SECTION 1 - GENERAL INFORMATION AND PROJECT TEAM

Introduction to CDM Smith

For more than 60 years, CDM Smith has provided innovative solutions combined with responsive, professional service to our clients. Worldwide, we deliver a full range of services that satisfy client needs for progressive planning, environmental evaluation, engineering, design, consulting, program management and construction management. **With annual revenues of more than $1.2 billion, and more than 5,000 professionals in over 125 offices worldwide, CDM Smith maintains the size, stability, and resources to take on a wide range of projects successfully.** Our projects range from small, short-term solutions to complex, ongoing environmental and industrial treatment, infrastructure and facility projects.

CDM Smith Michigan Offices:

Lansing:
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Staff Count: 15

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Staff Count: 2

CDM Smith Michigan Inc.

In Michigan, CDM Smith operates as CDM Smith Michigan Inc., a wholly-owned subsidiary of CDM Smith Inc. CDM Smith Michigan Inc. (CDM Smith) began doing business in Michigan in 1977 as a partnership headquartered in Detroit. In 1990, CDM Smith expanded our services to serve the State of Michigan as a Level of Effort (LOE) contractor for Act 307 contaminated sites. In 2001, CDM Smith opened the Lansing office; in 2002, services expanded further with the opening of our Ann Arbor office. In 2011, the parent company, CDM, and Wilbur Smith merged to form CDM Smith Inc. In 2012, the Michigan subsidiaries (one from CDM and one from Wilbur Smith) changed their names and business structures to align with the parent companies' corporate merger. Currently, two wholly owned subsidiaries of CDM Smith Inc. are active in Michigan, namely CDM Michigan Inc. and CDM Smith Michigan Inc. As current contracts are completed, CDM Michigan Inc. will eventually be dissolved. CDM Smith Michigan Inc.'s Federal Tax Identification Number is 57-1082023.

In addition to the 40 staff in our Michigan offices, CDM Smith can pull from the firm's 5,000 staff members located in our 125+ offices worldwide. On December 26, 2012, the Michigan partnership was incorporated into CDM Smith Michigan Inc.

Mr. Todd King, P.E., has been designated as CDM Smith's Project Manager charged with executing the contract and committing firm resources to complete the scope of work contained in this proposal. Mr. King can be contacted at CDM Smith's Lansing office as stated above or e-mail: kingtw@cdmsmith.com.

KERN Statistical Services, Inc.

Subconsultants

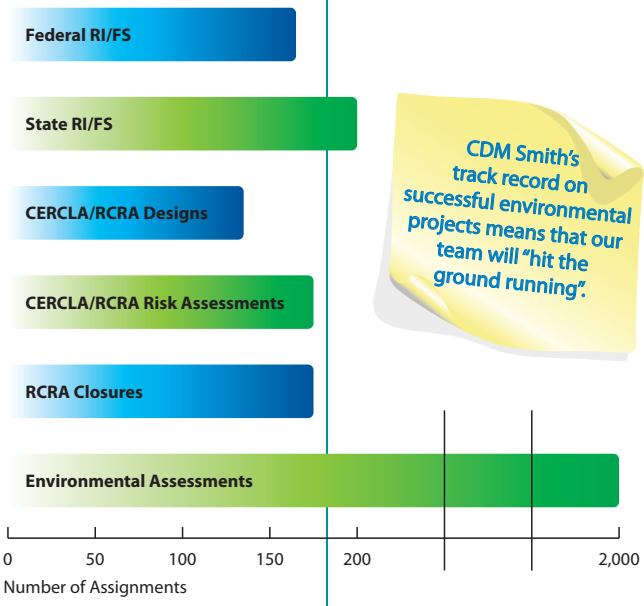
Kern Statistical Services, Inc. (KSS)

5175 Northeast River Road
Sauk Rapids, MN 56379
Phone: (320) 281-0676

Dr. John Kern of Kern Statistical Services, Inc. will provide statistical support to MDEQ as a subcontractor to CDM Smith as he has been doing for the last 15 years on the Kalamazoo project. Dr. Kern is a nationally recognized expert in the application of geostatistical and geospatial models to complex contaminated soil and sediment sites with particularly unique experience with Superfund mega sites. Few in the statistical community have actual hands on experience working with the complexities of spatial analysis related to fitting geostatistical models to contaminated sediment sites. Dr. Kern serves as the lead expert representing state and federal agencies at several of the largest contaminated sediments sites in the United States, including the Fox River in Green Bay Wisconsin, the Hudson and Passaic Rivers in EPA Region 2, in addition to representing the MDEQ at the Pine and Kalamazoo Rivers in Michigan. Often oversight contractors provide services much like a peer reviewer, reviewing reports and offering critical advice and comment. Dr. Kern is unique in that he has worked both independently of and collaboratively with PRP groups to do the statistical modeling used to develop remedial alternatives analysis critical to the RI/FS process. Most oversight contractors have not had such opportunities.

Qualifications

For more than 20 years, CDM Smith has worked with the Michigan Department of Natural Resources (DNR) and later, the Michigan Department of Environmental Quality (MDEQ), on Michigan sites of environmental contamination. We are currently working on the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site on behalf of MDEQ Remediation and Redevelopment Division. CDM Smith's role has included architectural and engineering design, construction oversight/management, remedial design, remedial investigations, feasibility studies, general contracting and construction, pre-construction geotechnical studies, hazardous waste RCRA closures, potentially responsible party searches, and natural resource damage assessments. CDM Smith is also providing remedial investigation services for the Torch Lake Superfund site in northern Michigan, human health and ecological risk assessments for the Velsicol Chemical Corporation Superfund Site, and groundwater sampling and data management services for the Metamora Landfill annual residential well sampling program in Lapeer County. CDM Smith recently completed an assignment in which we providing technical support to MDEQ project managers on the Defense States Memorandum of Agreement (DSMOA) in Lansing.



CDM Smith's track record on successful environmental projects means that our team will "hit the ground running".

In addition, since the passage of the Resource Conservation and Recovery Act (RCRA) in 1976 and the Comprehensive Environmental Response, Compensation, and Liability

Act (CERCLA) in 1980, CDM Smith has assisted clients throughout the United States in solving the multitude of problems associated with hazardous waste sites, including the careful management, disposal, reuse, and remediation of solid and hazardous waste for long-range public health and environmental protection. We combine our broad knowledge of regulations, permitting requirements, and compliance strategies with our technical expertise in innovative technologies and approaches for preventing or reducing environmental degradation. Always at the forefront of technological innovation and up-to-date on current and anticipated regulations, CDM Smith helps the nation's largest companies comply with strict regulations and develop successful environmental management programs for the future.

Experience working at Parts 201 and 213 of NREPA 1994 P.A. 451, as amended sites

CDM Smith has more than 30 years of experience in risk assessments, remedial investigations/feasibility studies, remedial design, and site cleanup at hundreds of federal and state sites of environmental contamination throughout the United States. CDM Smith is particularly experienced with site investigations and cleanups at federal and Michigan Superfund sites, leaking underground storage tank (LUST) sites, RCRA hazardous waste sites, and orphan sites of environmental contamination. CDM Smith is accustomed to working with federal and state regulatory agencies to deliver services within the applicable regulatory frameworks.

We understand that the principal regulations applicable to the DTMB ISID program relate to the conduct of investigation and cleanup activities at orphan sites of environmental contamination (Part 201 sites), LUST sites (Part 213), and State-owned sites (as regulated under Parts 201 and Part 213). CDM Smith also understands that there are many projects that are regulated under Superfund. We have substantial experience at conducting site investigations, risk assessments, RI/FS work, and site cleanups at Part 201, Part 213 and Superfund sites at more than 40 sites for DEQ and other clients in Michigan.

