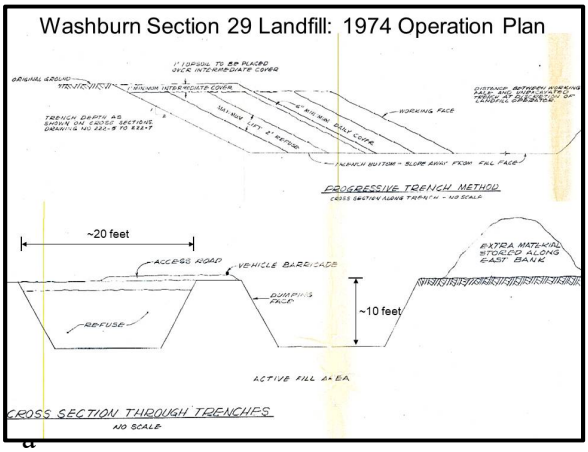
Plan Commission Minutes
Town of Washburn

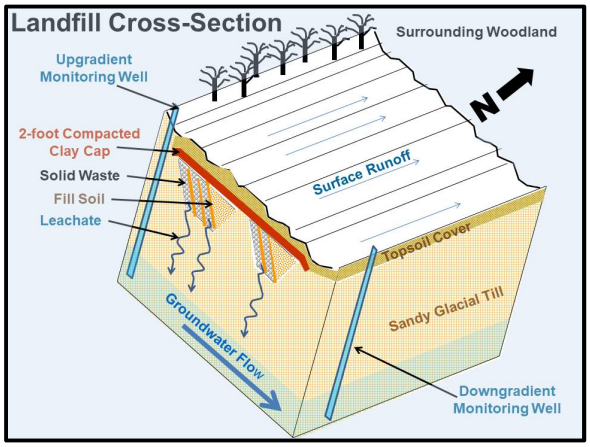
Section 29 Closed Landfill, South Maple Hill Rd.
Sunday, October 16, 2022

Members present: Kim Bro (chair), Cyndi Belanger (secretary), Tim Schwenzfeier (vice chair).
Members absent: Jim Park (town board representative), Hallie Sandberg.
Others present: Bob Adams, Scott Kluver (Washburn City Administrator) , Bob Short, Wendy Stein.

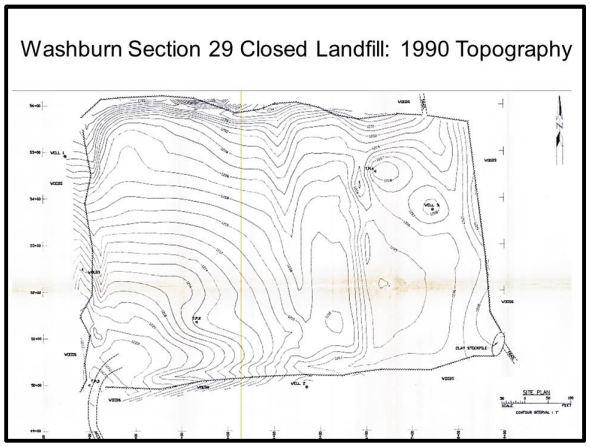
1. Chairman Bro called the meeting of the commission to order at 3:30 P.M. and verified its legal notification (posted at town hall and Tetzner Dairy) on October 11, 2022 and on town website.
2. The commission led a field visit of the closed landfill to explain – and learn – the historical operation and closure process, groundwater monitoring, and post-closure maintenance. Some of those present disposed their garbage at the landfill when it was open and shared recollections of its operation. The group observed areas of subsidence subsequent to closure.

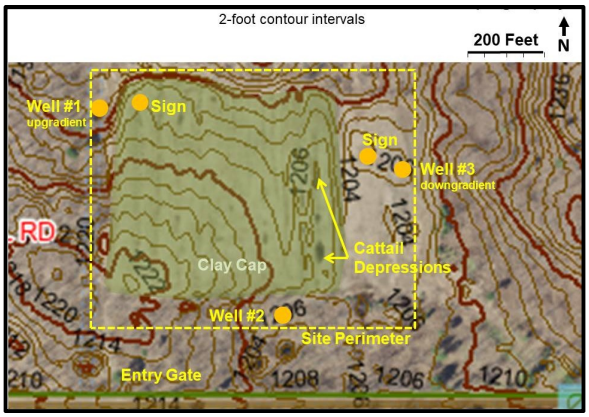
   Kim shared a drawing the proposed operation of the landfill from 1974 and a conceptual cross-sectional view of the closed landfill's current condition. The landfill operated as a series of north-south trenches in the sandy soil approximately 500 feet long, 20 feet wide and 10 feet deep. Trenches were excavated sequentially from west to east. As one trench was excavated and filled with solid waste, it was compacted and covered with two feet of sand, and the next trench was excavated to the east and filled. Municipal solid waste was disposed in the trenches for 15 years from 1975 through 1989. There is no impervious barrier at the bottoms of the trenches. Any leachate leaking from the waste seeps into the sandy soil below. The bottoms of the trenches are approximately 250 feet above the groundwater table.





