

Michigan to Further Regulate Food Processing Water Discharges

INTRODUCTION

It is anticipated that significant processing water discharge regulations will be forthcoming in 2010 from the State of Michigan that will impact the Michigan Food Processors Association (MFPA) membership. Specifically, the regulations will address ground water plumes related to processing water discharges.

PROCESSING WATER DISCHARGES AND GROUNDWATER QUALITY ISSUES

Groundwater plumes consisting of various metals can develop from processing water discharges on the land. If a spray discharge rate is too large or the concentration of biological oxygen demand (BOD₅) is too high, the soil loading capacity in the spray area can be exceeded and geochemical changes take place in the groundwater that will mobilize naturally occurring metals.

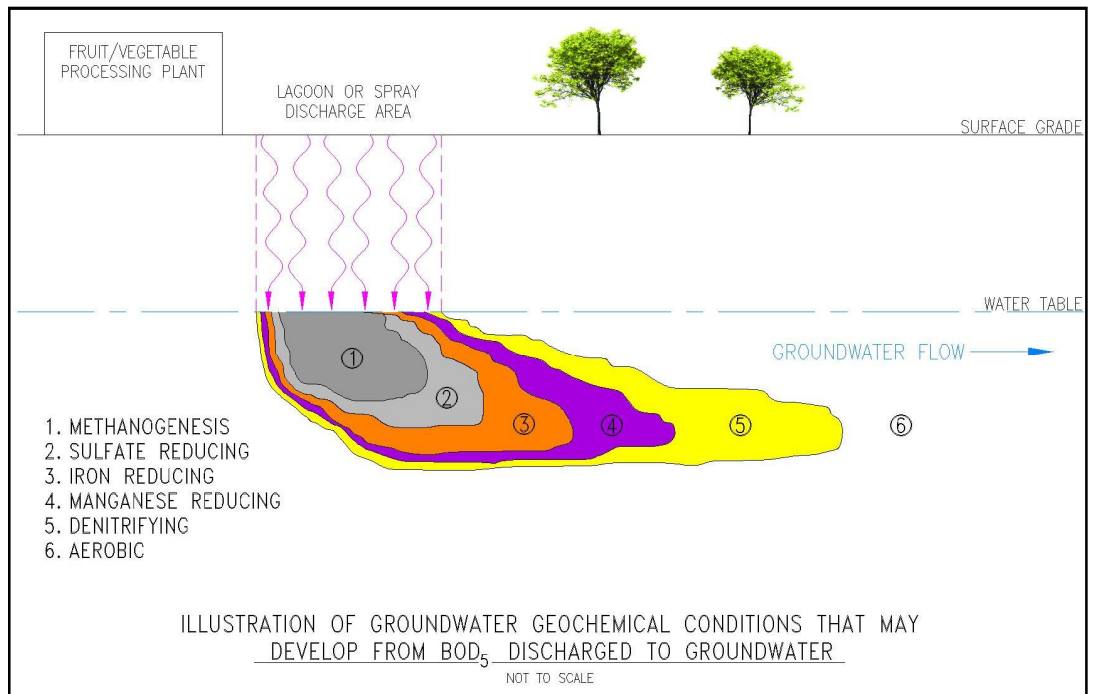
Naturally occurring metals in the soil, such as iron, manganese, and arsenic, are of the most concern. These metals have relatively low regulatory thresholds. The mobilization of these metals frees them to travel in the direction of groundwater flow and create a groundwater metals plume. A diagram of a typical metals plume from a fruit or vegetable processing facility is shown below in cross section.

If the metals concentrations in the plume exceed the State of Michigan's Part 201 Health or Aesthetic Based Drinking Water Criteria, you will likely be required to investigate and address the groundwater metals plume in the near future.

REDUCING PROCESSING WATER DISCHARGE IMPACTS

Evaluations of the discharge rate, concentrations of BOD₅, analyzing the discharge process, and the area of discharge will provide insight into whether your discharge has the potential to create a metals plume at your facility. This analysis can also recommend measures you can take to limit the discharges impact. Evaluations typically require a review of the following information:

- Groundwater discharge rate
- Discharge management plans
- Detailed flow diagrams
- Detailed water & processing water balance
- Processing water sampling analyses
- Current discharge practices
- Discharge monitoring practices



The analysis will provide recommendations that will assist your facility in limiting discharge impacts to groundwater. Some of the typical recommendations are:

- Reduction of discharge rates
- Relocation of the discharge
- Expansion of discharge area
- Reduction of BOD₅ in water discharges



TREATMENT OPTIONS

If modifications to the discharge process are not adequate to limit or remove impacts to ground water, then other options can be implemented. There are numerous options to treat both discharges at the processing facility and metals plumes in groundwater. The type and cost of treatment is often affected by the characteristics of the discharge or the size and severity of any metals plume in the groundwater.

Some of the options include:

- Monitored natural attenuation (MNA)
- Air sparging technologies
- Groundwater pump and treat technologies
- Treatment plants for processing water
- Combinations of the above listed approaches

In the next newsletter we will provide more details about the various options and costs to treat these types of groundwater issues.

Groundwater Discharge Permit Update

The State of Michigan provided the MFPA the first draft of a groundwater discharge permit to cover its members that do not currently have a permit. The permit, as drafted, will provide processors a five-year time frame to address process water treatment issues at their facilities to meet MDNRE requirements. Members are asked to provide comment or revisions to K.C. Gimmey via email at gimmeyk@michigan.gov on or before April 12, 2010.

As a member of MFPA, Gosling Czubak Engineering Sciences' team of professional engineers, certified professional geologists, and environmental professionals are well versed in the issues you face as an industry and would like to discuss the issues in greater detail with you. Contact Doug Coates, P.E. at 1-800-968-1062 for further assistance.

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Gosling Czubak
engineering sciences, inc.

Gosling Czubak
1280
Business Park Dr.
Traverse City, MI
49686-8607

Telephone:
231-946-9191
1-800-968-1062

Fax:
231-941-4603

Website:
goslingczubak.com