In addition, CDM Smith knows that implementation of site cleanups and remedial measures require knowledge and application of other environmental regulations designed to safeguard Michigan land, waterways, groundwater and air. CDM Smith makes sure that its site investigation work (e.g., drilling, test pitting, and investigation derived waste from sampling activities) is conducted in accordance with applicable regulations such as, but not limited to, Part 111 Hazardous Waste Management, Part 121 Liquid Industrial Waste, Part 115 Solid Waste Management. Likewise, we make sure that the bid specifications for the procurement of remediation contractors contain the correct references to applicable federal and State of Michigan regulations related to hazardous and non-hazardous waste and contaminated soil removal, handling, transportation, storage, and disposal/recycling requirements. The requirements we include in the bid specifications also include health and safety rules and regulations as promulgated by federal and Michigan OSHA.

Under more than a dozen EPA contracts, CDM Smith has completed over 1,700 CERCLA and RCRA assignments

Experience working at CERCLA regulated sites

Recently, CDM Smith has worked on the Kalamazoo River, Pine River/Velsicol, Metamora Landfill and Torch Lake Superfund sites on behalf of the State of Michigan. Outside of Michigan, since the 1980 passage of CERCLA, CDM Smith has been a leader in helping the EPA to implement the national Superfund law. Under more than a dozen EPA contracts, CDM Smith has completed over 1,700 CERCLA and RCRA assignments

for RI, FS, risk assessments, EE/CA, RD, construction and operation of remedial actions, community involvement support, and oversight of work performed by other contractors. CDM Smith's work has spanned more than 500 Superfund sites in all 10 EPA regions. CDM Smith staff have prepared over 1,000 CERCLA-compliant Work Plans, SAPs, QAPPs, HASPs, RI and FS reports, 100s of risk assessments and treatability studies. Further, CDM Smith has performed 100s of remedial designs for soil, groundwater, surface water, and sediment remediation, and remedial action and remedial action oversight.

Over the past 20+ years, CDM Smith has completed dozens of remedial investigation projects throughout Michigan

Experience in conducting effective environmental assessment, RI, and FS services

CDM Smith has been performing environmental remediation and restoration services for over 30 years, completing more than 600 remedial investigations worldwide. Over the last 20+ years, CDM Smith has completed dozens of remedial investigation projects throughout Michigan with clients that include the State of Michigan, US Fish and Wildlife Service, Wayne County, Oakland County, City of Detroit, City of Lansing, City of Grand Rapids and various private and public sector clients.

In addition, CDM Smith has completed more than 400 remedial action projects in the past 30 years throughout the world. Within Michigan, CDM Smith has completed a variety of remedial actions that include landfill closures, free product removals, PCB removals, UST removals, spill cleanups and other activities. Our Michigan based project team is well aware of Part 201, Part 213 and Part 115 requirements that may be relevant to assigned tasks under this ISID contract.

Experience with the development of human health and ecological risk assessments

CDM Smith's human health and ecological risk assessment scientists are experts in completing and critiquing risk assessments completed as part of the Superfund RI process. Our staff includes expertise in aquatic and terrestrial ecology and biology, human toxicology, ecotoxicology, environmental chemistry, botany, zoology, and wetlands sciences. We produce technically sound and legally defensible risk assessments and related documents for a wide variety of federal, state, and municipal agencies, and private clients both nationally and internationally.

CDM Smith performed a large and complex Human Health Risk Assessment (HHRA) and Baseline Ecological Risk Assessment (BERA) for human, aquatic and terrestrial ecological receptors for a 35-mile reach of the Kalamazoo River contaminated with PCBs from paper manufacturing facilities. The work included oversight of development of DQOs and sampling plans, field work conducted by the PRP and development of the RI. CDM Smith worked closely with state and federal officials to develop a comprehensive approach to assessing ecological risks at this site. This approach involved assessing PCB-related risks based initially on total PCB concentrations measured in surface water, sediment, surface soil, and biota. Abiotic and biological data were used to assess risks directly and as inputs into terrestrial and aquatic food web models. The BERA included more site-specific PCB food web transfer data than any other ecological risk assessment published at the time. CDM Smith quantitatively evaluated the effects of historical PCB contamination on existing aquatic and terrestrial organisms in the Kalamazoo River and Portage Creek. Human and ecological risk-based cleanup goals were developed for the site. The risk assessments were approved by the State of Michigan and US EPA.

CDM Smith provided support to the MDEQ during a remedy failure investigation that lead to a new Record of Decision and implementation of a new remedy. CDM Smith's role was performing two very complex HHRA and BERA on Operable Units (OU) 1 &3 of the Velsicol Chemical Corporation Superfund site. OU 1 included the former chemical plant, warehouse, parking area and residential area and OU 3 included the Pine River downstream of the St. Louis Impoundment, OU2. The primary chemicals of concern at this site are chlorobenzene, para-chlorosulfonic acid, DDT, PBB and DCBP as well as hundreds of other secondary chemicals of concern. The results of the HHRA and BERA on OU 1 were directly responsible for convincing the EPA and MDEQ that the former containment remediation conducted in 1983 by the Potentially Responsible Parties had failed and providing the defensible justification for selecting a new source control remedy costing $374 million dollars. The remedy will actively address the wide spread groundwater contamination, the two distinct Dense Non Aqueous Phased Liquids in the subsurface, and the wide spread soil contamination of the residential area as well as replacement of the city of St. Louis drinking water source. In addition to this CDM Smith produced the HHRA and BERA on the 45-miles portion of the Pine River downstream of the St, Louis Impoundment that provided the EPA and MDEQ with the defensible justification that this downstream portion of the Pine River was contaminated to unacceptable levels that provided a risk and must be designated as the third OU for the site. This resulted in the EPA reversing their prior decision that there was no risk present in the downstream area.

Experience with database development and management

CDM Smith has managed millions of records in laboratory analyses and real-time data as part of the Rouge River Wet Weather Demonstration Project, the Kalamazoo River Superfund Site, Torch Lake Superfund Site, Metamora Landfill, and a variety of other projects for public sector clients. In order to manage and QA/QC this large volume of data, CDM Smith has developed a system of receiving electronic data deliverables (EDDs) and hard-copy backup. Our quality assurance/quality control (QA/QC) process addresses the data integrity of both the electronic and hard-copy versions to verify that the project-specific data quality objectives are met. Data are managed in Microsoft Access and Oracle databases and EDDs are received in a variety of formats. EDDs are imported to our databases, QA/QC'd directly and then cross-referenced with hard-copy data when it is received. Scanned images and portable document formats (PDFs) are also imported to our databases after going through a separate conversion process into a usable electronic format. Our procedures have been developed and tested for more than 15 years and are available immediately to DTMB projects with no development time required.

CDM Smith has managed millions of records in laboratory analyses and real-time data as part of the Rouge River Wet Weather Demonstration Project, the Kalamazoo River Superfund Site, Torch Lake Superfund Site, and Metamora Landfill

Ability to perform sampling and provide technical review and Quality Assurance/Quality Control (QA/QC) of provided laboratory data

Efficient and accurate data handling begins with coordinating sampling events with the contracted laboratories. For both the Kalamazoo River Superfund Site and Metamora Landfill residential well sampling, CDM Smith coordinates regularly with the State's Environmental, Drinking Water, and Department of Community Health laboratories, in addition to out-of-state laboratories to assure that the appropriate analytical methods are provided by each laboratory, and that their standard operating procedures (SOPs) meet the project-specific data quality objectives. Coordination includes review of lab SOPs,

sample shipment, and sample tracking. All samples are assigned a unique sample number that follows a sample and its data through the entire data management system. Field data are validated by review of the field notes and equipment calibration logs to check that procedures have been performed and the information has been recorded appropriately. CDM Smith has coordinated with the laboratories to provide standard and site-specific EDDs for easy import to project specific databases (e.g, Kalamazoo River and Metamora Landfill projects).

The QA/QC Program assures that analytical results are technically and legally defensible. QA/QC procedures are designed to produce reliable and reproducible analytical data. CDM Smith designates a Quality Assurance Officer to oversee QA/QC protocols. The CDM Smith Project Quality Assurance Officer is responsible for the overall control of project related QA/QC activities. They have the authority and responsibility to identify quality problems; initiate, recommend, or provide corrective actions; and verify the implementation of the corrective actions.

