2 of the Contaminated Sites Regulation? *

- ◯ Yes
- ◯ No

If you answered NO to the question above, this form does not need to be submitted to the ministry. Soil deposition on receiving sites must adhere to other existing laws and bylaws.

If you answered YES to the question above, you must complete this form. All fields marked with an asterisk (*) are mandatory.

To be completed by a qualified professional on behalf of the person responsible for relocating soil.

Section A: Source Site Information

1. SOURCE SITE OWNER

First name * | Last name *

Company, if applicable

Mailing address * | City *

Province * | Country * | Postal code *

Phone number * | Email *

☐ Are there additional owners?

Additional owners

First name * | Last name *

Company, if applicable

Address * | City *

Province *

Country *

Postal code *

Phone number *

Email *

Are there more than two owners? Include contact information as above.

First name, last name - address, city, province, postal code, contact phone and email

2. SOURCE SITE CONTACT

Same as above? *

- ◯ Yes
- ◯ No

Source site contact person (if not same as above)

First name *

Last name *

Company, if applicable

Mailing address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

3. SOURCE SITE LOCATION

Site identification number (site ID), if available

Include all related numbers, separated by commas.

Coordinates for the centre of the site:

Latitude

Degrees *

Minutes *

Seconds *

Longitude

Degrees *

Minutes *

Seconds *

Land ownership *

- ◯ Legally titled, registered property
- ◯ Untitled Crown land
- ◯ Untitled municipal land

For legally titled, registered property

Site street address (if applicable) *

Or nearest street name/intersection if no address is assigned.

City *

Postal code *

Source site regional district *

PID numbers and associated legal description

PID *

___-___-___

Legal land description *

Attention: *

Attach land title record of source site.

For untitled Crown land

PIN numbers and associated legal description

PIN *

Legal land description*

And if available:

Crown land file numbers

For untitled municipal land

Legal land description*

4. SOURCE SITE USE

Identify all of the industrial or commercial uses described in SCHEDULE 2 which have occurred or are occurring on this site. If no Schedule 2 uses apply, indicate 'none'.

Example Schedule 2 references and descriptions

E1. appliance, equipment, or engine maintenance, repair, reconditioning, cleaning or salvage

F10. solvent manufacturing, bulk storage, shipping and handling

Schedule 2 reference and description *

Specify all that apply.

Is the source site classified as high risk? *

- ◯ Yes
- ◯ No

If the site is classified as high risk, the minimum volume exemption does not apply and a soil relocation notification form must be submitted for all soil relocation from the high risk site.

5. SOURCE SITE PROJECT DETAILS

Identify the purpose of the soil excavation and relocation. *

Current type of soil storage (e.g. stockpiled, in situ) *

Section B: Soil Description and Relocation Information

1. SOIL QUALITY AND CHARACTERIZATION

Volume of soil to be moved - identify soil quality

Soil volume to be relocated in cubic metres (m^3) *

Soil quality *

- [ ] Industrial land use (IL)
- [ ] Commercial land use (CL)
- [ ] Residential land use high density (RL_{HD})
- [ ] Residential land use low density (RL_{LD})
- [ ] Urban park land use (PL)
- [ ] Agricultural land use (AL)
- [ ] Wildlands natural land use (WL_N)
- [ ] Wildlands reverted land use (WL_R)

Note: Soil and vapour test results records must be maintained and provided to the ministry upon request.

2. SOIL CHARACTERIZATION METHOD

Describe soil characterization method: *

Attention: *

Attach soil analytical data

3. VAPOUR CHARACTERIZATION METHOD

Exemptions : Does the exemption from analyzing vapour apply?

Yes or No *

- ◯ Yes
- ◯ No

If the exemption applies, please describe. *

If no, describe the vapour characterization method. *

Attention: *

Attach vapour analytical data

4. SOIL RELOCATION INFORMATION

Soil relocation estimated start date (month - day - year) *

Month * Day * Year *

Estimated completion date (month - day - year) *

Month * Day * Year *

Relocation method (e.g. truck, barge, train) *

Section C: Receiving Site Information

Receiving Site

1. RECEIVING SITE OWNER

First name * Last name *

Company, if applicable

Mailing address * City *

Province * Country * Postal code *

Phone number * Email *

Are there additional owners?

Additional owners

First name * Last name *

Company, if applicable

Address * City *

Province * Country * Postal code *

Phone number * Email *

Are there more that two owners? Include their contact information as described above:

First name, last name - address, city, province, postal code, contact phone and email.

2. RECEIVING SITE CONTACT

Same as above? *

- ◯ Yes
- ◯ No

Receiving site contact person (if not same as above)

First name * | Last name *

Company, if applicable

Mailing Address * | City *

Province * | Country * | Postal code *

Phone number * | Email *

3. RECEIVING SITE LOCATION

Site identification number (site ID)

Include all related numbers separated by commas, if applicable

Coordinates for the centre of the site:

Latitude

Degrees * | Minutes * | Seconds *

Longitude

Degrees * | Minutes * | Seconds *

Receiving site regional district *

Attention: *

Attach site location map of appropriate scale showing the boundaries of the site and the location the soil will be deposited.

Land ownership *

- ◯ Legally titled, registered property
- ◯ Untitled Crown land
- ◯ Untitled municipal land

For legally titled, registered property

Site street address (if applicable) *

Or nearest street name/intersection if no address is assigned.

City *

Postal Code *

PID numbers and associated legal description

PID *

___-___-___

Legal land description*

Attention: *

Attach receiving site land title record.

For untitled Crown land

PIN numbers and associated legal description

PIN *

Legal land description*

And if available: Crown land file numbers

For untitled municipal land

Legal land description*

4. RECEIVING SITE PRIMARY LAND USE

Applicable primary land use, consider current and future use as per CSR Section 12. Please check below.

Receiving site land use *

- [ ] Industrial land use (IL)
- [ ] Commercial land use (CL)
- [ ] Residential land use high density (RL_{HD})
- [ ] Residential land use low density (RL_{LD})
- [ ] Urban park land use (PL)
- [ ] Agricultural land use (AL)
- [ ] Wildlands natural land use (WL_N)
- [ ] Wildlands reverted land use (WL_R)

Applicable site-specific factors for CSR Schedule 3.1 *

Relocated soil use at the receiving site (e.g. fill, cover, berms) *

- [ ] Receiving site is a high volume site (more than 20,000 cubic metres deposited on the site in a lifetime).
- [ ] Soil deposit is in the Agricultural Land Reserve (ALR).

Contact the Agricultural Land Commission (ALC) in regard to submitting a Notice of Intent or a Soil and Fill Use application for the soil deposit in the ALR. The ALC can be contacted at 236-468-3343 or ALC.Soil@gov.bc.ca for soil enquiries.

- [ ] Soil deposit is on Reserve lands.

Inform Indigenous Services Canada via email to aadnc.bccontaminatedsites.aandc@canada.ca

Additional Receiving Sites

☐ First additional receiving site information

FIRST ADDITIONAL RECEIVING SITE

1. RECEIVING SITE OWNER

First name *

Last name *

Company, if applicable

Mailing address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

☐ Are there additional owners?

Additional owners

First name *

Last name *

Company, if applicable

Address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

Have more than two owners? Include their contact information as above:

First name, last name - address, city, province, postal code, contact phone and email.

2. RECEIVING SITE CONTACT

Same as above? *

- ◯ Yes
- ◯ No

First additional receiving site contact person (if not same as above)

First name * | Last name *

Company, if applicable

Mailing address * | City *

Province * | Country * | Postal code *

Phone number * | Email *

3. FIRST ADDITIONAL RECEIVING SITE LOCATION

Site identification number (site ID)

Include all related numbers separated by commas, if applicable.

Coordinates for the centre of the site:

Latitude

Degrees * | Minutes * | Seconds *

Longitude

Degrees * | Minutes * | Seconds *

First additional receiving site regional district *

Attention:*

Attach site location map of appropriate scale showing the boundaries of the site and the location the soil will be deposited on the first additional receiving site.

Land ownership *

- ◯ Legally titled, registered property
- ◯ Untitled Crown land
- ◯ Untitled municipal land

For legally titled, registered property

Site street address (if applicable) *

Or nearest street name/intersection if no address is assigned.

City *

Postal code *

PID numbers and associated legal description

PID *

___-___-___

Legal land description*

Attention: *

Attach land title record for the first additional receiving site.

For untitled Crown land

PIN numbers and associated legal description

PIN*

Legal land description*

And if available:

Crown land file numbers

For untitled municipal land

Legal land description*

4. FIRST ADDITIONAL RECEIVING SITE PRIMARY LAND USE

Applicable primary land use, consider current and future use as per CSR Section 12. Please check below.

Receiving site land use *

- [ ] Industrial land use (IL)
- [ ] Commercial land use (CL)
- [ ] Residential land use high density (RL_{HD})
- [ ] Residential land use low density (RL_{LD})
- [ ] Urban park land use (PL)
- [ ] Agricultural land use (AL)
- [ ] Wildlands natural land use (WL_N)
- [ ] Wildlands reverted land use (WL_R)

Applicable site-specific factors for CSR Schedule 3.1 *

Relocated soil use at the receiving site (e.g. fill, cover, berms) *

- [ ] Receiving site is a high volume site (more than 20,000 cubic metres deposited on the site in a lifetime).
- [ ] Soil deposit is in the Agricultural Land Reserve (ALR).

Contact the Agricultural Land Commission (ALC) in regard to submitting a Notice of Intent or a Soil and Fill Use application for the soil deposit in the ALR. The ALC can be contacted at 236-468-3343 or ALC.Soil@gov.bc.ca for soil enquiries.

- [ ] Soil deposit is on Reserve lands.

Inform Indigenous Services Canada via email to aadnc.bccontaminatedsites.aandc@canada.ca

Second additional receiving site

☐ Second additional receiving site information

SECOND ADDITIONAL RECEIVING SITE

1. RECEIVING SITE OWNER

First name *

Last name *

Company, if applicable

Mailing address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

☐ Are there additional owners?

Second additional receiving site additional owners

First name *

Last name *

Company, if applicable

Address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

Are there more than two owners? Include their contact information as above:

First name, last name - address, city, province, postal code, contact phone and email

2. RECEIVING SITE CONTACT

Same as above? *

- ◯ Yes
- ◯ No

Second additional receiving site contact person (if not same as above)

First name *

Last name *

Company, if applicable

Mailing address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

3. SECOND ADDITIONAL RECEIVING SITE LOCATION

Site identification number (site ID)

Include all related numbers separated by commas, if applicable.

Coordinates for the centre of the site:

Latitude

Degrees *

Minutes *

Seconds *

Longitude

Degrees *

Minutes *

Seconds *

Second additional receiving site regional district *

Attention: *

Attach site location map of appropriate scale showing the boundaries of the site and the location the soil will be deposited on the second additional receiving site.

Land ownership *

- ◯ Legally titled, registered property
- ◯ Untitled Crown land
- ◯ Untitled municipal land

For Legally titled, registered property

Site street address (if applicable) *

Or nearest street name/intersection if no address is assigned.

City *

Postal code *

PID numbers and associated legal description

PID *

___-___-___

Legal land description*

Attention: *

Attach land title record for the second additional receiving site.

For untitled Crown land

PIN numbers and associated legal description

PIN *

Legal land description*

And if available:

Crown land file numbers

For untitled municipal land

Legal land description *

4. SECOND ADDITIONAL RECEIVING SITE PRIMARY LAND USE

Applicable primary land use, consider current and future use as per CSR Section 12. Please check below.

Receiving site land use *

- [ ] Industrial land use (IL)
- [ ] Commercial land use (CL)
- [ ] Residential land use High Density (RL_{HD})
- [ ] Residential land use Low Density (RL_{LD})
- [ ] Urban park land use (PL)
- [ ] Agricultural land use (AL)
- [ ] Wildlands natural land use (WL_N)
- [ ] Wildlands reverted land use (WL_R)

Applicable site-specific factors for CSR Schedule 3.1 *

Relocated soil use at the receiving site (e.g. fill, cover, berms) *

- [ ] Receiving site is a high volume site (more than 20,000 cubic metres deposited on the site in a lifetime).
- [ ] Soil deposit is in the Agricultural Land Reserve (ALR).

  Contact the Agricultural Land Commission (ALC) in regard to submitting a Notice of Intent or a Soil and Fill Use application for the soil deposit in the ALR. The ALC can be contacted at 236-468-3343 or ALC.Soil@gov.bc.ca for soil enquiries.

- [ ] Soil deposit is on Reserve lands.

