IMO

Lower Minnesota River Watershed District

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IMO CONSULTING GROUP

March 30, 2022

Linda Loomis, District Administrator
Lower Minnesota River Watershed District
naiadconsulting@gmail.com

Subject: Statement of Qualifications for 2022/2023

Dear Ms. Loomis and Members of the Selection Committee:

The Lower Minnesota River Watershed District has a diverse set of stakeholders, and the needs of those stakeholders are equally diverse. Whether the issue is runoff from the Minneapolis-Saint Paul International Airport, a new development in the City of Bloomington (the third largest city in Minnesota), a regional concern of Hennepin or Ramsey County (two of the most populous counties in Minnesota), historic or culturally sensitive concerns at Fort Snelling State Park, a downstream concern of the City of Carver (a town of under 4,000 at the tail end of the district) or a culturally significant concern of the Shakopee Mdewakanton Sioux Community – an understanding of the perspectives of each of those entities will be important. As development around the Minnesota River continues to intensify, it is imperative that the impact on the quality and quantity of that water on the river (and the other water bodies within the watershed district) is understood and mitigated to prevent further degradation.

IMO Consulting Group offers the following strengths and benefits to The Lower Minnesota River Watershed District:

Creativity

The individuals selected specifically for this proposal are known for their ability to develop creative solutions to challenging situations. Our collective experience and history of working together allows us to generate ideas and engineer solutions for many different types of projects – a process that we believe sets us apart.

Experience/Expertise

Our team is made up of some of the most experienced professionals in the region in their respective roles. Our Project Managers and many of our designers/field staff have over 30 years' experience each in leading complex multidisciplinary projects. Our Stormwater Management Specialists are some of the early pioneers/developers of sustainable stormwater solutions with well over 30 years of experience both locally and internationally.

Communication

Our team understands the impact of communication and how important it is to get it right. Whether it is working with agency staff, property/business owners, or other users of facilities we consider the perspective of their often-differing needs. We understand the challenges of working with a diverse group of stakeholders, and work diligently to develop equitable solutions.

Commitment to Equity

Our culture is one of understanding, compassion, empathy and equity. We are inclusive and welcoming of all and strive to provide accessible facilities for everyone. IMO is a MNUCP Certified Minority Business Enterprise (DBE/MBE) and has small business certifications including CERT, TGB and SBE. IMO is unique in that our leaders were previously leaders at other large, Metro Area firms and have all led complicated, multi-disciplinary projects whose success required collaborative solutions.

Our Statement of Qualifications includes the following categories: 3) Hydrologic, Hydraulic and Water Quality Modeling Analysis; 7) Urban Stormwater BMP Design and Construction Management; 9) Land Surveying.

Please contact me if you have any questions or need more information. You can call me at 952-446-7898 or email me at imartinez@imoconsultinggroup.com. On behalf of our entire team, I thank you for the opportunity to provide you with our proposal and we look forward to working with you!

Respectfully submitted,

Ismael Martinez-Ortiz, President
IMO Consulting Group Inc.

BACKGROUND

IMO Consulting Group was founded in 2013 and is an MNUCP Certified Disadvantaged Business Enterprise (DBE/MBE). Our mission has always been, and continues to be, to create thriving communities by delivering innovative, equitable and cost-effective projects and solutions through outstanding service and meaningful relationships. Over the past nine years, we have grown from a two-person firm specializing in water resource services and architecture to our current team of 24 professionals providing services in water resources, architecture, planning, civil engineering, surveying, and construction observation/administration. We employ a diverse group of people as we believe that diversity in the workplace is a source of incredible creativity and collaboration.

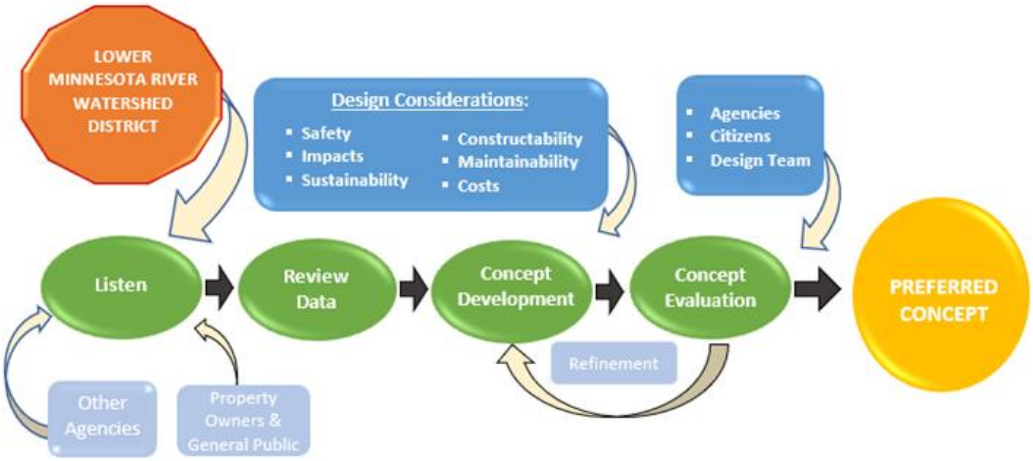
While our firm has only been in business for nine years, our key staff members have a more than 30-year history of serving clients in the Upper Midwest at some of the largest consulting engineering firms headquartered in the Twin Cities region. We have provided planning, design, project management and construction services for some of the most complex projects in the region. We also understand that not every project is going to be complex – that sometimes the solution is quite simple. Our reputation is one of thinking outside the box – which often results in a more economical, sustainable, and acceptable alternative.

