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State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

October 16, 2002

USEPA Region V
Mr. Jon Peterson USEPA-SR-6J
77 West Jackson
Chicago, IL 60604

Subject: CSTAG Recommendations - WDNR Comments

Dear Mr. Peterson:

Thank you for the opportunity to provide input and comment on the CSTAG Recommendations for the Ashland/Northern States Power Lakefront Superfund Site prepared on behalf of the Contaminated Sediments Technical Advisory Group and dated September 3, 2002. On July 15th through July 17th, 2002 the US EPA's Contaminated Sediment Technical Advisory Team (CSTAG) met with the Wisconsin Department of Natural Resources (WDNR), EPA Region V Project Managers and several stakeholders regarding the Ashland/Northern States Power Lakefront Site. The WDNR appreciates the opportunity to discuss this site, the investigative work completed and past feasibility studies with the members of CSTAG and EPA Region V staff. As we move forward through the CERCLA Remedial Investigation/Feasibility Study (RI/FS) process, the CSTAG recommendations and comments will be reviewed and implemented as appropriate. WDNR would like to take this opportunity to provide you with specific comments on the CSTAG recommendations.

CSTAG Recommendations followed by WDNR Comments

Principal #1, Control Sources Early

- **Many potential sources appear to have been well characterized and adequately identified. However, the CSTAG recommends further characterization of the free product and the dissolved phase of the contaminants in the deeper aquifer.**

WDNR has been investigating the site since 1993 when contamination was discovered near the City of Ashland's wastewater treatment facility. Based upon the early investigation it was determined that one potential source of the contamination was a former manufactured coal gas facility which operated on

property owned at that time by Northern States Power (NSP) now Xcel Energy. In 1995 Xcel was notified of their potential liability and began working with the WDNR to define the degree and extent of contamination, particularly on their property. To date, Xcel has generated several reports containing the results of investigations, however, as pointed out in the CSTAG comment, the depth and full lateral extent of the contamination in the deep aquifer has not yet been defined.

As part of the RI/FS process, the data collected to date has been or is being reviewed and a recommendation for areas of further investigation at the site is being developed. A Conceptual Site Model is being developed for the site, including information on the known and potential waste sources, affected media, migration pathways, and receptors at the site. The model will be used to further develop a conceptual understanding of the site. This model will also aid in determining areas where further investigation is necessary. Both the DNR and Xcel agree that there is a need to obtain better clarification of the degree and extent of contamination in the groundwater in the Copper Falls Aquifer. Xcel has agreed to take the lead on this investigation and will be discussing their proposed work plan with WDNR and EPA staff on October 22, 2002. Recognizing the importance of defining the extent of contamination WDNR will be working with Xcel to expedite the investigation of the groundwater contamination in the Copper Falls aquifer and to expedite submission of the data to WDNR so that the results can be incorporated into the Remedial Investigation Report.

- **Evaluate the potential benefits of addressing upland sources before sediment remediation.**

The interconnectedness of all of the four "operable units" at the site is important when assessing remedial options and the timing of the implementation of any remediation. The majority of the contaminant transport mechanisms have been in effect for nearly a century. Accordingly the need to remediate the upgradient source areas, the Copper Falls Aquifer and Ravine, prior to implementing remedial efforts at the Kreher Park and Sediment operable units will be assessed to minimize the potential for reintroduction of contaminants to the areas cleaned up. Interim Actions conducted in the Copper Falls and Ravine operable units will be evaluated during the RI/FS process to take advantage of data obtained (such as pumping data from the 3 gallons per minute recovery well on Xcel's property) and to evaluate the actions for potential incorporation into the final remedy for the site.

- **Consider consulting with technical experts at EPA's National Risk Management Research Laboratory in Ada, OK regarding DNAPL control/removal technologies and methods for characterizing the deeper aquifer.**

NAPL characterization, control and removal technologies were included in the scope of work for the WDNR's consultant and will be assessed as part of the RI/FS. WDNR will complete a literature search and contact the EPA's National Risk Management Research Laboratory to obtain information on the developing technologies for NAPL management and the findings will be incorporated as part of the Remedial Alternative Development and Screening Phase of the FS. NAPLs exist in all operable units at the site. Data gaps for both the characterization of NAPLs and definition of the degree/extent of NAPLs will be assessed during the completion of the RI (including the potential need for additional investigation).