  Inform Indigenous Services Canada via email to aadnc.bccontaminatedsites.aandc@canada.ca

Section D: Qualified Professional Information and Certification

1. QUALIFIED PROFESSIONAL CONTACT INFORMATION

First name *

Last name *

Type of qualified professional

Professional license/registration (e.g., P. Eng, RPBio) *

Organization

Street address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

2. QUALIFIED PROFESSIONAL DECLARATION

I, the undersigned, confirm the following:

- I am a qualified professional and I have demonstrable experience in conducting investigations of the type reviewed above.
- I have no financial or other interest in the outcome of this project other than the standard fee I will receive for my professional services.
- The information in this form is true, complete and accurate to the best of my knowledge.
- The soil is not waste soil.
- The characterization and classification of soil to be relocated has been completed in accordance with applicable protocols and regulations under the *Environmental Management Act*, and in undertaking such work I have considered all applicable guidance and standard professional practice.
- If applicable, that the receiving site meets the requirements for a high volume site as set out in the Contaminated Sites Regulation.

SIGNATURE *

Sign above

First and last name *

Date signed *

SCHEDULE 8.1

HIGH VOLUME SOIL RECEIVING SITE

REGISTRATION FORM

All fields marked with a red asterisk (*) are mandatory.

Section 1 - RECEIVING SITE OWNER AND/OR OPERATOR

First name *

Last name *

Organization, if applicable

Street address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

☐ Are there additional owners or operators?

Additional owners and operators

First name *

Last name *

Company, if applicable

Address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

Are there more than two owners? Include their information below:

First name, last name - address, city, province, postal code - contact phone and email

Section 2 - RECEIVING SITE CONTACT PERSON

◯ same as above
◯ different than above

Receiving site contact person

First name *

Last name *

Organization, if applicable

Street address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

Section 3 - RECEIVING SITE LOCATION

Site ID, if available

Include all related numbers, separated by commas.

Coordinates for the centre of the site:

Latitude

Degrees *

Minutes *

Seconds *

Longitude

Degrees *

Minutes *

Seconds *

Receiving site regional district *

Attention:

An attachment of a map with appropriate scale showing the location and boundaries of the site is required for submission. *

Land ownership *

- ◯ Legally titled, registered property
- ◯ Untitled Crown land
- ◯ Untitled municipal land

For legally titled, registered property

Site address *

Or nearest street name/intersection if no address is assigned

City *

Postal code *

PID and legal land description

PID *

___-___-___

Legal land description

Attention:

Attach land title record. *

For untitled Crown land

PIN *

Legal land description

And if available:

Crown land file numbers

For untitled municipal land

Legal land description

SECTION 4 - RECEIVING SITE USE

Receiving site primary land use:

Select one of: *

- [ ] Industrial land use (IL)
- [ ] Commercial land use (CL)
- [ ] Residential land use high density (RL_{HD})
- [ ] Residential land use low density (RL_{LD})
- [ ] Urban park land use (PL)
- [ ] Agricultural land use (AL)
- [ ] Wildlands natural land use (WL_N)
- [ ] Wildlands reverted land use (WL_R)

High volume site confirmation:

- [ ] Receiving site is a high volume site (more than 20,000 cubic metres of commercial and/or industrial quality soil deposited on the site in a lifetime) *

Date site became high volume *

Describe how the relocated soil will be used at the receiving site (e.g. fill, cover) *

- [ ] Soil deposit is in the Agricultural Land Reserve (ALR).

Contact the Agricultural Land Commission (ALC) in regard to submitting a Notice of Intent or a Soil and Fill Use application for the soil deposit in the ALR. The ALC can be contacted at 236-468-3343 or ALC.Soil@gov.bc.ca for soil enquiries.

- [ ] Soil deposit is on Reserve Lands

Inform Indigenous Services Canada via email to aadnc.bccontaminatedsites.aandc@canada.ca

Section 5 - QUALIFIED PROFESSIONAL CONTACT INFORMATION

First name *

Last name *

Type of qualified professional

Organization

Professional license/registration (e.g., P. Eng, RPBio) *

Street address *

City *

Province *

Country *

Postal code *

Phone number *

Email *

Section 6 - QUALIFIED PROFESSIONAL DECLARATION

I, the undersigned, confirm the following:

- I am a qualified professional and I have demonstrable experience in conducting soil management of the type reviewed above.
- I have no financial or other interest in the outcome of this project other than the standard fee I will receive for my professional services.
- The above information and all attached information is true, complete and accurate, based on my current knowledge as of the date completed.
- The site meets all requirements for a high volume receiving site set out in the Contaminated Sites Regulation including the requirement for an approved professional to review and approve the soil management plan.

SIGNATURE *

Sign above

First and last name *

Date signed *

Stage 14 Amendments
Soil Relocation - Exemptions

- Less than 30 m^3 on a single project over the course of 2 years;
- Receiving site is outside BC or on federal property, other than a reserve;
- Low-impact land use or mined/quarried material from a site with a permit under the Mines Act;
- Preload material;
- Winter-maintenance sand.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – Soil Vapour

Definition of "waste" in the Act

41 (1) For the purposes of the definition of "waste" in section 1 (1) of the Act, a soil is prescribed as waste in relation to a receiving site if

(a) the concentration of any substance in the soil is greater than

(i) the generic numerical soil standard applicable to the receiving site, or

(ii) the lowest value of the matrix numerical soil standards applicable to the receiving site, or

(b) the concentration of any substance in vapour emissions from the soil is greater than the generic numerical vapour standard applicable to the receiving site.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – Soil Vapour

(3) Subsection (1) (b) does not apply in relation to a substance if

(a) the concentration of the substance in vapour is not greater than

(i) the applicable site-specific numerical standard, or

(ii) the background concentration of that substance in vapour at the receiving site, or

(b) the soil is exempt under subsection (4) from vapour analysis.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – Soil Vapour

(4) For the purposes of subsection (3) (b), soil is exempt from vapour analysis if

(a) the soil does not contain any volatile chlorinated substance set out in Schedule 3.1, and

(b) the soil does not contain any substance with a concentration greater than

(i) the generic numerical soil standard for a low density residential land use, or

(ii) the lowest value of the matrix numerical soil standards for a low density residential land use.

Stage 14 Amendments
Soil Relocation – HVRS

- Trigger to register as High Volume Receiving Site (HVRS) is still 20,000 m^3 from Schedule 2 Sites
- Received soil exceeds the generic standard applicable to a site used for a **low impact land use** or lowest matrix value, but is below CL/IL standards.
    - Low impact land use defined as “a land use described in Section 12.3 (a) to (d)”
    - Includes wildlands, agricultural, park, and both low and high density residential.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – HVRS

- Exemptions for many types of infrastructure uses:
  - Highways
  - Transit systems
  - Pipelines
  - Telecommunications
  - Dikes
  - Sewage collection systems
  - Water, electricity distribution systems
  - Right of ways

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – HVRS

- Exemptions to the exemptions:
  - Receiving site is located within 10 m of a watercourse or body of water;
  - Within 10 m of a ditch or spring, whether or not usually containing water, or a wetland;

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – HVRS

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – HVRS

- Exemptions to the exemptions:
  - Soil contains an **organic** substance concentration > generic standard applicable to a site used for a low impact land use or lowest matrix value.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – HVRS

- New registration process required for HVRS
- Form is Schedule 8.1 of the CSR
  - Owner's information
  - Site location, including map
  - Receiving site primary land use
  - Description of how soil will be used at HVRS
  - Statement as to whether HVRS is located in ALR or on Reserve Lands

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – HVRS

- Soil Management Plan (SMP) required
- SMP must be developed by a QP, approved by an AP – cannot be the same person.
- Include procedures for detailed tracking of soil being received and where it is placed.
- Conduct seasonal groundwater monitoring.
- Include a closure plan for the HVRS.

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – Questions/Challenges

- Testing frequency?
- Prescribed PCOCs?
- Soil Management Plans – audits?
- HVRS – 10 m exemption exemption
- HVRS – how many are there?

Stage 14 Amendments
Soil Relocation – Questions/Challenges

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – Questions/Challenges

CSAPSOCIETY.BC.CA

Stage 14 Amendments
Soil Relocation – Questions/Challenges


Questions?
tdeeter@thurber.ca
CSAP
CSAPSOCIETY.BC.CA

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Stage 14 – Anticipated Real World Impacts

Travis Deeter, P.Ag., CSAP,
Thurber Engineering &
Steve Boyce, B.A. (Env), Active Earth Engineering

OVERVIEW

1. Anticipated impacts to Consultants
2. Anticipated impacts to Industry
3. Anticipated impacts to ENV
4. Predications for High Volume Receiver Sites (HVRS)
5. Boots-on-the-Ground Scenarios
6. Implications of Soil Vapour changes

Anticipated Impacts to Consultants

Challenges before March 1, 2023:

- Identifying projects and clients that will be impacted
- Communicating regulatory changes to clients
- Planning amidst uncertainty (e.g., sampling frequencies)
- Planning for sites where previous assessments of Schedule 2 activities are now outdated
- Being the bearer of bad news

Anticipated Impacts to Consultants

Challenges starting March 1, 2023:

- Limited driller availability & laboratory capacities?
- Rush requests for soil assessments (schedule pressure)
- Gathering the info required to prepare notifications
- Additional remedial excavations
- More background assessments (P4), site-specific standards (P2/27)
- More disposal at sea
- Being the bearer of bad news
- More work?

Anticipated Impacts to Industry

For Developers / Property Owners:

- Identifying impacted projects and planning accordingly
- Increased schedule
- Increased costs
- Decreased soil disposal risks

For Excavation / Trucking Contractors:

- Uncertainty during bidding
- Down-time resulting from unplanned receiver site change
- Delays caused by sporadic “contamination”
- Being the bearer of bad news
- Decreased soil disposal risks

Anticipated Impacts to Industry

For Clean Fill Receivers:

- Increased pressure to “pre-approve” soil
- Increased uncertainty regarding soil volumes
- Increased QEP due-diligence efforts / costs
- Pros and Cons of HVRS designation
- Increased certainty of soil chemical quality

For Contaminated Soil Receivers:

- Potential increase in material received

Anticipated Impacts to Industry: **Costs**

Hypothetical Excavation:

- Large shopping centre redevelopment, 5-level underground parkade.
- Approx. 500,000 m^3 of soil requiring disposal.
- Based on Final Policy Paper frequency table, will require a total of 347 samples to be analysed (50 + 67 + 230).
- Up for debate, but assumed 70 boreholes, 5 samples per hole.

Anticipated Impacts to Industry: **Costs**

Estimated Costs:

- Consultant Fees → $45,000
- Lab Fees → $60,000.
- Driller/Locator → $45,000.
- **Total Cost → $150,000**

Assumes solid stem auger drilling. Need sonic?

→ Add another $25,000

Anticipated Impacts to ENV

- Lots of questions
- New auditing & enforcement responsibilities
- Unlikely to encourage soil re-use or discourage “simple disposal”
- Potential unintended consequences:
  - Increase in NIR submissions?
  - Increase to development / housing costs?
  - Further incentivizes disposal at sea
  - Confusion for concerned citizens (soil movement from sites without Schedule 2 activities won’t be registered)
- Increased transparency and certainty for the public

Predictions for HVRS

Assumptions:

1. **Very few clean fill receivers currently accept Commercial / Industrial Quality Soil (>RL_{HD})**
2. **Significant costs to satisfy HVRS requirements:**
   - Soil Management Plan
   - Seasonal Groundwater Monitoring
   - Appropriate Containment
   - Record Keeping
3. **HVRS are beneficial for limited soils:**
   - Soil from Schedule 2 sites; AND
   - Soil that is >RL_{HD} but <CL / IL) – this ‘Goldilocks’ soil **not** common

HVRS 'Goldilocks' Metals

No Change from RHD to CL

- Antimony
- Arsenic
- Barium
- Beryllium
- Cadmium
- Chromium
- Cobalt
- Copper
- Manganese
- Molybdenum
- Nickel
- Selenium
- Silver
- Sodium ion
- Thallium
- Tin
- Uranium
- Vanadium
- Zinc

Change from RHD to CL

- Aluminum
- Boron
- Iron
- Lead
- Lithium
- Mercury
- Strontium
- Tungsten

HVRS 'Goldilocks' PAHs

No Change from RHD to CL

- Anthracene
- Benz(a)anthracene
- Benzo(b+j)fluoranthenes
- Benzo(k)fluoranthene
- Dibenz(a,h)anthracene
- Fluoranthene
- Indeno(1,2,3-c,d)pyrene
- Naphthalene
- Phenanthrene
- Pyrene

Change from RHD to CL

- Acenaphthene
- Benzo(a)pyrene
- Chrysene
- Fluorene
- 1 and 2-methylnaphthalenes
- Quinoline

HVRS 'Goldilocks' Hydrocarbons/VOCs

No Change from RHD to CL

- VPH
- Benzene
- Ethylbenzene
- Toluene
- Xylenes
- Styrene
- Tetrachloroethylene (PCE)
- Trichloroethylene (TCE)
- Carbon tetrachloride
- Cis/trans-1,2-dichloroethylene (DCE)

Change from RHD to CL

- LEPH
- HEPH
- MTBE
- Tetra-ethyl lead
- Vinyl chloride

Predictions for HVRS

- Few clean fill receivers will seek HVRS designation
- Disposal costs will increase for >RL_{HD} soil from Schedule 2 sites
- Majority of >RL_{HD} soil will continue to be disposed to contaminated soil facilities (this trend may actually increase)

Boots-on-the-Ground Scenarios

1. **Owner/Contractor is slow to select receiver sites**
   - ➢Delay for notification at outset

2. **Unplanned receiver site change during project**
   - ➢Delay for notification mid-way through excavation

Boots-on-the-Ground Scenarios

3. **Owner not aware of requirements during design/tender**
   - Delay for soil assessment and notification at outset
   - Costs for soil assessment and associated delays
   - Discussions/disagreement about the responsible party (costs)

Boots-on-the-Ground Scenarios

4. Sub-Contractor Capacity Limitations

- Driller availability – proceed with excavator (in lifts)?
- Laboratory turnaround delays
- = Moderate cost and schedule impacts

Boots-on-the-Ground Scenarios

5. Unexpected contamination identified

a) Localized spill or zone of poor quality fill

- NIR, remedial excavation, closure sampling (all rush)
- Moderate cost and schedule impacts

b) Sporadic/widespread background metals at depth

- Statistical assessment (TG2) if effective
- Physical remediation = significant cost impacts
- Site-Specific Standards (P2/27) = cost and schedule impacts, uncertain outcome, uncertain acceptance by receivers

Soil Vapour Implications

Recap - When is soil vapour assessment required?