Data validation provides an independent third-party review of written reports, laboratory analytical results, and supporting QA/QC data to assess usability of the data. Procedures used to validate data integrity are: completeness of laboratory data package, traceability of the sample from its receipt through data reporting (by the use of analysis request and COC forms and unique sample number), conditions of sample upon receipt by the lab compared to shipping criteria for that type sample (e.g., refrigeration), maintenance of holding time requirements, comparison of initial and continuing calibration results to method calibration criteria, and evaluation of method blanks. Deliverables include sample chain-of-custody forms, analytical results, designated QC summaries and supporting data. The CDM Smith Quality Assurance Officer makes sure that required items are present, complete, and meet the project Data Quality Objectives.

Ability to provide comprehensive professional services for the assigned projects

CDM Smith has designed and implemented soil and groundwater investigations for small and large sites nationwide, including the design and implementation of field programs for sampling and characterizing potentially contaminated areas, and identifying contaminants of concern. We have also designed field and laboratory quality assurance/quality control (QA/QC) programs to ensure the accuracy and validity of sampling and analytical methodologies, including strict adherence to detailed sampling and analysis, and chain-of-custody protocols to ensure legal defensibility of work products.

Based upon our years of experience investigating and characterizing all types of contaminated sites in myriad hydrogeological settings, CDM Smith has developed systematic processes to complete this project phase in a cost-effective way without turning it into a "science project." We have found that careful upfront planning of approaches and strategies, coupled with a focus on the end use of the data collected, proves invaluable in investigating the right data and controlling investigative costs. CDM Smith uses and has pioneered innovative site characterization technologies designed to save money on expensive drilling and well installation methods.

Our design engineers have proven experience in preparing practical remedial designs for site cleanup actions. CDM Smith routinely prepares design documents supporting voluntary cleanup actions, including both new and innovative technologies as well as

traditional methods, for optimal reliability and cost-effectiveness. In every case, our remedial design efforts are crafted with the magnitude of the project and its regulatory requirements in mind. With each client engagement, CDM Smith provides a design staff with extensive knowledge of presumptive and innovative remedial technologies and their associated costs, efficiencies and limitations.

Our vast experience in implementing and optimizing a wide array of remedial technologies allows us to recognize and pursue appropriate remedial solutions based on practical experience, not just on theoretical or published information.

Accounting systems with capability to provide detailed cost documentation

CDM Smith's accounting system provides all the capabilities for review and tracking needed for this type of project. CDM Smith has already implemented all accounting, reports and databases, thus providing a significant cost savings to the State of Michigan. CDM Smith has tailored its accounting procedures to address documentation, billing and accounting needs of the MDEQ, both contractually and as a value added breakdown, to support cost recovery from the responsible parties. Over the two decades of service, current CDM Smith staff has prepared numerous memos, letters, reports and technical memoranda for the MDEQ and have a developed a clear understanding of accounting needs and perspectives. We will meet with the accounting staff of subconsultants at the project outset to clarify and synchronize invoicing so that all costs can be reviewed collectively each month. CDM Smith will issue task orders to subconsultants for specific tasks and deliverables. Our internal teams will be given similar scope, schedule and budgets for each task. This system provides a forecast of costs and a benchmark for assessing month-to-month actual costs.

Our ability to estimate work accurately in a competitive market is one of the keys to our success, and is founded on our experience in the hard bid market.

It is also one of the keys to preparing other types of estimates accurately – conceptual estimates, value engineering and scope reduction estimates, and working estimates. Without knowing the market value of work in place, as determined by the competitive bid process, the reliability of our conceptual estimating cannot be as firm. Therefore, it has been essential that each of our estimators is grounded in the hard bid arena first before they develop their skills in conceptual estimating.

Our estimators also are involved in the buyout of the project and the closeout, assisting our project managers in the buyout of each project they estimate. This involvement gives them a valuable "reality check" on their estimates and maintains their relationships with the vendors, suppliers, and subcontractors upon whose pricing they rely. Our estimators also are involved in the closeout of a project when final costs are assembled and loaded into the estimating database. This is the true "reality check" on their estimates when they are able to compare actual installed costs versus their estimates.

CDM Smith

"Todd King, as the MDEQ's main point of contact for CDM (Smith), has been involved in all aspects of the project ensuring a seamless linkage between the MDEQ's technical needs and the resources available at CDM (Smith)"

Steven E. Chester, Former Director (MDEQ)

SECTION 2 - UNDERSTANDING OF PROJECT AND TASKS

CDM Smith has extensive project experience in the hazardous waste field having prepared literally hundreds of regulator-approved environmental site assessments, remedial investigations, and feasibility studies, as well as site remediation work plans, remedial designs, remedial construction, and operation and maintenance assignments. CDM Smith's experience on a wide range of environmental issues has resulted in remediation goals being achieved across the US and internationally, and is further demonstrated in the awards CDM Smith has received for environmental excellence.

CDM Smith has the skilled local management staff and systems in place to efficiently and cost-effectively manage DTMB ISID projects. We have extensive experience in managing hazardous waste remedial investigation/feasibility study, remedial design, construction and O&M contracts of similar scope and complexity for state government, including the MDEQ's level of effort (LOE) contract. CDM Smith has a proven track record of having worked for the State of Michigan to meet environmental goals. MDEQ's confidence in our ability to perform the required services has been expressed in "excellent" performance evaluations of the work assignments completed under the previous standby contracts.

As a firm, CDM Smith has established a 63-year history of client satisfaction. Our technical expertise, project management capabilities, and communications are key elements to strong client relationships. We believe that efficient and cost-effective management must go beyond simple measures of "on time, on budget," which represent baseline performance. To assist the State of Michigan in the face of changing priorities and diminishing funds, a successful contractor must deliver management, financial, and technical expertise and "do more with less", continuously seeking and seizing opportunities for management improvement.

CDM Smith's goal for this ISID contract is to exceed DTMB's and the Client Agencies expectations for scope, schedule, budget, and quality. Our approach to accomplish that goal is one that has led to success on many other government and private contracts, and reflects CDM Smith's core values: Excellence, Initiative, Shared Commitment, Integrity, and Teamwork.

The DTMB can be assured that CDM Smith has assembled a premier team of highly qualified and local engineers, scientists, and field technicians whose reputation and experience are second to none in environmental and construction services. The project management and staffing proposed for DTMB's ISID contract underscores the importance of continuity, consistency, and quality assurance in all aspects of our work—from project inception to completion, as further detailed in this proposal.

CDM Smith is uniquely qualified to manage remedial site operations and maintenance for the State of Michigan. CDM Smith has direct experience with working under DTMB's design guidelines and construction protocols and associated standards and forms. Our project team has provided oversight for construction contracts in excess of $100 million within the State of Michigan and has a full staff of construction oversight professionals qualified to oversee construction contractors in accordance with DTMB procedures. Our team can work effectively with DTMB to manage construction contractors and

implement a remedial project that meets the ultimate project goals to protect human health and the environment in accordance with the National Contingency Plan and Parts 201 and 213 NREPA 1994 P.A. 451, as amended sites

CDM Smith has provided construction management services on projects for state agencies, municipalities, industries, and EPA encompassing a widely diverse group of design, management, and quality assignments during the remedial design, bidding, and remediation phases.

Prior to construction, CDM Smith may conduct a constructability analysis which encompasses review of project plans and specifications, preparation of a detailed construction cost estimate for each contract, and development of a detailed construction schedule for each contract. CDM Smith makes recommendations to expedite long-lead procurement of equipment; initiates project monitoring, cash flow projections, and estimates; assist clients during state and federal reviews; and establishes a management information system. During construction, CDM Smith assist in the construction site management and in coordinating the work of contractors; provides job site inspections; prepares master scheduling; coordinates and expedites equipment testing and start-up operations; and submits a final report to the client agency.

