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LETTER REGARDING U S EPA REGION I RECOMMENDATIONS FOR SUPPLEMENTAL INVESTIGATIONS IN SUPPORT OF THE DRAFT FEASIBILITY STUDY FOR SOLVENT RELEASE AREA NAS SOUTH WEYMOUTH MA
12/10/2010
U S EPA REGION I

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION I
5 Post Office Square, Suite 100
Boston, MA 02109-3912

December 10, 2010

Brian J. Helland, P.E.
BRAC Program Management Office NE
4911 South Broad Street
Philadelphia, PA 19112-1303

Re: Meeting Notes and Recommendations for Supplemental Investigations in Support of the Draft Feasibility Study Report for the Solvent Release Area

Dear Mr. Helland:

Thank you for the opportunity to review the notes for the meeting held October 28, 2010 among EPA, Navy, Tetra Tech NUS and MassDEP to discuss comments on the draft *Feasibility Study Report* for the Solvent Release Area at the Naval Air Station South Weymouth, dated August 2010. We believe the meeting notes provide a reasonable summary of that meeting. Clarifications and comments, where appropriate, are noted below. As a follow-up to discussions at the meeting, EPA has also prepared the following recommendations.

Comments/Clarifications to Meeting Notes:

The minutes state that EPA assumes DNAPL exists in the source area. It is more accurate to state that EPA believes that DNAPL could be present in the source area based on the concentrations of PCE detected to date.

The minutes state: "EPA (R. Sugatt) agreed that MCLs and risk-based concentrations as PRGs would be acceptable provided that the risk was evaluated at the end of the remediation. This could also be done as part of five-year reviews, if appropriate." My understanding is that the FS would demonstrate before remediation that the selected PRGs are protective (Table 2-3). It does not make sense to rely on a risk evaluation after remediation. PRGs must be shown to be protective beforehand.

General Discussion and additional data needs, page 2, ¶1: The summary accurately notes that there was consensus concerning the benefits of collecting additional temporal groundwater quality data from sampling events proposed for spring and fall of 2011. All parties also concurred regarding the need to better define the location of the 1000 ug/l PCE contour before initiating additional monitoring. While the summary describes an overburden well for this purpose, EPA believes that bedrock control would be useful in this part of the plume to better define the location of the 1000 ug/l PCE contour. Specific suggestions for additional monitoring are provided below in greater detail.

EMD/Surface water, page 2, ¶2: Additional information regarding the 'bedrock feature' that potentially cuts across the EMD, was presented by EPA on July 22, 2010. The feature in question is

interpreted to be a sharp notch-like depression on the top-of-bedrock surface, possibly an expression of a fracture zone within the bedrock. The feature is interpreted to strike north-south, extending at a minimum (based on the limits of the 2-D resistivity survey coverage area), from the vicinity of the EMD to the source area near MW10-402. Figure 1 (Approximate Location of N-S Trending Anomaly on Top-of-Bedrock Surface Interpreted from 2-D Resistivity Data) depicts the approximate location of the interpreted feature. The feature was interpreted in light of anomalies in the vicinity of the bedrock/overburden interface indicated on three east-west 2-D resistivity profiles prepared for the RI. The northern and southern extent of the feature is not clear since the 2-D resistivity coverage is absent in these directions. However, as discussed on July 22, 2010, the linear character of this feature may be responsible for the quasi-linear character of the plume in this part of the site. As such, bedrock and overburden monitoring in the source area, mid-plume areas, and in the area proximal to the EMD needs to target this feature. Suggestions for additional monitoring are presented below in greater detail.

EMD/Surface water, page 2, ¶3: EPA disagrees that the effects of ISCO regarding metals mobilization in groundwater will be "similar to bioremediation." Not only are the processes different (oxidizing versus reducing), but the ISCO treatments – and resulting geochemical impacts - are likely much more short-lived. In contrast, impacts from enhanced bioremediation schemes may last decades.

Post-Remediation Risk and PRGs, page 2, ¶9 Manganese mobilized during remediation is considered to be a release and must be considered in the risk evaluations.