- When chlorinated VOCs are detected in soil.
- When any (volatile) substance concentration in soil exceeds RL_{LD} standards.

How much soil will be affected due to vapour contamination?

- Reviewed drilling investigations completed in last 12 months and selected the following for further evaluation.

Soil Vapour Implications

Case Study 1

- Strip mall on Vancouver Island with active gas station
- Four vapour probes installed
- All four vapour probes had raw exceedances for at least one parameter, most had several.
  - 1,2,4-trimethylbenzene
  - 1,3-butadiene
  - Benzene
  - Naphthalene
  - VPH
- Soil was non-detect in all four boreholes

Soil Vapour Implications

Case Study 2

- Industrial property in Fraser Valley, currently office use
- Three vapour probes installed
- One of three vapour probes had raw exceedances for:
  - Benzene
  - VPH
- Soil sample from pertinent borehole was non-detect
- So now what….delineate raw vapour hits?

Soil Vapour Implications

Case Study 3

- Tire change facility on Vancouver Island (formerly auto repair)
- Two vapour probes installed
- Both vapour probes had raw exceedances for at least one of:
  - 1,2,4-trimethylbenzene
  - Benzene
  - VPH
- Soil samples from both boreholes were non-detect

Soil Vapour Implications

Case Study 4

- Strip mall in Metro Vancouver with active dry cleaner
- Five vapour probes installed
- Four out of five vapour probes had raw exceedances for at least one of:
  - TCE
  - PCE/PERC
  - VPH
- Soil samples from all boreholes were non-detect

Soil Vapour Implications

What to take away from all this?

- Raw vapour hits are common, particularly for VPH and benzene → drill related?
- Use soil quality exemption wherever possible
- Many sites already have vapour data → possible to reassess?
- Unclear how to deal with isolated raw vapour hit → delineate?
- Leave as much time as possible between drilling and sampling

Q&A / Discussion

Steve Boyce, B.A. (Env)
Principal, Senior Scientist
Active Earth Engineering Ltd.

cell: 778-888-0473
steve.boyce@activeearth.ca
www.linkedin.com/in/steveboyce-enviro/

Travis Deeter, P.Ag., CSAP
Associate, Senior Environmental Scientist
Thurber Engineering Ltd.

cell: 604-360-8543
tdeeter@thurber.ca
www.linkedin.com/in/travis-deeter-b2505930/

CSAP

CSAPSOCIETY.BC.CA

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Economic Impacts from Remediated Contaminated Sites

Ed Mansfield, Ph.D.
Mansfield Consulting Inc.

CSAPSOCIETY.BC.CA

Presentation Outline

- 2021 Study of Economic Impacts of Remediated LMR Sites
- Near-Term Economic Impacts from Site Assessment and Remediation
- Near-Term Economic Impacts from Site Redevelopment
- Long-Term Economic Impacts from Site Redevelopment
- Estimated BC Averages for Economic Impacts
- Comparisons with Economic Impacts of Other Industries

About Mansfield Consulting

Ed Mansfield is the founder and president of Mansfield Consulting Inc. Ed has more than thirty years of experience providing consulting services to public and private companies, professional associations, industry organizations, and government agencies.

Ed has been a partner or principal with four major accounting and business consulting firms where he was the leader for the firms' Economics practices.

Led and executed many economic impact studies, including studies for the federal government, Province of BC, and BC municipalities.

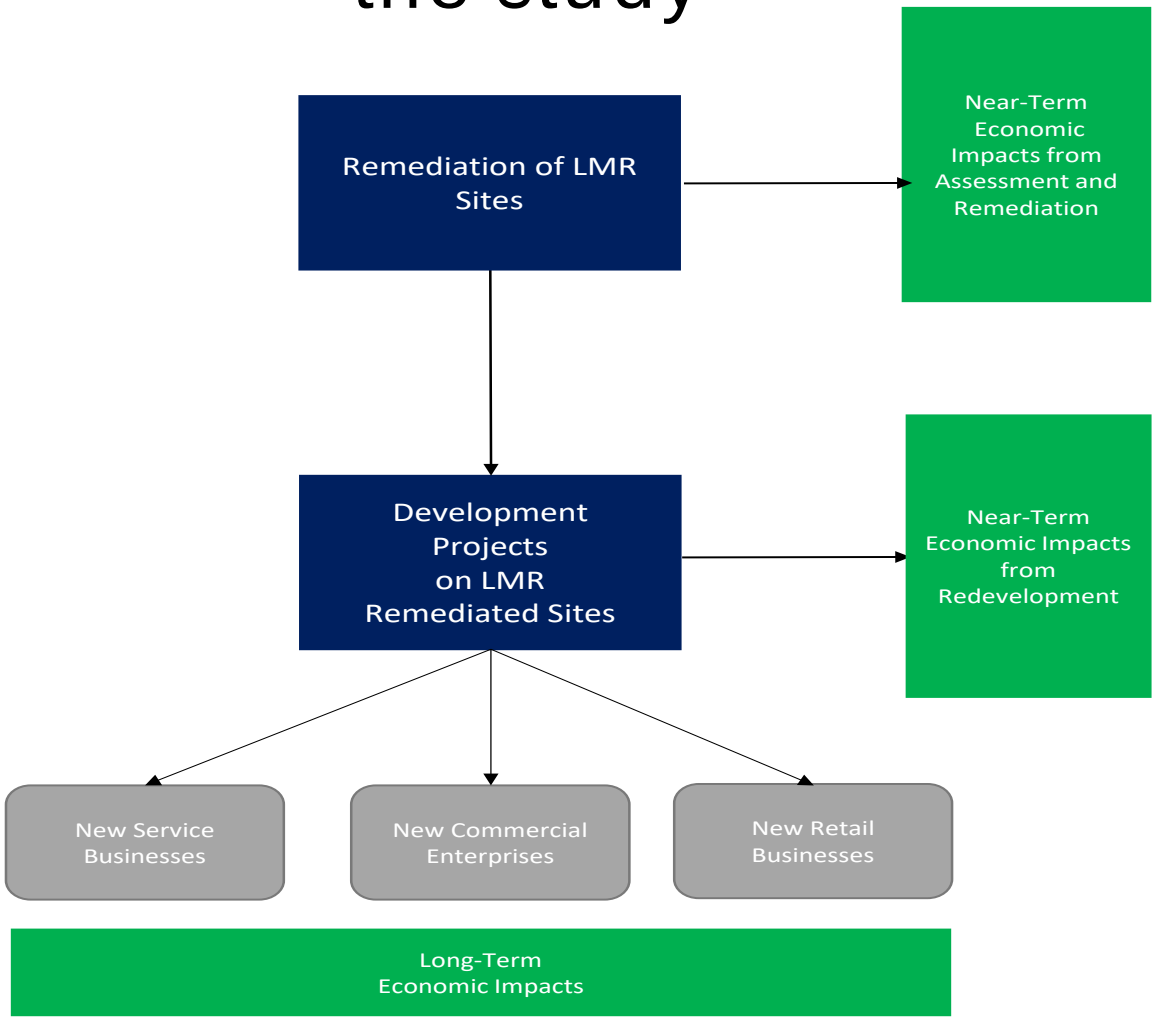
2021 Study of Economic Impacts

The scope for the study encompassed:

1. Estimating the near-term economic impacts that are created by the remediation and redevelopment on low to moderate risk contaminated sites in BC.

2. Projecting the long-term, ongoing annual economic impacts that are created by the remediation and redevelopment on low to moderate risk contaminated sites in BC.

Economic Impacts Included in the Study



Economic Impact Measures

Economic impact measures include:

- **Output** is the total gross value of goods and services This is the broadest measure of economic activity. *Example: A bakery buys flour and other ingredients for $1.00 and uses them to produce a loaf of bread, which is then sold for $1.50. The output for the bakery is $1.50.*
- **Gross Domestic Product (GDP)**, or value added, refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. *Example A bakery buys flour and other ingredients for $1.00 and uses them to produce a loaf of bread, which is then sold for $1.50. The direct GDP for the bakery is $0.50, which represents the value-added by the bakery.*
- **Employment** is the number of additional jobs or full-time equivalent (FTEs) created.
- **Government Tax Revenue** is the total amount of tax revenues generated for federal, provincial, and local governments.

Economic Impact Levels

Economic impacts may be estimated at the direct, indirect, and induced levels.

- **Direct** impacts are changes that occur in “front-end” businesses that would initially receive operating revenue and incur expenditures.
- **Indirect** impacts arise from changes in activity for suppliers of the “front-end” businesses.
- **Induced** impacts arise from spending on goods and services resulting from increases to the payroll of the directly and indirectly affected businesses.

Near-Term Impacts from Site Assessment and Remediation

Followed approach used in previous study (2012) with updated average cost estimated at $520,000 per site (up from $130,000 in 2012).

Estimated Economic Impacts

Economic Impact	Output	GDP	Employment (FTEs)	Federal Tax	Provincial Tax	Municipal Tax
Direct	$520,000	$347,880	3.0	$38,103	$21,400	$639
Indirect	$163,800	$95,160	0.8	$10,531	$7,512	$1,822
Induced	$151,320	$97,240	0.7	$15,450	$17,174	$3,739
Total	**$835,120**	**$540,280**	**4.5**	**$64,084**	**$46,086**	**$6,200**

Near-Term Impacts from Site Redevelopment

Developed new approach based on detailed case studies of typical developments.

All case studies are based on actual developments and used real data where available.

Construction costs based on Altus Group Canadian Cost Guide (2021).

Total costs based on NAIOP (the Commercial Real Estate Development Association) and Conference Board study (2019).

Ongoing business revenues estimated using ISED (federal government) data.