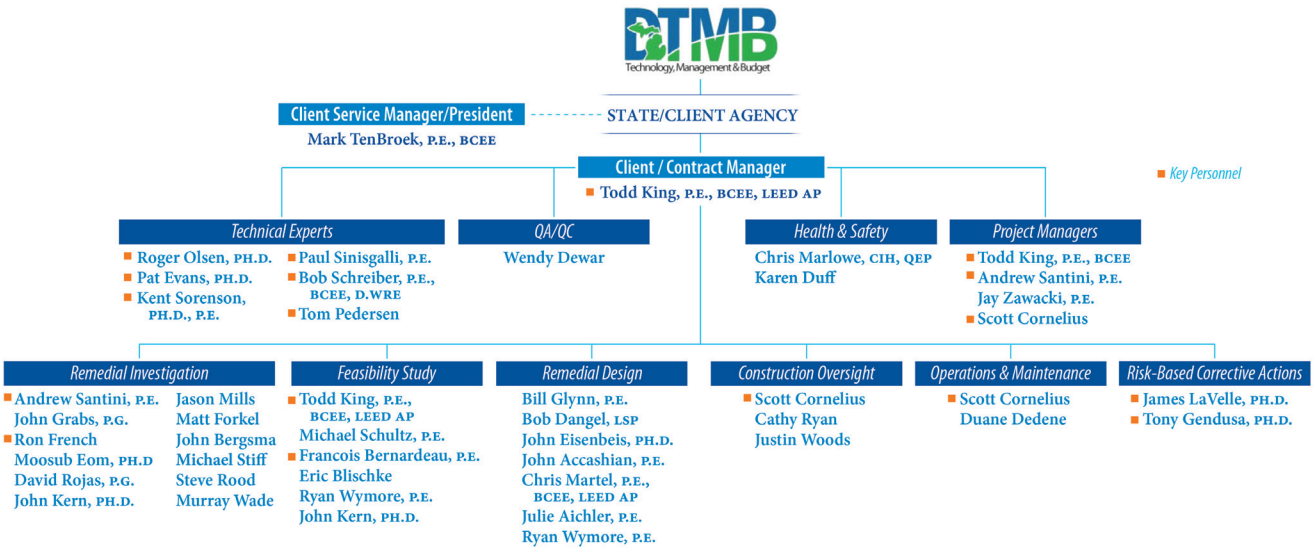
Our construction management engineering starts during the remedial design, prior to the bid phase where the most cost-effective impacts to the project can take place. We have saved our clients significant time and resources by recognizing that involvement of our construction management staff during design as well as remediation is most cost-effective.

SECTION 3 – PERSONNEL

In the 23 years that CDM Smith has served the State of Michigan in environmental consulting services, our core group of senior engineers and scientists has remained with CDM Smith and involved with Michigan projects such as the Kalamazoo River Superfund Site project. We will maintain our present staff commitments to the state with a flexible, as-needed project management approach that minimizes costs to the State and allows for rapid changes in project staffing.

The success of an evaluation, design, and implementation of a remedial action at a site of environmental concern will require a combination of local design staff knowledgeable of site conditions and state environmental laws and regulations, combined with experts in human health and ecological risk assessments, remedial technologies, and natural resources damage assessments. These projects require a team of professionals that bring an understanding of MDEQ project standards, site knowledge and established relationships with other state/federal regulators. In fact, CDM Smith is providing committed project team members who have applied their expertise on CERCLA and Superfund projects across the country assisting federal, state, and private clients with successful remediation at more than 500 Superfund sites. Additionally, many of our staff members have been working with MDEQ since 1990 and are familiar with the agency's policies and procedures, and experience working at Parts 201 and 213 NREPA 1994 P.A. 451, as amended sites.

Based on those criteria, we have crafted a team for the DTMB ISID at Parts 201 and 213 NREPA 1994 P.A. 451, as amended sites contracts composed of local and firm-wide degreed engineers and scientists that will be available to work on ISID projects. All of these professionals have the experience and qualifications to perform work specified in the RFP. Their technical degrees (including undergraduate and advanced degrees) and expertise includes: Environmental Engineering, Civil Engineering, Chemical Engineering, Geology, Hydrogeology, Biology, Chemistry, Environmental Sciences, Industrial Hygiene, and Toxicology. The organizational chart outing authority and communication lines, including Key Personnel, is shown below. Detailed resumes of all key project team members can be found in Appendix A.



Key Personnel

Todd King, P.E., BCEE, LEED AP - Project Manager

Mr. King is a chemical and environmental engineer with over 25 years experience in wastewater, air and hazardous waste management projects for state, industry and municipalities. He has served in a full range of engineering roles from project manager to resident, design and construction engineer for municipal and private-sector environmental projects. Currently, he is actively involved in the evaluation of several contaminated mega-sites including the Kalamazoo River Superfund site, Portland Harbor Superfund site and the Deepwater Horizon Oil spill site. As Project Manager for this contract, he brings the commitment of CDM Smith and a command of its technical resources to guarantee their availability. In this role, he will work with MDEQ to assure satisfaction with all aspects of our work, and to ensure that CDM Smith's standards of project management and quality control are adhered to in the manner on which our reputation was built.

Andrew Santini, P.E. - Assistant Project Manager

Mr. Santini is a civil and environmental engineer with 13 years experience planning, conducting and managing comprehensive sediment, soil, water, and biota sampling programs, remedial investigation and feasibility studies, ecological and human health risk assessments, landfilll construction and O&M, and the implementation of data and GIS management, health and safety, and quality control systems. For the Kalamazoo River project, Mr. Santini is managing the long-term monitoring (LTM) program, which includes preparing yearly reports that summarize the sampling events and present an evaluation of the data, preparing sampling plans and conducting sediment, surface water and biota sampling. These data are also being used to further refine the Site human health and ecological risk assessments and MDEQ's public fish consumption advisories. Mr. Santini is also the field team leader responsible for coordinating oversight of RP sampling programs, and conducting sampling for the MDEQ. As assistant project manager, Mr. Santini will provide support to the project manager and will afford an alternative avenue of communication to the client.

Ron French, Remedial Investigation

Mr. French is an ecologist and aquatic biologist with extensive expertise in biomonitoring and environmental research as it applies to water quality and ecological systems. In particular, his work has focused on the effects of point and nonpoint discharges on aquatic ecosystems. Mr. French has completed an ecological risk assessment for 37 miles of the Kalamazoo River. The ecological risk assessment defined remediation cleanup goals for the site to ensure protection of ecological resources along the river. This work involved extensive field sampling of abiotic and biotic media to determine levels of contamination and bioaccumulation for food web modeling. Mr. French also served as the project manager for the biological monitoring activities associated with Wayne County's Rouge River Wet Weather Monitoring project, where he oversaw an extensive biological sampling program that included macroinvertebrate, algae, fish sampling and fish tissue analysis. In addition to these efforts, the project team conducted extensive habitat analysis according to U.S. Geological Survey NAWQA protocols and U.S. EPA's rapid bioassessment program. The information gathered from this monitoring effort was used to determine impacts to aquatic life from stormwater, combined sewer overflows and nonpoint sources.

Scott D. Cornelius, Project Manager; Construction Oversight; O&M

Mr. Cornelius is a limnologist and aquatic biologist with extensive expertise in biomonitoring and environmental research as it applies to water quality and remediation of environmental contamination sites. His work has focused on the point and non-point source impacts on terrestrial and aquatic systems. He specializes in remedial investigation and remediation of sites of environmental contamination with decades of experience in environmental site characterization and remediation of mining facilities, chemical manufacturing facilities, paper manufacturing facilities, auto parts manufacturing facilities, electroplating facilities, industrial/municipal landfills, radioactive disposal sites, Department of Defense sites and the associated waste disposal areas at these facilities. Mr. Cornelius is an expert at guiding the sites through all stages of the Superfund process from site discovery to delisting. He has specialized in the characterization and remediation of sites involving contaminated sediments, groundwater, wetlands, riparian land and surface water of lake and river ecosystems. Mr. Cornelius is an expert on contaminated

sediment investigation and remediation, serving on many work groups and is a current member of the Interstate Technology and Regulatory Council sediment team.