OUR APPROACH

We believe that the most important thing that we can do as planners/designers is to listen. It's what we do throughout the process – from the very first meeting to the end of the project. We listen to our client. We listen to the partner agency representatives. We listen to adjacent property owners, and the general public. It is the single most important part of any project, and it goes hand in hand with asking the right questions. At IMO we recognize that the way to glean the most relevant information on any project is to ask the right questions the right way.

The next most important aspect of a project is data. Understanding the data, how it was acquired, when it was acquired, and under what conditions it was acquired all play a part in being able to analyze the information and determine its sufficiency. If the data is inadequate, incomplete, insufficient, or incorrect it is best to know that at the outset of a project. Through our years of experience, we've learned to recognize the need for additional data – and recognize it early.

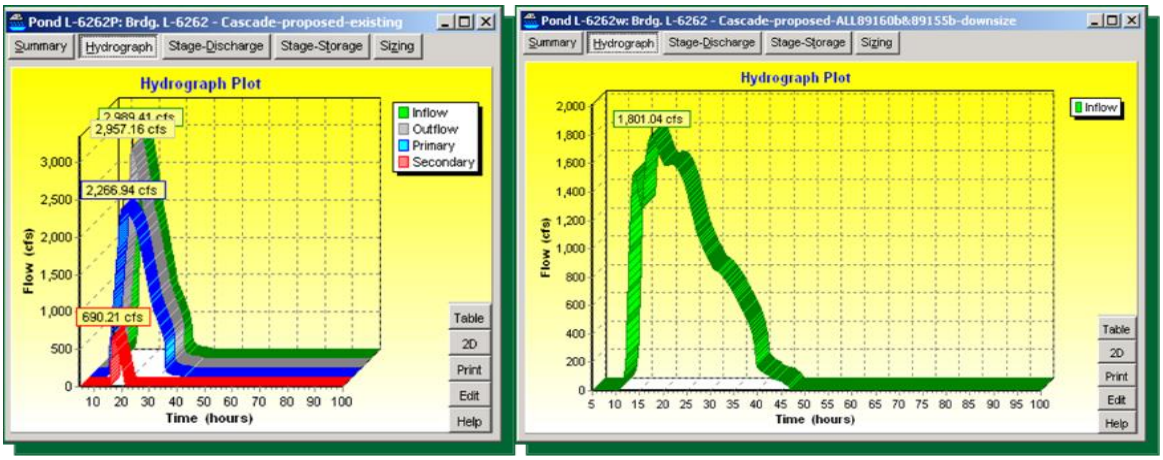
With the information gleaned from listening and reviewing the data, coupled with our collective experience, we then begin the process of developing solutions. Analyses of various options are developed to ensure compliance with the project intent and regulations, as well as consideration for maintenance staff needs, long-term maintenance costs, and any accessibility or other requirements for the finished project. With any public improvement project, communication with elected officials (Mayors, City Council Members, County Board Members, etc.), property owners and the general public is part of the process. We have significant experience in facilitating public meetings, presenting at City Council/County Board meetings, and working closely with elected officials in work sessions.
Our typical project approach can be seen in the graphic below.



CATEGORY 3: HYDROLOGY, HYDRAULIC AND WATER QUALITY

Our approach to Hydrologic and Hydraulic Analysis is to first understand the goal of the analysis, and to keep this goal in mind throughout. The type of project, its location, and the goals/desired outcomes provide the team with clues for the methods to be employed. We use those clues to evaluate the various tools available and select the most appropriate for the project. Whether it is a complex watershed or a single wetland, selecting the proper tools and gathering the necessary data are critical.

Modeling watersheds and sub-watersheds we must consider the possible outcomes of proposed changes to the system Our team's experience reviewing development submittals is invaluable when performing a watershed analysis. Our team has performed hundreds of watershed analyses for numerous agencies over the past 30 years. Natural features such as infiltration, evapotranspiration and interception are an important part of the modeling, as are depressional storage and storage occurring in non-delineated floodplains. We have the experience to recognize these variables and include them in the models. We use HydroCAD, HEC-RAS, SWMM and XP-SWMM and understand which of these tools are appropriate (or inappropriate) for each project.



As for water quality analysis, our research and experience has shown that most of the pollutant load carried in urban storm water runoff over a given year is the result of wash-off of pollutants from small to moderate-sized precipitation events. For example:

- Common rains (less than 1/2 inch) have relatively low pollutant discharges (less than 25% of the annual pollutant mass discharges from residential areas) but occur very often (on nearly 100 days per year in Minneapolis-St. Paul).
- Rains between 1/2 and 1-1/2 inches are responsible for roughly 75% of the annual runoff-pollutant mass discharges from residential areas and are the key rains that need to be addressed when concerned with mass discharges of pollutants.

Ismael Martinez was directly involved in the preparation of the Water Quality Management Plan for the City of Eagan, the first of its kind in the Metropolitan Area. His contributions resulted in a practical, results oriented plan that later translated into stormwater quality fees for new developments. He was also instrumental in the preparation of the Lower Minnesota River Watershed Strategic Action Plan.

IMO staff have performed numerous studies and developed solutions to improve the water quality of many high priority water bodies. These projects include the design of multiple cell configuration stormwater ponds, low flow bypasses, backflow preventers, high efficiency outlets and a variety of hydraulic structures. The designs and construction of the improvements have saved thousands of pounds of nutrients from entering these high priority waterbodies.

Our team takes a holistic approach to transporting runoff that optimizes environmental and recreational opportunities. We stress multi-cell designs with natural plantings that are easy to maintain. Our designs incorporate shallow marshes, deep marsh, open water, fresh wet meadow, and prairie to maximize water quality and habitat improvement.