<u>Principle #2, Involve the Community Early and Often</u>

- **Overall, the project team has encouraged early and meaningful community involvement and such practices should continue, especially with regard to decision criteria and remedial technologies, including environmental dredging and capping.**

WDNR plans to continue and expand outreach efforts to the community and stakeholders. In the near future a Citizens Advisory Committee will be appointed to provide input to the WDNR on the project. The Committee will meet on a regular basis and will be comprised of a cross section of the community. WDNR is also finalizing a Request for Proposals for public outreach and education services. A Community Involvement Plan is being developed.

- **Update the Human Health Risk Assessment using EPA Superfund guidance and current site-specific data (*e.g.*, consumption rates and frequency of dermal contact).**

An evaluation of the 1998 Human Health Risk Assessment (HHRA) is planned as part of the RI/FS process. The Wisconsin Department of Health and Family Services, Division of Health, will assist our consultant in the evaluation of data acquired since the initial HHRA was developed and will include a calculation of clean-up goals based on human health risk including assumptions based on consistence consumption (Tribal Populations). The Conceptual Site Model will be used to determine the potential exposure pathways and impacted populations. The clean-up goals will be developed for areas of the site that present excess risk as the result of human exposure to contaminants for all exposure routes. This will include consulting the EPA Guidance Document, Tribes At Risk: The Wisconsin Tribes Comparative Risk Project, EPA 230-R-92-017 (October 1992)

The 1998 HHRA utilized modified default values for many input parameters. The default values were modified to more accurately reflect site-specific exposure pathways. The community including the Bad River and Red Cliff Bands will be contacted to gain an accurate understanding of demographics, land/water use, and consumption of fish and other species potentially impacted by contaminants from the site. This information will be incorporated in the update of the HHRA. With regards to dermal contact with impacted sediments (with free phase tars), only limited data is available for the prediction of absorption through the skin. This exposure route will be further assessed to consider the developing science related to the prediction of effects related to human health. Remedial Action Objectives as well as uncertainties associated with the development of the updated HHRA will be stated.

- **Discuss fish consumption concerns with affected tribes and incorporate changes where appropriate. Consider ways to limit any adverse impacts from the remedial action on tourism and public use of the waterfront.**

As previously discussed, the fish consumption concerns of the potentially affected Bands will be discussed in the up-dated HHRA with input from the Wisconsin Division of Health.

During the FS stage of the process, potential adverse impacts of remedial actions will be assessed. The Detailed Analysis of Alternatives will be completed in accordance with the EPA's nine criteria for analysis of remedial alternatives on NPL sites. Criteria number nine "Community Acceptance" will be considered during the evaluation and analysis of remedial alternatives. Information obtained through community outreach efforts will be utilized during the evaluation of the remedial alternatives. It is likely that some viable and cost-effective remedial alternatives may cause short-term impacts to tourism or public use of the area. However, the long-term benefits to the community may substantially outweigh any short-term impacts. Accordingly, effective community outreach and education efforts can be used to solicit input and educate stakeholders in the community to the benefits of the selected remedy.

- **Explore whether additional stakeholders should be involved (*e.g.*, public service commission).**

DNR will continually evaluate whether additional stakeholders should be involved in the discussions related to the site. A Citizens Advisory Committee will be formed and will provide an opportunity for many stakeholders to stay informed on progress at the site and to provide input on the investigation and

eventual cleanup. The Citizens Advisory Committee will have representatives from the City of Ashland, environmental and civic groups, citizens, the Red Cliff and Bad River Bands, Xcel Energy, and the business community. In addition, DNR staff have been in contact with the Wisconsin Public Service Commission (PSC) to obtain information on how environmental cleanup costs are typically addressed by utilities and has extended an invitation to PSC staff to attend a meeting of the Citizens Advisory Committee.

Principle #3, Coordinate with States, Local Governments, Tribes, and Natural Resource Trustees

- **Increase involvement of natural resource trustees throughout the process.**

WDNR recognizes that the role of natural resource trustees has been limited to date. Efforts to expand their role will be undertaken. WDNR will be working with EPA staff to make sure that all potential trustees are identified, their role in the process clarified and they will be given an opportunity to participate in their defined roles throughout the process.

Principle #4, Develop and Refine a Conceptual Site Model that Considers Sediment Stability

- **Evaluate sediment stability using core data and depositional pattern data. Use all available data (*i.e.*, 1998 and 2001 data).**

Sediment stability and depositional patterns will be assessed during the development of the Conceptual Site Model, which will include all operable units of the site, and completion of the RI. The initial efforts will include the correlation of water depth, sediment composition, and variations in grain size and contaminant concentrations from the various sediment sampling efforts. Changes in these parameters will be used to develop an understanding of the transport mechanisms affecting sediment stability. An "EarthVision" 3-dimensional computer model currently under development for the site will be used to overlay the sediment data from various sampling events to visualize predicted changes in sediment profiles.