Roger L. Olsen, Ph.D., Technical Expert

Dr. Olsen has more than 30 years of experience in the conduct, planning, and management of comprehensive sampling and analyses programs for sediments and water; laboratory treatability and fate/transport studies; use of models to evaluate hydrodynamic, physical and chemical processes in the environment including streams, lakes and reservoirs; statistical evaluation of environmental data; treatability studies; evaluation of risks/impacts; pilot plant operation; evaluation of remediation systems; remediation costs analysis; and strategic planning. His experience includes evaluations on over 100 sites with PCBs, dioxins, furans and PAHs. Dr. Olsen is a recognized expert in the evaluation, modeling and remediation of chemicals in surface water, groundwater, soils and sediments. Because of his broad experience and technical expertise, Dr. Olsen is routinely requested to assist in scoping and planning overall environmental evaluations, strategies and remediation alternative implementation at sites. Dr. Olsen has pioneered the use of many innovative investigation and remediation techniques including the use of dynamic work plans, passive treatment systems for metals and monitored natural attenuation for arsenic.

Patrick J. Evans, Ph.D., Technical Expert

Dr. Evans has conducted process engineering for various air, water, and soil remediation treatment systems. These systems have included air stripping, wet and dry caustic scrubbing, thermal oxidation, catalytic oxidation, activated carbon adsorption with and without steam regeneration, vapor condensation, vapor treatment using permanganate-impregnated zeolites, biological treatment of air, water, and soil, advanced oxidation of water using ozone, hydrogen peroxide and other oxidants, and oil water separation. Dr. Evans has also conducted process engineering of remediation systems involving in situ thermal treatment, soil vapor extraction, multiphase extraction, air sparging, ozone sparging, in situ chemical oxidation, biogeochemical transformation, in situ chemical reduction, in situ bioremediation, surfactant flushing, and free product recovery.

Kent S. Sorenson, Ph.D., P.E., Technical Expert

Dr. Sorenson is an environmental engineer with more than 14 years of experience in groundwater characterization and remediation. He specializes in applying innovative technologies for groundwater remediation. His work focuses on in situ remediation of organic contaminants in groundwater, including aspects of microbiology, hydrogeology, and geochemistry. In particular, he has implemented bioremediation (including bioaugmentation), chemical oxidation, thermal remediation, monitored natural attenuation, and combinations thereof. He is also actively involved in pursuing innovative methods for drilling and injection of amendments in the subsurface.

Paul S. Sinisgalli, P.E., Technical Expert

Mr. Sinisgalli has over 35 years of experience performing extensive work in the fields of facility engineering, industrial wastewater treatment plant (WWTP) design, industrial process water treatment systems, and hazardous waste remediation. Mr. Sinisgalli has a broad-based facilities engineering background and has designed industrial wastewater treatment systems, process buildings and associated utilities, cooling towers, RCRA waste tank farms, hazardous materials storage facilities, and truck unloading facilities.

Mr. Sinisgalli has managed numerous WWTP projects and is an expert in the management of multi-disciplinary projects including both traditional design-bid-build and design-build projects. He is a specialist in the selection and design of wastewater treatment systems for industrial wastes.

Robert P. Schreiber, P.E., BCEE, D.WRE, Technical Expert

Mr. Schreiber has over 36 years of experience in water resources engineering and computerized engineering analysis. He is a senior technical leader specializing in groundwater flow and contaminant studies, and serves as a company-wide resource in this area. He has concentrated on the application of analytical techniques to problems in remediation of groundwater contamination from hazardous waste site releases, source water protection and watershed management, surface water and groundwater supply sustainability, disposal of wastewater treatment plant effluent, and management and monitoring of landfill environmental impacts. He has implemented and guided groundwater modeling and assessment efforts on dozens of plume remediation projects, including RI/FS, pilot-testing, design, implementation, monitoring, and performance assessment stages.

Thomas A. Pedersen, Technical Expert

Mr. Pedersen has over 34 years of environmental and management consulting experience consults to senior managers in client organizations on corporate social responsibility and sustainability strategy, management systems, scorecards, and performance improvement. He assists industry, university, federal and public sector clients design, develop and implement management systems and performance improvement programs. Mr. Pedersen has extensive experience in all phases of environmental remediation and has served as project manager for preliminary site assessments, hazard ranking scoring, remedial investigations/feasibility studies, treatability studies, remedial design, soil vapor extraction research, construction quality assurance, clean-up verification studies, post closure monitoring design and evaluation. He was among the first to sample and characterize the Hudson River contaminated sediments and remnant areas in the late 1970's.

James M. LaVelle, PhD., Risk-Based Corrective Actions

Dr. LaVelle is CDM Smith's senior toxicologist and risk assessment specialist. He has 28 years of professional and academic toxicology and risk assessment experience with specific expertise in environmental assessment of chlorinated pesticides, polychlorinated biphenyls (PCBs), dioxins, chlorinated solvents, and metals, especially arsenic, cadmium, lead and mercury. Dr. LaVelle serves as the national resource for toxicology and human health risk assessment within CDM Smith. He was the led efforts to develop risk ranking methodology used by the State of Louisiana to prioritize hazardous waste sites in their Inactive and Abandoned Sites Program. He has served as expert witness in support of litigation at several hazardous waste sites. He was a member of the Governor's Health Advisory Panel that oversaw a multimillion-dollar study of past releases of radionuclides and organic chemicals from the former Rocky Flats Nuclear Weapons plant outside Denver, Colorado. He also was appointed to a special task force for the Colorado State legislature to evaluate the use of cost-benefit analysis in promulgating regulations for air toxics. He also has extensive experience communicating toxicological, ecological and human health risk assessment information to the general public. Dr. LaVelle has published numerous papers and abstracts, and continues to present papers and lectures on toxicology and risk assessment at technical meetings and local universities.

Prior to joining CDM Smith, Dr. LaVelle was an environmental toxicologist in U.S. Environmental Protection Agency (EPA) Region VIII's Superfund office.

Tony C. Gendusa, Ph.D., Risk-Based Corrective Actions

Dr. Gendusa has been working in the field of ecological toxicology since 1987 and in the biological sciences since 1973. His area of expertise includes aquatic ecology and biology, aquatic/ecotoxicology, aquatic habitat assessment, Natural Resource Damage Assessment (NRDA), and ecological risk assessment (ERA). More specifically, his area of expertise focuses on the potential impacts to aquatic and terrestrial biota, including threatened and endangered species, from a variety of ecological stressors including chemically contaminated water, sediment, soil, and biota. Dr. Gendusa provides ecotoxicology, aquatic biology, and technical project management expertise to a variety of ERA and aquatic/ ecotoxicology projects nationwide. He has performed and managed more than 100 ERAs for private industrial clients, state and federal regulatory agencies, and municipalities throughout the nation.

Francois G. Bernardeau, PE., Feasibility Studies

Mr. Bernardeau has more than 43 years of experience in civil, geotechnical, structural and geo-environmental engineering. He has extensive experience in planning, design, cost estimating and management of projects including major combined sewer overflow systems, waste water and water treatment facilities, environmental remediation, different types of underground containment walls, groundwater collection systems, soft ground and rock tunnels, dredging, marine structures, harbor construction, and dams. Mr. Bernardeau also has extensive experience in large civil work design and construction projects within dense urban areas in addition to estimating, contract negotiation and management.

SECTION 4 – MANAGEMENT SUMMARY, WORK PLAN, AND SCHEDULE

For typical remedial investigation, feasibility study, remedial design, or construction service assignments anticipated as part of the ISID contracts, CDM Smith will utilize four basic project phases, as appropriate: start-up, work plan development, execution, and close-out.