PROJECT EXAMPLE: Cascade Lake and Creek Realignment. Rochester, MN

This complex and multidisciplinary project consisted of the development of a Master Plan to transform the gravel mining areas along Cascade Creek into Cascade Lake Park. The City of Rochester desired this 240 Acre-park to be a premier multi-use park, with Cascade Lake at the heart of many recreational activities that include hiking, picnicking, boating, fishing, and swimming. The project involved the coordination of an 18-member Citizen Advisory Group and an 8-member Technical Advisory Committee. The project also required several public meetings and public presentations and numerous City Council, Recreation and Park Board, Planning and Zoning Commission, and the Committee on Urban Design and Environment meetings.

Many innovative ideas were considered and evaluated. The final design created high water quality in the lake and maximized passive, educational and recreational features of the park while retaining the natural floodplain. One of the most significant components was the realignment of Cascade Creek to divert flows from 21,000 acres of farmland. This created an 100-acre groundwater fed lake. The Cascade Creek realignment project combined the best of bioengineering, traditional civil engineering, and wetland and prairie management to enhance the park's natural setting.

Cascade Park is located within an existing flood-plain and preserving its storage capacity was critical. The project required the design of a multi-stage lake outlet that allows flows to exit the lake during average conditions and enter the lake during flood conditions, balancing water quality preservation with flood control. It also included the design of a fish ladder that helps the fish navigate the steep drop from the realigned stream to the existing stream. This project was completed by Ismael Martinez while at another engineering firm.

PROJECT EXAMPLE: Surface Water Management and Non-Degradation Plan. Chaska, MN

IMO staff created the City of Chaska's Surface Water Management and Non-Degradation Plan. With several challenges unique to the City, the plan also needed to conform to the regulatory requirements of several overlapping drainage authorities and meet the needs of the city for this 35 square mile watershed. Those challenges included the following:

- A levee system with internal flood control and a USACE diversion adjacent to the Minnesota River
- Trunk storm sewer system update in anticipation of future commercial and residential development
- A future Trunk Highway project bisecting the City of Chaska, requiring multiple drainage/wildlife/pedestrian crossings
- Generally steep and rolling topography with clay soils prone to erosion
- A trout stream and numerous impaired lakes requiring water quality protection

This project was completed by Ismael Martinez while at another engineering firm.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
Lower Minnesota River Strategic Action Plan*	Friends of the Minnesota Valley	TMDL approach to identifying high priority projects for cost effective improvements
Eagan Water Resources and Water Quality Management Plans*	Eagan, MN	Ease stormwater conveyance while minimizing possibility of future flooding
Equalization Basin Design*	Chanhassen, MN	Modeling, Natural Resources, Stream Bank Stabilization, Calcareous Fed Protection
Section 7 Water Resources/Water Duality Study*	Rochester, MN	Routing storm sewer to determine effects on wetlands and sizing inlet/outlet structures for the lake
Lotus Lake*	Chanhassen, MN	Aquatic vegetation management through water level manipulation, carp and sediment removal
Lake Saint George Water Quality/Dam Removal*	River Falls, WI	Water quality modeling, minimize, thermal impact, evaluation of dam removal options
Schwanz Lake*	Eagan, MN	Design of low flow bypass to reduce pollutant loads from Hay Lake

**Indicates projects completed while at another firm.*

CATEGORY 7: Urban Stormwater BMP Design and Construction Management

For many years, the most common (and often only) Best Management Practice (BMP) strategy employed for stormwater management was the construction of wet ponds. As our collective understanding of hydrology, and the need to preserve our natural resources) has grown over the past 40 years, our toolbox of appropriate solutions to the various problems created by urban development has also grown. Our team's approach to the unique issues presented in an urban environment is to minimize the size of the proposed infrastructure, which allows us to maintain more of the natural habitat, and to use BMP'S that are constructible, maintainable, and blend in with the surroundings.

Our team has designed dozens of raingardens and infiltration basins/trenches in Minnesota and Iowa, with many of those facilities in operation for over ten years and performing very well. They are highly dependent on the infiltration capacities of the soil, and often can only infiltrate small, infrequent storms. However, we have observed a direct correlation between their performance and the amount of sediment entering the system. We performed a study using a soils laboratory and learned that even small amounts of 'fines' can decrease the infiltration capacity substantially, which shortens the life expectancy of the devices. By implementing a train of treatment and finding creative ways to reduce the load of fine sediment on these devices (such as sediment traps), we have been able to improve their actual performance. Routing overflows into the storm sewer can be practical for storm events that exceed the infiltration capacity of the soils.

IMO's hydrologic/hydraulic team experts perform low flow and high flow analyses for all our stormwater projects. Experience is a valuable resource in determining overland flow routes and depressional-storage. For small structures, calculations by hand are often more effective and efficient than a computer model. For tributary areas larger than one acre we use HydroCAD to determine volumes of runoff. For larger areas, the model can be segmented and customized for storm events of 1/2", 1", 2" storms (and larger) to meet regulatory requirements.

Our philosophy is to provide and maintain a "natural" system within an urban setting whenever possible. We consider the use of bioengineering techniques using native species of vegetation wherever possible as this provides habitat enhancement. We also consider the surrounding vegetation since it affects light penetration and debris sources that can significantly affect the efficacy of the system. Adjacent land use, storm drainage, water quality enhancement and maintenance accessibility are other factors that influence the design.

Design guidelines are considered through the modeling and geomorphic assessment tasks. They allow habitat measures to be located based on flow depths and velocities, sediment sorting and vegetation cover. In this manner, the design promotes and maintains habitat complexity for target and secondary species. Size and placement of various system components for habitat enhancement is determined in conjunction with the geomorphic and hydraulic assessments. Refuge areas for juvenile and adult fish during low, normal, and high flood flows are also considered necessary when we are working near streams and rivers.