Surface Water RAO, page 3, ¶3: it is more accurate to state that appropriate monitoring will be needed to determine whether there are future impacts in the EMD, as well as to determine the appropriate response actions. EPA expressed particular concerns relative to the EMD regarding possible metals mobilization/precipitation as a consequence of enhanced bioremediation alternatives.

Bedrock, page 4, ¶1: While it may be true that there are presently no known down-gradient bedrock groundwater receptors, it must be acknowledged that contamination in bedrock may discharge to overburden and/or surface water in unknown locations, perhaps well beyond the current limits of "the site." Groundwater monitoring in bedrock, particularly deeper bedrock, is somewhat sparse. Management of migration/groundwater containment will be essential for all future remedial scenarios.

<u>*Recommendations:*</u>

Groundwater Monitoring: During the meeting of October 28, 2010, the site team reached consensus concerning the need to perform additional time-series groundwater monitoring for sampling events proposed for spring and fall of 2011. For these events, EPA recommends collecting synoptic water levels and groundwater quality samples from all on-site monitoring wells.

Analytical Parameters: While CVOC (*i.e.,* PCE and all associated breakdown products) are the most important parameters targeted for follow-up monitoring, strong consideration should be given to collecting MNA data from a least a subset of wells that are selected for ongoing monitoring if natural attenuation will be evaluated. Natural attenuation field and lab parameters such as ORP, pH, eH, redox couples, and various other parameters useful for determining MNA characteristics

and MNA potential for the site should also be collected. Although metals were mostly below background conditions, LTM analytes should include the common redox-sensitive metals present or expected at the site (*i.e.,* iron, manganese, arsenic) in order to determine baseline conditions for these constituents before the site geochemistry is disturbed from remedial actions or pilot testing.

Overburden GW Monitoring (General Considerations): In order to better characterize the nature of the plume (*e.g.,* stability, dispersion and natural attenuation), EPA believes that all on-site monitoring wells should be sampled in the spring and fall of 2011. Particular focus should be directed to the plume axis and a few key flank (*i.e.,* side-gradient) locations. In order to obtain a more complete axial profile, the data gap near the inferred 1000 ppb contour (*e.g.,* near temporary well location CH-GW108-04) should be addressed. New bedrock and overburden monitoring wells should be installed and sampled.

There should also be a few wells located at mid-plume distance from the source area, out toward the flanks in key cross-gradient locations. Trends at these locations could inform plume stability analysis. There are steep transverse (E-W) gradients in PCE on the plume flanks, and dispersion may push contamination laterally in these directions. However, if the plume is stable (*i.e.,* all transport processes in balance), no further increases in concentrations at cross gradient locations would be found. Existing wells that would serve this purpose are MW10-403 and/or MW-302 (the former is closer to the 1000 ppb contour, the latter closer to the 100 ppb contour). These are on the mid-plume western flank. There are no corresponding MWs on the eastern flank. Additional monitoring well control should therefore be considered in this area (*i.e.,* ~ 150 ft. east of MW10-403 and/or ~ 150 ft. east of MW-302).

A secondary data gap lies upgradient of the source area, where high concentrations exist, but there are limited monitoring wells in the vicinity of the expected 100 – 1000 ppb domain. Additional monitoring control in upgradient areas is warranted.

New well depths are expected to be consistent with the depths for nearby wells. However, vertical profiling should confirm the optimum depths for screen installation.

Bedrock GW Monitoring (General Considerations): As for the overburden, EPA recommends an array of axial wells in the shallow bedrock to help resolve the overall plume profile and evolution. Existing wells that could be used include MW20-503D (up-gradient), MW10-405D1/D2 (SW of the source area), MW10-402 (SE of the source area), MW-302D (mid-plume, W of the axis), MW10-411D2 (leading edge). As noted for the overburden, there is a particularly significant gap in bedrock well coverage down the longitudinal plume axis in the vicinity of the 1000 ppb contour. EPA therefore believes that a new bedrock well couplet, along with an overburden screen, should be installed near CHGW108-04 to fill this gap.