Prior to entering the start-up phase, CDM Smith will evaluate where any conflicts of interest (COI) exist at the site. A COI review is conducted after receiving the names of the potentially responsible parties at the site. CDM Smith will provide the Client Agency a written response detailing CDM Smith's COI review, including any potential conflicts that may exist. For projects that pass the COI review stage, the CDM Smith team will begin the start-up phase.

A critical component of the start-up phase is the project kick-off meeting with CDM Smith, the Client Agency, and all other relevant parties. The kick-off meeting will bring together team members to establish project objectives, deliverables, and milestones; establish scope, schedule, budget; and identify critical components of the project.

Successful completion of any project assigned under the ISID contract will be achieved most effectively using a well-planned and thorough project management process that is led by the respective project managers at CDM Smith and the Client Agency. Using

a collaborative approach, CDM Smith will develop key project plans in the work plan phase for each project with significant input from the Client Agency to assure that applicable project plans are prepared and all relevant details are included. CDM Smith will diligently execute the work on this project so that the project plans are followed throughout the course of a project. At CDM Smith, quality is defined as meeting or exceeding the expectation of our clients and those we set for ourselves. CDM Smith has developed a series of Quality Management Plans (QMP) that delineate the procedures we agree to follow to provide the necessary quality control and assurance on our projects. Quality assurance/quality control (QA/QC), as outlined in our QMP manuals, are woven into all facets of our work, including environmental sampling, data reduction, report processing, construction and construction oversight. Specifically, CDM Smith's QA/QC approach is applicable to every aspect of remedial activities identified in our proposal, including but not limited to:

- Site Management Plan (SMP)
- Data Management Plan (DMP)
- Health and Safety Plan (HASP)
- Sampling and Analysis Plan (SAP)
- Quality Assurance Project Plan (QAPP)
- Contingency Plan (CP)

Our QA/QC program is designed to ensure all services offered meet the required standards of performance, reliability, validity, and quality, while remaining unaffected by budget or scheduling. Quality control focuses on the product, while quality assurance focuses on the process. Quality assurance ensures a product (e.g. groundwater sampling) is created, implemented, or produced correctly, whereas quality control determines if the "end result" (e.g. groundwater data) is satisfactory or not. CDM Smith's QA/QC approach is an integrated management plan for establishing and maintaining quality service. CDM Smith will develop QA/QC requirements for each of the projects that require the collection of environmental samples, field sampling, engineering drawings and specifications, report preparation, and construction oversight.

Site Management Plan (SMP)

CDM Smith, in collaboration with the Client Agency, will develop a Site Management Plan that will guide the overall management of a project. CDM Smith will develop a SMP that is specific and customized to the assigned project. The SMP will include all of the necessary components that act as a constant reminder to CDM Smith and the Client Agency staff of the day-to-day actions at each stage of a project. The major items to be included in the Site Management Plan include:

General Information

This section identifies the name and address of facility, and includes a site map showing important details (e.g., aboveground structures, site trailer/facilities, security provisions, utilities, property boundaries, location of areas where current or past remedial activities are or have taken place, and proposed decontamination areas. A description of local topography, geology, measured depth to groundwater, direction of groundwater flow

should be included. Pollution control and contaminant mitigation are also include in the plan, which may include elements not limited to erosion control and sedimentation, contamination migration control, state/federal regulations and local ordinances, air monitoring and dust control plan, waste characteristics, and requirements for waste storage, transportation, and disposal.

Project Management

The plan will identify all staff with a description of the roles and responsibilities with respect to the work plan tasks, and will provide a project organizational chart of all persons, including subcontractors, in the project.

Documentation and Reporting

Observations and details on how tasks in this study are accomplished will be carefully noted in a daily field log book, including photographs and/or videos. A communications approach that describes how information flows between CDM Smith and the Client Agency, which meetings (including conference calls) will be attended and how meeting minutes will be prepared and distributed.

Schedule of Proposed Activities

The project schedule will be an overall depiction of the work involved and the time required to complete it. The project schedule will include a work breakdown structure (WBS) that identifies phases of work, major tasks, minor tasks, subtasks, and completion milestones. Critical path(s) will be identified and the project schedule will be effort driven with the level of effort input into each subtask so as to develop a realistic time schedule. For multiple-tasks the work plan will include a diagram, flow chart, or critical path chart that help readers to understand the schedule of work activities planned. Work of subcontractors (e.g., drillers), analytical laboratory work, review periods by the Client Agency, and meetings will all be shown on the project schedule.

Budget

The project budget will include all of the subtasks on the project grouped and rolled up under their respective minor and/or major tasks. The project budget will be aligned with the project schedule so that the Client Agency can anticipate the cash flow requirements on the project in terms of professional services charges from CDM Smith, its subcontractors.

Data Management Plan (DMP)

CDM Smith manages millions of records in laboratory analyses and GIS data as part of the Kalamazoo River Superfund Site, and a variety of other projects for public sector clients. In order to manage and QA/QC this large volume of data, CDM Smith has developed a system of receiving electronic data deliverables (EDDs) and hard-copy backup. Our QA/QC process addresses the data integrity of both the electronic and hard-copy versions to verify that the project-specific data quality objectives are met. Data are managed in Microsoft Access databases and EDDs are received via dbf, csv, xls, and tab-delimited formats. EDDs are automatically imported using proven loading routines to our databases (including code specifically written to handle data files from the MDEQ's Environmental and Drinking Water laboratories, and the Michigan Department of Community Health). Data are QA/QC'd and cross-checked with hard-copy data when it is received. Scanned images and portable document formats (PDFs) may also be imported to our databases after going through a separate conversion process into a

usable electronic format. Our procedures have been developed and tested for more than 15 years and are available immediately to the ISID contracts with no development time required.

Efficient and accurate data handling begins with coordinating sampling events with the State laboratories. CDM Smith coordinates with in- and out-of-state laboratories to assure that the appropriate analytical methods are provided by each laboratory, and that their standard operating procedures (SOPs) meet the project-specific data quality objectives. Coordination includes review of lab SOPs, EDD development, sample shipment, and sample tracking. All samples are assigned a unique sample number that follows a sample and its data through the entire data management system. Field data are validated by review of the field notes and equipment calibration logs to check that procedures have been performed and the information has been recorded appropriately.

Site-Specific Health & Safety Plan (HASP)

CDM Smith has prepared hundreds of HASP for EPA Superfund Sites, hazardous and nonhazardous waste remediation, and for site investigations. CDM Smith will conduct a site exposure hazard and control analysis to identify and categorize the relevant site hazards and the appropriate controls. The contents of the HASP will include those outlined in 29 Code of Federal Regulations (CFR) 1910.20 for hazardous waste operations. The HASP that will identify known site hazards, risk mitigation, appropriate levels of PPE, site safety protocols, lines of communications, chain of commands, and emergency procedures to be used at the site during the course of the work.

Sampling and Analysis Plan (SAP)

The SAP describes procedures for field sampling and sampling submittal for analysis, field chemical parameter measurements, data documentation, data assessment and data reporting requirements. The SAP also describes the methods used to ensure that data collected is accurate, precise, representative, complete, legally defensible, and comparable. Typically the SAP consists of two components: a Field Sampling Plan (FSP), and a Quality Assurance Project Plan (QAPP).

The FSP identifies how the necessary data is collected. It is critical that the data collected in this study is suitable to support the remedial design. The FSP includes a description of:

- Sampling type and objectives.
- Sampling locations, timing, and frequency.
- Sample identification or designation.
- Sampling equipment and procedures.
- Sample handling and analysis.
- Quality Assurance Project Plan (QAPP)

The QAPP provides the overall guidance on how data from the site is managed and reported to meet the objectives of the project. It describes the quality control procedures used to ensure a high level of quality in the collection and analysis of data to be used in the project. The QAPP includes procedures (data quality objectives) that allow the sampling team to design a sampling program that, when implemented, will yield data

that will meet the requirements of how the data will be used. Specifically, a QAPP will usually include (1) a project organizational chart identifying task managers and individuals responsible for performance of the project, (2) a list of names of all key participants, including subcontractor names and telephone numbers for project, field, and laboratory QA officers, (3) a description of the authority given to each key participant with an emphasis on the authority of the key individuals to initiate and approve corrective actions, (4) the role of regulatory representatives, (5) type and frequency of QC samples to be collected, and, (6) standard operating procedures (SOPs). The detail of the QAPP will be based upon the level of effort required for each assigned project and the QAPP will approved by the Client Agency before activities begin.