Our staff is often involved during the construction of these projects. Our experience allows us to guide the construction of these unique projects and ensure that the work is done in accordance with the permit requirements and the plans. We can identify potential risks to the project during construction and provide solutions to reduce or eliminate them. We regularly work alongside the contractors during installation to ensure conformance and compliance with the permit and plans and prepare pay estimates and weekly reports for the clients. Regular communication with the client ensures that there are no surprises during the project.

PROJECT EXAMPLE: Harrington & Ramsey Roads Water Quality Improvements, Wayzata, MN

The City of Wayzata needed to address localized flooding issues in the final storm water discharge point of a Lake Minnetonka peninsula. The flooding was the result of a large portion of the internal area of the peninsula being landlocked and relied on a lift station during and after storm events. Prior to alleviating the flooding issues, it was necessary to determine how storm water runoff could effectively be treated prior to discharging into such an important body of water.

The project involved the analysis and design of infiltration trenches, sediment traps and storm sewers with enough capacity to meet the rate control and water quality treatment goals. Our innovative solution allowed for removal of a lift station that had been in service for more than 30 years by changing the system to gravity flow, while at the same time alleviating flooding issues and improving the water quality of the discharge from this neighborhood.

PROJECT EXAMPLE: Mississippi Gorge Regional Park Master Plan, Minneapolis, MN

The Mississippi River is the largest and most important inland waterway in North America. The river is immensely important for transportation and commerce, and it is a living part of the landscape and one of the most iconic natural features of the Twin Cities. In an effort to upgrade the amenities available in the Mississippi River Gorge and to improve the water quality of runoff entering this impaired waterway, IMO generated a list of recommended improvements. IMO proposed a "treatment train" approach, where water would pass through multiple BMPs before it entered the river. This staged treatment would purify the water while adding more natural features in places where the floodplain is primarily grass. The BMP's included infiltration basins, grassy areas, buffer strips, and natural plantings.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
Downtown Chaska Water Quality Improvements	Chaska, MN	Use of pervious pavement/soil concentrators to remove sediment/nutrients
Villa Pond Water Quality Improvements	Wayzata, MN	Sediment removal and pond bottom modifications to improve sediment removal efficiency and accommodate water fountains
Cerro Gordo County Water Quality Improvements	Mason City, IA	Design of 8 flow separators and rain gardens
Heritage Street and Lamotte Drive Storm Water Improvements*	Centerville, MN	Pipes, structures, and volume control BMPs for inlet to Centerville Lake
Lake Street Infiltration Trench*	Wayzata, MN	Infiltration Trench Design and Water Quality impacts
Sand Filter/Trench Outlet*	Grafton, WI	Design of an underground sand trench outlet
Lower Kings Run Channel	Rochester, MN	Stormwater peak flow reduction and ditch transformation to a stream
Oxidation/Infiltration Trench	Clear Lake, IA	Design underground infiltration trench and soil concentrators to treat low flow at swimmable beach

**Indicates a project completed while at another firm.*

CATEGORY 9: LAND SURVEYING

Our surveying philosophy is to provide our clients with the services necessary to fulfill their needs without cutting corners. By consulting with our clients early, we better understand their specific needs for the project as well as the larger picture of the project. Through this understanding, we utilize our collective knowledge to recommend appropriate scopes of work and procedures that will provide the best value to our client and the overall project, yet still meet the accuracy needs for both the current and future projects.

Our crews are equipped with the latest survey and communication technology/equipment and can effectively and efficiently gather the needed information and communicate that to our clients in real-time. This allows us to be nimble as the inevitable changes occur.

Data is collected by our crews and compiled by our office to ensure accurate representation of the conditions in the field. This data is then supplemented with necessary property information and other utility information. Digital terrain models are created and checked for accuracy by our experienced staff before it is used for design or construction purposes.

Many of our staff have been surveying for over 25 years. We regularly operate five survey crews and have the ability to add a sixth if needed. Our registered Professional Land Surveyor (PLS) provides the necessary land survey documents.

PROJECT EXAMPLE: Southwest LRT, Eden Prairie to Minneapolis, MN

The Southwest LRT is a 14.5-mile light rail transit route that extends the current METRO Green Line from Target Field to southwest Eden Prairie. This project includes 16 new stations and 29 bridges for rail, pedestrians, vehicles, and freight as they use much of the same right-of-way. There are also 2 tunnels and over 100 retaining walls being constructed. Construction began in 2019 with an anticipated opening in 2023.

This project encompasses many aspects of surveying, with the majority considered construction layout. Bridge points require high accuracy for the initial layout of footings and abutments. This is repeated once the concrete has been placed at these locations with a follow-up trip to place layout points on the top of the piers, so the beam seats are built into their final location and elevations before the girders (beams) are placed. Once the beams are set, elevations at the center line of each girder are measured. After they have been set for about 6 weeks the process is repeated to verify, they have relaxed an amount predetermined in the design. All sanitary & storm sewer, watermain, grading for road subgrades, accurate hub staking for Class V is laid out prior to paving and offsets for curb and gutter installation are placed. We also stake the electrical systems for the LRT, as well as the platforms where the trains will stop for passengers. These platforms have a ¼ inch tolerance.

All trails and sidewalks on the project are staked, and often need to be field changed to match previously constructed tie-in elevations. Occasionally we perform topographic surveys for the design team as changes arise. Once all aspects of the plan have been constructed, we will complete an as-built/topographic survey and prepare final record drawings. Our crews interact with every trade on the project at one point or another, and have an excellent working relationship with the contractors, design team and agency staff.

PROJECT EXAMPLE: Hastings Water Treatment Plant, Hastings, MN

The Hastings Water Treatment Plant is comprised of two separate parcels, requiring different tasks to move the project into the future and final plan. Those parcels are the existing treatment plant and the new treatment plant location, which will service an additional 100,000 homes near Hastings.

