

POLICY STATEMENT

**SAND AND
GRAVEL
PROGRAM
REVIEW**

April 2017



OVERVIEW

This statement was developed by the Red Deer River Watershed Alliance in response to the review of the provincial sand and gravel program by Alberta Environment and Parks in 2017. The RDRWA's multi-sector Board of Directors voted to approve the statement below, and the statement was shared with Alberta Environment and Parks as part of the official program review.

CURRENT SITUATION

Watershed Planning and Advisory Councils (WPACs) have been engaged as part of the sand and gravel program review led by Alberta Environment and Parks in 2017. Staff from this Ministry presented to WPAC representatives on January 17th, 2017 and eight WPAC delegates later attended engagement sessions in Leduc (January 26-27, 2017) and Airdrie (February 2-3, 2017). Two RDRWA representatives attended the session in Airdrie. Alberta Environment and Parks requested written submissions and this note forms the official response from the RDRWA.

BACKGROUND

- WPACs are multi-stakeholder, not-for-profit organizations that assess watershed conditions and develop plans and activities to address watershed issues. Our activities support the three goals of Alberta's Water for Life Strategy: 1) Healthy aquatic ecosystems; 2) Reliable quality water supplies for a sustainable economy; and, 3) Safe, secure drinking water.
- Sand and gravel resources are needed to build Alberta's infrastructure, and the aggregate industry can support local economies and create jobs.

RED DEER RIVER WATERSHED CONTEXT

- There are 245 sand and gravel pits in the Red Deer River watershed according to Alberta Environment and Parks [1]. Eighty-two percent (82%) of these pits occur on private lands.
- The Red Deer River is a gravel-bed river with significant near-surface sand and gravel deposits (Figure 1). These deposits are typically connected to surface water features, including key tributaries and the river's mainstem, and may contain alluvial aquifers.
- Fifty-nine percent (59%) of registered pits on private lands in Alberta are found in the Red Deer River and North Saskatchewan River watersheds (n = 527). There are an additional 100 surface material leases on public lands in these watersheds [Sand and Gravel Engagement Session, Airdrie 2017].
- In 2013, Alberta Environment and Park's Red Deer regional office had 253 pit registrations on file, amounting to more than any other regional office in the province. Of these, only 1 in 13 pits had reclamation certification applications. 220 pits were reported to cover an area greater than 14 km² [2]

- The Red Deer River watershed includes several smaller sub-watershed units that have been identified as priority areas in Alberta for flood, drought, and water quality mitigation by the Government of Alberta . Any changes to Alberta’s sand and gravel program should consider flood, drought, and water quality risks accordingly.

COMMENTS

The RDRWA welcomes the review of Alberta’s sand and gravel program and hopes this will provide an opportunity to better address potential cumulative effects within Alberta’s watersheds. We recognize the fundamental importance of supporting a responsible sand and gravel industry in the province and that this development must be prudent, orderly, and managed through a lens of cumulative effects to support achieving the goals of Water for Life.

Our comments herein relate to sand and gravel extraction activities as a whole, and largely do not distinguish between Class 1 and Class 2 pits, or wet pits and dry pits. We do not restrict our comments to the four discussion topics proposed by Alberta Environment and Parks, recognizing the need for significant improvements across the whole sand and gravel program in Alberta, and on both public and private lands.

ISSUE AND RECOMMENDATIONS

1. **Conduct a scientific study of the cumulative effects of aggregate extraction activities as they relate to hydrological function and ecosystem health at regional and sub-watershed scales, focusing on areas with higher development pressure.**

Issue: Cumulative Effects

Details:

- Through the Alberta Land Stewardship Act and the Land-use Framework, the Government of Alberta has committed to manage the cumulative effects of development on air, water, land, and biodiversity at the regional level.
- To our knowledge, there has been no scientific assessment of cumulative effects related to aggregate extraction activities led by the Government of Alberta at a regional, watershed, or sub-watershed scale to date.
- The cumulative effects of aggregate development as they relate to hydrological function and ecosystem health need to be assessed to fully understand the impact of aggregate development across the triple-bottom line, to align with key policies, and to meet the goals of Water for Life.

2. Initiate a science-based, inclusive, and transparent review of the Surface Water Body Aggregate Policy (2011) to enable amendments through broad stakeholder engagement.