   Kim shared two figures comparing the topography of the landfill cap in 1990 vs 2020. What were smooth contours with a drainage swale in the east third of the cap is now much more "lumpy," likely from the decay and compaction of municipal solid waste below the cap. The most severe such depressions are on the east side of the landfill. They subsided at least two feet. The cattails growing in them is an indication that they form ponds of standing water for a substantial part of the year. Surface water flows to the north, and groundwater flows to the east toward Lake Superior. The elevation of the water table in Monitoring Well #1 (on the west) is approximately 3 feet higher than that in Monitoring Well #3 (on the east) and approximately 1 foot higher than Monitoring Well #2 (to the south).





1990 **2020**

Kim explained how a clay cap functions. Clay is not impervious but rather is very weakly permeable. Surface water flows through the clay and into the buried waste, but the clay is expected to minimize the rate of leachate flowing into the groundwater so that concentrations of landfill contaminants in groundwater will remain low as the groundwater flows east away from the landfill site. The six-inch cover of topsoil over the clay cap provides a medium for grassy groundcover that prevents erosion of the clay cap and it is contoured to direct surface water flow off of the cap without flowing so fast that gullies are formed. The topsoil cover is intended to hold enough moisture to reduce the likelihood of the clay drying and cracking. Any cracks in the clay are potential conduits that carry larger amounts of surface water into the waste and increase the rate of leachate flow to groundwater.

Cattail depression in clay cap.

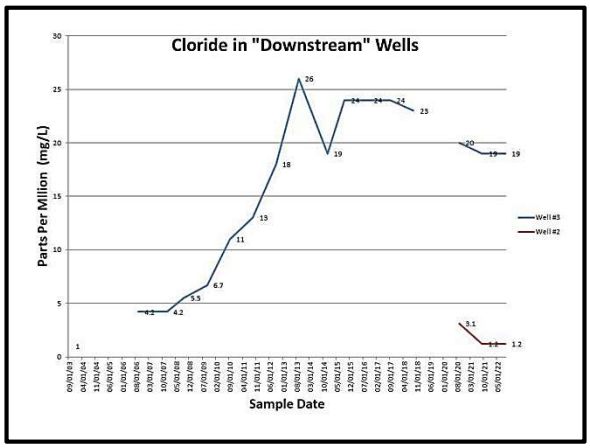
Regular mowing of vegetation on the cap is intended to minimize the potential for deep-rooted vegetation from penetrating the cap and creating additional conduits for water to seep into the waste too rapidly. As solid waste under the cap decays and becomes more compacted, the clay cap will subside. These areas of subsidence may reduce the rate of surface water runoff and may even allow water to pool over the clay. These lumps and pools on the surface of the cap increase the rate of leachate seeping into the groundwater. Cracks in the clay may also occur around areas of subsidence. The groups saw several cracks in the soil around these depressions, but it was not clear that the cracks extended through the clay cap.

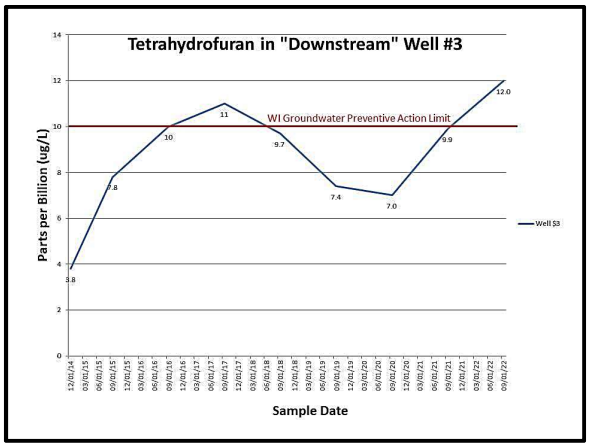
Other potential sources of damage to a cap are 1) vehicle traffic that may cause ruts in the surface, 2) deposition of rocks, boulders, or other debris, and holes created by burrowing animals. The group could only guess where the boundaries of the clay cap are and recommended that testing with small soil cores be done to prevent encroachment and disturbance of the cap and to assure that the entire cap area is mowed.