Case Study 1. Large Residential Development

Near-Term Redevelopment

Description	33-storey residential building, consisting of 127 market strata units
Residential Space	184,000 sq ft
Retail Space	None
Parking	27,000 sq ft
Other Features	$31 million in developer contributions to local government, consisting of Community Amenity Contributions, Development Cost Levies, and other contributions
Total Costs, Including Building Costs, Soft Costs, Interior Buildout Costs, and Site Infrastructure Costs	$113.0 million ($72.2 million in construction hard costs)

Case Study 2. Mid-Size Residential Development

Near-Term Redevelopment

Description	6-storey wood framed residential building, consisting of 49 market strata units
Residential Space	32,000 sq ft
Retail Space	1,000 sq ft Occupied by a general merchandise store
Parking	3,000 sq ft
Total Costs, Including Building Costs, Soft Costs, Interior Buildout Costs, and Site Infrastructure Costs	$15.6 million ($10.0 in construction hard costs)

Ongoing Business

Summary of Business Activity	
Retail Space	1,000 sq ft
Businesses	One general merchandise store
Business Annual Revenues	$274,000

Case Study 3. Small Mixed-Use Development

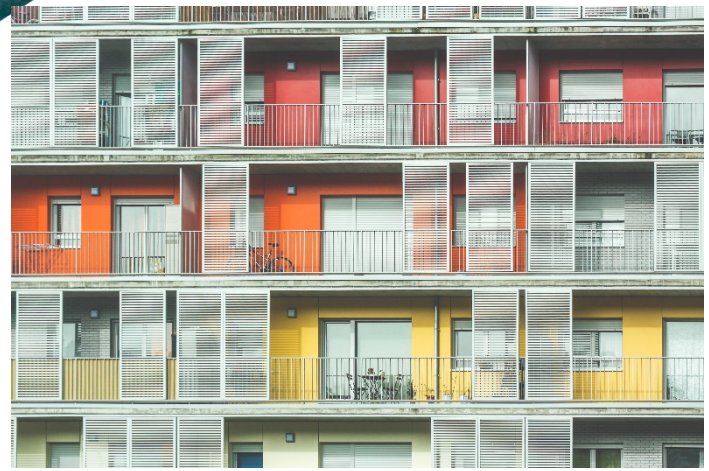
Near-Term Redevelopment

Description	2-storey wood framed, mixed use development, containing 3 commercial units and 4 residential units.
Residential Space	3,800 sq ft
Retail Space	4,400 sq ft Assumed to be occupied by a café and two general merchandise stores
Parking	5,500 sq ft
Total Costs, Including Building Costs, Soft Costs, Interior Buildout Costs, and Site Infrastructure Costs	$4.0 million ($2.6 million in construction hard costs)

Ongoing Businesses

Summary of Business Activity	
Retail Space	4,400 sq ft
Businesses	Assumed to be occupied by a café and two general merchandise stores
Business Annual Revenues	$1,533,400

Case Study 4. Seniors Residence



Near-Term Redevelopment

Description	9-storey residential building, consisting of 132 senior living units
Residential Space	89,100 sq ft
Retail Space	4,600 sq ft Assumed to be occupied by a two-physician medical practice, a coffee stand, and two general merchandise stores
Parking	27,000 sq ft
Total Costs, Including Building Costs, Soft Costs, Interior Buildout Costs, and Site Infrastructure Costs	$53.4 million ($34.2 million in construction hard costs)

Ongoing Businesses

Summary of Business Activity	
Retail Space	4,600 sq ft
Businesses	Assumed to be occupied by a two-physician medical practice, a coffee stand, and two general merchandise stores
Business Annual Revenues	$1,639,200

Case Study 5. Commercial Development

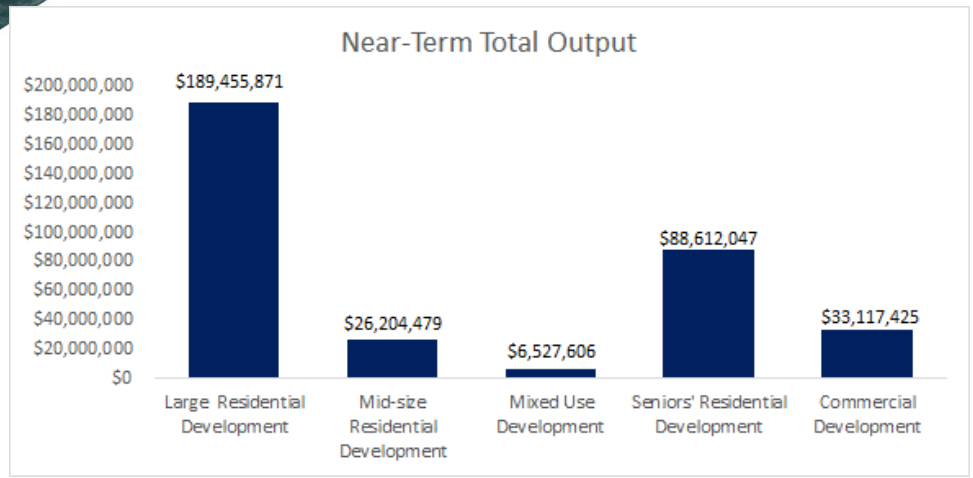
Near-Term Redevelopment

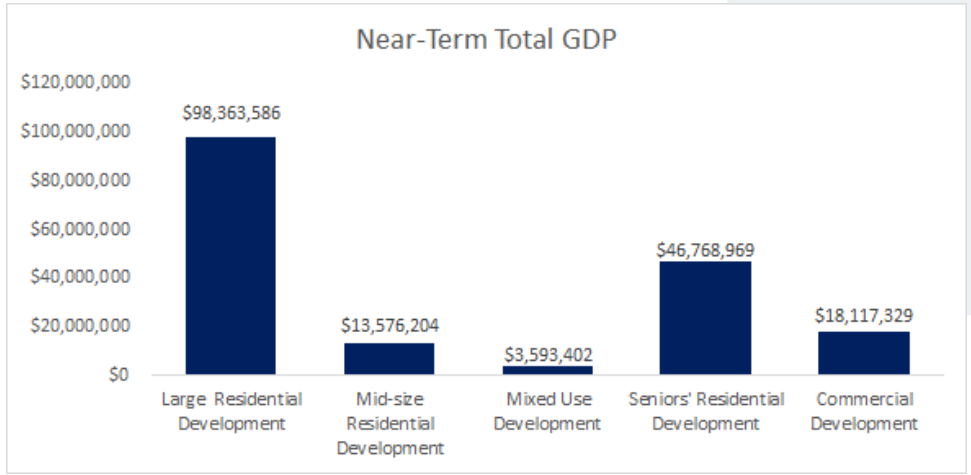
Description	2-storey Commercial Development
Residential Space	None
Retail Space	46,000 sq ft assumed to be a new car dealership
Parking	64,600 sq ft of surface parking
Total Costs, Including Building Costs, Soft Costs, Interior Buildout Costs, and Site Infrastructure Costs	$19.9 million ($12.7 million in construction hard costs)

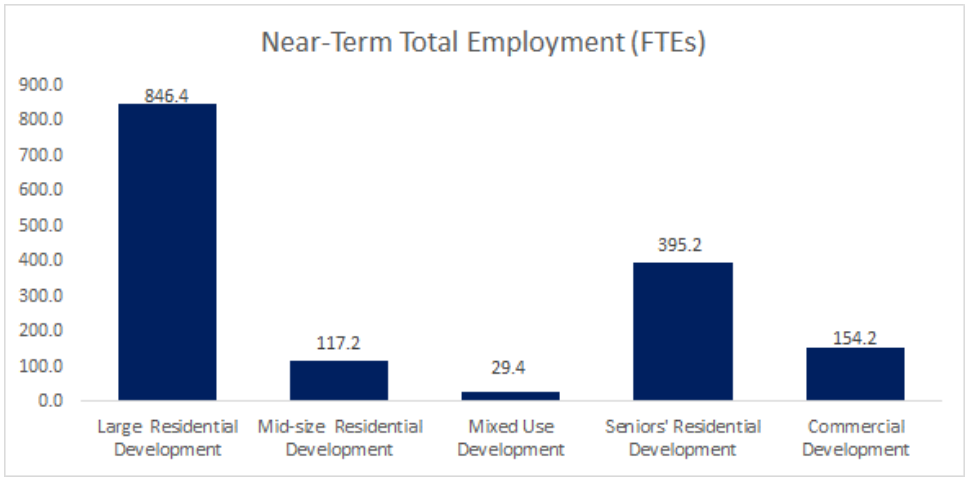
Ongoing Businesses

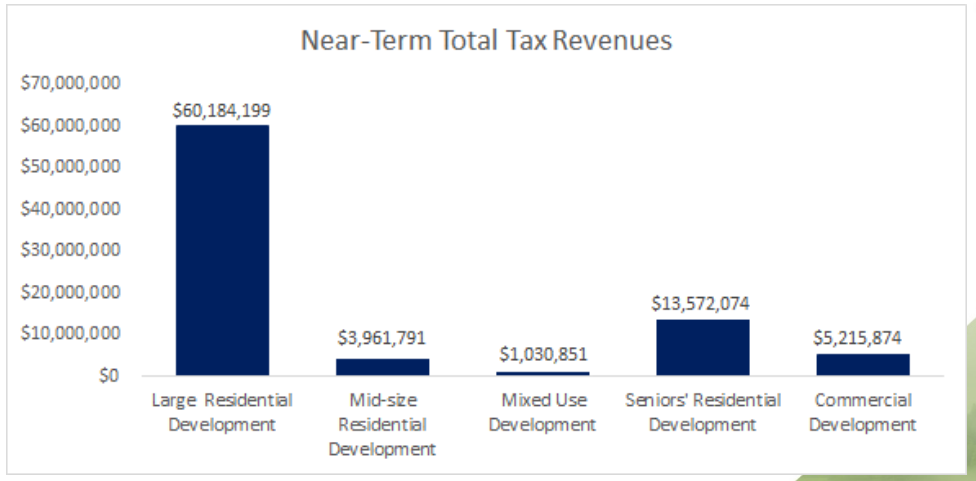
Summary of Business Activity	
Retail Space	46,000 sq ft assumed to be a new car dealership
Businesses	New Car Dealership
Business Annual Revenues	$15,892,895