The new well depths are expected to be generally consistent with the depths for nearby wells considering available fracture characteristics. However, screening and/or geophysics should confirm the best well depths. Extensive monitoring of bedrock ground is warranted to confirm current conditions in anticipation that remedial options for bedrock groundwater will be limited and their effectiveness questionable. Therefore, long-term monitoring will be applicable under any scenario and having an adequate set of baseline data, particularly in bedrock, is essential. Consideration needs to be given to augmenting the bedrock monitoring network in areas up-gradient (*i.e.,* to the north), and side-gradient (*e.g.,* to the east and west) of the source area in regions where

monitoring is presently weak. Additional analysis is needed to determine optimal locations for new wells. Please consider collecting additional surface and borehole geophysical data to support these objectives.

Priority Locations for New Monitoring Wells: New overburden and shallow bedrock monitoring wells are needed. Priority one wells should be installed before spring 2011 for inclusion in the 2011 monitoring program. Priority two wells could be installed later, but ideally before the 2011 monitoring program. The locations of the proposed new wells are shown on Figure 2, Proposed New Well Locations.

- Priority 1 -- New overburden well near the leading edge of the 1,000 μg/L contour, approximately 20 feet east of CH-GW108-04, screened above the top-of-bedrock surface. This well is to be located within the notch feature shown on Figure 1.
- Priority 1 -- New shallow bedrock well near the leading edge of the 1,000 μg/L contour, approximately 20 feet east of CH-GW108-04, screened in the uppermost 50 feet of bedrock. This well is to be located within the notch feature shown on Figure 1.
- Priority 1 -- New overburden well near the leading edge of the 100 μg/L contour, located on north side adjacent to the EMD, in the vicinity SW/SD-112, screened above the top-of-bedrock surface. This well is to be located within the notch feature shown on Figure 1.
- Priority 1 -- New shallow bedrock well near the leading edge of the 100 μg/L contour, located on north side adjacent to the EMD, in the vicinity SW/SD-112, screened within the upper 50 feet of bedrock. This well is to be located within the 'notch' feature shown on Figure 1.
- Priority 1 -- New overburden well near the eastern lateral edge of the 100 μg/L contour, approximately 150 ft. east of MW-302.
- Priority 1 -- New shallow bedrock well near the eastern lateral edge of the 100 μg/L contour, approximately 150 ft. east of MW-302.
- Priority 1 -- New overburden well near the leading edge of the 10,000 μg/L contour, approximately 50 feet east of MW10-405, screened above the top-of-bedrock surface.
- Priority 1 -- New shallow bedrock well near the leading edge of the 10,000 μg/L contour, approximately 50 feet east of MW10-405, screened above the top-of-bedrock surface.

- Priority 2 -- New overburden well, screened above the top-of-bedrock surface, approximately 30 feet east of MW10-402. This well should be located within the notch feature shown on Figure 1.
- Priority 2 -- New bedrock well, screened in uppermost 50 feet of bedrock, approximately 30 feet east of MW10-402. This well should be located in the notch feature shown on Figure 1.
- Priority 2 -- New overburden well located on south side of the EMD approximately 60 to 80 feet west of MW11-112, screened above the top-of-bedrock surface. This well is to be located on-strike within the notch feature shown on Figure 1.
- Priority 2 -- New shallow bedrock well located on south side of the EMD approximately 60 to 80 feet west of MW11-112, screened within the uppermost 50 feet of bedrock. This well is to be located on-strike within the notch feature shown on Figure 1.
- Priority 2 -- New overburden well near the present western lateral limits of the plume, approximately 200 ft. west of MW-302.
- Priority 2 -- New shallow bedrock well near the present western lateral limits of the plume, approximately 200 ft. west of MW-302.

- Priority 2 – New up-gradient shallow bedrock well near MW-338.
- Priority 2 -- New up-gradient deep overburden well screened just above the top of bedrock surface near MW-338.

Additional Investigation: The results of the proposed groundwater sampling and analyses will govern whether additional investigation beyond that proposed are warranted before remedy selection. Investigation of the magnitude and extent of contaminated soil in the source area is also warranted to evaluate source control (*i.e.,* a soil removal action).

I look forward working with you and the Massachusetts Department of Environmental Protection on the investigation of the Solvent Release Area. Please do not hesitate to contact me at (617) 918-1385 should you have any questions.