In addition, WDNR may evaluate the cost effectiveness of the development of a sediment transport model typically used for evaluation of sediment transport mechanisms in this part of Chequamegon Bay. Given the fine-grained nature of the sediment, it is likely that the sediment may be transported to low energy environments prior to settling out of the water column. This has been shown through a previous sediment-settling test.

The sediment stability data and any modeling carried out will be included as an input to the FS.

- **Investigate the effect of ice scour/movement on sediment stability and mixing. Literature reviews and possible tracer tests should be evaluated.**

A literature review will be conducted as part of the FS to aid in the prediction of the effects of ice scour on any remedial options involving leaving sediment in place or capping/armoring. Information from the literature review and any field data/modeling, if carried out, will be included as an input to the FS.

- **Evaluate the effects of proposed future waterbody uses (*e.g.*, propeller wash, anchoring) on sediment stability.**

The contaminated sediment portion of the site are currently closed to boating, swimming and wading due to observed releases of tars and oils to the waters surface. Propeller wash and/or anchoring and strong

storm events release these tars and oils from the sediments causing a slick to form. As such, the sediments are known to be unstable at this time. Any proposed remedy involving leaving sediments in place, such as armoring, will need to be evaluated in the FS, assuming full future use of the area after clean up.

Principle #5, Use an Iterative Approach in a Risk-Based Framework

- **Document how a phased approach to the sediment remedy is being considered.**

An evaluation of a phased approach was included as part of the 1998 FS conducted by the WDNR before the site was assessed for potential placement on the NPL. A phased approach will again be evaluated in the up-coming RI/FS. A phased approach may consider the removal of separate sediment areas of the site during consecutive construction seasons. A significant challenge exists when considering removal options for the sediments to prevent recontamination of areas where contaminated sediments would be removed. Factors to be considered include the fine-grained nature of much of the sediment, adsorption of contaminants by these fine-grained sediments, wave environment in the bay, ice conditions, short construction season, and ecological risks from low-level PAHs.

- **Evaluate addressing the sediment portion of the site in one season to minimize impacts on the community.**

This evaluation will be included in the up-coming RI/FS. As previously mentioned, several factors may complicate the ability to remediate the large volume of contaminated sediment within one construction season in Ashland. One option that will be considered is a phased approach with construction of a protective breakwater (or other containment structure) in one season, followed by a removal and processing of the sediment the second year. The construction of a containment structure should not itself negatively impact the community. Any schedule developed for implementation of removal of sediments will consider potential impacts to the community.

- **Consider an iterative approach to cleanup, including hot spot removal.**

The evaluation of an iterative approach to sediment clean up will be included in the up-coming RI/FS. The Conceptual Site Model will be used to evaluate an iterative approach option during the decision-making process for remedy selection. In addition, a literature review will be completed to determine how effective "hot spot" removal and monitored natural recovery (MNR) have been at other PAH impacted sites in environmentally sensitive areas. The previously completed ecological risk assessment shows impacts to benthic organisms at low PAH concentrations, so this will need to be considered if contaminants are left in place as part of the remedial action. Finally, the site exhibits a pattern of a contaminant "brightline" (high concentrations in the entire contaminated zone) versus a gradation of concentrations from isolated hot spots. Therefore, if hot spot removal and MNR are recommended for certain areas where contaminated sediments would be left in place, a monitoring program and a predicted recovery model would be needed to assess the effectiveness of the remedy. This effort would require the development of a statistically sound baseline and prediction model.

Principle #6, Carefully Evaluate the Assumptions and Uncertainties Associated with Site Characterization Data and Site Models

- **Validate bioaccumulation data and use existing fish tissue data where possible. Access resources of EPA's National Health and Environmental Effects Research Laboratories at Narragansett, RI and Duluth MN with regard to toxicological effects and fingerprinting of PAHs and to bioaccumulation modeling expertise.**

WDNR will confer with the EPA laboratories regarding the conceptual site model and theoretical predictions for PAH bioaccumulation and/or biotransformation in fish and benthos at this site. WDNR will also confer with the EPA laboratories regarding potential methods to validate bioaccumulation and/or

bio-transformation predictions. As part of the RI, fish will be collected from the site and analyzed for PAH concentrations in fish tissue, and PAH metabolites in the fish bile. Fish may also be examined for tumors and lesions. In situ bioaccumulation tests may also be conducted using caged fish, molluscs and/or oligochaetes. A decision on the collection of additional samples will be made in consultation with EPA.

