



WMSRDC: REGIONAL INFRASTRUCTURE INFORMATION MANAGEMENT PROGRAM

A GIS Readiness Assessment, Strategic Roadmap, and
Implementation Plan for the Western Michigan Shoreline Region

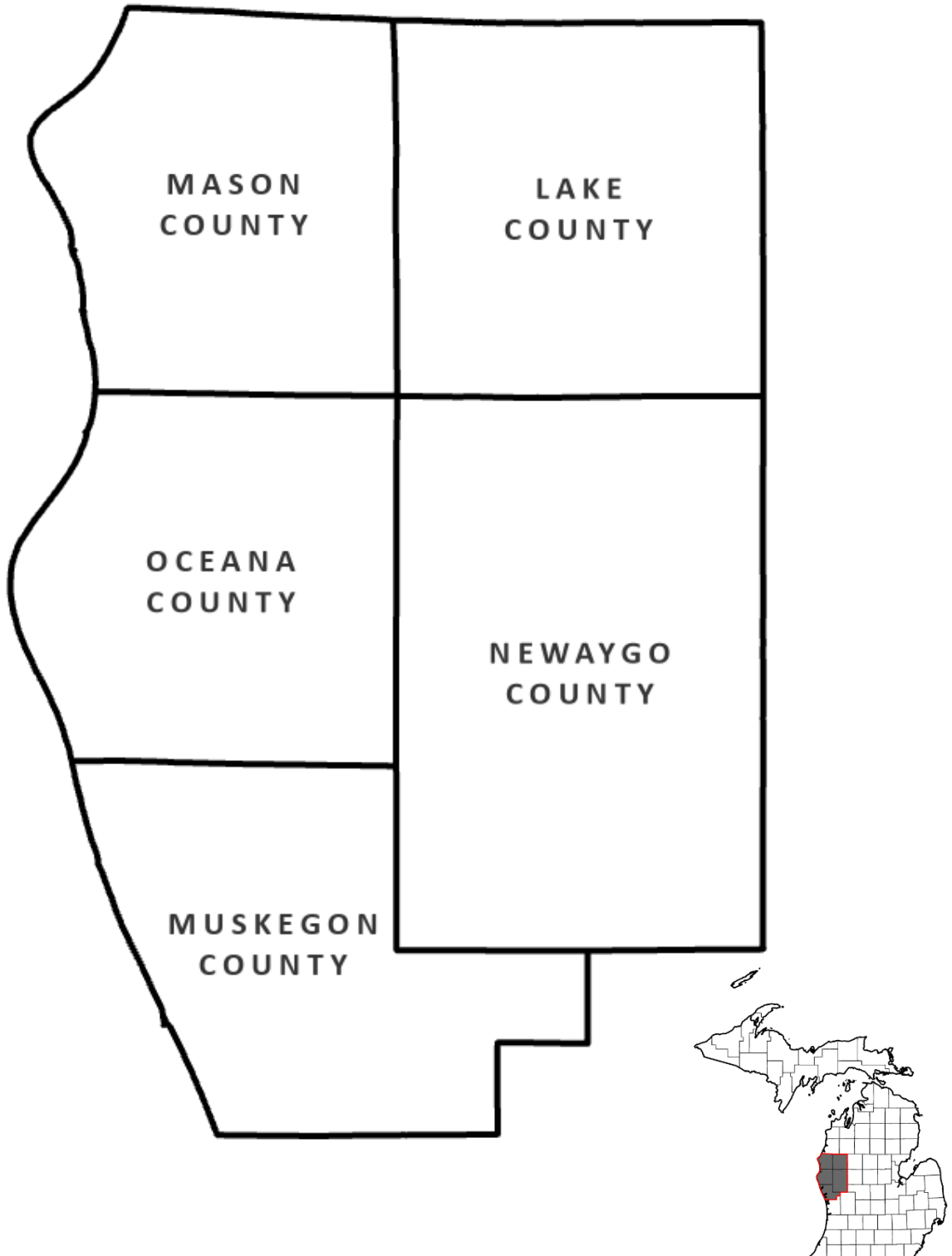




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CHAPTER 1: Executive Summary

The Western Michigan Shoreline Regional Development Commission (WMSRDC) 5-county operating region is at an important point in the evolution of Geographic Information Systems (GIS). Communities throughout the region increasingly rely on geospatial information to support infrastructure management, transportation planning, economic development, emergency response, environmental stewardship, public works, utilities, and countless other public services. At the same time, local governments face growing expectations to deliver more efficient services with limited financial and personnel resources while coordinating with an expanding network of local, regional, state, and federal partners.

Recognizing these opportunities and challenges, WMSRDC, under an agreement with the Michigan Infrastructure Council (MIC) and as part of a multi-regional statewide pilot program, initiated this Regional GIS Readiness Assessment and Strategic Roadmap. Its purpose is to understand the current state of GIS across the five-county region of Lake, Mason, Muskegon, Newaygo, and Oceana Counties and to identify a practical, long-term strategy for strengthening regional collaboration through geospatial technology.

The assessment included a comprehensive GIS Readiness Survey distributed to local governments, counties, utilities, emergency management organizations, and regional stakeholders, yielding 48 responses representing roughly a third of the region's organizations, followed by interviews with agencies representing a broad range of GIS experience and organizational maturity. Together, these efforts provided valuable insight into current capabilities, organizational priorities, existing challenges, and opportunities for future collaboration. The full methodology and findings are presented in Chapter 2.

While the assessment identified varying levels of GIS maturity across the region, it also revealed a consistent and encouraging theme: organizations recognize the value of GIS and are willing to work together to improve how geographic information is collected, managed, shared, and used to support decision-making.

Rather than recommending independent technology investments, this roadmap proposes a collaborative regional approach that allows organizations to build upon existing investments while creating new opportunities for shared services, standardized data, coordinated infrastructure planning, workforce development, and regional innovation.

Key Findings

The GIS Readiness Assessment identified several themes that consistently emerged throughout both the survey responses and stakeholder interviews.



Regional Collaboration Faces Virtually No Opposition. Of responding organizations, all but one expressed openness to regional collaboration, and half volunteered for a pilot project. Hesitation, where it exists, reflects capacity constraints rather than resistance.

GIS Maturity Varies. GIS capabilities vary considerably throughout the region. Some organizations operate mature enterprise GIS environments supported by dedicated staff, while others rely on a single employee who manages GIS alongside numerous other responsibilities. Several communities currently have limited GIS capabilities but expressed interest in expanding their use of GIS if technical support and shared resources become available. Chapter 3 presents a five-level Regional GIS Maturity Model that gives organizations a common framework for locating themselves on this spectrum and growing from wherever they start.

Data is the Region's Most Underutilized Asset. Organizations across the region invest in and rely on authoritative geographic data daily, yet much of its regional value goes unrealized: most responding organizations report no regular data sharing, and only a handful maintain written data standards. Closing that gap is the foundation of the Regional Data Strategy.

Staffing and Training Remain the Greatest Constraints. Many organizations identified limited staffing, budget constraints, and lack of specialized GIS expertise as barriers to expanding GIS capabilities. Participants consistently supported regional training opportunities, shared technical assistance, and a collaborative user community that allows agencies to learn from one another.

Infrastructure Coordination Presents a Significant Opportunity. The assessment revealed widespread interest in improving coordination of infrastructure projects across jurisdictions. Better communication regarding Capital Improvement Programs, transportation projects, utility improvements, and development activities can reduce duplication, improve planning, strengthen grant applications, and maximize the value of public investments.

A Regional Vision

This roadmap recommends that WMSRDC establish a Regional Infrastructure Information Management Program (RIIMP) that positions GIS as the foundation for regional collaboration rather than simply a mapping technology.

The program is built around several core principles:

- Local agencies remain the authoritative stewards of their own data.
- WMSRDC serves as the Regional Information Integrator, providing leadership, coordination, shared services, and technical support.
- Organizations participate at a level appropriate to their needs and available resources.
- Regional standards improve interoperability while preserving local flexibility.
- Shared technology, applications, and training reduce barriers to GIS adoption.



- Continuous collaboration strengthens planning, infrastructure management, and public service delivery throughout the region.

This approach enables organizations to achieve collectively what would be difficult or cost-prohibitive to accomplish independently.

Major Recommendations

The roadmap presents a series of recommendations designed to establish a sustainable regional GIS program over the next decade. They are summarized below in the order they are developed in this report, with each recommendation examined in detail in its corresponding chapter.

Establish the RIIMP (Chapter 4). Create a permanent regional program within WMSRDC responsible for coordinating GIS initiatives, supporting member communities, managing shared services, and advancing regional collaboration.

Create a Regional Governance Framework (Chapter 5). Establish a Regional GIS Steering Committee and Regional GIS User Group to provide strategic direction, encourage collaboration, and promote consistent regional standards.

Develop the Regional ArcGIS Online Cooperative (Chapter 6). Implement a centrally administered ArcGIS Online environment that provides participating organizations with access to standardized datasets, shared applications, dashboards, field tools, and configurable ArcGIS Solutions.

Implement a Regional Data Strategy (Chapter 7). Develop standardized regional datasets, establish authoritative data stewardship, and create governance procedures that improve data quality while respecting local ownership, including a shared regional Capital Improvement Project dataset that integrates with the MIC's statewide MiDIG portal.

Expand Shared Regional Services (Chapters 8 and 10). Provide regional support for mobile GIS, field data collection, drone operations, remote sensing, Capital Improvement Program coordination, application deployment, technical assistance, and emerging geospatial technologies.

Strengthen Partnerships and Grant Competitiveness (Chapter 9). Expand collaboration among local governments, counties, utilities, educational institutions, state agencies, federal partners, and the private sector while pursuing coordinated funding opportunities.

Invest in Workforce Development (Chapter 11). Create a comprehensive regional training program that supports GIS professionals, occasional GIS users, elected officials, and organizational leadership while strengthening long-term regional capacity.



A Phased Implementation Strategy

Recognizing that organizations throughout the region possess different capabilities and priorities, this roadmap recommends a phased implementation approach, presented in full in Chapter 13.

Phase One: Build the Foundation. Establish governance, launch the Regional ArcGIS Online Cooperative, begin standardizing foundational datasets, initiate training programs, and demonstrate early success through shared applications and regional collaboration.

Phase Two: Expand Regional Services. Increase participation, broaden shared datasets, implement regional Capital Improvement Program coordination, expand regional applications, strengthen partnerships, and increase grant competitiveness.

