



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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June 27, 2019

Marisa Floyd  
Vice President  
Reserve Silica Corporation  
20 First Plaza Center NW, Suite 308  
Albuquerque, NM 87102

**Re: Opinion and Recommendations for Proposed Agreed Order at the Following Site:**

- Site Name: Reserve Silica Corporation
- Site Address: 26000 Black Diamond-Ravensdale Road, Ravensdale, WA 98051
- Facility/Site No.: 2041
- Cleanup Site No.: 4728

Dear Marisa Floyd:

Thank you for your March 13, 2019, letter providing Reserve Silica's proposed responses to public comments.

The Department of Ecology (Ecology), Reserve Silica, and Holcim held a public meeting on November 16, 2018, to discuss the status and planned remediation approach for the Site, and Ecology requested and received public comments. Ecology consulted with Reserve Silica and Holcim on a revised draft agreed order and a response to public comments during a January 9, 2019 meeting. Ecology received written responses from Holcim on January 30, 2019, and from Reserve Silica on March 13, 2019.

Ecology is generally in agreement with Reserve Silica's analysis of the public comments received. We also agree that it makes sense for the remedial action under the agreed order to address the cement kiln dust (CKD) landfill-related hazardous substance releases and any collocated or immediately adjacent potential releases, such as from slag roadbeds near the landfill areas. Ecology has concluded that hazardous substance releases known to have occurred at the former plant site are sufficiently distinct and spatially separated from the CKD landfill-related releases to constitute a separate site or "facility" under the Model Toxics Control Act (MTCA). Ecology is satisfied with Reserve Silica's proposal to proceed with an independent cleanup for the plant site.

### **Basis for Ecology's Determination that the Former Plant Site is a Separate Site**

Ecology's conclusion<sup>1</sup> that the former coal and sand processing plant area is appropriately considered its own site, separate from the area impacted by the cement kiln dust landfills is based on the following considerations:

- The sources and types of contamination are distinct, and the contamination areas do not overlap. There is no indication, at this time, that CKD-impacted groundwater extends to the plant facility parcel nor any indication that hazardous substance releases from the former plant facility extend to the landfill-impacted area.
- Public Health – Seattle & King County (Public Health) issues a post-closure landfill permit for the limited purpose landfills on Parcel No. 362206-9138 (Lot 6) that were closed under WAC 173-301 (Lower Disposal Area) and WAC 173-304 (Dale Strip Pit). PHSKC currently issues an inert waste landfill permit for the active landfills on Parcel No. 012106-9011 (Lot 5) under WAC 173-350. A post-closure landfill permit will be maintained on this Site until applicable functional stability or MTCA compliance is demonstrated, with applicable long-term post-closure care and environmental covenant requirements. In contrast, the cleanup of the plant site will be performed in accordance with MTCA and short-term cleanup alternatives are anticipated.
- The PLPs have reasonably proposed separate remedial investigation (RI) and feasibility study (FS) reports for the landfill area and the plant site. The RI for the landfill-impacted area will likely involve a staged evaluation of the complex hydrogeology impacting groundwater flow and CKD seepage, and the FS will be developed with consideration of the operation, evaluation, and continual improvement of independent and interim cleanup actions. An expedited cleanup schedule for the plant site is anticipated and preferred.
- The landfill-impacted areas present a higher risk than the hazardous substance releases known to have occurred at the plant site.

The basis for this recommendation does *not* include the fact that Ecology's Site Hazard Assessment (SHA) only focused on CKD related releases. The scope of the remedial investigation is not constrained to the risks assessed in the SHA for the site. The purpose of an SHA is to assess the relative potential risk of a site using preliminary data; the SHA is not intended to be a detailed site study or assessment of the health risk posed by a site.<sup>2</sup> The purpose of the RI, in contrast, is to collect and evaluate sufficient information to fully characterize the nature and extent of contamination at the site and to collect sufficient information to develop and evaluate cleanup action alternatives, based on past uses of the site and all potential and known sources of contamination. Ecology cleanup site managers have discretion in guiding the necessary scope and breadth of the RI based on site-specific circumstances.<sup>3</sup> The RI should also develop a conceptual site model to discuss contaminant release, fate and transport, and exposure pathways, propose cleanup standards, and propose the Site boundary.

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<sup>1</sup> See Responsiveness Summary for Site Definition.

<sup>2</sup> Ecology (2009), Focus of Site Hazard Assessment, Ecology Publication No. 91-111, rev. 08-09, August 2009.

<sup>3</sup> Ecology (2016), Remedial Investigation Checklist, Ecology Publication No. 16-09-006, May 2016.