Kim had compiled groundwater sampling data from the Wisconsin Department of Natural Resources online database of landfill groundwater data (GEMS) and showed two graphs to illustrate how landfill leachate is affecting groundwater. Scott mentioned that sampling recently occurred in September, and Kim added the data Scott shared to the graphs shown below.

Chloride concentrations are a general indicator of the "saltiness" of the water. At a few parts per million (mg/L), it is not a substance of health concern but rather indicates that landfill leachate is in groundwater. It is not detectable in the "upstream" well (#1) on the east, but started to be detectable in the "downstream" well (#3) in 2003. Concentrations rose steadily to a peak of 26 mg/L in 2013 and now are leveling to approximately 20 mg/L recently. Kim said, to think of a leachate plume, as a trickle of colored water in a slowly flowing stream: the color spreads and fades as the colored liquid diffuses and slowly flows downstream. It took several years after waste was placed in the landfill for the salty leachate to be detectable in Well #3.

Six organic solvents have been detected in the "downstream" well (#3), but only one solvent occurs at levels that can be quantified in laboratory tests: tetrahydrofuran. The Wisconsin Groundwater Standard for tetrahydrofuran is 50 parts per billion (µg/L), and the Wisconsin Preventive Action Limit is 10 µg/L. Kim explained that a one part per billion concentration is approximately one drop mixed in a large tanker truck of water. In other words, a very small amount in solid waste can contaminate groundwater at levels of health concern. The solvent is used as an adhesive in PVC pipes since the 1970s and as a solvent in lacquers. The chemical vaporizes and degrades rapidly in well ventilated areas, but it degrades very little in groundwater. The state standard is based on the chemical's potential effect on fetal development.





Kim said to imagine a citizen who had a mostly used quantity of PVC adhesive in a sealed steel can that they threw out with their garbage. In a time before can recycling and Clean Sweep hazardous waste collections, it was a likely choice for disposal. As the organic waste around the container in the landfill degraded, the garbage became acidic and corroded the steel until the solvent leaks out with the leachate. No one knows how many cans of solvent were in garbage placed in the landfill over fifteen years.

When the concentration of a substance in groundwater exceeds a state Preventive Action Limit at the boundary of a facility, The Department of Natural Resources (DNR) must decide what, if any, actions are appropriate to prevent such concentrations from exceeding the state Groundwater Standard. Kim said he asked Nathan Coller, the DNR regional hydrogeologist in

Spooner when a DNR staff member could meet with local officials at the landfill site to explain what next steps are appropriate. Nate said he would ask Sonny Zentner, a DNR regional engineer in Eau Claire to set up a visit, but Sonny likely would not be able to visit until later in the fall or next spring.

Kim explained that, because nobody knows how many or what types of potentially toxic chemicals may have been mixed with the garbage placed in the landfill, monitoring and maintaining a closed landfill is a perpetual responsibility. The Washburn Town Board this year assigned the Town Plan Commission with the task of annually monitoring the landfill and making recommendations for maintenance of the site. The commission intends to prepare a checklist of items to monitor and of required maintenance needs to recommend to the Town Board and partner municipal officials. As officials step down and new ones take over, it will be important to assure that annual monitoring and maintenance is not forgotten because increased concentrations of contaminants in groundwater could lead to required repairs costing several million dollars. The Town of Barksdale currently provides 47 homes with water piped from the City of Washburn. That clean-up was funded by an industrial polluter, but the landfill management is a municipal liability.

Wendy pointed out several invasive noxious weeds growing on the landfill site: spotted knapweed and leafy spurge. She mentioned two steps to reduce the spread of weed seeds from the property: 1) as much as possible, mowing the site after the plants flower but before they produce seeds, and 2) minimizing the extent to which vehicles on the property might carry seeds offsite in tire treads. It may also be appropriate to apply weed control chemicals to reduce the abundance of weeds.

The group observed several tree stumps excavated from the realignment of South Maple Hill Road that were stacked east of Monitoring Well #3 and a pile of soil from the project. Several suggested that it would be appropriate to mark clearly the boundary between the landfill site (a shared responsibility of the town, the city, and the Town of Bayview) and Town of Washburn property outside of the site. The group asked to be informed about what follow-up maintenance is to be done.

Stumps east of Monitoring Well #3.

3. The meeting adjourned at 4:30 P.M.

Draft submitted by: Kenneth Bro, Chair, Town of Washburn Plan Commission
(November 6, 2022).