Near-Term Total Economic Impacts From Development

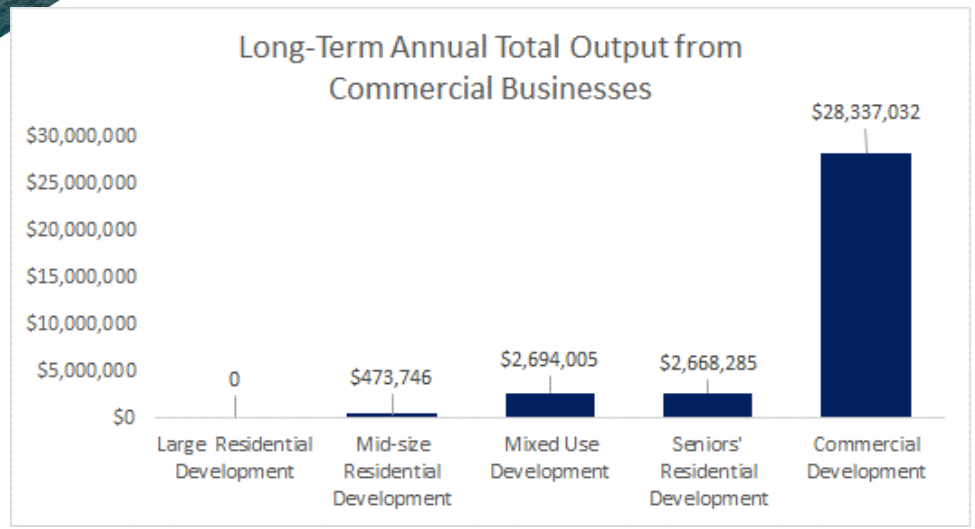


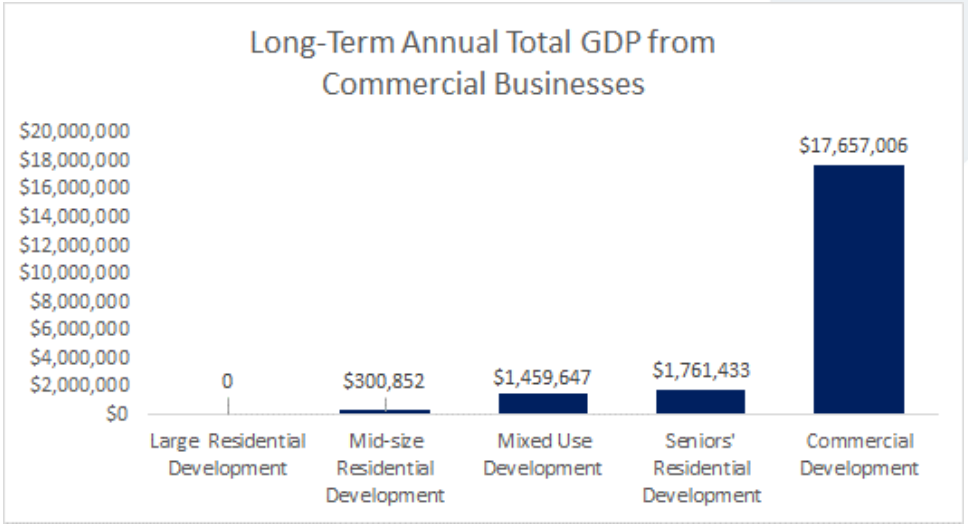


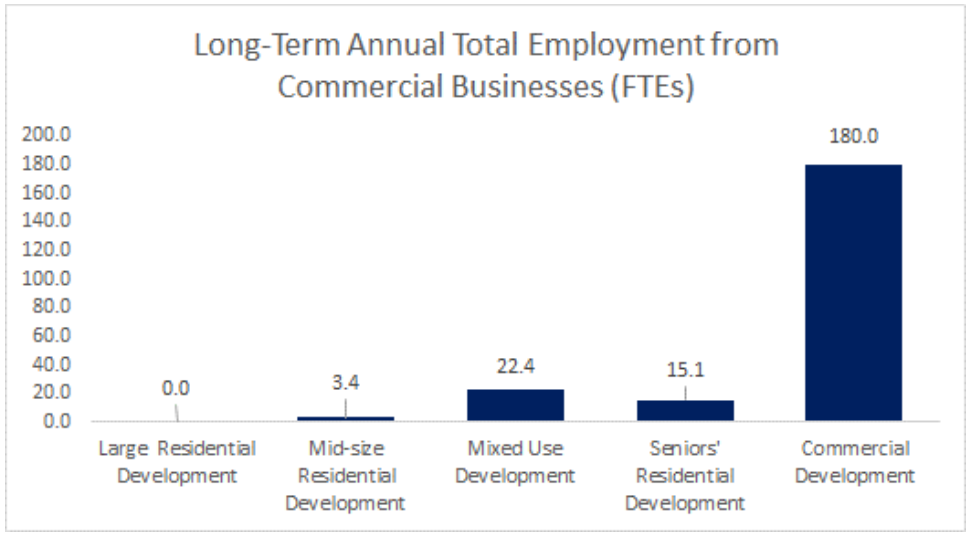


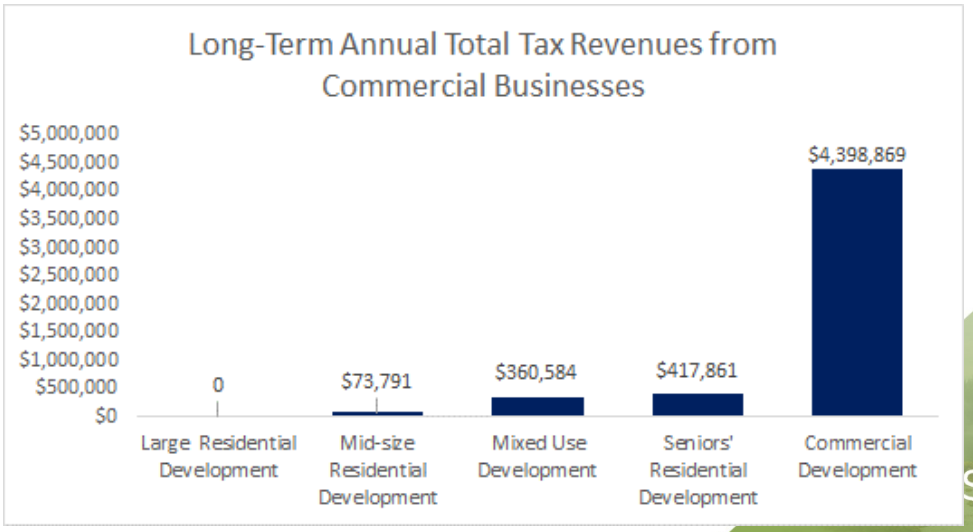


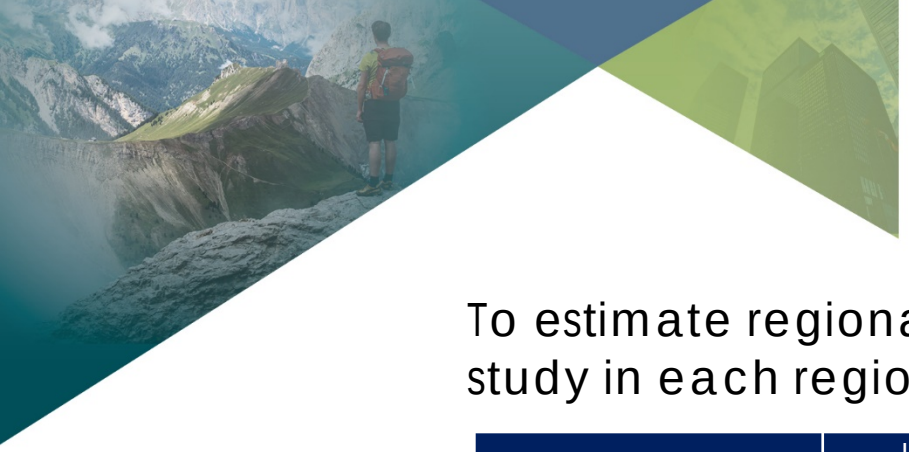
Long-Term Total Economic Impacts











Using Case Studies to Estimate Average Impacts

To estimate regional average, Assume proportions of each type of case study in each region.

Region	Large Residential Development	Mid-size Residential Development	Mixed-Use Development	Seniors Residence	Commercial Development	Total
Vancouver	30%	40%	10%	5%	15%	**100%**
Metro Vancouver	20%	40%	20%	5%	15%	**100%**
Vancouver Island	0%	40%	40%	5%	15%	**100%**
Southern Interior	0%	30%	50%	5%	15%	**100%**
Northern Interior	0%	20%	60%	5%	15%	**100%**

To estimate provincial average, assume proportions of remediated sites in each region: 17% in Vancouver, 48% other Metro Vancouver, 14% Vancouver Island, 12% Southern Interior, and 9% Northern Interior.

BC Average Economic Impacts from Redevelopment

Near-Term Economic Impacts from Redevelopment

Economic Impact	Output	GDP	Employment (FTEs)	Federal Tax	Provincial Tax	Municipal Tax
Direct	$28,334,273	$13,936,718	116.7	$1,791,509	$1,587,648	$5,260,211
Indirect	$11,621,189	$6,067,410	57.8	$766,300	$504,998	$98,033
Induced	$7,509,739	$4,824,730	38.5	$809,469	$863,707	$184,190
Total	**$47,465,201**	**$24,828,858**	**213.1**	**$3,367,279**	**$2,956,353**	**$5,542,433**

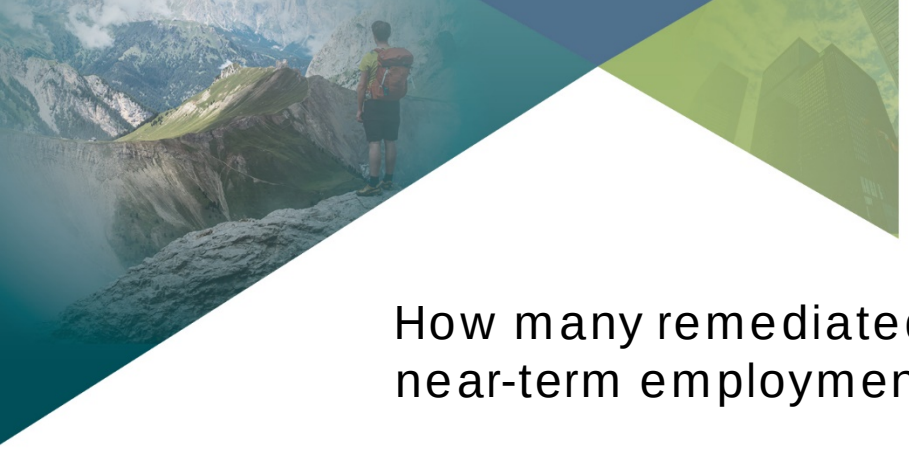
Long-Term Economic Impacts From Redevelopment

Economic Impact	Output	GDP	Employment (FTEs)	Federal Tax	Provincial Tax	Municipal Tax
Direct	$3,064,248	$1,888,686	24.0	$219,219	$127,602	$23,076
Indirect	$1,105,727	$626,479	5.9	$74,146	$57,247	$18,531
Induced	$1,267,116	$815,906	6.6	$132,946	$143,480	$30,124
Total	**$5,437,090**	**$3,331,072**	**36.6**	**$426,311**	**$328,329**	**$71,731**

BC Average Total Economic Impacts

Estimated BC Average Total Economic Impacts from Assessment and Remediation and Site Redevelopment

Category	Average Total Output	Average Total GDP	Average Total Employment	Average Total Government Revenues
Assessment and Remediation	$835,120	$540,280	4.5	$116,370
Redevelopment	$47,465,201	$24,828,858	213.1	$11,866,066
Total Near-Term Impacts	**$48,300,321**	**$25,369,138**	**217.6**	**$11,982,436**
Annual Long-Term Impacts	**$5,437,090**	**$3,331,072**	**36.6**	**$826,372**



Comparisons with Other Industries

How many remediated sites would it take to create the same level of near-term employment as other industries?

Industry (2021)	Number of Remediated Sites to Create the Same Amount of Near-Term Employment
BC Paper Manufacturing	109
BC Air Transportation	71
BC Rail Transportation	49
BC Oil and Gas Extraction	40
Development of a New Mineral Mine	21
One Year of Production of a High-end Television Series	2

References/Links

2021 Economic Impact Study
https://csapsociety.bc.ca/wp-content/uploads/Economic-Impact-Study-2021.pdf

Altus Group Cost Guide
https://www.altusgroup.com/reports/canadian-cost-guide/

NAIOP and Conference Board Study
https://www.naiop.org/en/Research-and-Publications/Reports/Economic-Impacts-of-Commercial-Real-Estate-in-Canada-2018

CHBA Benchmarking Studies
https://www.chba.ca/CHBA/Housing_in_Canada/The_Government_Role/Municipal_Benchmarking.aspx

Thank You!

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Excess Soils to Construction Aggregate

Peter Reid, P.Eng., CSAP, GRT

GRT
Wash. Sort. Reuse.

Presentation for
CSAP

Excess Soils to Construction Aggregate

November 17, 2022

GRT
Wash. Sort. Reuse.

Problem 1 – Excess Soil

Soils from development projects require off-site disposal

- New building developments, parkade excavations, tunnels, and remediations
- Some soils need to be replaced - don't meet geotechnical or environmental requirements
    - Other times there is simply too much soil
- Problem persists worldwide and is most prevalent in large metropolitan areas

Why is this a problem?

- Soils are filling exceedingly limited landfill airspace (or dumped offshore or on farmland)
- Extensive greenhouse gas emissions to transport soils to distant landfills
- Disposal process is costly - deferring development
- Valuable materials end up in landfills

GRT
Wash. Sort. Reuse.

Excess Soil – The Facts

- **Millions of tonnes of excess soil generated annually** in the Lower Mainland of BC.
- Excess soil **costs increase with trucking costs**
- **Ocean disposal permits are harder to get**, effectively removing that disposal option
- **Illegal dumping persists** in the absence of affordable alternatives, causing pollution impacts on farmland*
- **A worldwide problem:** Seattle and San Francisco have issues, Ontario has new regulations, and London faced large issue during the Olympics

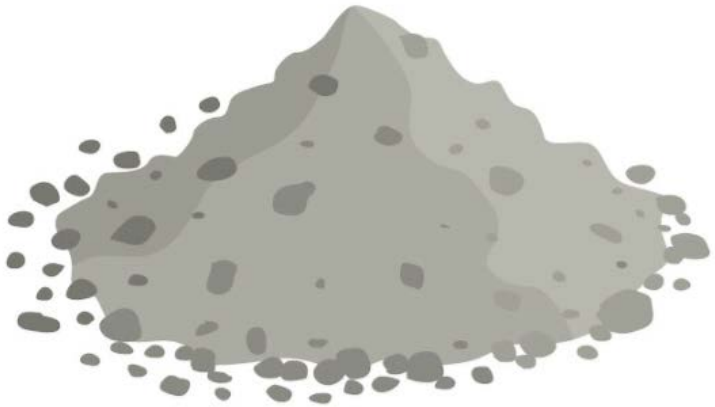
*https://www.cbc.ca/news/canada/british-columbia/alc-alr-farmland-dumping-illegal-fill-1.4654479

GRT
Wash. Sort. Reuse.

Problem 2 - Depleting Aggregate Supply

Growth cycle fuels demand for sand and aggregate

- Escalating worldwide demand to support concrete production and urban development



Why is this a problem?

- Virgin aggregate and sand are finite resources, especially globally
- Mining is hard on the environment & ecosystems
- Aggregate sources close to urban areas are mined out.
- Aggregates are shipped further distances to market at higher transportation and environmental cost

GRT
Wash. Sort. Reuse.

Depleting Aggregate – The Facts

- Annual global demand for sand exceeds **40 - 50 billion tonnes per year.***
- **Sand use has tripled** over the past two decades.*
- Areas of the world **running out of sand.***
    - Concrete sand from Northern Vancouver Island is used in California
    - China and India are mining lakes and the coastline for sand.