Ecology recommends that the remedial investigation to be conducted under the agreed order be limited to the areal extent of the CKD landfill-related impacts, and include other potential sources of contamination within that area (e.g., roadbed slag). The RI needs to evaluate the lateral and vertical extent of underground mining works, coal seams, and faults, and assess whether these features potentially impact groundwater flow from the Dale Strip Pit and potentially into the Lower Disposal Area.<sup>4</sup> This investigation is needed to develop and evaluate cleanup action alternatives in the FS.

If the remedial investigation to be conducted under the agreed order is limited to the extent of the CKD landfill impacts, then Reserve Silica and/or other PLPs will be free to proceed with independent remedial action at the plant site. *See* WAC 173-340-515(2) (providing that, with certain exceptions, “a potentially liable person may not conduct independent remedial actions after commencing discussions or negotiations for an agreed order”). However, Ecology would retain all of its enforcement options with respect to the plant site, as it does regard to any independent remedial action.

### **Ecology’s Review of Historical Coal Preparation Operations**

Ecology requested and received additional photographs and documentation from Michael Brathovde on January 28 and 30, 2019. Ecology reviewed historical coal mining resources<sup>5</sup> and draws the following conclusions about historical coal preparation operations:

- Coal preparation facilities were located near the current Black Diamond-Ravensdale Road beginning in circa 1924. The current railroad line pre-exists coal mining and preparation activities, and the current alignment of Black Diamond-Ravensdale Road is shown on construction plans dated May 1941.
- Map K56\_D shows Ravensdale Lake (aka Beaver Lake), the railroad line, a former railroad spur potentially underlying the current Black Diamond-Ravensdale Road, a washery and tipple located on current Lot 1 on the south side of the railroad spur, and a “surface tram to washery” that extends from the washery and tipple to both the Dale tunnel and Ravensdale No. 2 Mine/McKay Workings in 1936. Map K60\_G shows that coal from Ravensdale No. 2 Mine/McKay Workings and the New McKay mine were conveyed to a “New Cleaning Plant” in Ravensdale in 1940.
- The May 1941 construction plans, provided by Michael Brathovde, show the proximity of the coal preparation facilities and railroad spur to the current alignment of the Black Diamond-Ravensdale Road.
- Coal preparation facilities were located on Parcel No. 352206-9018 (aka plant site), Parcel No. 362206-9065 (aka Lot 1), and the intermediate Black Diamond-Ravensdale Road property, and likely extended to Parcel No. 362206-9138 (aka Lot 6).

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<sup>4</sup> See Responsiveness Summary for Groundwater Hydrology and Chemicals of Potential Concern.

<sup>5</sup> See Responsiveness Summary for Public Comment Nos. 11, 12, 25, and 26 including Attachment A: Coal Reference Documents, Attachment B – Historical photographs and documentation provided by Michael Brathovde, and Attachment C – Referenced Coal Maps K56\_C, K56\_D, K60\_G, and K62\_A.

Tailings from coal preparation were deposited south of the pre-existing railroad in low areas that potentially extend under the current Black Diamond-Ravensdale Road. The tailings appear to be impounded primarily, if not exclusively, on the plant site parcel. Coal tailings were encountered from 20 to 30 feet below ground surface and underlain by recent lacustrine deposits in boring AMW-1 on the plant site parcel, and a 4- to 6-foot layer of tailings was encountered above recent lacustrine soil within 10 feet of the surface in borings AMW-2, AMW-3, and AB-1 through AB-4 on the plant site parcel. Based on a review of Resource Protection Well Reports,<sup>6</sup> the coal tailings do not appear to extend to the south side of Black Diamond-Ravensdale Road in borings MW-1A, MW-2A, MW-5A, and MW-6A adjacent to the infiltration pond on the Baja Properties parcel (Parcel No. 352206-9046) and Lot 6 (Parcel No. 362206-9138).

Ecology does not necessarily agree with Aspect Consulting's comment that "there are few to no risks to human health and the environment associated with historical coal mining activities in King County" based on the information presented.

#### **Ecology's Conclusion Regarding Allegation of CKD Fertilizer Use**

Ecology agrees with Reserve Silica's analysis of the public comment<sup>7</sup> that speculates about possible use of CKD fertilizer on Lot 3 (Parcel No. 012106-9002).

Ecology reviewed the International Forestry Consultants (IFC, 2012)<sup>8</sup> and American Forest Management (AFM, 2016)<sup>9</sup> reports for the Site that were prepared for Reserve Silica. The 2012 IFC report assessed timber potential on the Site and assigned assessment areas, including Areas 7, 8, and 9 and wetlands and buffers on Lots 3 and 4, which are summarized as follows:

- Area 7 – Low value hardwoods with high management costs, currently, and in the future for conifer establishment and growth.
- Area 8 – Low to moderate quality stand, with half low value hardwood. Increased management costs with isolation from main property and adjacency to county road.
- Area 9 – Well stocked Douglas-fir suited for timber production. Increased management costs with isolation from main property and adjacency to county road.
- Wetlands and buffers – No timber management potential.