Phase Three: Regional Intelligence and Innovation. Leverage mature regional datasets and partnerships to support predictive analytics, digital twins, artificial intelligence, real-time data integration, and advanced regional decision support.

Each phase builds upon the accomplishments of the previous phase, allowing organizations to participate at a pace appropriate to their resources while continually increasing the value of the RIIMP. Progress through each phase is evaluated against the performance measures presented in Chapter 12, and the risks that could affect implementation, along with strategies for managing them, are addressed in Chapter 14.

Expected Outcomes

Successful implementation of this roadmap will produce benefits that extend well beyond GIS. Expected outcomes include:

- Better coordination of infrastructure investments.
- Increased access to GIS technology for communities of all sizes.
- Higher quality and more consistent geographic information.
- Reduced duplication of effort and greater operational efficiency.
- Stronger regional partnerships and collaboration.
- Increased grant competitiveness.
- Improved emergency preparedness.
- Better-informed planning and decision-making.

Most importantly, the roadmap establishes a sustainable framework that allows communities to work together while preserving local ownership, local priorities, and organizational independence.



Looking Ahead

The recommendations contained within this report represent more than a technology strategy. They establish a vision for how WMSRDC can become the regional leader in infrastructure information management by connecting people, data, technology, and partnerships into a coordinated regional program.

The chapters that follow present the findings of the GIS Readiness Assessment, define the regional vision, and provide a practical roadmap for implementing a RIIMP that will strengthen communities throughout the region for years to come.

CHAPTER 2: Regional GIS Readiness Assessment & Current State

Understanding the Region's GIS Landscape

WMSRDC's area of service is a diverse network of counties, cities, villages, townships, utilities, transportation agencies, emergency management organizations, and regional partners. Collectively, these organizations are responsible for planning, maintaining, and improving the infrastructure, natural resources, and public services that support residents, businesses, and visitors throughout the region.

Over the past two decades, GIS has evolved from a specialized mapping tool into core business infrastructure for these organizations. Increasingly, they rely on geographic information to make informed decisions, coordinate projects, manage assets, communicate with the public, and meet state and federal reporting requirements.

Yet how thoroughly each organization has adopted GIS differs widely across the region. Some agencies operate mature enterprise GIS programs supported by dedicated staff and well-established workflows, while others are only beginning to explore how GIS can support their operations. Most organizations fall somewhere in between, utilizing GIS successfully for specific business functions but lacking the resources necessary to fully realize its potential.

Recognizing these differences, WMSRDC initiated this GIS Readiness Assessment to better understand the current state of GIS across the region, identify opportunities for collaboration, and develop a practical roadmap for strengthening regional geospatial capabilities over the coming decade.

Rather than focusing solely on technology, the assessment examined the broader factors that contribute to a successful regional GIS program, including governance, staffing, data management, partnerships, training, infrastructure coordination, and organizational readiness.



Assessment Objectives

The GIS Readiness Assessment was developed to provide WMSRDC with a comprehensive understanding of the region's current GIS environment while establishing a foundation for long-term strategic planning.

The assessment sought to answer several key questions:

- How is GIS currently being used throughout the region?
- What technologies, datasets, and organizational capabilities already exist?
- What barriers prevent organizations from expanding their use of GIS?
- Where are opportunities for regional collaboration?
- Which services could be provided more efficiently through a shared regional approach?
- How can WMSRDC best support its member communities while respecting local ownership and autonomy?

Answering these questions provided the factual basis for every recommendation contained within this report.

Assessment Methodology

The readiness assessment was completed using a multi-phase approach designed to gather both quantitative and qualitative information from organizations throughout the region.

Regional GIS Readiness Survey. WMSRDC distributed a comprehensive GIS Readiness Survey to local governments, counties, utilities, emergency management agencies, and other regional stakeholders in March 2026. The survey collected information regarding current GIS capabilities, staffing and organizational structure, software and technology, existing datasets, mobile GIS and field operations, infrastructure management, data sharing practices, training needs, organizational priorities, and future interest in regional collaboration. The survey provided a consistent baseline for evaluating GIS maturity across participating organizations.

Stakeholder Interviews. Survey results were supplemented with follow-up interviews involving 14 organizations representing a broad range of GIS maturity levels and operational responsibilities. These discussions provided context that could not be captured through survey responses alone. Participants described current business workflows, operational challenges, existing partnerships, infrastructure management practices, technology needs, long-term organizational goals, and opportunities for regional collaboration. The conversations helped identify both common challenges and innovative practices already occurring within the region.



Survey Participation

Survey responses were received from 43 of the region's 140 organizations (31 percent), producing 48 completed surveys. Participation by organization type and by county is summarized in tables 1 and 2 below.

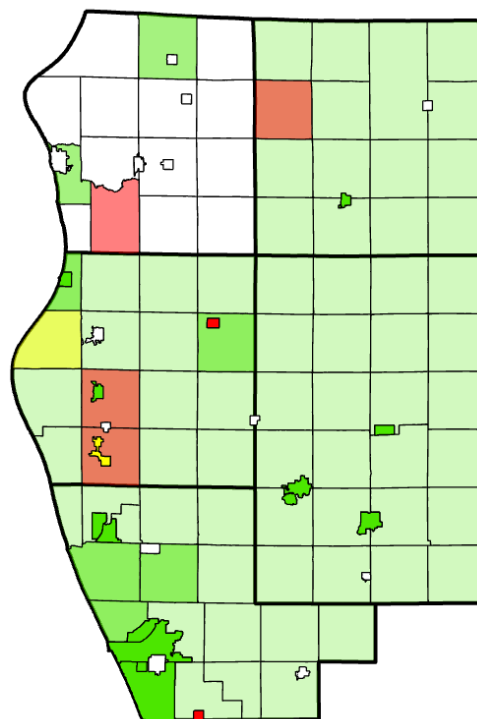
Table 1. Survey Respondents by Agency Type

Agency Type	Agency Responses	Total Agencies	% Responded
County	4	5	80%
Road Commission	5	5	100%
Drain Commission	3	5	60%
Township	12	86	14%
City	10	14	72%
Village	6	14	43%

Table 2. Survey Respondents by County

County Name	Agency Responses	Total Agencies	% Responded
Lake	4	21	19%
Mason	6	24	25%
Muskegon	13	32	41%
Newaygo	5	32	16%
Oceana	13	27	48%

Participation was strongest among the organizations that manage the region's largest infrastructure portfolios: every road commission responded, along with four of five counties and nearly three-quarters of cities. Township participation tells a different and equally important story. Townships are the region's most numerous unit of government, representing 86 of its 140 organizations, yet only 12 responded (14 percent). The reasons for non-response cannot be determined from the survey itself, but the responses that were received are instructive: not one responding township reported a dedicated GIS staff member, and nearly all described themselves as interested in regional collaboration but in need of significant support. It is reasonable to conclude that the non-responding townships skew toward even more limited capability,





and that the survey results therefore describe the region's most GIS-engaged organizations rather than the region as a whole. Rather than weakening the assessment, this gap sharpens its central conclusion: the region's largest cohort of governmental units is precisely the population that a low-barrier, scalable regional program is designed to reach, and any regional strategy that requires existing GIS capability as a condition of participation would exclude the majority of the region's organizations from the start.

Asset Management Champion Stakeholder Interviews

WMSRDC provided a contact directory of past Asset Management Champion Program participants and other local officials identified as points of contact for their organizations. Every individual in that directory other than WMSRDC staff was contacted directly, twenty-eight people in total. Five had left the position the directory recorded. Three participated in interviews, representing Fruitland Township and the City of Muskegon within Muskegon County and the City of Fremont in Newaygo County. All three had also volunteered for pilot participation through the readiness survey (Table 7, Chapter 13).

Three responses from twenty-nine invitations is a small and self-selected sample. Each participant had prior exposure to structured asset management practice through the Champion Program and arrived already understanding why the concept of knowing “what infrastructure exists, and where” has value. Their consistency is a clear signal from the region's most prepared audience. The five stale contacts are a finding in themselves: turnover among staff holding asset management responsibility is frequent enough that a directory of this kind loses currency quickly, which indicates that maintaining contiguous regional points of contact as a living database will be critical moving forward, as described in Chapter 11. Findings from these interviews are as follows:

No participant opposed the concept.

No participants specifically identified a downside or described concerns about a regional program being an added burden. In Fremont, the outgoing city manager and the successor who replaces him within weeks both joined the call and were equally supportive. In Muskegon, where GIS is already embedded in daily operations, interest centered on removing silos and coordinating across organizational boundaries. The more GIS-mature participants attached conditions to their support, addressed below. This matches the survey results reported above, in which only one of forty-six responding organizations expressed no interest in regional collaboration.

Existing county relationships are the first question communities ask

Fruitland Township, which operates under a service agreement with Muskegon County, asked directly whether a regional system would replace that arrangement or duplicate it. The answer



given, consistent with the position taken throughout this report, is neither. Where a county already serves its communities, that county remains the first-line provider and authoritative hub for its jurisdiction, and the regional program connects and amplifies that work (Chapter 4). The two Muskegon County participants show how variable this relationship can be within a single county. The City of Muskegon shares an enterprise GIS environment with the county, manages its own utility infrastructure on it, and receives substantial technical support from county staff, with municipal GIS technicians focused on converting legacy records and implementing new standards. Fruitland Township, in the same county, buys services under agreement and holds no internal GIS capacity.

This, of course, means that a minimum of three arrangements must exist. 1) Where a community and its county already share an enterprise environment, the regional program connects to that environment as a single participant. 2) Where a county serves a community under agreement, the preferred arrangement has the county participate as a full partner, contributing data to the regional environment and drawing regional data back while continuing to serve its communities directly. 3) Where that is not immediately possible, the county relationship continues unchanged and the community receives viewer-level access to regional products, with all data services still provided by the county. Each depends on agreement at the county level, which falls outside the scope of this study. WMSRDC should open these conversations with each county during the first three months of implementation (Appendix A) and document the resulting understanding, so member communities are not left to infer where responsibility lies.

For rural communities, the value is in shared corridors

Fruitland Township illustrates an asset profile common among the region's townships. Nearly all property is served by private wells and septic, street lighting is tracked by the electric utility and the county, natural gas distribution belongs to its operator, and the township's own inventory amounts to a handful of buildings, boat launches, and the water and sewer along the Whitehall Road commercial corridor. An inventory limited to township-owned facilities would return little. The value the township identified is visibility into the corridor itself, where it knows infrastructure exists but not which properties it serves or where it runs underground, and where the county, wastewater committees, and water quality bodies all hold an interest in the same ground. Extending service, such as connecting White Lake Drive into the Whitehall system, raises that value further. This supports the scalable participation tiers in Chapter 5 and the shared Capital Improvement Project dataset in Chapter 7.