If collected, PAH bioaccumulation data for fish will be used in the consumption component of the HHRA as stated previously. Data on bio-transformation of PAHs will be used in the weight of evidence analysis for risks to fish.

Fingerprinting of PAHs adsorbed to the sediments will provide further data on the contaminant source, its degradation process, and provide a more complete list of chemicals to utilize in the EPA's Equilibrium Partitioning Sediment Guidelines (ESGs) model. WDNR will evaluate whether fingerprinting can be extended to the tissue analyses as well.

Principle #7, Select Site-specific, Project-specific, and Sediment-specific Risk Management Approaches that will Achieve Risk-based Goals

- **Evaluate Monitored Natural Recovery (MNR) in the Feasibility Study.**

MNR will be considered in the RI/FS evaluations. MNR may be a viable option if used in concert with other remedial components. Given the relative age, persistence and recalcitrant nature of the PAH contaminants in Chequamegon bay, the dynamic high-energy environment, and the presence of human and ecological receptors MNR may not be a viable stand-alone option.

WDNR may consider fingerprinting of the contaminants in the sediments to identify what degradation of PAHs is ongoing, site-specific half lives, the nature of the contaminant degradation compounds, and to provide inputs to a fate and transport model to predict the long term MNR recovery period. A fate and transport model may be used to evaluate the relative toxicity and half-lives of the degradation compounds.

MNR will be evaluated as a remedial alternative during the detailed analysis of remedial alternatives.

- **Evaluate combinations of various technologies in the Feasibility Study (*e.g.*, dredge and cap, dredge and MNR).**

WDNR anticipates evaluating a number of technologies independent of and in combination with each other as part of the RI/FS process, including dredging in combination with capping or MNR.

- **Consider installing a temporary breakwall (*e.g.*, sheet piling, water dike, silt curtain) and completing remediation in one season.**

This evaluation will be included in the up-coming RI/FS. Consideration of temporary breakwalls will include assessment of new technologies that may be available to address the various site-specific complexities, including the heavy wave action and seasonal vagaries of ice movement. Previous studies on sediment suspension and contaminant concentrations indicate that standard silt curtains alone may not provide the protection to the local environment from the suspended contaminants. However, WDNR will consider new curtain technologies in development that include adsorptive properties to capture the contaminants. WDNR will also evaluate the City of Ashland's interest in the redevelopment of this area and the potential of incorporating a temporary breakwall into their plans. The City's recently approved Waterfront Development Plan identifies a break water system in Chequamegon Bay.

- **Consider performing a sensitivity analysis to compare a range of cleanup numbers, dredging technologies, and the implications on the sediment cleanup.**

This evaluation will be included in the up-coming RI/FS. The EarthVision 3 dimensional computer model that is being developed can be used to evaluate a range of remediation volumes and will allow comparison of likely residual contaminant levels that would remain if different remedial technologies were implemented. These comparisons will be part of the FS.

Principle #8, Ensure that Sediment Cleanup Levels are Clearly Tied to Risk Management Goals

- **Develop more site-specific Remedial Action Objectives (RAOs) and clearly articulate RAOs for protecting benthos, fish, and for recreational users.**

Based upon the conceptual site model and stakeholder perceptions for the future use of the site, and its value to the community and the local environment, separate remedial action objectives will be developed for benthos, fish and recreational users. For instance, if the model indicates the site is a spawning area, it would be reasonable to evaluate the impacts of contamination upon fish eggs and embryos. The objectives will be utilized to evaluate and establish the PRGs for the site.

Further data collection to assist in the development of PRGs for benthic organisms could include: additional benthic survey information (more data points); chronic toxicity testing; mussel bioaccumulation; and further acute toxicity testing of the sensitive species identified in 1998 and 2001 Ecological Risk Assessment tests. Further data collection to assist in the development of PRGs for fish (protection not consumption) could include: PAH metabolites in bile and tumor analysis; additional elutriate studies; fish embryo studies (with and without photo activated toxicity); and chronic toxicity effects from long term exposures. A decision on the collection of additional samples will be made in consultation with EPA.

Further development of PRGs for recreational users would be based upon the updated HHRA that will further evaluate the receptors, frequency of exposure, dermal contact model, and fish consumption model.

