

## AquaCon at a glance

AquaCon AS is a Norwegian holding company which have secured three US properties in order to develop several land-based salmon RAS facilities in direct proximity to key US salmon seafood markets

- The team behind AquaCon comprises professionals with in-depth experience from the salmon farming industry, with focus on land-based facilities and RAS technology
- Will utilise proven RAS technology, specifically tailored to optimise production sustainability and mitigate risks
- Initial production volume target of 42,000 tonnes<sup>1</sup>, which will be built over three phases. Clear roadmap, with land plots secured, to scale production to 100,000 tonnes<sup>1</sup>
- Aims to be listed on the Oslo Stock Exchange



AKVAgroup will be the RAS technology supplier and has selected AquaCon as the preferred project in the USA



# Off-flavor in Land-based aquaculture

#### **OFF FLAVOR**

#### **Geosmin and MiB**

- The most common preharvest off-flavors in aquaculture products are caused by geosmin and 2-methylisoborneol (MiB), two highly odorous, earthy-musty metabolites of aquatic microorganisms.
- Geosmin and MIB are produced as secondary metabolites by a variety of bacteria, such as actinomycetes, cyanobacteria, proteobacteria and fungi
- The compounds are rapidly absorbed by fish and stored in lipid-rich tissues. Elimination of geosmin and MiB is slower than uptake, and the rate of elimination is reduced as water temperature decreases and tissue lipid content increases
- The detectable level of the off-flavor compounds are at very low concentrations and are more predominant in fatty parts of the filet. According to different sources threshold for human geosmin detection limit is around 200-400 ng/kg in the flesh/ filet (can subjective and in some cases, persons are immune to the off-flavor)
- The quick absorption and slow elimination from the flesh put a strong emphasis on the need for total control on the geosmin and MiB level in the production water, especially the last 2-3 months before harvest.
- ₹ Efficient removal from the fish and to avoid accumulation in the flesh requires a low concentration in the production water. Target concentration is as low as possible and less than 5-10 ng geosmin /L water
- Other off flavor compounds might be relevant, but the focus will initially be on geosmin and MiB



# Traditional removal and alternative Mitigation Strategies

### **Traditional mitigation method**

#### **Purging/ depuration**

- Purging/ depuration is basically keeping the fish in clean water for up to one week to eliminate geosmin and MiB from the flesh
- Purging efficiency is dependent upon exchange rate water (HRT), temperature and the gradient in geosmin and MiB between water and fish.
- ➡ Effect of purging goes down over time and with lowered temperature, due reduced metabolic activity and less effective excretion over the gills
- Initial geosmin and MiB level in fish before purging will effect the duration of purging and the success in getting the level down to avoid off-flavor

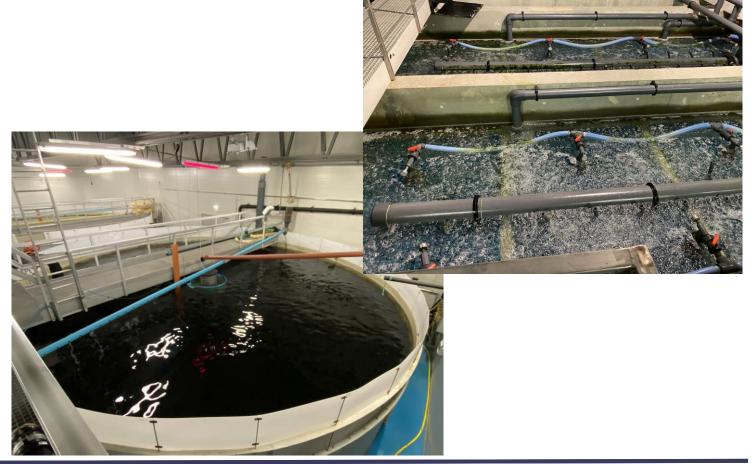




### **Alternative Mitigation Strategies – our approach**

# Geosmin and MiB reduction in production and purging water by improved particles removal and the use alternative methods for geosmin and MiB elimination

- Profiling across production systems 10-12 locations in active operations/ sites.
  - Geosmin and MiB level
  - Particle distribution
- Sampling production water with known Geosmin and MiB concentration
- Spiking production water with geosmin to simulate different concentration
- Testing and benchmarking different technologies (alone or combined) for partial and full flow treatment
- Due to agreement with RAS technology provider the methods under testing can't be disclosed until further documentation is ready
- Evaluation of cost benefit of various methods
- Develop full scale application together with RAS technology provider





# AquaCon

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