Sincerely,

Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

cc: Dave Barney, USN, South Weymouth, MA
Dave Chaffin, MADEP, Boston, MA
Kevin Donovan, SSTTDC, South Weymouth, MA
Phoebe Call, TTNUS, Wilmington, MA

Figure1. Approximate Location of N-S Trending Anomaly on Top-of-Bedrock Surface Interpreted from 2-D Resistivity Data.

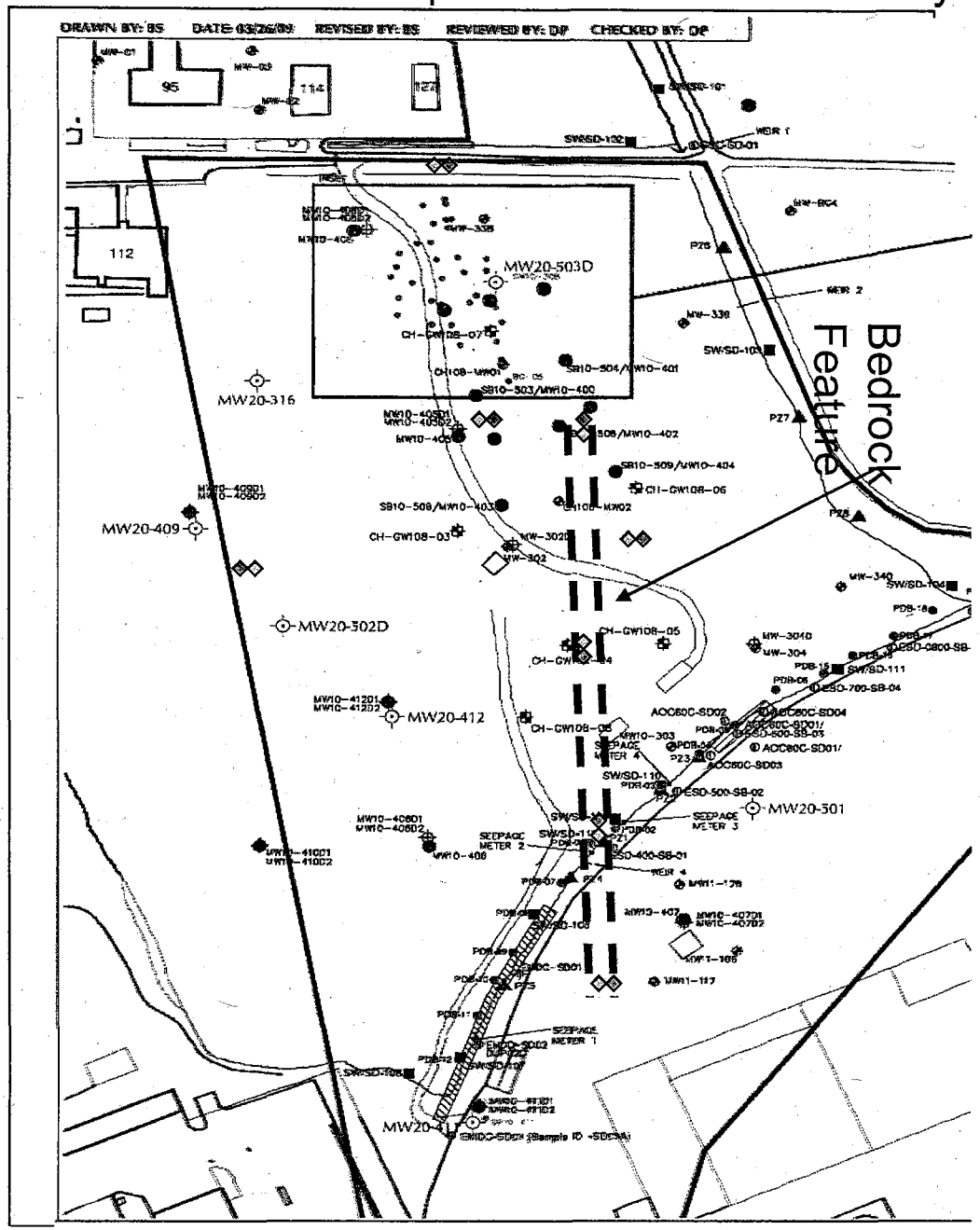
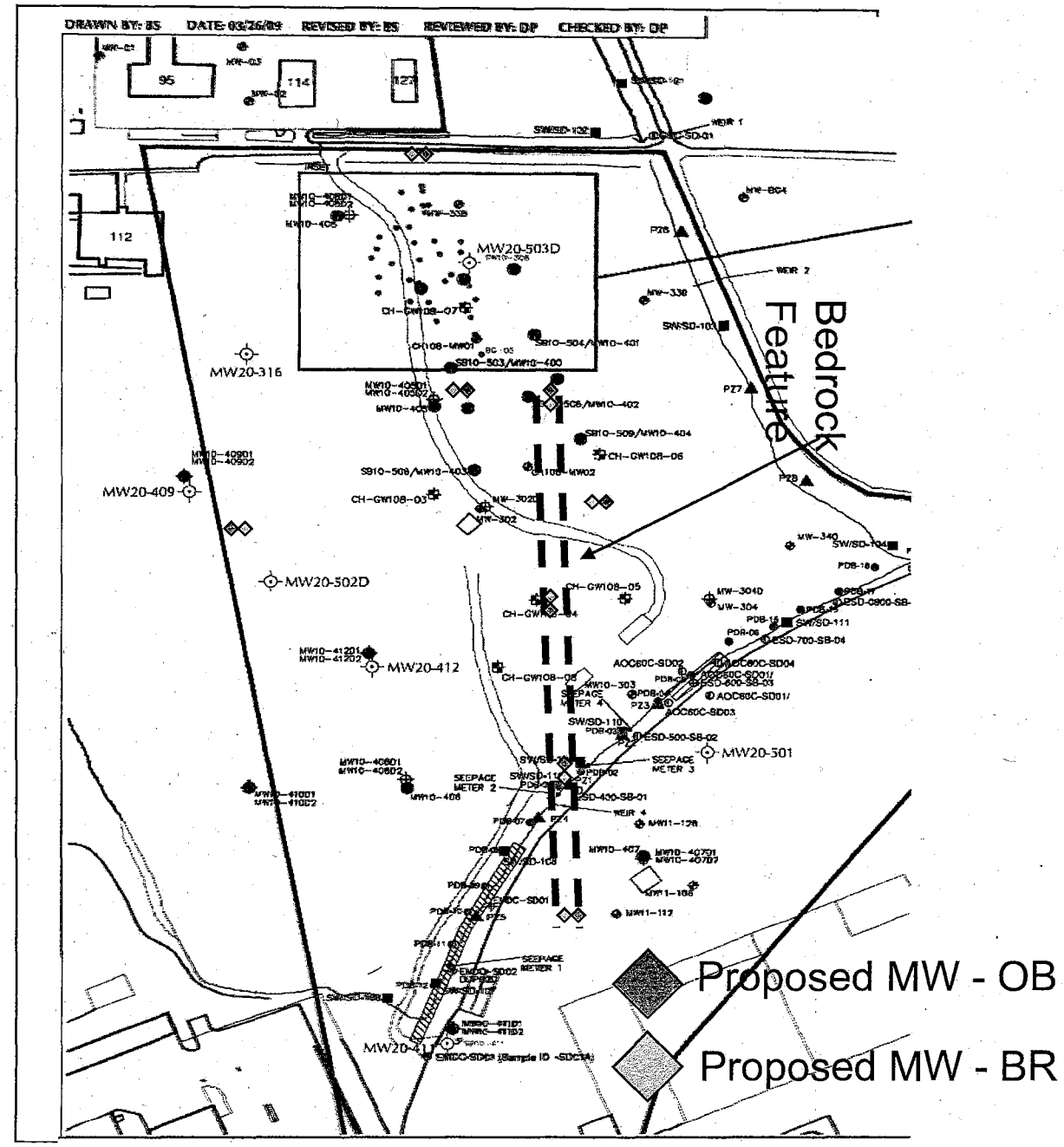
Figure 2. Proposed New Well Locations.