Contingency Plan

The Contingency Plan describes the procedures that will be implemented in case of emergency or if unacceptable conditions occur at the site. It will also describe practices that will be implemented to minimize or prevent hazards to the surrounding community. The Contingency Plan will include:

1. Identification of a site emergency coordinator.
2. Emergency response procedures.
3. List of emergency contact telephone numbers.
4. Procedures to handle accidental spills and releases
5. Evacuation plan
6. Post-emergency procedures
7. Preparation of incident reports

Following agency approval of project specific work plans and project plans, CDM Smith will execute the specific tasks. During this phase, CDM Smith will maintain regular communication with the Client Agency, reporting on task progress, budget, and any issues that may arise.

At the completion of an assignment, CDM Smith and the Client Agency will meet to review the scope to ensure all tasks have been completed and all costs are accounted documented and invoiced. Appropriate technical and contract documents will be reviewed and transferred to the Client Agency.

Constructability Reviews

CDM Smith will dedicate a team of process, operation and construction specialist to review and comment on the project plans and specifications. Our constructability review might be more aptly called a "constructability/ bid ability/operability" review, as we will consider clarity of the bid documents and ultimate O&M of the facilities as well as construction. The reviews will identify potential major problems and estimate the impact of these problems on time, cost, and quality.

Effective constructability reviews result in clearer contract documents, thus promoting significant cost savings and smoother construction. It will be critical to prepare a constructability review plan and to assemble the proper blend of technical disciplines for

each review. The reviews must be organized, scheduled, and carried out in a timely and effective manner.

The key to our approach will be the use of senior technical personnel familiar with project requirements to review the plans and specifications. We will approach all reviews from four points of view:

- We will study the design from a contractor's point of view, specifically asking, "How will the project be built?" while examining site layout, equipment use, durations, logical construction phasing, and potential delivery and interference conflicts.
- We will examine the design from the operator's perspective, keeping in mind system requirements, maintenance needs, and ease of operation.
- We will consider the construction efficiency of design, and consider materials used, and lifecycle cost analyses.
- We will analyze the contracting strategy to assure bidder competition and cost-effectiveness.

The review will identify potential problems that would surface during construction and operation, analyze contract packaging, and review material and equipment selection. We will focus on eliminating weaknesses and ambiguities in plans and specifications that could lead to potential contract changes, delays, and cost increases. When specialized installation of unique construction is proposed, we will employ appropriate experts from our team staff.

SECTION 5 – REFERENCES

Kalamazoo River

For more than 20 years, CDM Smith has been working directly with the Michigan Department of Environmental Quality (MDEQ) to support their efforts to remediate sediment and upland sources associated with the discharge of PCBs from paper recycling operations along an 80-mile stretch of the Kalamazoo River and tributaries.

Over the course of this project, CDM Smith has conducted field studies and prepared human health and ecological risk assessments approved by USEPA. CDM Smith has worked closely with the State agencies/trustees, (MDEQ, MDNR, Attorney General) and Federal agencies/trustees (USEPA, US Fish and Wildlife Service, National Oceanic and Atmospheric Administration) to support efforts to streamline remedial efforts under Superfund. As part of this project, CDM Smith led and participated in key public, agency and technical meetings to engage stakeholders and develop buy-in for proposed remedial actions to be implemented at various portions of the site. Successes at the site completed over the last two decades include:

- Source control of four land based operable units;
- Completion of three time critical removal actions within the Kalamazoo River and Portage Creek;
- Removal of one dam to restore natural flow to the Kalamazoo River while controlling sediment and PCB transport;

Client

Michigan Department of Environmental Quality (MDEQ)

Reference

Paul Bucholtz, Project Manager
(517) 373-8174

Key Team Members

Todd King
Andrew Santini
Duane DeDene

- Completion of an EPA peer review of the responsible party ecological work completed in part by Michigan State University; and
- Completion of a three-party facilitated mediation to work through critical issues outside of the Superfund process.

CDM Smith staff has assisted MDEQ in presentations to and workshops for coworkers, management, the public, trustees and responsible parties. Through clear and concise technical communications with stakeholders, CDM Smith has become a trusted point of reference for the public, agency staff and management.

CDM Smith formulated and maintained an 800,000 record database to house all data collected on the site. To further support MDEQ, CDM Smith has developed electronic data deliverables (EDD) and protocols to streamline result analysis from state and outside laboratories, and to check data against established quality assurance/quality control protocols.

In order to document the long term performance of source control efforts, early action/time critical removals and final remedies, CDM Smith devised and implemented a long-term monitoring program that collects abiotic and biotic samples to determine temporal and spatial trends in PCB concentrations across the site.

Former Aurelius Road Landfill

Client
City of Lansing

Reference
Zubair Ahmad, City of Lansing,
(517) 483-4462

Key Team Members
Andrew Santini
Todd King
Chris Martel

Since 1996, CDM Smith has been assisting the City of Lansing in addressing environmental conditions at the 80-acre Aurelius Road Landfill, which was used for disposal of municipal and commercial sludge and industrial solid waste from 1966 through the late 1970s. After its closure in 1981, the city retained CDM Smith to manage $4M in site closure and design activities to convert the facility to a public soccer complex. As part of the project, CDM completed the following tasks:

- Determined the extent and nature of on- and off-site contaminants attributed to the landfill, and compared existing and new data with current regulatory standards for the State of Michigan (i.e., Part 201 of Act 451, as amended)
- Conducted topographic aerial survey and geotechnical investigation to assess location and extent of potential settlement;
- Designed soccer complex on 30 acres of the landfill site including 10 regulation sized soccer fields, 500+ space parking facilities, restroom/concessions building and maintenance building;
- Designed irrigation system for field areas including a pump station in the adjacent river and designed field under drain system for rapid removal of storm water and landfill gas;
- Consulted with Michigan State University Turf grass Institute on field construction;
- Coordinated landfill closure and soccer field development with City & Ingham County officials;
- Facilitated meetings between MDEQ and local authorities to fast-track regulatory approvals and permits to construct fields while remedial efforts were ongoing and address groundwater impacts;

- Developed a unique design that reused a former landfill; incorporated closure features of below-ground landfill gas systems and venting and flares along the perimeter of the property out of the way of active soccer play;
- Developed the detailed design plans and specifications, supported the city through bid and contractor selection, and provided service through construction and opening of the soccer complex.
- Preparation of specifications for removal of an underground storage tank.

Currently, CDM Smith is conducting semi-annual groundwater sampling and site inspections, yearly ambient air monitoring, a feasibility study to evaluate viable alternatives that address solid waste that is buried outside the boundaries of the site, and a hydrogeologic evaluation to determine if the distribution of monitoring wells is sufficient to properly monitor site groundwater quality conditions and detect potential migration of contaminants of concern from the site. CDM Smith developed and maintains the project database, GIS and reporting tools. CDM Smith is continuing to support the City of Lansing in negotiations with the State of Michigan to address ground water impacts on the site. Through cooperative negotiations with state, county and city representatives, CDM Smith helped facilitate the beneficial reuse of this former landfill and liability.

