

Response to RSG Strawman Comment #1

CMS shares the RSG's interest in minimizing leachate collection. CMS appreciates that the RSG recognizes the cost implications of leachate management.

The existing diversion system, as a component of the final site remedy, is the result of an investigation and design process. This process included extensive investigation and data analysis, as well as communication and coordination with the EPA and MDEQ, over several years. The investigation process alone has included installation of 123 boreholes and 195 monitoring wells and the collection of over 400 water samples.

During the design process, initial diversion concepts that were considered included:

- High-capacity wells to dewater the CKD;
- High-capacity wells to reverse the gradient away from Lake Michigan.
- Upgradient interceptor trench; and
- Lower-capacity diversion wells to divert groundwater from the CKD.

The RI/AE evaluation concluded that, compared to other isolation and containment technologies, lower-capacity wells were the most effective method for minimizing leachate collection (see AE Rev. 3.0, Table 10 and Appendix H).

A thorough design investigation and analysis was completed to determine the optimal locations and pumping rates of a series of lower-capacity diversion wells. The stated objective of this investigation and analysis was to minimize leachate collection. Additional groundwater modeling and diversion well configurations were analyzed. These modeling results determined that diversion well(s) located west of the existing diversion system would provide negligible reduction in the amount of leachate collected. The following steps remain in the investigation and design process:

- Startup and operation of the diversion system; and
- Optimization of the diversion system.

Diversion wells to reduce the gradient, along with other components of Alternative 2 (excavation/consolidation, geomembrane cover, collection drains), are feasible and cost effective because they:

- Provide significant barrier to direct exposure;
- Minimize migration of contaminants to groundwater;
- Intercept discharges of leachate to Lake Michigan and minimizes the gradient;
- Reduce potential for exposure to leachate at shoreline and impacts to surface water; and
- Limit volume of leachate generated through reduction of infiltration and improved cover.

Responses to queries about specific opportunities to reduce leachate collection are provided below:

West Diversion Well

The addition of a diversion well west of the “Scenario C” diversion wells will provide negligible additional reduction in flow to the WLCS Trench.

Note:

Scenario C Diversion Wells		
Well Name	Depth (feet)	Planned Pumping Rate (GPM)
EPDW-2	152.5	15
EPDW-4	170	15
EPDW-6	171	25
EPDW-7	155	25
EPDW-9	170	25

An additional potential diversion well was modeled in two locations: one scenario modeled a lower well at the south edge of the CKD; a second scenario modeled an upper well just north of the condominiums.

- The lower well option is not viable due to close proximity with the saturated CKD and likelihood of plume capture. A diversion well at this location would itself capture leachate, thereby defeating the purpose of a diversion well (i.e. to capture *less* leachate).
- The upper well option provided only minimal additional reduction in flow toward the WLCS Trench. The modeled flow toward the trench was reduced from 2.5 gpm (by the existing diversion system) to 2.2 gpm (by the existing diversion system plus an additional west diversion well).

Dewatering CKD

Upgradient dewatering wells are not effective because:

- They will be physically unable to dewater or stop upwelling;
- They will require significant discharge to surface water;
- They will entrain mercury, and mercury treatment at low concentrations will be infeasible; and
- They are significantly more costly with no improvement in benefit compared to diversion.

Gradient Reversal

Reversing the hydraulic gradient with pumping wells would result in water from Lake Michigan flowing through some portions of the CKD pile on the way to the pumping wells, thereby creating more leachate. The volume of leachate that would require disposal using this option would be orders of magnitude larger than the volume currently collected by the existing IR drains, i.e. thousands of gallons per minute.

Upgradient Interceptor Trench

An upgradient interceptor trench is not practical because:

- The corridor required to construct an adequately deep trench would be over 100 feet wide.
- Construction would destroy components of the remedy and infrastructure that have already been installed; and
- It is significantly more expensive and offers no measurable reduction in amount of leachate collected compared to diversion wells.

Drain Fields to Collect Irrigation Water

The CKD pile at East Park has been remediated with the following:

- Geomembrane cover;
- Drainage layer; and
- Perimeter drain tile.

These components are designed to collect all runoff and all infiltration such that additional leachate is not generated by precipitation or irrigation.