- **Discuss the uncertainties associated with the derivation of cleanup goals and how they were addressed.**

This is planned as part of the RI/FS process. There are several uncertainties associated with the derivation of the cleanup goals that result in questioning whether the PRGs are under-protective or over-protective. The WDNR has and will continue to address uncertainties by comparing the site specific results to independent EPA models available for PAHs in sediments. These independent EPA models have been developed from thousands of empirical data points available for a multitude of sites with similar contamination

Further site specific testing may be conducted to gather more data points to finalize the PRGs. Testing would include: acute toxicity testing of sensitive species, chronic toxicity testing, and additional benthic population enumeration. The WDNR will confer with the EPA labs to identify what reasonable quantity of data points they believe is necessary to provide a scientifically sound and statistically valid PRG.

- **Solicit additional technical support from researchers at the Duluth Laboratory in using the toxicity data to select final cleanup goals.**

SEH (the RI/FS contractor) and WDNR met with EPA Duluth Lab (Dave Mount) in June 2002 and will continue to confer on the site. The lab will be contacted for input on cleanup goals as related to photo-activated toxicity, fish embryo studies, etc.

- **Reevaluate ecological significance of toxicological tests used to develop cleanup goals.**

This is planned as part of the RI/FS process. Toxicity tests conducted to date for the Ashland sediments have measured both acute toxicity and sublethal effects from short-term exposures. If the remedial action objective for the sediment benthos and fish is to provide protection from chronic exposures, further testing will need to be conducted to evaluate effects associated with long term exposures to a range of PAH contaminated sediments.

- **Update the ecological risk information based on current research on toxicity to organisms in the Great Lakes.**

This is planned as part of the RI/FS process. The EPA Duluth Lab has been conducting research that indicates photo-activated toxicity of PAHs to fish embryos occurs at PAH concentrations lower than the draft PRGs for this site. Similar testing could be conducted on the Ashland sediments to evaluate whether the draft PRGs would be protective to fish. WDNR will work with staff in EPA's Duluth office to ensure that the research and findings are reflected in the final ecological risk assessment findings.

Principle #9, Maximize the Effectiveness of Institutional Controls and Recognize their Limitations

- **Collect site-specific information to document the effectiveness of any institutional controls required as part of the selected remedy (*i.e.*, boating bans).**

The effectiveness of institutional controls associated with remedial alternatives will be evaluated during the FS process. Issues such as public acceptance, need for education and enforceability will need to be evaluated.

Principle #10, Design Remedies to Minimize Short-term Risks while Achieving Long-term Protection

- **The CSTAG recognizes that many site investigations are on-going, that data are under evaluation, and that the Region may not be ready to propose a remedy for the site. Nevertheless, the CSTAG thought it appropriate to recommend the following design considerations:**

- **Evaluate whether the remedy can be completed in one season to minimize impacts on the local community and aquatic biota.**

As stated previously, this is planned as part of the RI/FS process.

- **Evaluate multiple dredging/excavation technologies to minimize resuspension, volatilization and other short-term impacts to the community.**

As stated previously, this is planned as part of the RI/FS process.

- **Evaluate short-term risks from transportation and disposal technologies.**

This will be evaluated as part of the RI/FS process. Short-term risks from spills, volatilization, etc will be evaluated for various transport technologies including truck, rail, and barge and potential disposal technologies including solid waste disposal landfill, confined disposal facilities, and beneficial reuse (following treatment).

Principle #11, Monitor During and After Sediment Remediation to Assess and Document Remedy Effectiveness

- **The CSTAG recognizes a long-term monitoring program may not be developed for this site for some time, but offers the following recommendations for future monitoring considerations:**

- **Ensure that monitoring plans are linked to RAOs.**

Post-remediation monitoring plans will be linked the remedial action objectives. For instance if an objective is to sustain a diverse benthic population, long term monitoring will include benthic population surveys to track recovery. The need for long term monitoring will be addressed in the FS and will need to be incorporated into the Record of Decision.

- **Ensure the Pre-Remedial Action baseline data are sufficient for comparison.**

Post remediation monitoring may include evaluation of long term benthic population recovery. Baseline data for the benthic population in the contaminated sediment area is limited. Further sampling (and an increased number of sampling points) of the pre-remedial action benthic population may be required to provide statistically supportable post-remediation comparisons.

- **Evaluate whether air monitoring during dredging/stockpiling is necessary.**

Air monitoring during any excavation work at this site will be required. The Wisconsin Division of Health in conjunction with the WDNR has released draft guidance on what types of air monitoring may be required.

WDNR appreciates the opportunity to provide you with these comments as they relate to the CSTAG recommendations. We look forward to working with you, members of the CSTAG and stakeholder to address issues of concerns as it related to the investigation and eventual cleanup of this site. Please feel free to contact me at (715) 635-4049 if you have any questions.

Sincerely,

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Wisconsin Department of Natural Resources

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