Environmental Support for the International Wildlife Refuge Center | Trenton, Michigan

CDM Smith was contracted by Hamilton Anderson Associates on behalf of Wayne County and later the US Fish and Wildlife Service (USFWS) to provide environmental support to redevelop a former Chrysler site into a natural area that will house USFWS staff and serve as an interpretive community and school center to introduce the public and schoolchildren to the International Wildlife Refuge. As part of this project, CDM Smith has developed designs and analyses to:

- Support the day lighting of a portion of city storm drain to improve water quality prior to discharge to the Detroit River;
- Perform hydraulic analysis to develop design of a detention pond and emergency wetland to improve water quality;
- Design a breakwater and fishing pier that will provide a summer mooring location for the Michigan Sea Grant floating classroom; and,
- Provide technical support with respect to the restrictive covenant and restricted areas associated with historic contamination at the site.

During the course of this project, CDM Smith collected supplemental soil samples and analyzed them in accordance with the State of Michigan Act 451, Part 201 requirements. All results were compared against the established risk screening levels developed by MDEQ based on the relevant land use criteria to determine the appropriateness of proposed aspects of the site's redevelopment. Currently, the site has received funding to soften the shoreline along the Trenton Channel of the Detroit River to provide more natural habitat for shoreline wildlife, birds and aquatic life. This project has received much recognition from local and national politicians and represents the potential re-purpose of strategically located contaminated sites in non-traditional uses such

Client
Wayne County

Reference
Steve Alman, Wayne County Parks, (734) 261-4312

Key Team Members
Todd King
Nicole Ivers

as support areas for a federal wildlife refuge. Key to the success of such a project is the technical understanding and credibility that CDM Smith provides in assessing, understanding and presenting the risks associated with former industrial activities. CDM Smith's reputation with Wayne County, the USFWS, the MDEQ and the public provides an environment where stakeholders can come together and discuss their concerns, and then rely on the expertise of CDM Smith staff to evaluate, and where necessary, mitigate their concerns to move a project forward that restores an impacted property to beneficial use within the community.

Remedy Operation and Maintenance and Remedial Investigation/Feasibility Study Torch Lake Superfund Site

Client
MDEQ

Reference
Robert Delaney, MDEQ,
517-373-7406

Key Team Members
Andrew Santini
Scott Cornelius
Ron French

CDM Smith is providing services relating to remedial investigation and feasibility studies, source identification and investigations, fate and transport statistical analysis, preparing ecological and human health risk assessments, developing a long term monitoring program, sampling abiotic (soils/sediment/water) and biotic (fish, macroinvertebrates) media, remedy Operation and Maintenance (O&M), and providing administrative support.

The Torch Lake Superfund Site (Site), located on the Keweenaw Peninsula is an area impacted by historical copper mining waste disposal practices. These mining waste known as tailings are toxic to aquatic macroinvertebrates due to their copper concentrations. The placement of these tailing into surface waters such as Torch Lake have eliminated the macroinvertebrates. Torch Lake is also listed as an Area of Concern (AOC) due to fish tumors of unknown origin and PCB contamination that resulted in fish consumption advisories for the area. CDM Smith is supporting the MDEQ in the remedy O&M and any Remedial Investigation and Feasibility Study (RI/FS) activities at the Site.

CDM Smith prepared sampling plans for additional sediment trap investigations to determine the rate of copper concentrations and deposition over time for long term monitoring of Torch Lake. CDM Smith has proposed to analyze the sediments in the trap for grain size distribution and evaluation of copper and other inorganic concentrations. The sediment trap investigation measures both the amount of copper in flux and/or settling out and the rate of sedimentation. CDM Smith proposed to implement additional sediment core studies to evaluate biotic recovery and characterize the extent and nature of the contaminants, and modify and refine sampling protocol in the sampling plan to not rely solely on sample coordinates but also on water depths to further minimize depth as a confounding factor in benthic community study.

The CDM Smith team has proposed to conduct a metal speciation evaluation and incorporated these findings into a geochemical conceptual site model (CMS).

The MDEQ has assumed responsibility for the O&M of the soil covers constructed by the EPA as the Superfund remedy. These soil covers remediate approximately 940 acres of tailings. CDM Smith is assisting the MDEQ with the O&M tasks and developing the long term O&M plan for the Superfund remedy combining knowledge gained from all the activities listed below. The O&M plan will provide the MDEQ with a road map for long term stabilization to ensure the integrity of the remedy, thereby protection of public health, safety, welfare, and the environment in the redevelopment of the properties

encompassed by the Torch Lake Superfund site. Plan implementation may also assist property owners in this region in obtaining liability protection from contamination related to historic copper mining practices in accordance with the relevant portions of statute and administrative rules for Part 201 of Public Act 451 of 1994, as amended (Part 201).

CDM Smith will be conducting the semi-annual inspections (usually in the spring and fall) on all 13 soil covers to assess their condition, identify damage from erosion, and conduct repairs. A technical memorandum will be prepared at the end of the year documenting inspection results. Conducting these inspections will provide the monitoring information used to track progress on establishment of vegetation and identify areas of the remedy susceptible to damage from erosion or other activities from humans or wildlife in a timely manner. Identification of these damaged areas will focus the MDEQ's efforts to protect the remedy through O&M. Repairs of the remedy will be conducted assuring the long term stability and protection of the remedy.

CDM Smith will also develop and implement a re-vegetation plan using soil enhancement to establish a sustainable vegetative cover on the Superfund remedy because the EPA was unable to produce a suitable vegetative cover. This plan will identify methods for producing a high quality sustainable vegetative cover from low cost soil enhancements providing long term protection for the remedy. A technical memorandum will be prepared documenting the findings of this project. Establishment of a high quality sustainable vegetative cover on the remedy will provide long term protection from erosional forces such as wind, surface runoff, snow melt and wave action

CDM Smith will also develop and maintain the master GIS database of the Site as part of the over all strategy for O&M. This database includes information regarding ownership, Restrictive Covenant requirements, tracks establishment of vegetation during the soil enhancement program, O&M activities and other pertinent information. This map will be a critical tool in monitor improvements in the vegetative cover, on-going O&M and compliance with the RCs and assist in identifying needs additional O&M activities.

Residential Well Sampling for the Metamora Landfill Superfund Site

CDM Smith is conducting annual residential well sampling, data management and reporting to assess the contaminant nature and extent of a 1,4-dioxane plume in the drinking water aquifer. Residential wells have been historically sampled downgradient of the landfill (i.e., to the north based on groundwater flow direction) to evaluate the groundwater quality due to their proximity to the Metamora Landfill.

CDM Smith is following sampling guidance provided by the MDEQ Drinking Water and Radiological Protection Division for the collection of drinking water samples. Water samples are submitted to the MDEQ laboratory for volatile organic compounds, methane, metals, and general chemistry analysis. After each sampling event is completed, CDM Smith summarizes the analytical results in an annual report. The report includes first-order conclusion of the sampling event and a comparison to cleanup criteria and screening levels from the MDEQ's Operational Memorandum No. 1, Attachment 1, Table 1, dated March 25, 2011.

Client
MDEQ

Reference
Keith Krawczyk, MDEQ,
517-335-4103

Key Team Members
Andrew Santini

CDM Smith developed and currently maintains a comprehensive database (in Microsoft Access) and geographic information system (in ArcView) tools to track both field and analytical data. The database incorporates loading routines specifically developed to import electronic data deliverables generated by the MDEQ's Environmental and Drinking Water laboratories, allowing for a cost-effective and efficient transfer of information from the lab to the project managers.

If your company is interested in participating in the MiDEAL program, please sign below and return to this letter to the letterhead address, Attention: Melissa Sambiagio

FOR THE STATE OF MICHIGAN

Robert C. Hall, RA, NCARB, Director
Design and Construction Division
Facilities Administration

FOR THE PROFESSIONAL

CDM Smith Michigan, Inc. agrees to extend the terms, conditions, and pricing of our 2013 Environmental Expanded Remediation Services contract, No. 00465, to MiDEAL members and will remit the one percent (.01) administrative payment fee along with the quarterly report as outlined.

Signature

2/6/2014
Date

Todd W. King / Vice President & Treasurer
Print Name/Title