ADVANTAGES OF A MULTIDISCIPLINARY APPROACH TO *IN SITU* AND ON-SITE PHYTOREMEDIATION OF CONTAMINATED SURFACE AND GROUND WATERS

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Abstract. Experimentation with plants for remediation of contaminated surface and ground waters is increasing. Potential advantages of *in situ* phytoremediation over standard, engineered structural approaches include reductions in initial capital outlay and required maintenance, coupled with potential transformation of contaminants into substances that are not hazardous to human health. The costs of developing the technology for a phytoremediation approach also can be reduced by incorporating knowledge of the ecological aspects of plants selected for testing from the initial stages of development. Examples include plants that: 1) successfully transform contaminants under laboratory conditions but have a low probability of survival *in situ* because of incompatible site conditions; 2) successfully transform contaminants under laboratory conditions, have a high probability of survival *in situ*, but may be sensitive to transformation compounds; 3) transform contaminants at slower rates under laboratory conditions, but have high potential for *in situ* performance due to site vigor and insensitivity to transformation compounds; and 4) are moderate performers under laboratory conditions, but have related populations of clones which are predicted to perform more satisfactorily. Basic knowledge of a plant's ecophysiology can reduce the time and expense of developing *in situ* phytoremediation.