## Johnson, Bill H (DNR)

**From:** Fred Marinelli <[redacted]
**Sent:** Tuesday, October 09, 2012 3:24 PM
**To:** Johnson, Bill H (DNR)
**Cc:** David Blaha; Melinda Todorov; Carlson, Erik (MPCA); Houston Kempton; Paul Haby; Fred Marinelli
**Subject:** Re: Materials used in FTB dams and embankments

Bill,

There are substantial differences in parameters that control chemical releases from LTVSMC and NorthMet (flotation) tailings. I request that your technical team review this email string and verify that the correct materials are being used for simulating Cell 2W embankments and Cell 1E and 2E dams/embankments. Thanks.

Regards,

Fred

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On Tue, Oct 9, 2012 at 12:33 PM, Cory D. Anderson <[redacted] wrote:

Fred,

In the model, the existing Tailings Basin is made up of two classes of materials, coarse and fines. The dams of the existing basin (Cell 2W embankments) are assumed to be coarse material which is consistent with what is known about the construction of the existing basin.

Below is a statement from the Flotation Tailings Management Plan (version 1, October 2011, document page 5) related to the construction of new dams.

"The dams will be constructed by the upstream method using mainly existing LTVSMC coarse tailings (with occasional inclusions of fine tailings and slimes depending on coarse tailings borrow location) to form the exterior shell."

Because of the "occasional inclusions" of other classes of tailings, the newly constructed dams are said to be constructed with what we are calling "bulk tailings" or "other" in the work plan tables. However, the coarse tailings will predominate. Attached is a page from the Waste Characterization Data Package which briefly says the bulk material is used to form the new dams (see last paragraph of the page). That is why there is a difference between the LTVSMC dams and the newly constructed dams.

Thanks for the question Fred, I hope this helps explain it a little better. As you say, we may need more clear explanation of what is used where.

I'm glad to hear however that the comparisons are going so well between the model and your independent calcs.

Thanks Fred,

Cory D. Anderson

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**From:** Fred Marinelli [mailto:[redacted]
**Sent:** Tuesday, October 09, 2012 12:33 PM
**To:** Cory D. Anderson; Tina Pint
**Cc:** David Blaha; Melinda Todorov; [redacted] Carlson, Erik (DNR); Houston Kempton; Paul Haby; Fred Marinelli
**Subject:** Materials used in FTB dams and embankments

Cory,

The Plant Site model appears to be using LTV "other" (or "bank") tailings for the North Dam and LTV coarse tailings for the Cell 2W embankment. Is the choice of these materials documented somewhere, and has the choice been discussed and mutually agreed upon? In general, we have not found documentation to indicate which tailings materials are to be used below each subarea of the FTB. If this exists (outside the model), can you please steer me to it? If it doesn't exist in the documentation, I would suggest a table that shows the tailings material used below each sub-each area of the FTB.

Note that with independent calcs, I have been able to reproduce exactly, the transient Sulfate concentrations for Cell 2W fine and Cell 2W coarse. I am uncertain about the Cell 2W embankment, because I don't know which tailings material should be used and why it would be different from the North Dam embankment.

Thanks,

Fred

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**Fred Marinelli**

Senior Groundwater Hydrologist

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