The coordination failures participants named are specific and current

Muskegon referenced current projects. Excavation work depends on onsite inspection to locate gas and electric infrastructure, because that information is unavailable spatially in advance. A utility gas line installation has been underway within the city without corresponding spatial support. Maintenance contracts covering water systems beyond the city's boundaries are administered without coordination between the parties involved. These are the same problems Fruitland described at a different scale: infrastructure whose existence is known but whose location, ownership, and service area are undocumented in a form the organizations sharing that ground can see. The near-term return on a regional program is the avoided cost of work performed without knowing what is already in the ground, which the Capital Improvement Project dataset in Chapter 7 is designed to address.

Data currency is the binding problem

Multiple interviewees reported that reliance on outdated information has been a recurring difficulty, and some described how currency is determined today: GIS technicians depend on a supervisor's judgment about whether a dataset is still good. Nothing in the data itself carries that answer. This is the operational form of the caveat raised elsewhere in these interviews, that a system is only as good as what is put into it. Data whose currency cannot be evaluated by the person using it, will eventually be distrusted regardless of its accuracy. The metadata requirements and data quality practices in Chapter 7 are the mechanism by which shared regional data stays usable to organizations that did not create it.

A regional program must fit around workflows already in place

Muskegon was explicit about its conditions: a low barrier to access, no interruption to workflows already in place, and security arranged to integrate organizations instead of ranking them. City maintenance crews already track assets through a separate work order platform, moving information from field technicians to that system to administrative staff, and a regional program requiring that flow be rerouted would be resisted. Asked what needed to be in place before participating, the response was that nothing was required and a request-based service model would work as is. The participation tiers in Chapter 5 and the security model in Chapter 6 should be evaluated against whether they add a layer to existing operations or insert themselves into the middle of them, and the business system integration in Chapter 10 should treat existing work order platforms as systems to connect to. Muskegon also raised shared GPS equipment as a straightforward regional benefit, a low-cost early demonstration consistent with the equipment strategy in Chapter 8.



The benefit is institutional

Participants framed value in terms of succession. A documented corridor, one respondent observed, principally benefits the next administration, a point Fremont made twice over by bringing its incoming city manager into the conversation. Institutional memory that survives staff turnover is the program's central long-term benefit, and data that is never maintained is its central operating risk. Both reinforce the data governance commitments in Chapter 7 and the emphasis in Chapter 13 on delivering visible results early, sustaining participation through the years before the long-term benefit becomes apparent.

A working regional precedent carries weight.

Fremont named REGIS as the model to emulate, on the grounds that it is a known success in the region. Chapter 3 examines REGIS in detail, including the reasons for its longevity and the architectural lesson this roadmap takes from it. That a city manager named an existing regional consortium unprompted indicates the concept requires little introduction in this region.

Current State of GIS

The assessment found that GIS is already providing significant value throughout the study area . Many organizations use GIS daily to support public works operations, transportation planning, utility management, emergency management, parcel administration, planning and zoning, asset inventories, environmental management, parks and recreation, and economic development.

These existing investments provide a strong foundation upon which a regional program can be built. As described above, however, those capabilities are unevenly distributed, varying with staffing, available funding, organizational priorities, and historical investment. This diversity should not be viewed as a weakness. Instead, it reflects the realities of local government and reinforces the need for a flexible regional model capable of supporting organizations at different stages of GIS development, a need addressed directly by the Regional GIS Maturity Model in Chapter 3 and the scalable participation principles in Chapters 4 and 5.

Key Assessment Findings

While individual organizations differ considerably, several themes consistently emerged throughout both the survey responses and stakeholder interviews. Each finding shaped the recommendations developed in the chapters noted.

GIS is Widely Valued

The strongest finding from the assessment was the widespread recognition among responding organizations that GIS provides measurable value to local government operations. Organizations



consistently described GIS as an important tool for improving efficiency, supporting planning, managing infrastructure, and communicating information. Even agencies with limited GIS capabilities expressed interest in expanding their use of geospatial technology if additional support and shared resources were available. This broad recognition provides an excellent foundation for regional collaboration.

GIS Maturity Varies

No two organizations currently operate GIS in exactly the same way. Some agencies maintain enterprise GIS environments supported by dedicated GIS professionals. Others rely upon planners, engineers, assessors, IT personnel, or public works staff who perform GIS responsibilities alongside numerous other duties. Several organizations currently depend upon county GIS departments or consultants for technical support. These differences reinforce the importance of creating scalable participation options rather than expecting every organization to operate identical GIS programs (Chapters 3 through 5).

Staffing is the Greatest Constraint

Across nearly every interview, organizations identified staffing as one of the primary barriers to expanding GIS. Challenges included limited personnel, competing priorities, lack of specialized GIS expertise, difficulty maintaining current datasets, limited time for training, and budget constraints with regard to licensing. Many agencies indicated that additional software alone would not solve these challenges. Instead, organizations expressed strong interest in regional technical assistance, shared services, and practical training opportunities. These needs are addressed by the shared platform covered in Chapter 6, the regional services in Chapter 10, and the workforce development strategy in Chapter 11.

Data is the Region's Most Underutilized Asset

The assessment found that organizations throughout the region treat authoritative geographic data as a valuable asset. They invest in maintaining it, rely on it in daily operations, and expressed consistent interest in improving its quality, standardization, accessibility, and sharing. The survey results show how much of that value remains unrealized: 19 of 48 responding organizations report no regular data sharing, and only 4 maintain written or organization-wide data standards. Information collected by one organization could provide significant value to neighboring communities, counties, utilities, and regional planning efforts, but today it rarely travels beyond the organization that maintains it. This finding directly motivates the Regional Data Strategy in Chapter 7.



Regional Collaboration Faces Virtually No Opposition

When asked directly about interest in regional GIS collaboration, 26 of 46 responding organizations answered yes and 19 answered maybe. Only one answered “no.” Half of all respondents (24 organizations) went further, expressing willingness to participate in a pilot project. The conditional middle is instructive rather than discouraging: the most common readiness response was “interested but need significant support,” indicating that hesitation reflects capacity constraints, not resistance to the concept. Organizations generally favored a collaborative model that enhances existing investments rather than replacing local GIS programs, the model formalized as the RIIMP in Chapter 4.

Infrastructure Coordination is a Significant Opportunity

Many stakeholders discussed challenges associated with coordinating transportation projects, utility improvements, Capital Improvement Programs, and other infrastructure investments. Organizations recognized that improved communication regarding planned projects could reduce duplication of effort, improve scheduling, strengthen grant applications, and maximize public investment. Participants also expressed interest in utilizing GIS as a regional planning platform that allows organizations to better coordinate projects across jurisdictional boundaries. Chapter 7 addresses this opportunity directly through a shared regional Capital Improvement Project dataset integrated with the Michigan Infrastructure Council's MiDIG portal.

Regional Strengths

The assessment identified several strengths that position WMSRDC for successful implementation of a regional GIS program: strong relationships among member communities, existing investments in GIS technology, valuable authoritative datasets maintained throughout the region, organizational willingness to collaborate, increasing recognition of GIS as a business system, growing interest in regional planning, existing partnerships with state and regional organizations, and WMSRDC's established role as a regional convener.

These strengths significantly reduce the barriers associated with launching a regional initiative.

Opportunities for Growth

The assessment also identified several opportunities that can substantially improve regional GIS capabilities over time: expanding regional data sharing (Chapter 7), standardizing core datasets (Chapter 7), coordinating Capital Improvement Programs (Chapter 7), providing shared ArcGIS Online services (Chapter 6), developing regional applications (Chapter 6), supporting grant development (Chapter 9), and improving infrastructure asset management (Chapters 8 and 10).

Collectively, these opportunities represent a practical path toward stronger regional collaboration, and the remainder of this report develops each of them in detail.



Summary

The GIS Readiness Assessment confirms that the participating organizations within WMSRDC possess many of the foundational elements necessary to build a successful RIIMP. Organizations throughout the region recognize the value of GIS as a tool for supporting infrastructure management, planning, emergency response, economic development, and public service delivery. Communities have already invested in technology, developed valuable geographic datasets, and established strong working relationships that provide an excellent foundation for future regional collaboration.

At the same time, the assessment identified several common challenges that limit the full realization of GIS across the region. These challenges are largely organizational rather than technological. Limited staffing, varying levels of GIS maturity, inconsistent data standards, and the absence of a coordinated regional framework have made it difficult for many organizations to fully leverage their existing investments or collaborate effectively across jurisdictional boundaries. These findings reinforce the idea that the region's greatest opportunity is not to create entirely new GIS programs, but to better connect the people, information, technology, and partnerships that already exist.

Ultimately, the GIS Readiness Assessment demonstrates that the communities assessed are well-positioned to move beyond independent GIS implementations toward a coordinated regional approach. Understanding where the region stands today is only the first step; the more important question is what the future of GIS in the region should look like. The following chapter presents that shared regional vision and introduces the Regional GIS Maturity Model, a framework through which organizations of all sizes can grow together.

CHAPTER 3: Regional GIS Vision & Maturity Model

From Individual GIS Programs to a Connected Region

The GIS Readiness Assessment demonstrated that GIS is already providing significant value across the organizations that manage most of the region's infrastructure: its counties, road commissions, cities, and utilities. It also revealed that this value is concentrated. The region's most numerous governmental units, its townships and villages, largely operate with little or no dedicated GIS capability, and most that responded described themselves as interested but in need of significant support.

These two findings together define the region's opportunity. It does not lie in expanding GIS within individual organizations alone, and it certainly does not lie in a program built only for the organizations that already have capability. It lies in connecting the region's existing investments



through a shared framework while extending low-barrier participation to the majority of organizations that cannot justify independent GIS programs of their own.

A Shared Regional Vision

The long-term vision for the region is to create a connected, collaborative, and sustainable regional GIS program that enables every participating organization, regardless of size or technical capacity, to leverage trusted geographic information in support of better decisions, stronger partnerships, and more efficient public services.

This vision rests on five commitments. They are stated here at the level of vision; Chapter 4 translates them into the RIIMP's operating principles, and Chapter 5 into its governance principles.

