
Fresh Water Use in Oil and Gas Fracking Operations

Hydraulic fracturing or ‘fracking’ typically uses quantities of pressurized water and sand to crack open ‘tight’ rock formations to release oil and natural gas; horizontal directional drilling has become the preferred technique to access these formations in Alberta. Over 10,000 wells were completed in Alberta between 2008 and mid-2017 that combined multi-stage hydraulic fracturing and horizontal drilling techniques. The Alberta Energy Regulator reported that 99 percent of the water used in fracking operations was fresh water, with one percent being “alternative” water (saline groundwater, ‘produced’ water from within drilled wells, or wastewater). This fresh water is removed from the hydrological cycle. In 2016 these operations reported using seven million cubic metres of fresh water and recycling about six percent of their water.

Water intensity in fracking operations has risen on average. The amount of fracking water to produce a barrel-of-oil equivalent

(BOE) has increased by about 35 percent from 2013 to 2016. In 2016, hydraulic fracturing used 0.38 barrels of fresh water to produce one barrel of oil equivalent. That compares to 2.51 barrels of fresh water per BOE for oil sands mines and .42 barrels of water (of which half is fresh and half is ‘alternative’ water) per BOE for oil sands drilled/steamed ‘in situ’ operations.

In late January 2018, AWA commented on proposed regulatory changes for hydraulic fracturing water authorizations. Alberta Environment and Parks is proposing a preference for term water licences instead of temporary diversion licences (TDLs), which AWA views as a step forward in improving management of fracking water withdrawals. Temporary water diversion licenses have been used for most of these operations. AWA was concerned with weak verification and oversight of approved TDLs, so that actual locations and volumes of diversion might vary significantly from what was authorized. AWA also believes that TDLs provided an unjustified loophole to take fresh water in basins closed to new water licenses, including the Bow

and Oldman watersheds. Term licenses, unlike TDLs, also require a public comment period and consideration of any approved Water Management Plan in that watershed.

While supporting this step, AWA also took the opportunity to outline our many remaining concerns with fracking impacts. These include: continued low enforcement capacity and penalties; inadequate management of impacts to small lakes and tributaries; and unsustainable cumulative surface disturbance and carbon emission concerns.

- Carolyn Campbell



Withdrawing water from the Red Deer River for use by the oil and gas industry. PHOTO: © AWA