The 2016 AFM report evaluated best forest management practices, and included a soil report for the Site. Lots 3 and 4 contain the following soil types:

- AgC – Alderwood gravelly sandy loam, 8 to 15 percent slopes.
- AgD – Alderwood gravelly sandy loam, 15 to 30 percent slopes.
- Sk – Seattle muck.

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<sup>6</sup> <https://fortress.wa.gov/ecy/wellconstruction/map/WCLSWebMap/default.aspx>

<sup>7</sup> See Responsiveness Summary for Public Comment No. 10.

<sup>8</sup> International Forestry Consultants (2012), Reserve Silica Ravensdale Property Forest Analysis, February 13, 2012.

<sup>9</sup> American Forest Management (2016), Forest Management Plan, Reserve Properties, King County, Washington, May 9, 2016.

The steeper AgD soil on the eastern portion of Lot 3 is poorly-suited for deep soil tillage necessary for site preparation in forested areas, whereas AgC and Sk soil are well-suited for deep soil tillage. The steeper AgD soil has a moderate seedling mortality rating, whereas AgC and Sk soils have a high seeding mortality rating due to high water content, requiring special design, extra maintenance, and costly alteration.

The forestry reports indicate that Lots 3 and 4 are remote and would have high management costs, the steeper soil on the eastern side of Lot 3 is poorly suited for soil treatment, and the remaining soil would be expected to have high seedling mortality because of high moisture content. The forested and wetland soils in Lots 3 and 4 do not appear suitable for soil treatment with CKD fertilizer.

Ecology does not recommend sampling to evaluate the commenter's speculation that CKD-derived fertilizers might have been used on Lot 3. The application of CKD fertilizer is improbable and there is no credible evidence to support the speculation. Additionally, CKD fertilizers are used as a soil conditioner to reduce soil acidity, which would stabilize natural metal concentrations in soil.

### **Next Steps**

Ecology is proposing amendments to the draft agreed order to reflect Ecology's conclusion that releases from the former processing plant constitute a separate site from the CKD landfill related releases to be addressed under the agreed order. These revisions include:

- Removal of the plant site parcel from the Site definition, with the statement that Reserve Silica will independently remediate hazardous substance releases at the plant site.
- Exhibit A (Preliminary Site Map) – The PLPs should revise the map to eliminate the plant site parcel.
- Exhibit B (Scope of Work) – Ecology proposed changes to address comments from Holcim relating to consultant-specific planning documents, making the RI work plan available for comment,<sup>10</sup> and extending the RI field work duration.

Ecology revised the Responsiveness Summary for public comments on the November 16, 2018, public meeting, the draft Agreed Order, and the Public Participation Plan. The enclosed Responsiveness Summary includes Ecology's changes following review of proposed changes from Reserve Silica and Holcim.

Ecology also revised the Public Participation Plan. This plan includes revisions to allow for informal review and feedback for the RI Work Plan and formal comment periods for the RI, FS, and Draft Cleanup Action Plan and State Environmental Policy Act (SEPA) documents.

After acceptance of the Agreed Order, Ecology recommends:

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<sup>10</sup> See Responsiveness Summary for Public Comment No. 1, Public Participation Plan, and Greater Maple Valley Unincorporated Area Council website – <http://gmvuac.org/reserve-silica/>

- Schedule a date to discuss the project status with Greater Maple Valley Unincorporated Area Council.
- Update the project website,<sup>11</sup> with PLP review, to reflect the preliminary site area, summarize the history of the release and independent cleanup actions, summarize the permits, and link pertinent documents.
- Post the Agreed Order, Responsiveness Summary, and Public Participation Plan on the project website.
- Send the Responsiveness Summary to the people that provided public comments.
- Initiate discussions between PLPs and Ecology regarding the scope of the RI work plan.

If you have any questions about this opinion, please contact me at (425) 649-7015 or by email at [alan.noell@ecy.wa.gov](mailto:alan.noell@ecy.wa.gov) or Tim O'Connor at (425) 649-7051 or by email at [tim.oconnor@ecy.wa.gov](mailto:tim.oconnor@ecy.wa.gov).

Sincerely,



Alan Noell  
Co-Site Manager  
Solid Waste Management Program

Attachments: Attachment A – Draft of Agreed Order, with proposed changes  
Attachment B – Agreed Order Exhibit A - Preliminary Site Map, prior to recommended changes  
Attachment C – Agreed Order Exhibit B – Scope of Work, with proposed changes  
Attachment D – Responsiveness Summary  
Attachment E – Public Participation Plan

cc: Carl Sanders, Baja Properties L.L.C.

ecc: Travis Bennett, Holcim (US), Inc.  
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Peter Christiansen, Ecology  
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<sup>11</sup> <https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=4728>