1. *Collaboration Over Isolation.* Communities throughout the region face many of the same challenges. Roads cross jurisdictional boundaries, utilities serve multiple communities, watersheds extend across counties, and emergency incidents require coordinated responses. Rather than addressing these challenges independently, organizations should work together through shared governance, common standards, and coordinated planning. Regional collaboration does not replace local decision-making; it strengthens it by providing better information, broader perspectives, and shared resources.
2. *Local Ownership, Regional Value.* One of the most consistent messages received during stakeholder interviews was that organizations want to retain ownership and responsibility for their own data. This roadmap embraces that principle. Authoritative information should remain under the stewardship of the organization that creates and maintains it. WMSRDC's role is not to replace these responsibilities but to connect them through common standards, shared services, and regional coordination, so that data collected by one organization becomes valuable to many others.
3. *GIS as a Business System.* Historically, GIS was often viewed as specialized mapping software used primarily by planners or GIS professionals. Today, GIS supports virtually every function of modern government, from infrastructure and asset management through transportation planning, emergency response, public works, utilities, economic development, natural resource management, and community engagement. The RIIMP recognizes GIS as a business platform that supports organizational decision-making rather than simply producing maps.
4. *Building Capacity Together.* Every participating organization enters this roadmap from a different starting point. Some maintain enterprise GIS environments with dedicated staff; others rely on a planner, engineer, assessor, or public works employee who uses GIS as one of many responsibilities. This diversity should be viewed as a regional strength. Organizations should not be expected to reach the same destination at the



same time. Instead, WMSRDC should provide scalable services that allow every organization to continually increase its GIS capabilities according to its own priorities and available resources.

5. *Continuous Improvement.* Technology, organizational priorities, funding opportunities, and public expectations will continue to evolve. The RIIMP is therefore designed as a framework for continuous improvement rather than a fixed implementation plan. Regional standards, governance, training, and shared services should evolve alongside the needs of participating organizations.

A Vision for the Future

Successful implementation of this roadmap will result in a region where geographic information is trusted, current, and easily accessible; organizations collaborate routinely rather than only when necessary; infrastructure projects are coordinated across jurisdictional boundaries; communities of every size have access to modern GIS capabilities; and decision-makers have timely access to the information needed to guide investments and public policy.

Rather than viewing GIS as an isolated technical function, organizations throughout the region will recognize geographic information as a strategic asset that supports nearly every aspect of government operations.

The Regional GIS Maturity Model

Achieving this vision requires recognizing that organizations progress through different stages of GIS development.

The Regional GIS Maturity Model provides a framework for understanding where organizations are today and identifying practical opportunities for future growth.

Importantly, the maturity model is not intended to rank or compare organizations. Instead, it serves as a planning tool that helps agencies identify appropriate next steps based on their current capabilities and business needs.

Progress should be measured against an organization's own development over time rather than against other communities.

Five Dimensions of GIS Maturity

Organizational maturity should be evaluated across five interconnected dimensions: People, data, technology, processes, and collaboration. For additional details see Figure 1.

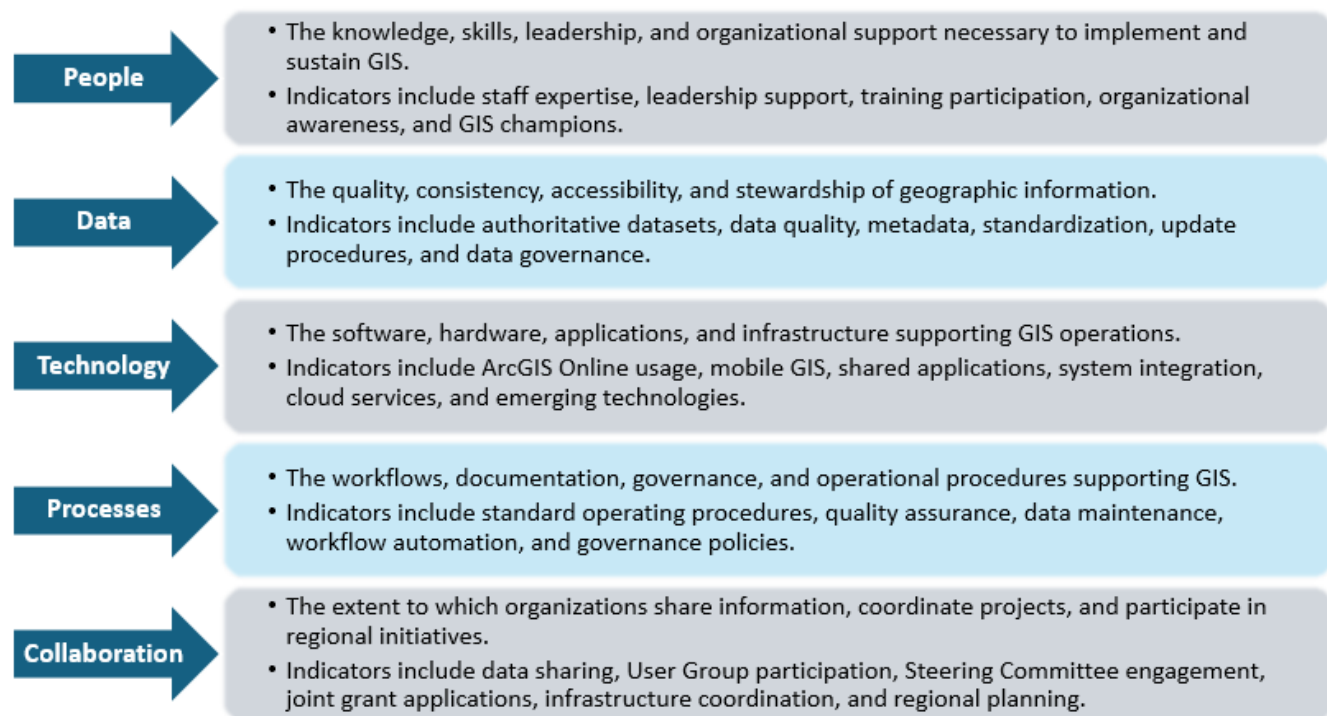


Figure 1. Five Dimensions of GIS Maturity

Levels of Maturity

Organizations generally progress through five levels of GIS maturity. The levels and dimensions work together: an organization may sit at different levels across the five dimensions, perhaps operating modern technology while its processes remain informal, and the level descriptions below summarize the overall patterns that typically emerge. When using the model as a planning tool, organizations should assess each dimension individually, since the lagging dimension is usually where the next practical investment belongs.

Level 1 – Emerging

Organizations are beginning to explore GIS.

Characteristics include:

- Limited-to-no GIS usage
- Few digital datasets
- Minimal staff expertise
- Project-based implementation
- Little formal governance

The focus at this stage is building awareness and demonstrating value.



Why it matters: Without basic GIS capacity, staff rely on manual processes for tasks (e.g., permitting, asset tracking, mapping requests) that neighboring communities are already automating, and the organization misses out on regional data sharing, shared applications, and grant support tied to demonstrated GIS readiness. Limited time and budget are real, legitimate constraints. Without outside support, they tend to be self-reinforcing, and the gap between Level 1 organizations and their regional peers widens each year.

Level 2 – Developing

GIS is becoming integrated into day-to-day operations.

Characteristics include:

- Regular GIS use
- Initial data standards
- Growing organizational support
- Basic mobile workflows
- Participation in regional training

Organizations begin transitioning from individual projects to sustainable GIS operations.

Why it matters: Moving beyond one-off projects gives the organization repeatable workflows and a foundation of standardized data. This reduces the risk that progress stalls when a single staff member leaves, increases efficiency (freeing up time), and positions the organization to participate in early regional initiatives.

Level 3 – Established

GIS supports multiple departments and business functions.

Characteristics include:

- Dedicated GIS responsibilities
- Standardized workflows
- Shared regional datasets
- Regional collaboration
- Routine data maintenance
- Executive support

Organizations become active participants within the RIIMP.

Why it matters: Once data is standardized across departments and not just digitized within them, the organization gains access to regional datasets, shared applications, and technical support that would be cost-prohibitive to build independently. Standardized data also makes



reporting and audits significantly easier, since information no longer has to be reconciled from inconsistent, department-specific formats.

Level 4 – Integrated

GIS is recognized as a strategic organizational asset.

Characteristics include:

- Enterprise GIS (organization-wide GIS capability; not necessarily ArcGIS Enterprise)
- Data governance and reliability safeguards
- System integration
- Advanced applications
- Regional leadership
- Infrastructure coordination
- Shared services
- Comprehensive governance

Organizations actively contribute to regional innovation.

Why it matters: Enterprise GIS and system integration let the organization coordinate across departments and with regional partners in real time, supporting more efficient infrastructure planning, faster emergency response, and stronger, more competitive grant applications. The data governance established here is also what makes an organization's information reliable enough to support the predictive analytics and AI-driven decision-making introduced at Level 5.

Level 5 – Optimized

GIS is fully integrated into organizational decision-making and regional collaboration.

Characteristics include:

- Predictive analytics
- Artificial intelligence
- Digital twins
- Real-time operational awareness
- Continuous improvement
- Regional leadership
- Innovation

Organizations at this level help shape the future direction of regional GIS while mentoring others throughout the region.



Why it matters: Organizations at this level can anticipate problems rather than react to them. Predictive analytics and real-time data are now able to guide investment decisions while also shaping regional standards and mentoring less mature organizations, which strengthens the entire regional network.

Where the Region Stands Today

Survey responses suggest that the large majority of responding organizations currently operate at Levels 1 and 2. A smaller group has reached Level 3, and only a few approach Level 4. No organization in the region currently operates at Level 5. That distribution describes the organizations that responded, which, as discussed in Chapter 2, are likely the region's most GIS-engaged. Accounting for the townships and villages that did not respond, the true regional distribution is almost certainly more bottom-heavy still, with well over half of the region's governmental units at Level 1. This is not a discouraging picture; it is a typical one for a region at the beginning of a coordinated GIS program, and it defines where the program's center of gravity belongs: helping Level 1 and 2 organizations establish sustainable operations, not pushing the region's most mature organizations toward Level 5.

Benchmarking GIS Across Michigan's MPOs and RPAs

Placing WMSRDC on the spectrum of Michigan's regional agencies makes the opportunity concrete and demonstrates that the two ends of the maturity model are not theoretical. The assessment benchmarked how peer regional agencies across Michigan deliver GIS services to their members, drawing lessons both from what has worked and from where early architectural decisions created lasting constraints.