- **90 million tonnes of concrete** were produced in the USA in 2020**
- Over **165 million tonnes of rock mined in Canada** in 2019, with **11 million + tonnes in BC alone****

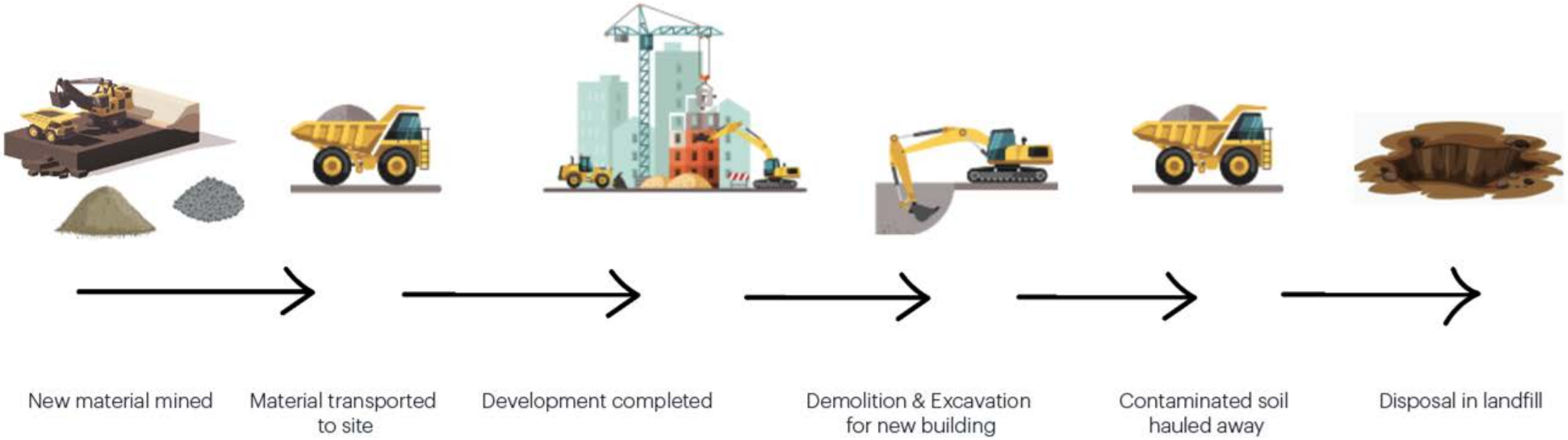
**Pascal Peduzzi - director of UNEP's Global Resource Information Database https://www.cnbc.com/2021/03/05/sand-shortage-the-world-is-running-out-of-a-crucial-commodity.html*

***Statista, Major countries in worldwide cement production 2010-2020; Statista, Production of stone in Canada by province 2019*

GRT
Wash. Sort. Reuse.

Typical lifecycle of soil today…

Cradle-to-grave process of **‘mine, fill, excavate, dispose’** is inefficient & poor environmentally



Moving to a Circular Economy – Waste to Product

Reuse Solution

GRT
Wash. Sort. Reuse.

Soil Washing Background

- Soil Washing used more in Europe than NA.
- 1990s US used soil washing on 8 Superfund Sites.
- Achieved 90% reduction in contaminant soil volume.
- When allowable concentrations decreased, percent volume reduction decreased.
- Technology could not move contaminant from clay, silt, and sand.
- Technology could not clean the wash water.
- Advances in technology allows for more effective washing and removal of contaminants from water.

Technology had to catch up to Standards set by Toxicology

GRT
Wash. Sort. Reuse.

A cleaner world with a sustainable resource economy.

Turning waste soils into construction aggregate

GRT takes in excess waste soils from construction projects, then washes, sorts and cleans that soil to produce specification construction aggregates.

Our process dramatically reduces waste entering landfills, as well as mining, transportation and their associated greenhouse gas emissions.

***GRT's Resource Regeneration Facility**, located at Duke Point Nanaimo on Snuneymuxw First Nations territory, on land managed by the Nanaimo Port Authority.*

Waste Soil

Non-structural, mixed material, would have gone to the landfill…

GRT
Wash. Sort. Reuse.

Resource Regeneration

Facility produces:

Rock

Xeriscaping, backfill,
Large rock for dike armourstone

Silty Clay

Dike core, concrete clinker, landfill liner

Aggregate / Gravel

Xeriscaping, concrete, pathways, backfill

Sand

Concrete, bedding sand, winter roads

GRT
Wash. Sort. Reuse.

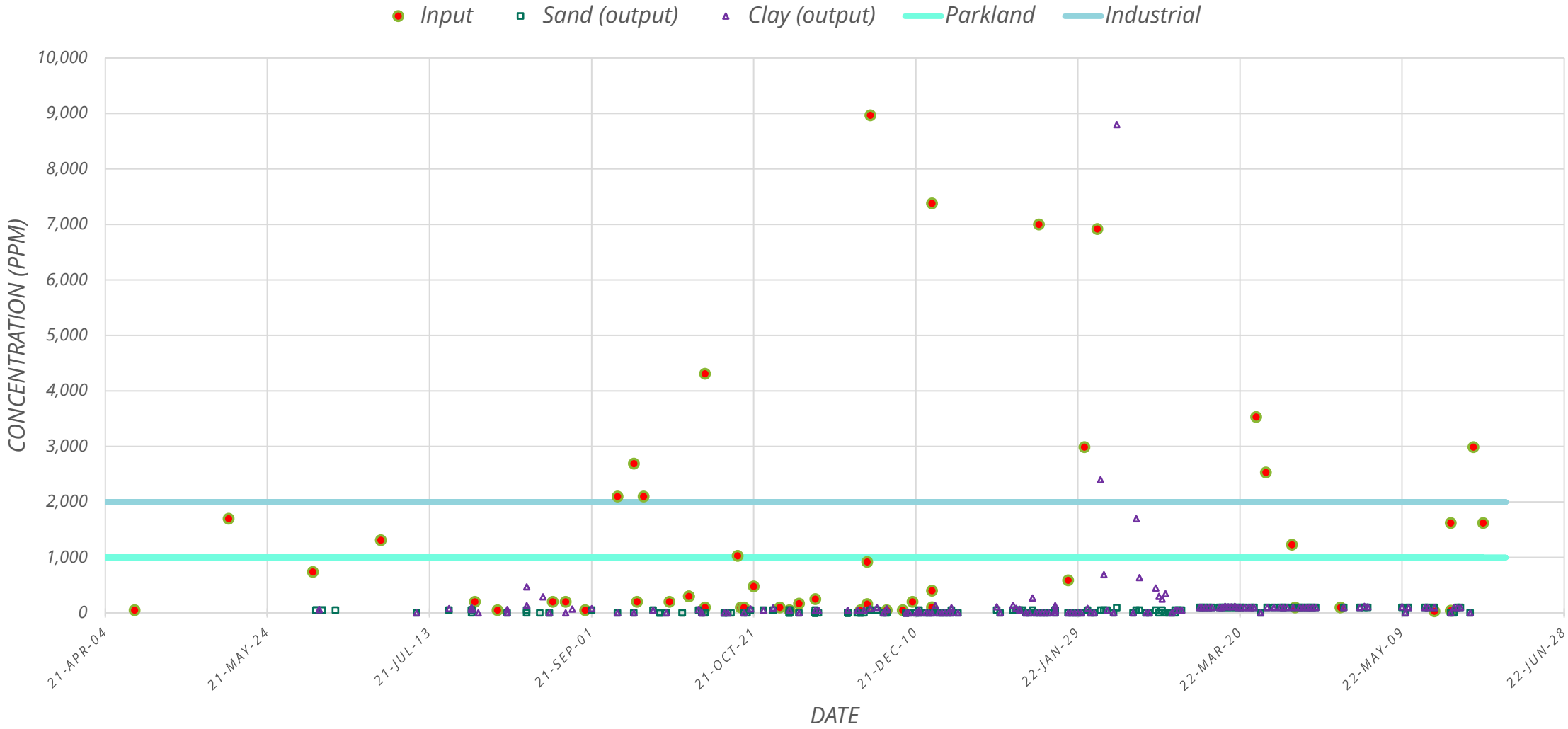
GRT Regenerated Sand:

- Sand currently meets C33 specification but could be adjusted to meet other specs.
- 100% upcycled, waste-to-product resource
- Volume diverted tonne-for-tonne from regional landfills
- Nominal carbon required for regeneration process, a fraction of what's required for virgin extraction
- None of the carbon required for the disposal
- Net negative carbon compared to mining and disposal
- All wash water is treated and recirculated
- It meets the environmental requirements

How is regenerated sand different than virgin mined sand. It is the same geotechnically, it has a much lower embedded carbon. It is regulated and tracked.

GRT
Wash. Sort. Reuse.

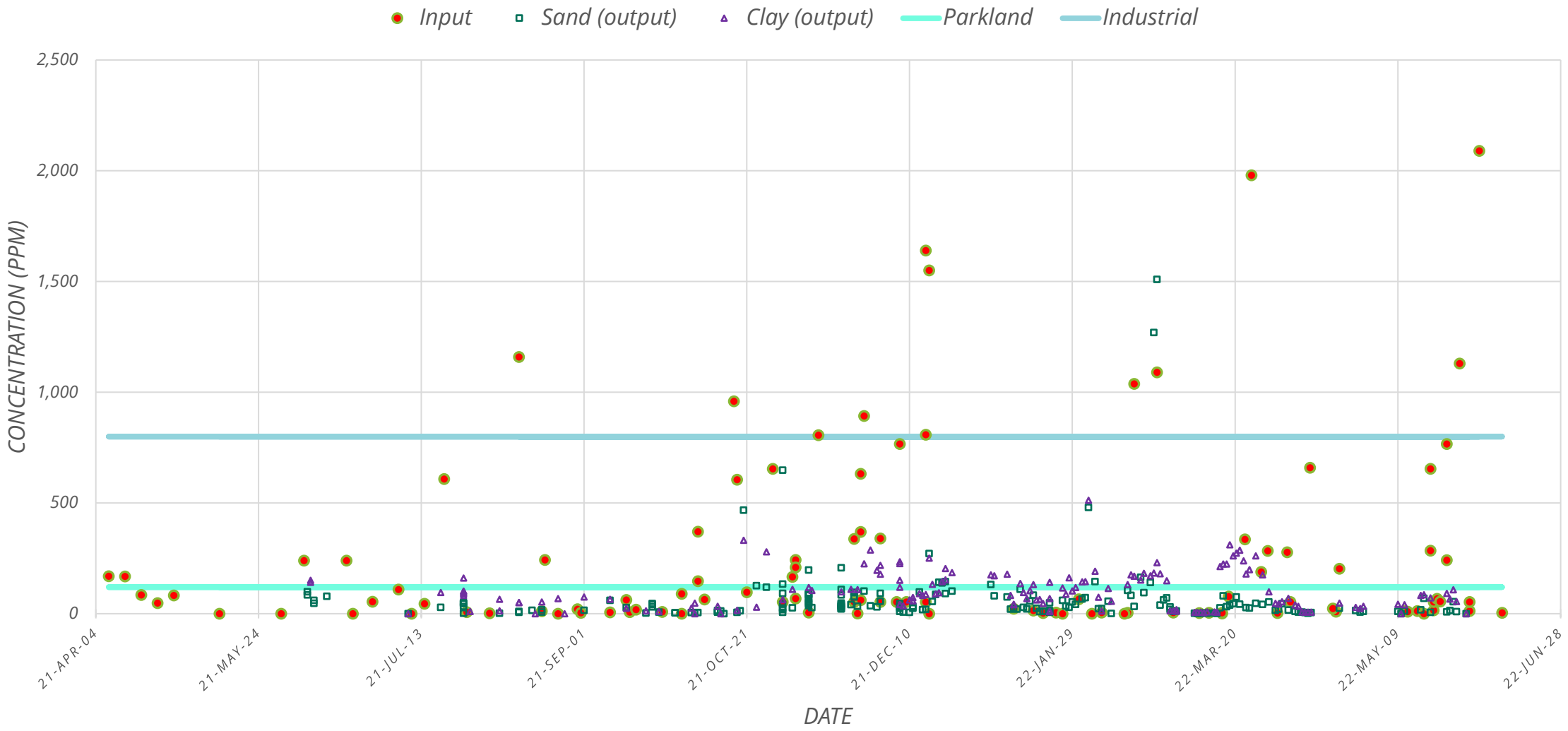
PRE/POST-PROCESSING CONCENTRATIONS (LEPH)



GRT

GRT
Wash. Sort. Reuse.

PRE/POST-PROCESSING CONCENTRATIONS (LEAD)



GRT

GRT
Wash. Sort. Reuse.

Lab Analysis

Larger Particle Sizes

- BC Lab Manual is based on analyzing smaller particle size.
- BC CSR is used for all particle sizes
- GRT initiated a study with BV to look at the concentrations of the larger particle sizes.
- Preliminary analysis of the results for larger particle sizes have not identified any unexpected concerns and finding will be presented after analysis is complete.
- Future presentation

GRT
Wash. Sort. Reuse.