Issue: Surface Water Body Aggregate Policy

Details:

- The Surface Water Body Aggregate Policy (2011) includes several important policy changes related to aggregate development including: a) defining the “active channel” and “non-active area” of a surface water body, and b) enabling aggregate extraction in the 1:100 year floodplain zone. This policy significantly shifted the Government of Alberta’s approach to aggregate management by enabling extraction in sensitive river floodplains.
- Members of the public and environmental not-for-profit groups have expressed concerns about the validity of this policy, citing that it was developed without adequate public consultation and scientific input [4].
- Allowing extraction in the 1:100 year floodplain zone may pose significant risks to aquatic ecosystem health and associated groundwater (i.e., alluvial aquifers). It would be prudent to revisit this policy and ensure adequate consultation with key stakeholder groups (i.e., members of the public, environmental non-profit groups), First Nations, and scientific experts prior to active implementation.

3. Include an explicit screening parameter in the risk pre-assessment process pertaining to hydrogeology (e.g., surface water -groundwater interactions; alluvial aquifer protection).

Issue: Aggregate extraction approvals in the 1:100 year floodplain zone.

Details:

- Floodplains form the hydrological backbone of Albertan landscapes. According to Hauer et. al (2016), gravel-bed river floodplains act as an “ecological nexus” and have “a disproportionate concentration of diverse habitats, nutrient cycling, productivity, and water supply [...]” [5]

¹ This includes 202 registered pits on private lands, 27 pits operated by the Government of Alberta on public lands, and 16 pits operated by private operators on public lands as of 2017.

² O2 Planning + Design Inc. (2013). Background Technical Report: Surface Water Quantity and Groundwater Resources. Prepared for the Red Deer River Watershed Alliance.

Available here: http://www.rdrwa.ca/sites/rdrwa.ca/files/pdf/O2_RDRWA_BT3_GW_SW_20130913.pdf

- Scientific studies indicate that aggregate extraction within the floodplain poses risks to shallow groundwater [6], species habitat, and river morphology [7].
- Extraction of sand and gravel in an active floodplain also poses risks to hydrological resilience and water security, as extraction can alter groundwater-surface water connectivity (for example, by interrupting groundwater recharge and baseflow contributions). Given significant water stress in several Southern Alberta watersheds, any risks posed by sand and gravel development in the 1:100 year floodplain zone to water security and hydrological resilience should be seriously considered [8].

4. Suspend new aggregate extraction approvals within alluvial (shallow) aquifers in the 1:100 year floodplain zone until further research analyzing risks to water security and aquatic ecosystem health is completed. (see Figure 1).

Issue: Aggregate extraction approvals in the 1:100 year floodplain zone.

- Alberta Environment and Parks new risk-based approach to screen sites for potential aggregate extraction in the 1:100 year floodplain zone could direct industry to areas that pose less risk to sensitive landscapes and waterways. We support this approach in general, pending a larger review of the Surface Water Body Aggregate Policy (see Recommendation #2).
- Our greatest concern is ensuring that shallow aquifers and critical surface water – groundwater interactions are not significantly affected by aggregate development in the floodplain. Any risk-based pre-assessment should explicitly assess risks to hydrogeology and hydrology as a key screening parameter (i.e., risks to surface-water groundwater interactions; channel morphology based on stream order; and alluvial aquifers).
- We recommend suspending approvals for new sand and gravel operations in and over shallow aquifers within the 1:100 year floodplain zone to support hydrological integrity and water security.
- This approach recognizes that the majority of sand and gravel resources in Alberta exist outside of the 1:100 year floodplain zone and that these resources can support a thriving sand and gravel industry in the province.

³ Government of Alberta (2016). Watershed Resiliency and Restoration Program Priority Maps. Available here: <http://aep.alberta.ca/water/programs-and-services/watershed-resiliency-and-restoration-program/documents/WRRP-PriorityMaps-Jul29-2016.pdf>

⁴ Alberta Wilderness Association (2016). Alberta Surface Water Body Aggregate Policy 2011. Flawed Process and Outcome. Available here: <https://albertawilderness.ca/gravel-mining-policy-puts-water-risk/>

5. Improve access to information regarding the number, type, and location of existing public and private pits in Alberta's watersheds and ensure that this information is used in decision-making.