At the mature end, the Southeast Michigan Council of Governments (SEMCOG) illustrates what a fully developed regional program looks like. SEMCOG staff create and maintain regional GIS data supporting planning and modeling and facilitate a quarterly Southeast Michigan GIS User Group. Its open data portal provides regional spatial data alongside interactive mapping, community profiles, master plan tools, and data and mapping services customized for member communities. SEMCOG operates at a scale WMSRDC will not replicate, serving Michigan's largest metropolitan region with resources to match, and the comparison is offered as a long-horizon reference point rather than a target. What it demonstrates is that the model this roadmap proposes, a regional agency serving as data steward, application provider, convener, and training hub, is proven in Michigan at Level 4 to 5 maturity.

Also instructive is the Northeast Michigan Council of Governments (NEMCOG), a smaller regional agency serving a rural region comparable to WMSRDC's. NEMCOG provides fee-based GIS services directly to its member communities, including parcel mapping, 911 mapping, zoning maps, recreation plans, infrastructure maps, cemetery maps, and asset mapping.



NEMCOG's technology footprint reflects the practical constraints of a small agency that grew its services incrementally over many years, and remains largely desktop-centric, built on workflows and software generations approaching or past end of support. WMSRDC begins from a different technical position and should not replicate that architecture. What NEMCOG demonstrates is demand: communities in rural Michigan will pay for GIS services from a trusted regional agency when those services are offered. That demand signal matters for the WMSRDC region, where dozens of townships and villages lack GIS capability, though the two regions differ in an important way. In Northeast Michigan, the regional agency is often the only provider available. In the WMSRDC region, several counties already operate capable GIS programs that serve their local communities. Muskegon County, for example, hosts enterprise GIS environments and web services on behalf of municipalities within the county, a working model of exactly the county-as-hub role described in Chapter 4's information flow. Where a county program exists, the RIIMP's role is to support, connect, and amplify it, never to compete with it. WMSRDC's direct services are aimed at the substantial population of communities that currently have no county GIS program to lean on, and at regional needs, such as cross-county coordination and standardization, that no single county can address alone.

The closest analog to what this roadmap proposes is REGIS, the Regional Geographic Information System operated by the Grand Valley Metropolitan Council (GVMC). REGIS is a true consortium in which roughly twenty cities, townships, and quasi-governmental organizations share a common database, infrastructure, and suite of applications supported by dedicated REGIS staff, making it one of the largest multi-participant local government GIS programs in the country. Its sustained popularity is the strongest available evidence that communities within the region will join and stay in a shared regional GIS when the value is real.

REGIS also offers this roadmap its most important design lesson. The program was built in an earlier technology era around a shared enterprise system, an architecture that made sense when it was created but that now collides with how Esri licenses its modern platform. ArcGIS Pro named users must belong to an organization's own subscription, and an ArcGIS Enterprise deployment can participate in a collaboration with only one ArcGIS Online organization. For a program built as a single shared system, constraints like these complicate the moment participants mature into needing their own environments. REGIS was not wrong; it was early. The RIIMP is designed with the benefit of hindsight REGIS could not have: by building the regional cooperative natively in ArcGIS Online, WMSRDC's organization can maintain partnered collaborations with many independent ArcGIS Online organizations at once, share more broadly still through cross-organization groups, and serve as the single collaboration endpoint for members operating ArcGIS Enterprise. The graduation path described in Chapter 6, in which organizations that mature into their own subscriptions remain full collaborators rather than departing members, is a direct application of this lesson.



Together, these three reference points frame WMSRDC's actual position and its path. SEMCOG proves the institutional model at full maturity. NEMCOG proves the demand for regionally provided GIS services among small rural communities. REGIS proves that WMSRDC organizations will commit to a shared regional system, while also marking the architectural trap to avoid. WMSRDC's position relative to these peers is stronger than its lack of a formal GIS program suggests. It already operates exclusively on current-generation, cloud-first tooling, ArcGIS Online and ArcGIS Pro, meaning it starts with none of the legacy systems, desktop-era workflows, or shared-enterprise architecture its peers must maintain or unwind. It already holds the convening relationships that took those agencies years to build. What WMSRDC lacks is not technology or trust but a formalized, funded, member-facing service program and the visibility that comes with announcing it. The RIIMP is that announcement. Coordination with these and other regional agencies through the Michigan Infrastructure Council's multi-regional pilot program also supports the statewide consistency objectives discussed in Chapter 7.

Advancing Together

One of the defining principles of this roadmap is that organizations do not need to reach the highest level of maturity before participating in regional initiatives. A township utilizing a regional map viewer contributes just as meaningfully to regional collaboration as a county operating an enterprise GIS. Likewise, a utility sharing infrastructure information creates regional value regardless of its internal technology platform.

The RIIMP is intentionally designed to meet organizations where they are today while providing clear opportunities for future growth. Every organization has a place within the regional program.

Summary

The GIS Readiness Assessment demonstrated that the organizations assessed already possessed the foundational elements necessary to build a successful regional GIS program. The vision presented in this chapter expands that foundation into a broader strategy for regional collaboration, one in which trusted information, shared services, and coordinated planning become common resources available to every participating organization.

The Regional GIS Maturity Model reinforces that this vision is achievable because it recognizes that organizations progress at different rates and require different levels of support. Success is not defined by identical technology or staffing models, but by continuous improvement and increasing collaboration over time.

Achieving this vision requires more than aspiration; it requires an organizational framework capable of connecting people, information, technology, and partnerships into a coordinated regional effort. The next chapter defines that framework: the RIIMP.



CHAPTER 4: Regional Infrastructure Information Management Program

A New Model for Regional Collaboration

The findings of Chapter 2 established that the region possesses many of the building blocks for a successful regional GIS program: existing technology investments, valuable datasets, and organizations open to working together. The assessment also highlighted a common challenge. While individual organizations have developed GIS capabilities that meet their local needs, those capabilities often operate independently. Data is maintained in different formats, applications are developed separately, technology investments are duplicated, and opportunities to coordinate infrastructure projects or share resources are frequently missed.

These findings point to a larger opportunity. Rather than expanding GIS independently within each organization, the region can create a collaborative framework that connects existing investments into a coordinated regional system. This approach preserves local ownership and operational independence while enabling organizations to work together more effectively through shared standards, shared technology, and shared services.

This roadmap recommends that WMSRDC establish a Regional Infrastructure Information Management Program (RIIMP) to provide that framework.

The RIIMP is not a new department or a single software platform. It is a regional service model that integrates governance, data, technology, partnerships, training, and collaboration into a sustainable program that supports communities throughout the region.

Why a Regional Infrastructure Information Management Program?

Infrastructure is one of the region's largest public investments. Roads, bridges, water systems, sanitary sewers, stormwater infrastructure, parks, public buildings, utilities, communications networks, and natural resources require continuous planning, maintenance, and investment. Every year, local governments, counties, utilities, and state agencies commit significant financial resources toward maintaining and improving these assets.

Increasingly, these decisions depend upon accurate geographic information. Questions such as:

- Where should infrastructure investments be prioritized?
- What projects are planned nearby?
- Which assets require replacement?
- How can emergency responders access critical infrastructure information?
- Where should future development occur?



- Which projects strengthen future grant applications?

are all fundamentally geographic questions. Yet the information required to answer them is often distributed across multiple organizations, maintained in different systems, and collected using different standards.

The RIIMP provides a framework for bringing this information together while allowing each organization to remain responsible for its own authoritative data. Rather than creating one centralized database, the program creates a connected regional information ecosystem.

From GIS Program to Regional Service

Traditionally, GIS has often been viewed as an internal technology function supporting mapping and data management. The RIIMP expands this role significantly. Instead of asking *"How do we provide GIS?"*, the program asks *"How do we provide better regional services using geographic information?"*

This shift changes GIS from a departmental technology into a regional business service supporting functions from infrastructure management and Capital Improvement Program coordination through emergency management, community planning, utility coordination, and grant development. GIS becomes the common operating picture that enables organizations to make more informed decisions together.

The Role of WMSRDC within the RIIMP

WMSRDC is uniquely positioned to lead this initiative. As the regional planning agency, WMSRDC already serves as a trusted convener, bringing together local governments, counties, state agencies, transportation organizations, utilities, emergency managers, and community partners to address issues that extend beyond individual jurisdictional boundaries.

The RIIMP expands this role by positioning WMSRDC as the Regional Information Integrator. WMSRDC already connects people and builds partnerships across jurisdictional boundaries; that is what a regional planning commission does. The RIIMP extends that same convening role to data and technology, and the extension is natural rather than novel: the assessment showed that the barriers to regional data sharing are organizational trust and coordination, not technology, which are precisely the currencies WMSRDC already holds. Rather than owning local information or directing local operations, WMSRDC becomes the organization that connects people, data, technology, and partnerships.

Its responsibilities include:

- Coordinating regional GIS initiatives.
- Administering shared GIS services.
- Developing and maintaining regional standards.



- Facilitating data sharing.
- Providing technical assistance.
- Delivering training and education.
- Supporting regional planning initiatives.
- Coordinating grant opportunities.
- Identifying opportunities for collaboration.
- Promoting continuous improvement throughout the region.

This service-oriented approach allows WMSRDC to strengthen existing local GIS programs rather than replace them. That commitment applies with particular force to the region's county GIS programs. Where a county already hosts GIS services on behalf of its communities, that county remains the first-line provider and authoritative hub for its jurisdiction, consistent with the information flow described later in this chapter. The RIIMP connects and amplifies these programs. WMSRDC's direct services are aimed at the many communities that have no county GIS program to lean on, and at genuinely regional needs, such as cross-county coordination and standardization, that no single county can address alone.

Guiding Principles

The RIIMP is founded upon five operating principles that translate the vision commitments of Chapter 3 into program design. They shape every recommendation contained within this roadmap.