First, the existing treatment plant required some updates, requiring 2 partial topographic surveys of the 521 Building to design new concrete pads at either end of the building, along with curb replacement in those areas. Next, we repaired the roads along Lea Street and 1st Street West on the northern end of the site. In addition to the road survey, this required a bathymetric survey of the Mississippi River 250 feet out from the shore, and from the railroad bridge just West of the property and East along the length of the property. The current of the Mississippi, weather, and wind presented unforeseen hurdles for IMOs field personnel. Inverts for all storm and sanitary sewer structures outside the property fence were recorded and the end of the outfall pipe located during the bathymetric survey so designers could evaluate the current street location and grade while keeping in mind the impact on the in-place infrastructure.

The future treatment plant site is located 3 miles East of the current plant site. The focus on this parcel was to establish the boundaries of the parcel, shoot topography 50 feet on either side of the property line along Ravenna Trail (CR 54), and design a fence along this right-of-way to secure the easily accessed site from unwanted access to the property.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
North Arm Boat Launch Concept Design	Hennepin County, MN (Orono)	Topographic survey of parking lot, boat launch and lake shore of Lake Minnetonka
Hendrickson and Noerenberg Bridge Crossings	Orono, MN	Topographic Survey for MCES utility replacement at two channel crossings of Lake Minnetonka
TH 5 Construction	Victoria, MN	Construction Staking
Carver Parkway	Carver, MN	As-Built Survey
TH 169	Eden Prairie, MN	Construction Staking
Bluff Creek Trail	Chanhassen, MN	Topographic Survey
Lake Lucy/Powers Blvd. Extension	Chanhassen, MN	Topographic Survey
Culvert Replacement Project	HCRRA, Mpls. MN	Topographic Survey
Deephaven Interceptor	MCES, Deephaven, MN	Topographic Survey/Easements

OTHER QUALIFICATIONS

While IMO is not submitting our qualifications currently for categories 1, 2, 4, 5 and 8, oftentimes a project does not fit neatly into a single category but spans multiple service areas. We have experience in each of the categories mentioned below and offer a very brief summary of our experience in each.

CATEGORY 1: WATERSHED, SUB-WATERSHED, AND WATER RESOURCE MANAGEMENT AND PLANNING.

IMO staff have extensive experience in this area. Our team has been responsible for the development of over 15 Watershed Stormwater Management Plans, 9 Water Quality Plans, and 5 Wetland Management Plans. Our clients include the Cities of Chaska, Chanhassen, and Eagan as well as the 2001 Lower Minnesota River Watershed Strategic Action Plan.

County Soil Maps, Surveys, and USGA crop maps are an initial source of information to determine the hydrologic parameters to use in a watershed analysis. A review of this type helps determine critical points for site visits which are a valuable tool to determine the need for road crossings, channel cross-sections and other survey needs. Our team takes a "Sherlock Holmes" approach by looking for the natural indicators of runoff behavior in the watersheds, as the model calibration often is done by field observations due to lack of other available data. Geomorphic evaluation and field confirmation of the physical features of wetlands are also used for the hydrologic model.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
Chaska Stormwater Management Plan*	City of Chaska, MN	Watershed Analysis for a 35 square mile watershed
Strategic Action Plan for Lower Minnesota River Watershed*	Friends of the Minnesota Valley	Develop a sustainable organizational structure and identify high priority projects to improve water quality in the Minnesota River
Eagan Stormwater Plan*	Eagan, MN	Community Stormwater Management Plan
Eagan Water Quality Plan*	Eagan, MN	Community Water Quality Plan

**Indicates a project completed while at another firm.*

CATEGORY 2: LAKE, WETLAND AND STREAM RESTORATION

The most common issue encountered during lake, wetland and stream restoration is the difficulty in predicting future hydrological input. Improvements in stormwater runoff models have increased the results of that restoration success. Another key issue is the inability to completely rehabilitate an entire water resource due to ownership patterns and drainage practices outside the control of the agency. Any effort to restore only part of a wetland or lake leads to ineffective results. If the hydrology cannot be restored in its entirety, invasive species such as reed canary grass or buckthorn encroach from adjoining non-managed properties.

IMO provides the hydrologic support and hydraulic expertise to achieve wetland mitigation, restoration, and creation goals as well as lake restoration projects. We often identify opportunities for the creation of wetlands instead of waterbodies when volume control is not a priority. Lake restoration projects have ranged from modifying inlets and outlets, removing first flush runoff resulting from small storms high in pollutants, designing bypasses for groundwater fed lakes, designing benches below water level along the shoreline to foster aquatic plant growth, and grading the shoreline to facilitate the growth of transitional vegetation.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
Coon Creek Watershed Permitting/Inspection*	Coon Creek Watershed District	Review of permit applications and field inspection for permit compliance.
Minnehaha Creek Watershed Permitting*	Minnehaha Creek Watershed District	Review of permit applications.

**Indicates a project completed while at another firm.*

CATEGORY 4: GROUNDWATER AND HYDROGEOLOGICAL MODELING, MONITORING, AND ANALYSIS

A successful monitoring program begins with a thorough understanding of the movement of both the surface and ground waters. The next step is the determination of the baseline water quality, required criteria or guidance parameters, and the goals of the agency. The final planning step is the projection of the costs of installation, on-going sampling and testing, and future maintenance and upgrades of equipment. Since monitoring programs can become very costly for a community, our approach focuses on the evaluation of the initial monitoring results and the estimated cost. Once the initial data is collected and the results are analyzed, the cost of the monitoring program can be better understood. Sometimes parameters need to be added to the monitoring protocols and/or removed. Also, long term monitoring programs sometimes lose sight of the initial goals.