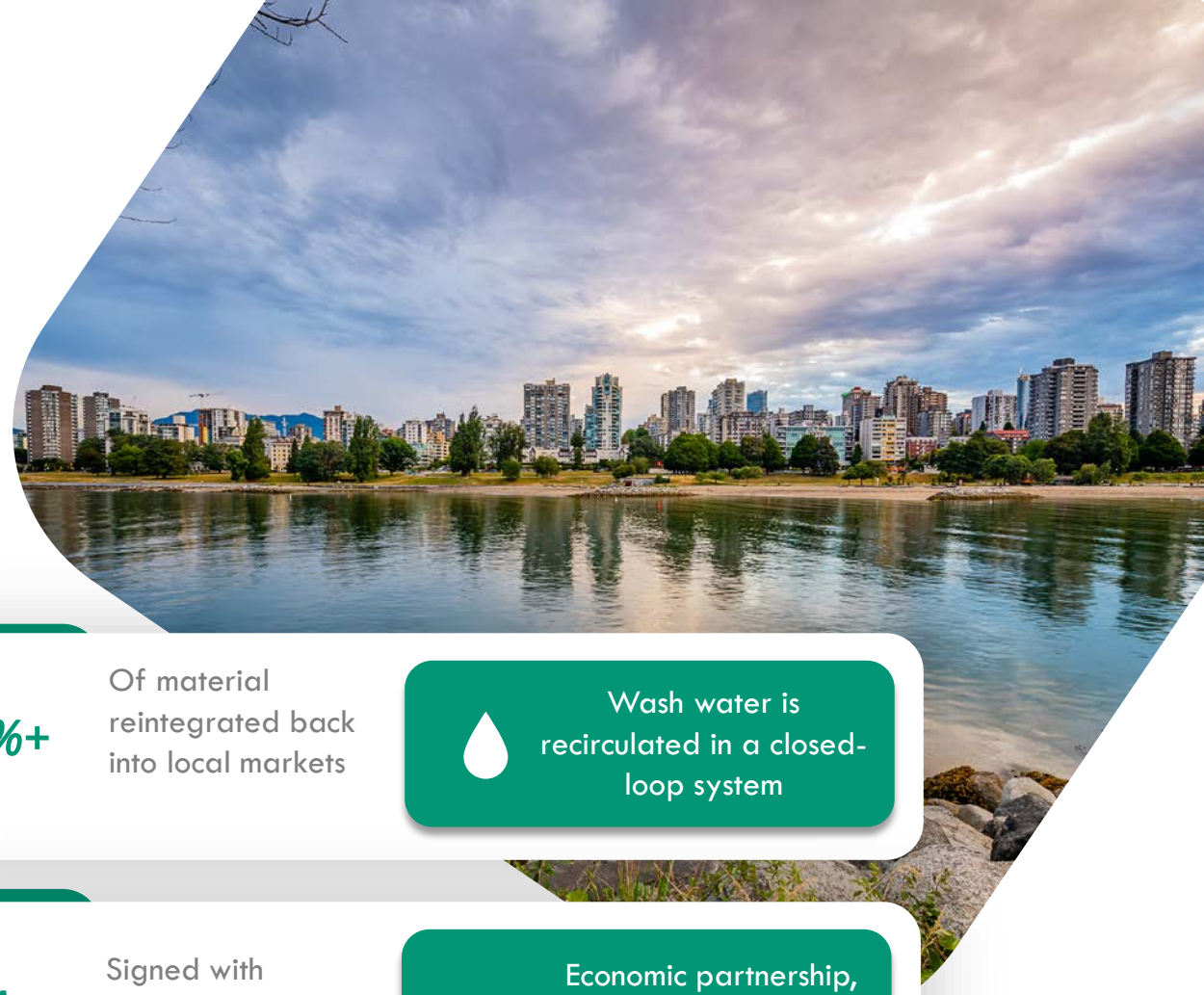
Rethinking the Built Environment

We're looking for ways to pull from what already exists to make what is required—from the ground up.

Extract not, dispose less

By viewing excess or contaminated soil as a resource instead of waste, we can support urban development that treads lighter on the earth.

We strive to find highest-value uses for all our plant outputs and continue to innovate new treatments and applications internally and with our partners.



90%+ Of material reintegrated back into local markets

Wash water is recirculated in a closed-loop system

IBA Signed with Snuneymuxw FN In 2021

Economic partnership, jobs, R&D

GRT
Wash. Sort. Reuse.

Nanaimo Facility

Opened 2021

40 tph

Processing Speed

4 acres

Barge ramp adjacent

Hydrovac receiving bins

18,000 tonnes storage capacity

8000 tonnes output cells

40 employees

Future Facilities

Vancouver, Seattle, etc.

160-500 tph

Processing Speed (depending on market size)

Nanaimo is our validation plant. We have the conceptual design complete, and we are ready to build larger plants in larger markets.

We need land.

GRT
Wash. Sort. Reuse.

Thank You.

peter@grtenv.com 778.394.1442

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Developing a Compliance Strategy for Stage 14 – An Industry Perspective

Brenda Hatch, P.Eng., BC Hydro
Michael Gill, P.Eng., CSAP, SLR Consulting

CSAPSOCIETY.BC.CA

Developing a Compliance Strategy for Stage 14 – An Industry Perspective

Brenda Hatch, P.Eng., BC Hydro

Michael Gill, P.Eng., CSAP, SLR Consulting

BC Hydro
Power smart

November 17, 2022

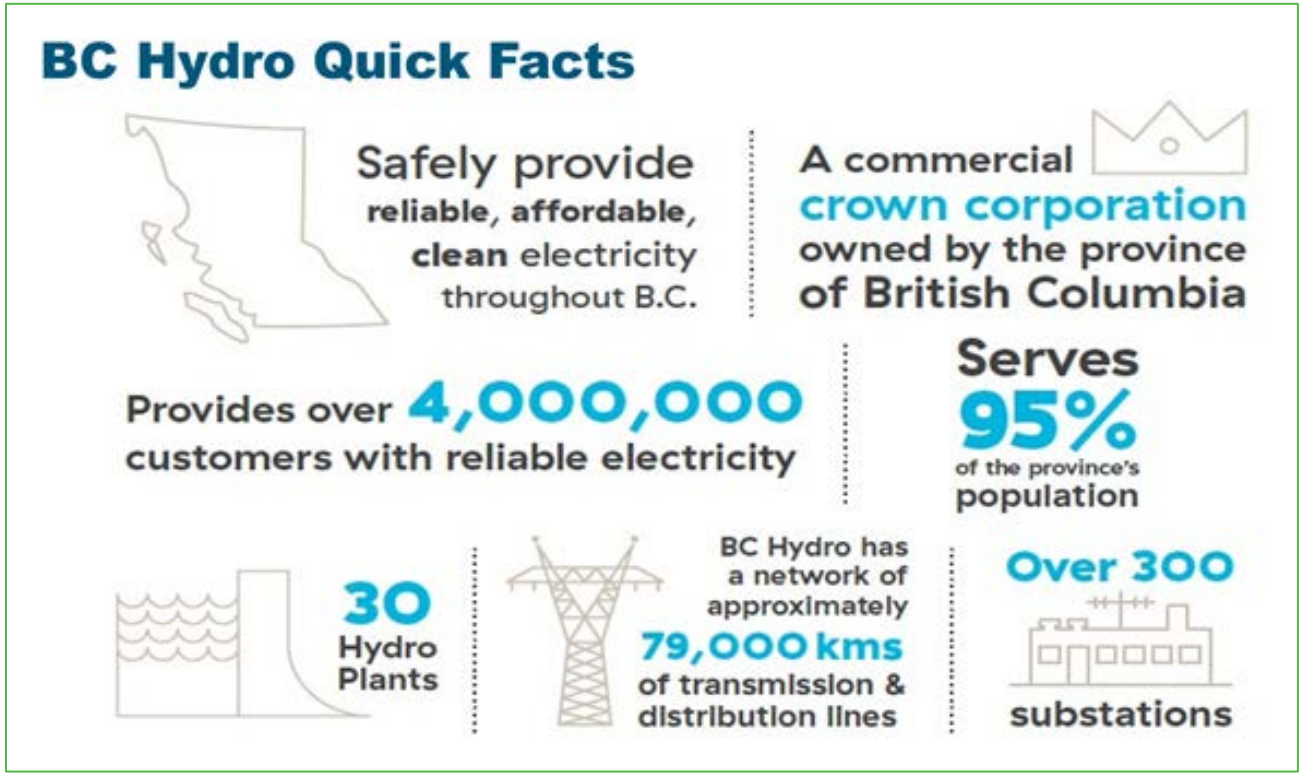
A little bit about BC Hydro

We have a lot of property throughout BC

Crown corporation – created in 1964

Many historic sites from predecessor entities

Over 700 facilities: substations, hydroelectric and thermal generating stations, district offices plus rights of way



BC Hydro
Power smart

Identifying Operational Impacts

How did we determine how big an issue this is for us?

- Communication with environmental personnel on projects and supporting maintenance
- Collecting applicable examples
- What is impact of extra testing, consultants, notifications on budget and timing on work
- Maximize exemption for volumes, reuse on site

BC Hydro
Power smart

Identifying Resourcing Impacts

Who will do the tasks related to clean soil relocation?

- Soil testing
- Vapour testing
- Notifications
- Tracking of notifications and movement of clean soil

What is role of: consultants, BC Hydro QPs, other environmental support

BC Hydro
Power smart

Leveraging Existing Environmental Processes

What existing environmental risk mitigation processes can we use?

- Good awareness of contaminated soil management
- BC Hydro Environment is already involved in capital projects and operations and maintenance activities
- Soil disturbance is a flag for archaeology issues
- Screening checklists are used in the work planning process, which ID environmental issues including soil contamination

BC Hydro
Power smart

Determining Strategy Format and Rollout

How do we respond to the new requirements and communicate this?

- Environment has a change management committee
- Environmental representatives are assigned to identify processes
- Format of the strategy – procedure and tracking system?
- Modify existing processes to include clean soil relocation requirements
- An Implementation Plan is prepared to indicate audience and method of rollout

BC Hydro
Power smart

Managing Uncertainty

What do we still not know?

- Do our existing processes capture all clean soil relocation?
- Details of the regulatory requirements
- Receiving sites acceptance requirements
- Will we have to send some clean soil to permitted facilities
- Access to ministry's notification database
- Extent of soil vapour issue

BC Hydro
Power smart

Soil Vapour for Clean Soil Relocation

Assisting with the process

SLR was retained by BC Hydro to help determine:

- Which sites will get captured (Schedule 2 uses)
- What PCOCs to analyze
- When will soil vapour sampling be required
- How to communicate the information

Typical Schedule 2 Uses

Step 1 – Develop a list of typical Schedule 2 uses for BC Hydro Sites

- Section B: Electrical equipment and activities
  - Many of the activities listed apply at operating sites
- Section E: Miscellaneous industries, operations or activities:
  - appliance, equipment or engine maintenance, repair, reconditioning, cleaning or salvage (vehicle services)
  - coal gasification (historical)
- Section H: Waste disposal and recycling operations and activities:
  - electrical equipment recycling
  - hazardous waste storage
- any other known CSR Schedule 2 Industrial or Commercial use – primarily historical

Typical Activities

Step 2 – For sites with Schedule 2 uses - determine typical activities

- ❑ battery fluid handling
- ❑ burning of oil / historical fires
- ❑ storage and handling of diesel fuels and lubricants
- ❑ importing fill of unknown origin or quality
- ❑ storage and handling of insulating or hydraulic oil
- ❑ fuelling and vehicle maintenance
- ❑ presence of galvanized metal structures
- ❑ historical use of PCB-oil
- ❑ presence of pole storage yards
- ❑ improperly stored or used pesticides
- ❑ other?

Next Steps

- Develop a site-specific list of PCOCs for soil and soil vapour
- Determine sampling frequency based on volumes planned for removal
- Based on soil results, determine need for vapour analysis
  - Are soil concentrations below the low-density residential land use standard (RL_{LD})?
  - Are there detectable chlorinated substances?

Next Steps

- Review BC Hydro database of soil and soil vapour data
- Determine the likelihood of detection of chlorinated substances or vapour PCOCs
- Develop flow charts and checklists for BC Hydro staff

Challenges

- Lack of confirmed sampling guidance/protocol
- Unclear wording in OIC*
- Difficult to plan, soil data needed to determine if vapour sampling required

* i.e., is soil vapour assessment required if arsenic in soil is above the low-density residential land use standards?