Issue: Access to information

Details:

- Improved information about the current status of sand and gravel operations in the province is needed to understand cumulative effects associated with sand and gravel activities and to inform decision-making.
- The Government of Alberta should report regularly on the number, type, size, and location of existing and proposed public and private pits in each watershed. All stakeholders would benefit from access to information reflecting the environmental, social, and economic performance of aggregate operations.
- We support the intention to include more detailed baseline sampling for soils and vegetation; and recommend additional baseline sampling for a suite of air, water, and biodiversity parameters.

6. Ensure that pit registrations and approvals are based on credible scientific information and ensure adequate oversight.

Issue: Science-based decision-making and education

Details:

- There is a need to increase scientific rigour within the approvals process. All decisions should be based on the best available, third party scientific information.

⁵ Hauer, F.R., et al. 2016. Gravel-bed river floodplains are the ecological nexus of glaciated mountain landscapes. *Science Advances*, Vol. 2., No. 6.

⁶ Hatva, T. 1994. Effect of gravel extraction on groundwater. *Future Groundwater Resources at Risk* (Proceedings of the Helsinki Conference, June 1994). IAHA Publ. no. 222, 1994.

⁷ Kondolf, G.M. 1997. Hungry water: effects of dams and gravel mining on river channels. *Environ. Manage.* 21: 533-551.

⁸ Faramarzi, M., et al. 2017. Uncertainty based assessment of dynamic freshwater scarcity in semi-arid watersheds of Alberta, Canada. *Journal of Hydrology: Regional Studies*. Vol. 9.

- It would be useful to provide training for municipal decision-makers about the potential implications of sand and gravel operations through a lens of cumulative effects.
- Approval processes would benefit from the input of independent professionals with specific expertise in assessing impacts to land, air, water, and biodiversity. Moreover, it is worth exploring options to enhance oversight of approvals based on this third party information, through for example, more frequent audits.

7. Improve coordination between the provincial government and municipalities on processes relating to the approval, oversight, and reclamation of public and private pits.

Issue: Municipal and provincial jurisdiction.

Details:

- There is an opportunity for better collaboration between the two levels of government on the approval and oversight of gravel pits, particularly those on private land.
- There are grey areas where it is unclear if it is a provincial or municipal mandate to manage land or water issues, given in part to a patchwork of legislation, policies, and land use bylaw provisions. Notably, there is a need to clarify environmental and natural resource management roles within approval processes and pertinent legislation (e.g., the Modernized Municipal Government Act).
- The province and municipalities should jointly address the proliferation of pits on private lands as an issue of potentially serious environmental and social concern. Both levels of government should be responsible for addressing this issue in tandem, across spatial scales. There is also a need to explore options to streamline management and oversight through a designated provincial lead.
- It is unclear how regional plans developed under the Land-use Framework will be used to guide sand and gravel development in key areas. There is a need to provide additional guidance through these regional plans to all stakeholders, on both public and private lands.

8. Increase the Government of Alberta's capacity to deliver an integrated sand and gravel program, by investing in staffing for monitoring, approvals, compliance, and public reporting.

Issue: Capacity

Details:

- We recognize the challenges involved in administering Alberta's sand and gravel program, both for the provincial government, municipalities, and industry.
- There is a need for increased capacity in areas of monitoring, approvals, compliance, and public reporting. For example, an effective inspection process to ensure timely and proper reclamation of public and private lands after aggregate extraction is needed.
- Finally, we encourage the provincial government to invest in more staffing. This will better support the responsible and orderly development of sand and gravel resources in Alberta.
- It is unclear how regional plans developed under the Land-use Framework will be used to guide sand and gravel development in key areas. There is a need to provide additional guidance through these regional plans to all stakeholders, on both public and private lands.

This submission presents high-level recommendations from the RDRWA related to the review of the sand and gravel program in Alberta. The RDWRA intends to use these recommendations again in the lead up to the development of a regional plan for the Red Deer Region.

We appreciate the opportunity to participate in this process and hope our recommendations will be considered seriously. Sand and gravel are non-renewable resources that support Alberta's economic future, and these resources must be managed prudently to ensure long-term supply while protecting the ecological integrity of Alberta's watersheds across scales. We offer our ongoing support to this process as needed, within existing capacity.