Representative Project: Fond du Lac Band of Ojibwe Pipeline Corridor Water Quality Monitoring Program

The Fond du Lac Band's agreement with Enbridge for the replacement of Line 3 and the upgrading of Line 4 provides for the development and implementation of a Water Quality Monitoring Program. IMO's work started with modeling of the Stoney Brook Watershed to determine the best method of crossing Stoney Brook and a review of ground water flow data. The preliminary ground water data was later confirmed by a series of piezometers. A detailed plan was developed for monitoring both ground water and surface water along the 13-mile pipeline corridor. The overarching goal of the project is to protect wild rice production lakes located along Stoney Brook as they are an invaluable resource to the culture, diet and economy of the community.

CATEGORY 5: NATURAL RESOURCES MANAGEMENT

The design and implementation of water resources projects provide opportunities to shape an area's physical appearance by integrating natural resources with parks, trails, roadways, and green space. Well planned and designed storm water management projects will meet both the local and national regulations and at the same time showcase and preserve our natural resources.

We believe that natural resource management begins with the implementation of a comprehensive water resource management plan. The plan serves as a guide to preserve and improve the quality of surface waterbodies and surrounding flora/fauna and to protect and recharge groundwater resources. Our water resource engineers are known for developing creative solutions to complex water management problems and have won multiple awards for their designs.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
Culvert Replacement Project	HCRAA Minneapolis, MN	Design, permitting and construction admin for culvert replacement
Lake Mallelieu	Hudson, WI	Stormwater modeling and channel improvements

CATEGORY 8: WATER RESOURCE PERMITTING

IMO staff, experienced in reviewing plans and permits, verified all permits and plans were compliant with watershed district regulations and provided erosion and sediment control inspections for projects under construction. Monitoring is an important part of any lake or wetland work. The process for monitoring site compliance with project requirements begins with a review of the terms stipulated in the permit or mitigation banking instrument. Typically, these requirements refer to a planting or vegetation restoration plan, hydrological conditions, buffer conditions, presence of invasive plants and placement of buffer signage.

RELATED PROJECTS

PROJECT NAME	CLIENT/LOCATION	SERVICES PROVIDED/DELIVERABLES
Coon Creek Watershed Permitting/Inspection*	Coon Creek Watershed District	Review of permit applications and field inspection for permit compliance.
Minnehaha Creek Watershed Permitting*	Minnehaha Creek Watershed District	Review of permit applications.

**Indicates a project completed while at another firm.*

Ismael MARTINEZ, PE

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Education

Master of Science
Civil Engineering
University of Minnesota

Bachelor of Science
Civil Engineering

University of
Queretaro - Mexico

Professional Registration

Professional Engineer - Mexico

Ismael is a consummate project manager for multidisciplinary projects and a pro-active client service manager. He acquired his experience being responsible for overseeing comprehensive plans, water resources studies, and hydraulic design projects. He has over thirty-four years of experience in the design and management of projects in the civil engineering field. Mr. Martinez has a proven ability to present at conferences and seminars. His development of presentation skills started when working as a full-time professor. He taught college and graduate-level classes. Mr. Martinez participated in MnDOT's DBE Bidding and Estimating Programs of 2011-2012, 2014-2015, the Business Assessment Program of 2016-2017 and the Business Courses of 2017-2018. He can relate to the needs of the DBE's attending these seminars since he is the owner of his own DBE consulting firm.

Project Experience:

Cascade Park, Creek Realignment and Lake Creation, Rochester, MN - Ismael served as Client Service Manager and the hydraulic designer for this complex and multidisciplinary project. This project required the coordination of multiple consultants, public meetings, and a stakeholder committee. The Cascade Creek realignment project combined the best of bioengineering, traditional civil engineering, and wetland and prairie management to develop Cascade Park into a recreational and aesthetic oasis. The project required the design of a multi-stage lake outlet that allows flows during average conditions to exit the lake and flows during flood conditions to enter the lake, balancing water quality preservation with flood control. It also included the design of a fish ladder that helps the fish to navigate the steep drop from the realigned stream to the existing stream.

Wayzata - Harrington and Ramsey Roads Drainage Study
As project manager Ismael facilitated neighborhood meetings, evaluated the water quality treatment alternatives, supervised the team designing the chosen alternatives, and provided cost estimates. The study involved analysis and design of storm sewer capacity to meet rate control and water quality treatment goals. It offered innovative solutions that resulted in the removal of a lift station that had been in service for more than 30 years by changing the system to gravity flow. Treatment alternatives included infiltration trenches and bio-infiltration.

West Chaska Interceptor, First Street, Hickory and Fourth Street Reconstruction – Chaska, MN - Ismael managed the hydraulic portion of the project, evaluating storm sewer capacity and routing alternatives, and water quality treatment options. This $9.5 million project extended a 72" and 36" sanitary sewer interceptor through the heart of historic downtown Chaska. The project involved tunnels under TH 41 and the Corps of Engineers storm-water drainage channel and required reconstruction of City utilities, storm sewer, sidewalks, and approximately 7,500 lineal feet of roadway. The storm-water design met the challenge of providing outlets for landlocked areas, designing diversions for treatment of low flows, and specifying structural treatment devices suitable for the limited space available while protecting the Minnesota River.

Facilitation Experience

Ismael has facilitated numerous task forces and steering committees. He gained his facilitation skills as a full-time college professor where he learned group dynamics and teaching pedagogy as part of his teaching preparation. Ismael's facilitation experience has evolved from using varying consensus building techniques to an open space format. Some of the projects where Ismael has used his facilitation skills include:

Lower Minnesota River Watershed, Strategic Action Plan – A large Steering Committee and Multiple Sub-watershed Teams with stakeholders were coordinated to identify a watershed-wide approach to identify hot spots and high priority improvements in the 1,800 square mile watershed.