- *Local Stewardship.* The organization closest to the data remains responsible for maintaining its accuracy. Cities maintain city infrastructure, counties maintain countywide datasets, utilities maintain utility information, and state agencies maintain statewide information. WMSRDC facilitates coordination, not ownership. Chapter 7 develops this principle into the Regional Data Strategy's stewardship framework.
- *Shared Regional Value.* Information collected for one purpose often has value far beyond its original use. A road centerline supports emergency response, transportation planning, utility coordination, economic development, and public communication. The program encourages information to be collected once, maintained by its authoritative steward, and reused many times.
- *Collaboration Before Duplication.* Organizations should build upon one another's work rather than independently developing similar datasets, applications, and workflows. Shared services reduce costs while increasing consistency and long-term sustainability.
- *Scalable Participation.* Not every organization requires the same level of GIS capability, and participation should be flexible. A township beginning its GIS journey should receive value from the program just as readily as a county operating a mature enterprise GIS



environment. The Regional GIS Maturity Model in Chapter 3 gives organizations the framework for locating themselves and growing at their own pace.

- *Continuous Improvement.* The program is designed to evolve over time. Technology, organizational priorities, funding opportunities, and regional needs will continue changing, and the program should remain adaptable while maintaining consistent governance and long-term strategic direction.

Core Components of the Program

The RIIMP is built upon six interconnected components. Each is summarized here and developed fully in its corresponding chapter.

Governance (Chapter 5). A collaborative governance framework establishes regional priorities, standards, and decision-making while ensuring that participating organizations have a voice in the future direction of the program.

Data (Chapter 7). Authoritative regional datasets provide the foundation for planning, analysis, emergency response, infrastructure management, and decision-making. Data governance ensures that information remains accurate, consistent, and trusted.

Shared Technology (Chapter 6). Cloud-based GIS services, shared applications, dashboards, mobile solutions, and standardized workflows reduce barriers to participation while providing enterprise-level capabilities to organizations of every size.

Regional Services (Chapters 8 and 10). WMSRDC provides services that individual organizations may find difficult or cost-prohibitive to develop independently, including shared application deployment, regional data management, Capital Improvement Program coordination, drone and remote sensing support, technical assistance, infrastructure analysis, and regional reporting.

Workforce Development (Chapter 11). Training, mentoring, technical assistance, and professional networking strengthen regional expertise while ensuring that organizations continue developing their GIS capabilities.

Partnerships (Chapter 9). Regional collaboration among local governments, counties, utilities, state agencies, educational institutions, nonprofit organizations, and private-sector partners creates opportunities that no individual organization could achieve independently.

How Information Flows Through the Region

One of the defining characteristics of the RIIMP is its federated information model. Information flows both upward and downward through the regional network (Figure 2).

Upward Flow



Local agencies collect and maintain authoritative information about infrastructure, development, public facilities, and community assets. County governments integrate this local information with countywide data to provide broader regional context. WMSRDC aggregates and standardizes information contributed by local agencies and counties, combining it into a consistent regional dataset that supports regional planning, infrastructure coordination, economic development, emergency management, and grant initiatives. State agencies then draw on this standardized regional information, provided by WMSRDC, to support statewide programs, reporting, and investment decisions, including reporting obligations to federal agencies that rely on consistent, regionally sourced data.

Downward Flow

Federal agencies provide national datasets, funding opportunities, and technical guidance. The State of Michigan distributes statewide datasets, imagery, transportation information, regulatory guidance, and planning resources. WMSRDC integrates these resources into regional applications, shared datasets, and planning tools. Participating counties receive this information to support countywide planning and coordination, and in turn share relevant resources with local governments to support day-to-day operations while eliminating redundant data collection.

This two-way exchange transforms individual datasets into regional knowledge.

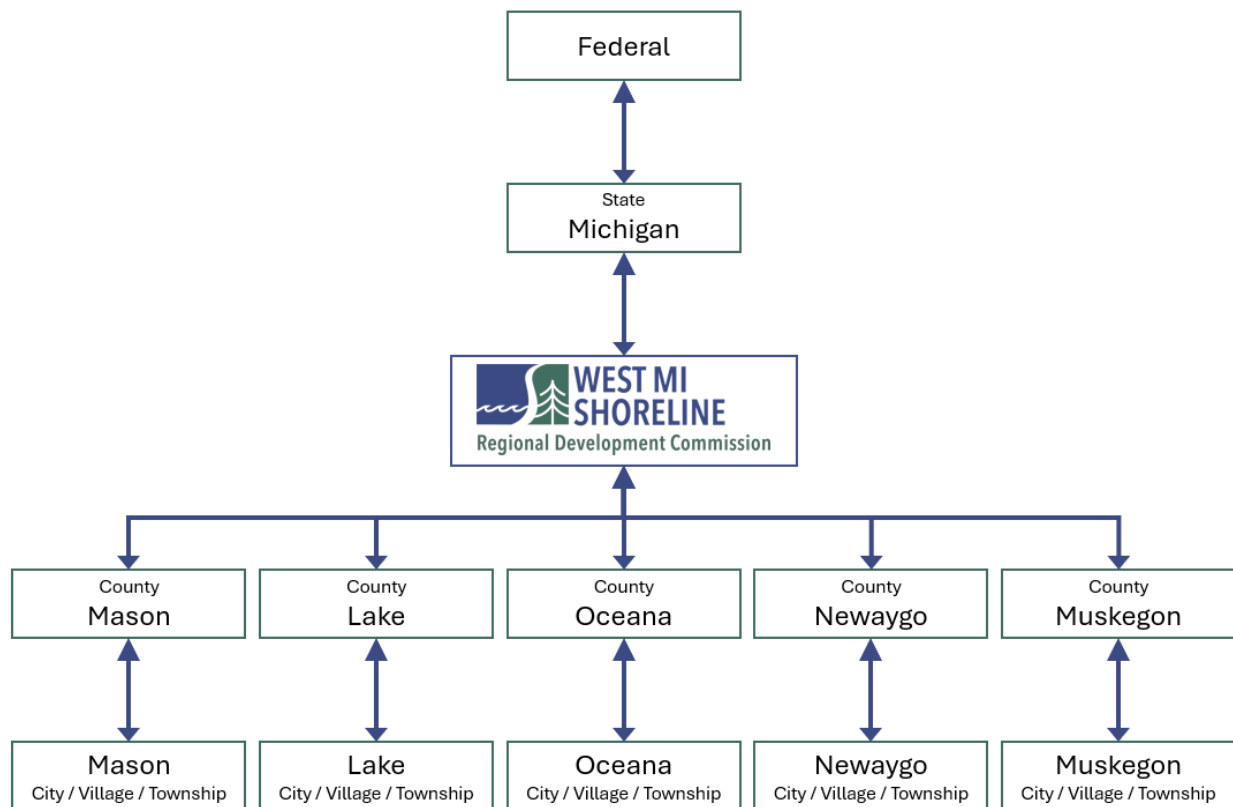


Figure 2. Flow of information

Delivering Regional Value

The RIIMP creates value for every participating organization, made concrete through the performance measures presented in Chapter 12.

For local governments, the program reduces barriers to GIS adoption while providing access to technology, training, technical support, and shared applications.

For counties, it strengthens regional coordination while supporting countywide planning and data management.

For utilities and transportation agencies, it improves communication and coordination of infrastructure investments.

For emergency management organizations, it provides improved situational awareness and access to trusted regional information.

For state agencies, the program provides consistent, regionally sourced information that improves statewide planning, reporting, and investment decisions.

For WMSRDC, it establishes a sustainable regional service that strengthens planning, grant competitiveness, and long-term collaboration.



Most importantly, residents benefit from better coordinated public investments, improved services, and stronger regional partnerships.

Building a Culture of Collaboration

Technology alone will not create a successful regional GIS program. Long-term success depends upon building relationships among organizations that routinely share information, communicate openly, and recognize that many regional challenges can only be addressed collaboratively.

The RIIMP provides the structure that supports this culture. By establishing common governance, shared technology, standardized data, and regular communication, the program creates an environment in which organizations continually learn from one another while collectively improving regional decision-making.

Summary

Implementation of the RIIMP represents the central recommendation of this roadmap. Rather than proposing a series of independent GIS initiatives, it establishes a comprehensive framework through which WMSRDC can coordinate regional collaboration, strengthen partnerships, improve data quality, expand shared services, and support more informed infrastructure planning throughout the region.

The program is intentionally designed to be scalable, sustainable, and adaptable. Organizations retain ownership of their data and decision-making authority while benefiting from shared resources, common standards, and regional coordination. As participation grows, the value of the program increases for every member, creating a network effect in which shared information and collaboration continually strengthen the region.

Ultimately, the Regional Infrastructure Information Management Program is not about implementing a new GIS system. It is about creating a regional information ecosystem that enables communities to plan together, invest together, and solve shared challenges together. Realizing it requires a governance framework that defines roles, establishes standards, and gives participating organizations a voice in how the program evolves; that framework is the subject of the next chapter.



CHAPTER 5: Regional Governance Framework

Creating a Sustainable Foundation for Regional Collaboration

The long-term success of the RIIMP depends upon more than technology, data, and funding. It also depends upon effective governance.

Regional governance provides the structure through which organizations collaborate, establish priorities, make decisions, develop standards, and ensure that the program continues to evolve in response to the needs of participating communities. Without a clear governance framework, even well-designed GIS initiatives can become fragmented as organizations pursue independent priorities, develop inconsistent practices, or duplicate one another's efforts.

The assessment made clear that organizations are willing to collaborate but also value their independence: communities want to maintain ownership of their data, preserve local decision-making authority, and continue managing their own operations while participating in a larger regional initiative. The governance model presented in this roadmap was designed specifically to balance these objectives. It provides regional coordination without centralized control, promotes consistency without eliminating flexibility, and encourages participation while respecting the unique needs and capabilities of each organization.

Governance Philosophy

The RIIMP is built upon a federated governance model, the organizational counterpart of the federated information model described in Chapter 4. Under this approach, participating organizations remain responsible for their own operations, data, and business decisions while collaborating through a shared framework that establishes regional standards, promotes interoperability, and coordinates common initiatives.

Governance is intended to enable collaboration, not create additional bureaucracy.

Every recommendation within this roadmap is guided by five governance principles. These principles carry the vision commitments of Chapter 3 and the operating principles of Chapter 4 into the program's decision-making structure.

Local Authority. Communities, counties, and partner agencies retain ownership of their data, systems, and operational decisions as determined by their respective leadership. The RIIMP does not replace local governance. It provides a mechanism for coordinating activities that benefit multiple organizations.

Shared Responsibility. Regional success depends upon active participation from every organization. Each participating agency contributes knowledge, expertise, and authoritative



information while benefiting from shared technology, technical assistance, training, and regional coordination. The program succeeds because responsibility is shared rather than centralized.