Challenges

- Unknown requirements / future industry standard for frequency of analysis of less common PCOCs
  - approx. $1700 per sample for full suite of potential soil PCOCs
  - need to use professional judgement in selection/frequency of PCOCs

BC Hydro

Power smart

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

Soil Salt Contamination: Challenges & Considerations

Paul Savinkoff, P.Geo., Ministry of Transportation and Infrastructure
Steve Boyce, B.A. (Env), Active Earth Engineering

CSAPSOCIETY.BC.CA

OVERVIEW

1. Soil standards recap
2. Salt leachate provisions & quick case study
3. Stage 14 changes & exemptions
4. Q&A with Paul Savinkoff, P.Geo., Senior Geoscientist with BC Ministry of Transportation & Infrastructure (MOTI)

Salt Soil Standards Recap

MATRIX 8 – NUMERICAL SOIL STANDARDS
CHLORIDE ION (CHEMICAL ABSTRACT SERVICE NUMBER 16887-00-6)

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6	COLUMN 7	COLUMN 8	COLUMN 9
Site-specific Factor	**Wildlands Natural (WL_N)**	**Wildlands Reverted (WL_R)**	**Agricultural (AL)**	**Urban Park (PL)**	**Residential Low Density (RL_{LD})**	**Residential High Density (RL_{HD})**	**Commercial (CL)**	**Industrial (IL)**
HUMAN HEALTH PROTECTION Intake of contaminated soil	> 1 000 mg/g	> 1 000 mg/g	> 1 000 mg/g	> 1 000 mg/g	> 1 000 mg/g	> 1 000 mg/g	> 1 000 mg/g	> 1 000 mg/g
Groundwater used for drinking water	100	100	100	100	100	100	100	100
ENVIRONMENTAL PROTECTION								
Toxicity to soil invertebrates and plants	200	350	350	350	350	2 500	2 500	2 500
Livestock ingesting soil and fodder	600	600	NS	600	600	600	600	600
Major microbial functional impairment			NS					
Groundwater flow to surface water used by aquatic life, freshwater			600					
Groundwater used for livestock watering			250					
Groundwater used for irrigation			40	40	40	40		

Salt Leachate Provisions

Standards for contaminated soil relocation

46.1 (1) The relocation of soil from a source site to a receiving site requires a contaminated soil relocation agreement if the soil that is or will be relocated is contaminated by having any substance with a concentration that, subject to subsections (2) and (3), exceeds the following numerical standards, prescribed for the purposes of section 55 (3) of the Act, for either soil or vapour:

(a) in respect of the land use of the receiving site, the lowest value of the soil standards set out in Part 1, 2 or 3, as applicable, of Schedule 3.1 of this regulation;

(b) in respect of the land use, or other use, of the receiving site, the lowest value of the vapour standards set out in Schedule 3.3 of this regulation.

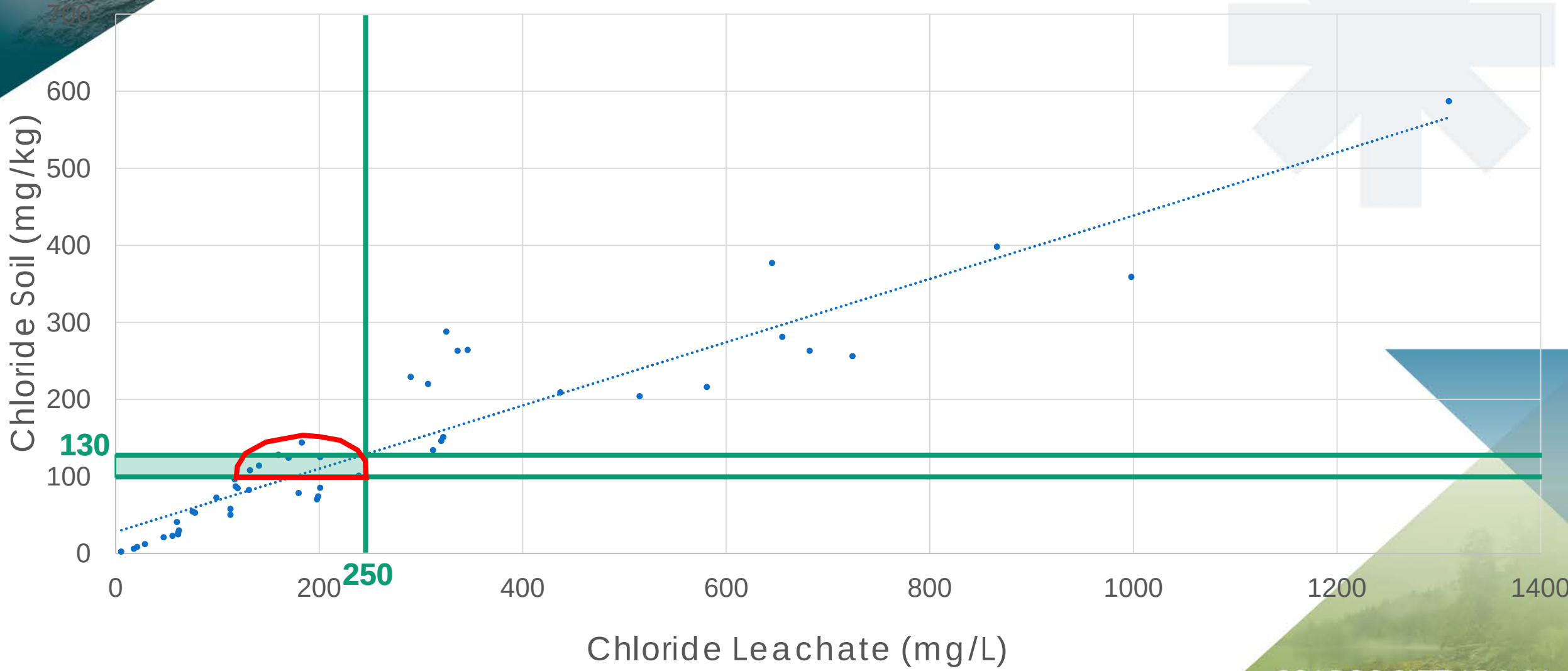
(2) As an exception to subsection (1), if contaminated soil has any substance with a concentration that exceeds a soil standard protective of groundwater in respect of the land use of the receiving site set out in Part 1 of Schedule 3.1 of this regulation, the numerical standards for soil protective of groundwater are not to be considered exceeded if either of the following applies:

(a) the site-specific soil standard protective of groundwater, derived in accordance with a director's protocol, is not exceeded;

(b) the water standard for groundwater set out in Schedule 3.2 of this regulation, based on the concentration resulting from a leachate test conducted in accordance with the director's protocol, is not exceeded.

Schedule 3.2 DW Standard for Chloride = 250 mg/L

Salt Leachate Case Study



Stage 14 Exemptions

Division 2 – Removal of Soil

Removal of soil

42 (2) A removal of soil to a receiving site is exempt from section 55 (1.1) of the Act in any of the following circumstances:

(e) the soil is winter-maintenance sand.

"winter-maintenance sand" means sand that is applied to roadways or other surfaces for the purpose of managing icy conditions.

However: Any contamination that results from application of winter maintenance sand is still **fully regulated** (no exemptions)

Stage 14 Changes

- Full repeal and replacement of Part 8 (incl. Section 46.1)
- New Part 8 does not allow for consideration of leachate quality when determining suitability for relocation.

  - Will the forthcoming Soil Characterization Protocol include this?
  - Existing Protocols 2 / 27 provide for leachate-based Site-Specific Standards but are more onerous.

Q&A / Discussion

Paul Savinkoff, P.Geo.
Senior Geoscientist
BC MOTI

paul.savinkoff@gov.bc.ca

Steve Boyce, B.A. (Env)
Principal, Senior Scientist
Active Earth Engineering Ltd.

cell: 778-888-0473
steve.boyce@activeearth.ca
www.linkedin.com/in/steveboyce-enviro/

CSAP

CSAP

SOCIETY OF CONTAMINATED SITES APPROVED PROFESSIONALS OF BRITISH COLUMBIA

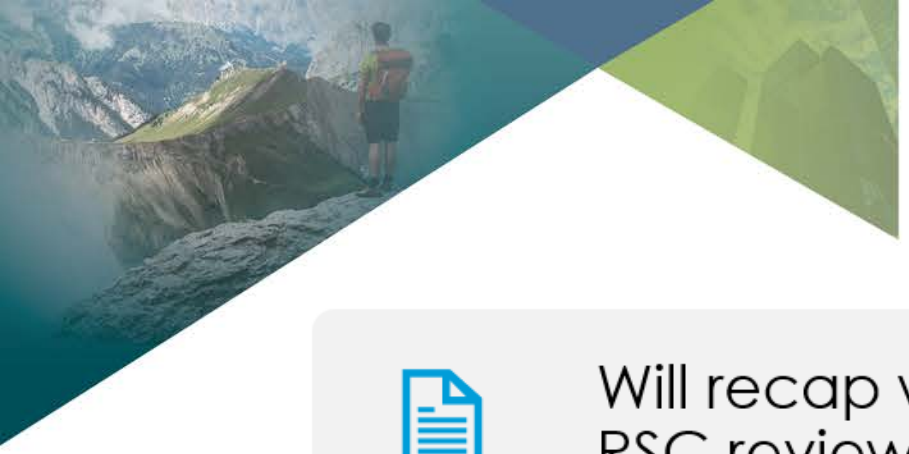
Review Services Committee Update

David Newton, P.Geo., CSAP
SNC-Lavalin

RSC Members

- APs: John Taylor, Brant Dorman, Mike Geraghty, Stephan Quaglia, David Newton, Eva Gerencher, Ajay Tumber
- ENV: Colleen Delaney, Heather Osachoff
- CSAP: Patricia Fu, Anna Popova

CSAPSOCIETY.BC.CA



Topics to be covered

- Will recap what types of reports RSC reviews
- The RSC review process
- Statistics to date
- New CSAP reminder process

Background

- Why was the RSC formed?
- What is a Director’s Requirement?

Director's Requirement

- Reviewing reports and statements that must be submitted to meet a director's imposed requirement on a non-high risk site, such as those requirements found in Certificates of Compliance (CoCs) and Approvals in Principle (AiPs)

- Not P6 work

From a CofC

“A statement signed by an Approved Professional shall be submitted to the Director on an annual basis within 90 days of the anniversary of the date of issue of this Certificate. The report shall be by an Approved Professional and shall include supporting documentation and the following:

a) A summary of the results of inspection and maintenance of any risk management and treatment works”

Clause from a AIP

- A report signed by an AP must be submitted for review to **the Director** annually….. of the date of issuance of this Approval in Principle. The report must include the following:

  (a) A summary of remedial activities undertaken during the reporting period;

  (b) An assessment comparing remediation progress to the actions and schedule set out in the plans referenced above.

  (c) Supporting documentation (e.g., analytical reports, records of inspection, maintenance of treatment works, etc.).

CSAPSOCIETY.BC.CA

Timing and Frequency

- RSC went live Jan 31, 2022
- Actual future numbers unknown but expected about 30 or 40 the first year
- Potentially more (or less) in subsequent years
- However, ENV policy changes can impact numbers

CSAPSOCIETY.BC.CA

What RSC Reviews

Approved Professional Statements	Requirement usually from an instrument but could be imposed in other ways by Director	Non HR, non HR Managed, non SDS related Various types: monitoring, progress, annual, quarterly, monthly, biennial, triennial, etc.. Also Closure reports
Monitoring Reports	same	same

CSAPSOCIETY.BC.CA

What we don't do

Reporting requirements out of permits

Modifications to Remedial Plans/AIPs

- Extensions to due date
- AIP extensions beyond 5 years
- Requests to Modify Director's requirement

Review Process

RSC assigns a reviewer

If necessary, they ask for clarifications

That has on occasion led to revised application documents

We prepare our review

Everything forwarded to ENV

SDM at ENV considers our review and prepares their decision letter

CSAPSOCIETY.BC.CA

Visit CSAP web page

- Check CSAP/RSC web page
- Questions can be sent to CSAP or ENV
- Will find RSC transmittal document and checklist for this type of work
- Fee schedule
- Request to Modify Director's Requirement – be sure to read the RSC web page

Application Process

- Documents listed on the Transmittal
- Reporting that considers the checklist
- CSSAF
- Cheque
- SRCR unless exempt

- Submitted same as you do with a P6 submission (electronically to CSAP with mailed cheque)

Stats Since Initiation

Received 18 in first 9.5 months

Increasing trend (maybe)

13 completed and forwarded to ENV

- 65% came out of CofC requirements
- The rest from AIPs
- 15% were older than 5 year
- 15/18 required an AP
- 60% required asking questions

Ongoing

Expecting increased numbers due to the increase in AIPs the past year

CSAP reminder process (90 day)

For 2022 applications. CSAP not going further back than above

Responsibility to remember Director's requirement is always with the submitters not CSAP

Going Forward – Meet SDMs

CSAPSOCIETY.BC.CA

Ongoing

Expecting increased numbers due to the increase in AIPs the past year

CSAP reminder process (90 day)

For 2022 applications. CSAP not going further back than above

Responsibility to remember Director's requirement is always with the submitters not CSAP

Going Forward – Meet SDMs

CSAPSOCIETY.BC.CA

Questions?