Robert SCHUNICHT, PE

IMO CONSULTING GROUP

Education

Master of Science in Civil Engineering, University of Minnesota-Twin Cities

Bachelor of Science in Civil Engineering, University of Minnesota-Twin Cities

Professional Registration

Licensed Engineer: *Minnesota*

Mr. Schunicht has 40 years of experience in all aspects of infrastructure planning and design for both the public and private sectors. His vast experience includes working for a variety of government units ranging from small townships to large metropolitan agencies and the federal government. During his career he has completed infrastructure plans for approximately 40 communities, including one third of the developing communities in the Seven County Metropolitan Area. He is adept at public facilitation and specializes in developing collaborative, multi-jurisdictional agreements. Mr. Schunicht applies his institutional and regional knowledge to pursue meaningful relationships that help his clients achieve their desired future. Bob completed Eagan's initial Master Storm Drainage Plan and managing the preparation of several subsequent city-wide plans.

Work Experience:

Metropolitan Council Environmental Services (MCES), St. Paul, MN:

- Consulting services to the MCES for over 40 years, including planning and design of 13 major interceptor projects.
- **Internal MCES Planning**: Recently managed the preparation of two internal MCES planning efforts including 1) analyzing the interrelationship of development density and wastewater flow rates and 2) analyzing development trends to assist regional planning efforts.
- **Elm Creek Interceptor**: Led an advisory team of eight communities and the MCES to a collaborative solution for the Elm Creek gravity interceptor system that will serve over 100,000 people based on a 50-year design. Facilitated a cost sharing agreement between MCES and Maple Grove and prepared facility plans and designs for several subsequent interceptor projects.
- **Centralization/Decentralization Study**: Managed the Interceptor Planning Section of the study and facilitated two regional meetings of community leaders to generate information and eventually support for the resulting plan.
- **Red Rock Interceptor**: Developed an entirely new concept for the interceptor system in the Southwest Metro that eliminated a costly and environmentally challenging interceptor route along the Minnesota River. Developed a cost sharing formula for local service from an interceptor and facilitated a cost sharing agreement between MCES, Eden Prairie and Chanhassen.
- **Tri-Interceptor**: Managed the three design teams on the Tri-interceptor projects and led a day-long meeting of MCES staff and the design teams to develop standards for the Tri-interceptors and future projects.

City of Maple Grove, MN:

- Consulting engineering services for 40 years
- Developed Maple Grove's original sanitary sewer, water, and storm water plans
- Discovered, defined, and developed Maple Grove's unique drift aquifer into the most cost-effective source of water in the Metro Area
- Led the preparation of Maple Grove's Gravel Mining Area Plan which set the stage for the reclamation of four-square miles of gravel pits and the development of the highly successful Arbor Lakes commercial area
- Planned and designed hundreds of infrastructure projects

IMO

Samuel LOPEZ-HIDALGO ,PE

IMO CONSULTING GROUP

Education
Letourneau University, Longview, TX
B.S. in Engineering with Civil Concentration, May 2015

Technical Skills
HEC-HMS, HEC-RAS, XPSWMM, PCSWMM, ArcGIS, QGIS, KYPipe, HydroCAD, AutoCAD Civil 3D, Bluebeam Revu

Professional Certifications

- Licensed Engineer: Minnesota
- Design of Construction Stormwater Pollution Prevention Plans Certificate

MNDOT

- Aggregate Production
- Bituminous Street 1 & 2
- Concrete Field 1 & 2
- Grading & Base 1 & 2
- ADA Construction Certification

IMO

Mr. Lopez-Hidalgo is a PE with six years of experience. His experience includes a variety of projects such as bridges, culvert crossings, utilities, hydrologic, and hydraulic design. He is skilled in drafting, site design, erosion and sediment mitigation, modeling, inspection, and technical writing.

Experience:

Minneapolis Water Softening Plant

Mr. Lopez-Hidalgo coordinated with Black & Veatch and the city of Minneapolis to draft the conceptual improvement alternates for a planned expansion and improvement of the lime slaking system.

10th Ave. Water Main River Crossing

Mr. Lopez-Hidalgo coordinated with Black & Veatch to draft the construction plans for a water main crossing under the Mississippi River in accordance with Minneapolis Water department standards.

HCRRA Corridor Culvert Replacement

Mr. Lopez-Hidalgo assisted the Project Engineer with the design of this project and drafted the construction plans. Mr. Lopez-Hidalgo obtained the necessary permits from the Riley Purgatory Bluff Creek Watershed District, Minnehaha Creek Watershed District, the City of Wayzata, the City of Minnetonka, and the Three Rivers Park District. Mr. Lopez-Hidalgo served as the liaison between contractor (ECI) and client (HCRRA) and performed construction observation.

Mississippi Gorge Regional Park Master Plan

IMO is a subconsultant specializing in water infrastructure design for this project. Mr. Lopez-Hidalgo has helped develop conceptual ideas for the Minneapolis Parks and Recreation Board to beautify the Mississippi River Gorge through downtown Minneapolis and to incorporate water purification. using a “treatment train” approach.

Airport Drainage Master Plans

Mr. Lopez-Hidalgo was on the team that developed the Drainage Master Plans for George Bush Intercontinental Airport, Houston, William P. Hobby Airport, and Ellington Field, in Houston, TX. Mr. Lopez-Hidalgo played a key role in the gathering of existing information from a mix of databases and site inspections. He used this information to develop hydrologic and hydraulic models of the drainage systems, which were used to develop system improvements.