Transparency. Regional priorities, standards, policies, and decisions should be openly communicated. Participating organizations should understand how decisions are made, how priorities are established, and how regional resources are allocated. Transparent governance builds trust and encourages long-term participation.

Flexibility. Communities vary significantly in staffing, technology, organizational maturity, and operational priorities. Regional governance should establish common direction while allowing flexibility in local implementation. Interoperability, not uniformity, is the objective.

Continuous Improvement. Governance should evolve as the region grows. Standards, policies, participation models, and organizational priorities should be reviewed regularly to ensure that the program remains relevant, effective, and responsive to changing needs.

Governance Structure

The RIIMP is supported through three interlocking components, each with a distinct function, working together to guide regional GIS development (Figure 3).

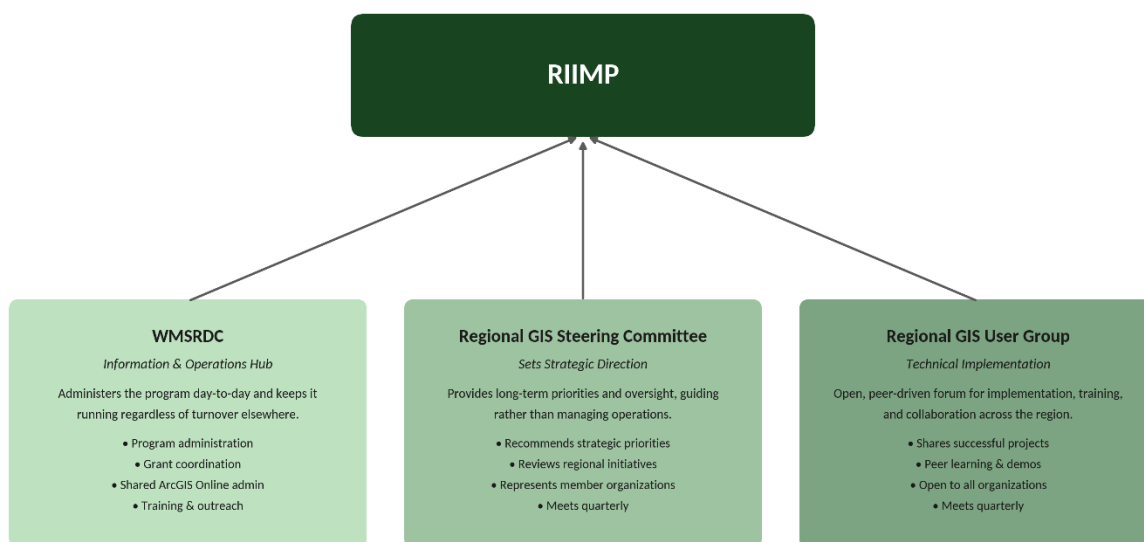


Figure 3. Structured contributions from each component organization to the greater RIIMP.

WMSRDC: Information & Operations Hub

WMSRDC serves as the administrative and operational hub of the RIIMP. As the Regional Information Integrator, WMSRDC is responsible for coordinating the program, facilitating collaboration, administering shared technology, supporting participating agencies, and ensuring



that regional initiatives continue moving forward. WMSRDC also connects the region's collective GIS activity to statewide priorities. While counties and cities maintain their own independent reporting relationships with the state, WMSRDC's regional view brings that information together and helps set the agenda for the Steering Committee's work.

Primary responsibilities include:

- Program administration.
- Strategic planning.
- Budget development.
- Grant coordination.
- Technical assistance.
- Shared ArcGIS Online administration.
- Regional application management.
- Data governance coordination.
- Training and education.
- Communication and outreach.
- Annual reporting.
- Performance measurement.

WMSRDC provides continuity, ensuring that the program remains active regardless of changes within individual organizations.

Regional GIS Steering Committee: Sets Strategic Direction

The Regional GIS Steering Committee provides strategic direction for the RIIMP.

Where WMSRDC manages daily operations, the Steering Committee focuses on long-term priorities, regional coordination, and program oversight, drawing on WMSRDC's regional perspective alongside the priorities individual counties and cities bring from their own relationships with the state. The committee serves as the primary advisory body responsible for ensuring that the program continues to reflect the needs of participating organizations.

Purpose

The Steering Committee should:

- Recommend strategic priorities.
- Review regional initiatives.
- Support implementation of this roadmap.
- Recommend updates to governance policies.
- Review annual performance measures (Chapter 12).
- Identify emerging opportunities.



- Promote regional collaboration.
- Assist with funding priorities.

The committee provides guidance rather than operational management.

Membership

Membership should represent the diversity of organizations participating throughout the region. Representation may include:

- WMSRDC
- County governments, including county GIS program staff
- Municipal governments
- Township representatives
- County Road Commissions
- Utilities
- Emergency Management
- Transportation organizations
- Economic Development
- Environmental organizations
- Educational institutions
- State agency liaisons (as appropriate)

Membership should balance technical expertise with executive leadership to ensure that both strategic and operational perspectives are represented. Participation by county GIS program staff deserves particular emphasis: as Chapter 4 describes, counties that host GIS services for their communities are the first-line providers within their jurisdictions, and the program's standards and priorities should be shaped with them at the table rather than delivered to them.

Meetings

The Steering Committee should meet quarterly, with additional meetings held as needed for major initiatives. Annual responsibilities should include:

- Reviewing implementation progress.
- Evaluating regional priorities.
- Recommending program improvements.
- Reviewing annual budgets.
- Supporting grant opportunities.
- Updating strategic objectives.



Regional GIS User Group: Technical Implementation

The Regional GIS User Group provides the operational and collaborative foundation of the RIIMP.

Where the Steering Committee focuses on strategy, the User Group focuses on implementation, communication, education, and peer collaboration. Participation should be open to any organization within the WMSRDC region with an interest in GIS, regardless of current GIS maturity. This inclusiveness is essential to reducing barriers to participation and encouraging organizations that are just beginning their GIS journey.

Purpose

The User Group provides opportunities to:

- Share successful projects.
- Demonstrate new applications.
- Exchange technical knowledge.
- Discuss operational challenges.
- Explore emerging technologies.
- Review new regional datasets.
- Provide feedback on WMSRDC initiatives.
- Identify opportunities for collaboration.
- Support peer learning.

The User Group should become the primary forum through which the regional GIS community learns from one another.

Meeting Format

Quarterly meetings are recommended. Meetings should include:

- Program updates.
- Agency presentations.
- Technology demonstrations.
- Training sessions.
- Project showcases.
- Guest speakers.
- Open discussion.

Participation Model

The RIIMP is designed to accommodate organizations with varying levels of GIS maturity and available resources. Participation should remain voluntary and scalable. Rather than expecting



every organization to adopt the same level of involvement, agencies should participate according to their needs and organizational goals.

- *Foundational Participants* utilize regional datasets, map viewers, training, and educational resources.
- *Collaborative Participants* actively contribute data, participate in the User Group, and utilize shared applications.
- *Strategic Partners* provide leadership through Steering Committee participation, collaborative planning, regional initiatives, and shared governance.

These tiers parallel the Regional GIS Maturity Model in Chapter 3: an organization at Level 1 or 2 will typically enter as a Foundational Participant, and participation naturally deepens as maturity grows. No tier is a prerequisite for value, and movement between tiers is expected. This flexible participation model encourages broad regional involvement while recognizing organizational diversity.

Decision-Making

The governance framework emphasizes collaboration and consensus whenever practical. Major regional initiatives should be developed through consultation with participating organizations rather than unilateral decision-making, prioritizing regional benefit, transparency, practical implementation, technical feasibility, financial sustainability, and organizational flexibility.

Whenever consensus cannot be achieved, WMSRDC should work with the Steering Committee to identify practical solutions that balance regional objectives with local needs.

Governance Responsibilities

To ensure clarity and accountability, governance responsibilities should be distributed across participating organizations. Note that the Regional GIS User Group does not lead any regional governance responsibility by design. Its value comes from peer exchange and feedback, not decision-making authority, with implementation itself remaining the responsibility of each individual organization.

Table 3. Governance Responsibilities

Responsibility	Primary Lead	Supporting Partners
Program Administration	WMSRDC	Steering Committee
Strategic Direction	Steering Committee	WMSRDC
Technical Assistance	WMSRDC	User Group
Data Stewardship	Authoritative Agencies	WMSRDC
Regional Standards	WMSRDC	Steering Committee & User Group
Shared Applications	WMSRDC	Participating Agencies
Training	WMSRDC	User Group
Grant Coordination	WMSRDC	Regional Partners
Performance Reporting	WMSRDC	Steering Committee



This distribution of responsibilities ensures that governance remains collaborative while clearly defining accountability.

Annual Governance Review

Governance should not remain static. Each year, WMSRDC and the Steering Committee should evaluate participation levels, organizational representation, governance effectiveness, regional priorities, emerging technologies, funding opportunities, policy updates, and lessons learned. Recommendations from this review should be incorporated into the RIIMP's annual work plan, informed by the performance measures presented in Chapter 12.

Building Trust

Effective governance is ultimately built on trust. Participating organizations must be confident that:

- Their data will remain under local control.
- Regional standards support rather than restrict local operations.
- Decisions are transparent.
- Every organization has a voice.
- Regional services provide demonstrable value.
- Participation is voluntary and beneficial.

Maintaining this trust is one of WMSRDC's most important responsibilities as Regional Information Integrator. As trust grows, organizations become increasingly willing to share information, coordinate projects, pursue joint funding opportunities, and collaborate on initiatives that strengthen the region as a whole.

Summary

The Regional Governance Framework establishes the organizational foundation necessary to sustain the RIIMP over the long term. Rather than creating a centralized authority, it provides a collaborative structure that connects local governments, counties, utilities, transportation agencies, emergency management organizations, and regional partners through shared leadership and common objectives.

By combining WMSRDC's role as operational hub with the strategic guidance of the Steering Committee and the collaborative energy of the User Group, the governance framework balances regional coordination with local autonomy. This approach encourages participation, strengthens accountability, and creates a transparent process for guiding future growth.



Effective governance is not an end in itself. It creates the trust and organizational stability necessary for regional collaboration to flourish. With this framework in place, the program can begin delivering the shared technology, applications, and services that transform governance principles into practical day-to-day value, beginning with the Shared Regional GIS Platform presented in the next chapter.



CHAPTER 6: Shared Regional GIS Platform

Delivering GIS as a Regional Service

The RIIMP establishes the governance, partnerships, and organizational framework necessary to strengthen regional collaboration. The next step is providing the technology that enables that collaboration to occur efficiently and consistently.

