

## Attachment G-1 Rationale for Selection of Groundwater Monitoring Wells

The following discussion summarizes the rationale for each monitoring well included in the groundwater monitoring program.

### *345 kV Line Area*

MW-413, MW-414, MW-415, MW-309, MW-323, MW-305B

DRO, boron, iron, manganese, sodium

MW-305B—This soil well will monitor the residual petroleum constituents from the spills in the former parking lot that once occupied the ISFSI area and the spills that were encountered when the ISFSI area storm drain pipe was replaced. It will also monitor the declining sodium concentrations in this area of marine dredge spoil disposal. Finally, this will monitor any changes in manganese that might take place in the decaying marsh deposits that underlie the fill in this specific area, which was once a small southward-trending branch of the saltwater marsh that was filled in this area.

MW-309—This soil well is in a downgradient position to monitor residual petroleum constituents from incidental spills and other diffuse sources in the fill under the 345-kV line. This location is the center of the former estuary finger that once extended eastward into this area from Bailey Cove, until it was filled with marine dredge spoils. Many contaminants carried in groundwater through the fill north of the Knoll could be potentially funneled through this area along the channels of the former marsh. Therefore, it will also monitor the iron and manganese generated near the decaying buried marsh deposits. Finally, the fill in the vicinity of MW-309 still has a fairly high sodium residual left over from seawater in the fill porewater and this well will assist in monitoring that purging process.

MW-323—This soil well is in the area of the second settling pond and low permeability sediments left from the marine dredge spoils. It is also located in a former estuarine channel in this area. It has fairly high residual boron and sodium left over from the marine dredge spoil porewater and this well would monitor that gradual purging. The well would also monitor the high iron and manganese associated with decaying marsh deposits under the fill in this area. Finally, this well will monitor DRO concentrations from diffuse sources in the upgradient area to this well, which is the “ballfield” area.

MW-413—The main purpose of this soil well is to monitor residual petroleum constituents from a groundwater plume created by the “spare generator enclosure kerosene spill”, which left a fairly high 2100 ug/l DRO concentration in this area. There is still an elevated sodium concentration in this area left over from the marine dredge spoil porewater that would be monitored, as well. Finally, this well also monitors the concentrations of iron and manganese created in association with decaying former marsh deposits buried under the marine dredge spoils in this area.

MW-414—The main purpose of this soil well is to monitor residual petroleum constituents in this area and the concentration of iron and manganese generated under the fill in this area in the old marsh deposits. Residual sodium in the marine dredge spoils is still elevated in this area and it purging can be monitored here.

MW-415—This soil well is in the heart of the second settling pond used to settle out the finer particles in the marine dredge spoils and because of the fill's slow permeability, the boron and sodium are still significantly above the Maine MEGs. This area is also at the edge of the former marsh and high iron and manganese occur in association with decaying marsh deposits under the fill. This well would monitor the part of the site that will probably take the longest to purge the excess seawater from the marine dredge spoils.

#### *Concrete Maintenance Garage Area*

MW-302A, MW-303B, MW-315, MW-316

Aluminum, manganese, molybdenum, sodium, DRO

MW-302A—This bedrock well had one of the highest reported molybdenum concentrations on the site that seems to be naturally associated with minerals in the rock. Aluminum is also elevated significantly above the Maine MEG, again with the most likely source being natural minerals from the rock. There is also an elevated sodium concentration in this well that could either be due to the marine dredge spoil fill, or might be due to construction era activities associated with the concrete batch plant that was located in the area of the ISFSI. With the uncertainty over the source of the observed exceedences of MEGs in this area, this well provide further characterization and monitor trends with time.

MW-303B and MW-316—The prime purpose of these wells is to monitor the residual petroleum constituents of the petroleum spill at the Former Truck Maintenance Garage where a clean-up was performed in the summer of 2004.

MW-315—As with other wells listed above, this soil well is located over the edge of a former estuarine marsh that was filled over by marine dredge spoils. The sodium concentration is still somewhat elevated here and the manganese concentration is also elevated, probably in association with the decay of the former marsh deposits. Finally, this area has a somewhat elevated DRO concentration from unknown sources and justifies monitoring to determine whether concentrations are declining.

#### *Warehouse 2/3, west side*

MW 404, MW-405

Aluminum, arsenic, iron, manganese, molybdenum, ethylbenzene, vinyl chloride

MW-404 and MW-405—These bedrock wells monitored the groundwater from the area of waste paint and thinner disposal that occurred west of the southwest corner of Warehouse 2/3. The

contaminated soil in this area was removed in the summer of 2004. As a result of either the waste material itself, or because of secondary reactions between mineral constituents of the soil and rock with the waste, we have proposed to monitor aluminum, arsenic, iron, manganese, molybdenum, ethylbenzene and vinyl chloride to see if the rock will purge of these constituents now that the source has been removed.

*Warehouse 2/3, TCA Plume*

MW-408, MW-409A, MW-422A, MW-429

TCA, DCA, DCE, VC, manganese, sodium, 1,4-dioxane

MW-408, MW-409A, MW-429, and MW-422—The purpose of these bedrock wells is to monitor a single longitudinal transect along the plume of the VOC TCA and its daughter products. This is a very small and narrow TCA plume and does not appear, by its size or concentration to justify additional transects. Previous drilling has bounded the location of this plume fairly narrowly.

RA & IA—MW-401B, MW-401A, MW-402, MW-403, MW-307, MW-318, B-202

DRO, sodium, manganese

MW-401A and -401B—add aluminum, arsenic, molybdenum

MW-307—The main purpose of this bedrock well is to monitor residual contamination left near the former diesel fuel storage tanks, and the manganese that has been elevated in association with the DRO in this area. There is a somewhat elevated sodium concentration in this area, too, probably from road salt use and the leaks from the former stormwater system that would back up from the diffuser forebay.

MW-318—This bedrock well will monitor the residual petroleum constituents that are left over from the main transformer fire release of the early 1990's. The elevated manganese is probably also associated with the high DRO concentration in this area and will also be monitored. A slightly elevated sodium, due either to leaking circulating water pipes or road salt use, would also be monitored.

MW-403 and B-202—These two bedrock wells will monitor residual petroleum contamination from the PAB alleyway where a complete soil removal containing the spilled product was conducted several years ago. As with most of the rest of the main driveway around the industrial and restricted area, this area also has elevated sodium that will be monitored.

MW-402—The primary purpose of this bedrock well is to monitor the purging of residual sodium in this area of the RA. Much soil has been removed in 2004 from radiologically contaminated areas upgradient and surrounding MW-402, so the concentrations of manganese and DRO should also be expected to decrease here.

MW-401A and MW-401B—The main purpose of these wells is to monitor any residual contamination from soil removals that occurred in this area for radiological and RCRA purposes. A very high concentration of DRO, elevated molybdenum, and slightly elevated arsenic, aluminum, and sodium occur here and should decrease greatly after soil removal. If no MCL or MEG exceedances are found in the wells after the first four quarters of monitoring, either or both wells may be removed from the program.