Subwatershed Flooding Analysis and Mitigation

Mr. Lopez-Hidalgo developed a 3-D model of a subwatershed in Fridley, MN. The purpose of this model was to replicate historic flooding event. Once the model was calibrated to the observed flood stages, the model was used to develop and analyze system improvements. In conjunction with the flooding conjunction with the flooding mitigation, an iron enhanced sand filter was installed to treat runoff before it entered the Mississippi River, an impaired waterway.

DAN FORSBERG

IMO CONSULTING GROUP

Education & Training

Dunwoody College of Technology –

Civil Engineering and Surveying, AAS (1994)

NSPS CST Level III

OSHA-10 Certified

eRailSafe Certified

BNSF Certified

Professional Development

PSMJ, Inc. Manager boot camp, 2015

Leica Clyclone scanning softward. Scanners P20, C10 and Scan Station II

Trimble Business Center 5.2, Access 2019

DCA/AutoCAD V.11 through Civil 3D 0218

All Leica survey grade software and filed equipment, 1985 to 2012

Trimble robotic total stations; GPS 4800, 5600, R6, R8, R12 Total Stations: S6

A National Society of Professional Surveyors Level III Certified Survey Technician and Survey Crew Chief with over Twenty-one years of experience. Manages survey crews performing preliminary design surveys, right-of-way surveys, and construction surveying on large, complex transportation projects. Provides construction staking services for private, municipal, county, and state entities. Experienced in utilizing Trimble GPS equipment and Trimble Robotic Total Stations.

Project Experience:

- Responsible for all the surveying and coordination of five survey crews on the Southwest Light Rail project. Construction staking of bridges, stations, railways, roadways, sanitary sewer, storm sewer and watermain, construction limits, right of ways, and more. Monitor bridges, railways, roadways, parking garages, and buildings. Set control and levelled it to 1/16 of an inch accuracy.

- Worked through teams to build solid workflows and field practices that ensure project accuracy specifications were always understood and achieved.

- Coordinate field crews to establish High Accuracy GPS network for primary control with closure of 1:120,000 over 8 miles of railroad track layout to meet 1/8" tolerance.

- Prepared legal descriptions, ATLA, boundary, topographic surveys and construction computations.

- Performed construction layout for Hwy 280 bridge modifications, electrical system duct bank set between rails – ½" tolerance, train power poles – 1/8" tolerance, grid lines of train station platforms – 1/8" tolerance, Storm & Sanitary sewers, water main, hot and chilled water pipes, blue top intersections to meet track slap with ¼" tolerance, curb, light poles etc. from a combination of computed points, alignments and profiles, 3D polylines and surfaces with Leica GPS and total stations.

- **Prelim Design Projects** - Residence Inn Woodbury, Tamarack Hills 1, 2 & 3rd Addition for small commercial development (prelim & construction), Randy's Sanitation new HQ in Delano (30 Acre), Renewal by Andersen storage facility in Cottage Grove (40 Acre)(prelim & construction), Hyland Greens Golf Course, Union Depot Tailtrack in St Paul, MCES 7020, Interceptor 8362/MCES 80861, Corcoran/Roger Connection, Mound Area Improvements 6-MO-650, Miske Meadows Residential subdevelopment (280 acres).

IMO

ANDREW CHRISTENSEN

IMO CONSULTING GROUP

Education

Bachelor's degree in Geography (Emphasis in Surveying)
St. Cloud State University
St Cloud, Minnesota
May 2002

Associates Degree in Civil Engineering
St. Cloud Technical College
St. Cloud, Minnesota
May 2000

Professional Certifications

Professional Surveyor
No. 48281

Training

AutoCAD Civil 3D

Andrew has 19 years of surveying experience. Andrew brings a well-rounded perspective to projects and is responsive, reliable, and prides himself on quality work.

His experience includes boundary and topographic surveys, ALTA/ACSM land title surveys, plats, rights of way and easements, existing conditions surveys, tree inventories, legal descriptions, common interest communities (CIC's), large area coordinate systems, aerial photo control, utility mapping, construction staking, building layout, street, utility, and grade staking, and as-built surveys. Andrew is also proficient in survey research and computations, AutoCAD, FEMA surveys, flood plain surveys, bridge surveying, light rail surveying, gas and oil development surveys, and cell phone tower surveys.

Project Experience:

Town Center Station Easement Layout – Eden Prairie, MN

Layout and easements in preparation for parcel acquisition for the Southwest LRT project.

2017 Connect the Park – City of St. Louis Park

Construction staking services for new sidewalk construction along Barry St. and 36 ½ St. and new trail along Utica Ave.

Grand Avenue – City of Minneapolis

Boundary and Topographic Survey for reconstruction on 2.24 miles of Grand Avenue S. between Lake St. and 48th St W.

2510 Oakland Road – Minnetonka, MN

Topographic survey for design of donated park property

Byllesby Dam Existing Facilities Improvements – Cannon Falls, MN

Lead project manager and crew chief for this dam rehabilitation project.

Vikings Stadium Survey – Minneapolis, MN

Boundary and ALTA/ACSM Land Title Survey for 32-acre +/- property involved with the new Minnesota Multi-Purpose Stadium (Vikings Stadium) in downtown Minneapolis.

TH241/CSAH 35 One-Way Pair – City of St. Michael, MN

Construction surveying

Ridgewood Road – City of Minnetonka, MN

Construction surveying services for road reconstruction.

Dominick Drive – City of Minnetonka, MN

Construction surveying services for road reconstruction.

TH 7 Frontage Road (North Side) – City of Minnetonka, MN

Construction surveying services for road reconstruction.

Oxboro Library – City of Bloomington, MN

Construction staking for this library building addition and site improvements.

Staring Lake Park Site & Building Improvements – City of Eden Prairie, MN

Construction staking for new park buildings and site improvements.

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