Historically, many organizations have developed GIS independently, selecting software, designing applications, maintaining data, and administering technology based upon local priorities and available resources. While this approach has allowed organizations to build valuable GIS capabilities, it has also resulted in duplicated effort, inconsistent user experiences, varying data standards, and significant differences in technical capacity across the region. As Chapter 2 documented, many communities, particularly smaller municipalities and townships, recognize the value of GIS but face staffing, budget, and expertise barriers that prevent them from implementing or maintaining it.

Rather than expecting every organization to independently develop and maintain a comprehensive GIS environment, this roadmap recommends a shared services approach in which WMSRDC provides a centrally managed regional GIS platform that participating organizations can utilize according to their individual needs.

The goal is not to replace local GIS systems, including the county GIS programs that already host services for their communities (Chapter 4), but to provide enterprise-quality technology and support that expands access, reduces costs, promotes consistency, and strengthens regional collaboration for the organizations that need it.

A Shared Services Model

The Regional GIS Platform should be viewed as a regional service rather than a software deployment. Instead of asking each organization to purchase, configure, maintain, secure, and support identical technology independently, WMSRDC provides a common platform that delivers these capabilities on behalf of participating organizations. This approach allows communities to focus on using GIS to improve their operations while WMSRDC manages much of the underlying technology, administration, and support.

Benefits include reduced implementation costs, lower barriers to GIS adoption, standardized applications, improved cybersecurity, consistent user experience, reduced administrative burden, shared technical expertise, simplified software updates, and regional collaboration by design. This model allows organizations of every size to benefit from enterprise-level GIS capabilities without requiring enterprise-level staffing.



The Regional ArcGIS Online Cooperative

At the center of the Shared Regional GIS Platform is a centrally administered ArcGIS Online Cooperative managed by WMSRDC.

Rather than each participating organization maintaining an entirely separate ArcGIS Online environment, WMSRDC would administer a regional organization that provides secure access to shared datasets, configurable applications, collaboration groups, and regional services. This cooperative approach creates a common operating environment while preserving organizational ownership of data and operational independence. Participating agencies receive access to a professionally managed platform without the complexity of administering the entire environment themselves.

Because the cooperative is cloud-hosted, participating organizations avoid the cost and complexity of maintaining local servers, receive software updates automatically without IT intervention, and can access the platform securely from any location. Alternatively, cloud hosting shifts costs from servers and IT labor to subscription licensing and metered service credits, which are budgeted and managed centrally by WMSRDC; Chapter 14 addresses the management of consumption-based costs as the program grows. Organizations with mature enterprise GIS environments of their own are encouraged to continue operating local infrastructure alongside the cooperative where it makes sense.

As an organization's GIS needs mature, most notably when staff require ArcGIS Pro named users, which Esri's licensing terms reserve for an organization's own dedicated ArcGIS Online subscription, that organization can establish its own ArcGIS Online organization while remaining an active collaborator within the regional cooperative, retaining the same access to shared datasets, applications, and regional services. This transition is a milestone rather than a departure: it reflects the very GIS maturity the program is designed to help organizations reach, achieved without stepping outside the collaborative regional community. This design is informed by the experience of Michigan's longest-running regional GIS consortium, discussed in Chapter 3: an ArcGIS Online cooperative can maintain partnered collaborations with many member organizations simultaneously, whereas architectures centered on a shared enterprise deployment face hard limits, including ArcGIS Enterprise's restriction to collaborating with a single ArcGIS Online organization, precisely when participants mature into independent environments. For members that operate ArcGIS Enterprise, that same restriction makes the cooperative especially valuable: pointing their single available ArcGIS Online collaboration at the regional organization gives them reach to the entire region through one connection.

The ArcGIS Online Cooperative becomes the regional hub through which organizations collaborate, share information, and deploy GIS solutions.



WMSRDC as the Regional GIS Administrator

Operating a regional GIS platform requires consistent administration, governance, and technical support. WMSRDC should serve as the primary administrator of the ArcGIS Online Cooperative with responsibilities that include:

- Managing organizational settings
- User account administration
- Security and access management
- Group administration
- Content organization
- Shared application deployment
- License management
- Solution deployment
- Technical support
- Platform maintenance
- Standards implementation
- Documentation and training

Central administration ensures consistency while reducing the technical burden placed on participating organizations.

Platform Participation

Not every organization requires the same level of GIS capability. Some agencies simply need access to authoritative regional information, while others actively maintain infrastructure data, develop applications, and manage field operations. The platform therefore supports the three participation tiers established in Chapter 5, each with a distinct capability profile:

Foundational Participants primarily consume GIS information. Typical capabilities include access to regional web maps, dashboards, public viewers, reporting tools, read-only datasets, StoryMaps, and planning applications. This tier provides an accessible entry point for organizations beginning their GIS journey.

Collaborative Participants actively maintain information within the regional platform. Capabilities include editing authorized datasets, field data collection, mobile GIS, Survey123, asset updates, quality assurance workflows, and department-specific applications. This tier supports organizations that contribute authoritative information to the regional platform.

Strategic Partners maintain mature GIS programs while collaborating through the Regional ArcGIS Online Cooperative. Capabilities include enterprise GIS integration, shared feature services, advanced applications, system integrations, collaborative content management,



regional analytics, and leadership within regional initiatives. These organizations help drive innovation while supporting the broader regional community.

Shared Regional Applications

One of the greatest advantages of a regional platform is the ability to develop applications once and deploy them many times.

Throughout the assessment, agencies identified numerous operational needs that are common across jurisdictions. Public works departments inspect roads. Utilities manage infrastructure. Planners review development. Emergency managers respond to incidents. Parks departments inventory assets. Although these activities occur within different organizations, the underlying business processes are remarkably similar.

Rather than building separate applications for every organization, WMSRDC can maintain a library of standardized applications that can be configured for individual agencies. Examples include:

- Regional Map Viewer
- Infrastructure Viewer
- Address Management
- Asset Inventory
- Utility Inspection
- Park Inspection
- Bridge and Culvert Inspection
- Stormwater Management
- Development Review
- Grant Project Tracking
- Public Information Maps

This approach reduces development costs while promoting consistency across the region.

ArcGIS Solutions

Esri's ArcGIS Solutions provide an excellent foundation for many common local government workflows.

Rather than requiring every participating organization to independently evaluate and configure these solutions, WMSRDC can deploy standardized regional implementations aligned with the region's governance model and data standards.

Potential solutions include:

- Local Government Basemaps



- Address Data Management
- Road Management
- Pavement Management
- Stormwater Infrastructure
- Capital Improvement Planning
- Park Management
- Code Enforcement
- Building Inspection
- Public Information
- Emergency Management
- Damage Assessment

WMSRDC would evaluate, configure, document, and maintain these solutions while providing training and technical support to participating organizations.

Mobile GIS

Modern GIS extends well beyond the office. Field staff increasingly rely on mobile applications to collect, update, and verify information directly where work occurs. The Regional GIS Platform should support standardized mobile workflows for asset inventories, infrastructure inspections, utility locating, construction monitoring, damage assessment, environmental monitoring, park inspections, trail inventories, road condition assessments, and Capital Improvement documentation.

By standardizing mobile applications across the region, WMSRDC can improve data quality while reducing training requirements and simplifying support.

Dashboards and Operational Awareness

Interactive dashboards transform geographic information into operational intelligence. Rather than reviewing static reports, managers and elected officials gain access to real-time information supporting day-to-day decision-making. Potential dashboards include:

- Regional Infrastructure Dashboard
- Capital Improvement Dashboard, integrated with the MIC's MiDIG portal (Chapter 7)
- Grant Performance Dashboard
- Asset Condition Dashboard
- Public Works Dashboard
- Emergency Operations Dashboard
- Economic Development Dashboard
- Executive Performance Dashboard



These dashboards provide leadership with timely information while improving transparency and communication across organizations.

Security and Access Management

As participation expands, protecting information becomes increasingly important. The Regional GIS Platform should incorporate security into every aspect of administration, including role-based permissions, group-based content sharing, administrative auditing, regular security reviews, standardized user provisioning, backup and recovery procedures (including the recycle bin and scheduled hosted-data exports detailed in Appendix D), and sensitive data classifications aligned with the sharing framework in Chapter 7.

Security should enable collaboration while protecting information appropriate to its level of sensitivity.

Building for the Future

Technology will continue evolving throughout the life of this roadmap. Artificial intelligence, digital twins, Internet of Things (IoT) devices, reality capture, and real-time sensor networks will increasingly become part of local government operations, the capabilities associated with Level 5 maturity in Chapter 3.

The Shared Regional GIS Platform is intentionally designed to accommodate these emerging technologies without requiring organizations to rebuild their GIS environments. Because the platform is cloud-based and vendor-maintained, new capabilities arrive through the platform itself rather than through migration projects, and by emphasizing configurable applications, standards-based interoperability, and standardized data, WMSRDC creates a flexible technology foundation capable of adapting to future innovation while preserving long-term investments.

Summary

The Shared Regional GIS Platform transforms GIS from an individual organizational investment into a regional service available to every participating agency. By centrally administering the ArcGIS Online Cooperative, deploying standardized applications and solutions, supporting mobile workflows, and maintaining shared technology, WMSRDC lowers the barriers to GIS adoption while increasing consistency and collaboration across the region.

Importantly, the platform does not replace local GIS systems or require organizations to abandon existing investments. Instead, it complements and strengthens those investments by providing shared services, technical expertise, and a collaborative technology environment that allows information to move more effectively between local governments, counties, regional organizations, and state partners.



The technology described in this chapter provides the digital infrastructure necessary to support the RIIMP. However, technology alone cannot create a successful regional GIS program. The value of the platform ultimately depends upon the quality, consistency, and stewardship of the information it contains, and that information strategy is the subject of the next chapter.

CHAPTER 7: Regional Data Strategy

Information as Regional Infrastructure

The RIIMP is founded upon a simple principle: better information leads to better decisions.

GIS provides the technology for organizing and visualizing information, but it is the information itself that creates value. The assessment found that organizations throughout the region treat authoritative geographic data as a valuable asset: they invest in maintaining it, rely on it in daily operations, and expressed consistent interest in improving its quality, standardization, accessibility, and sharing. Agencies have invested significant time and resources developing parcel databases, transportation networks, utility inventories, address systems, environmental datasets, and asset management records that support their daily operations.

The assessment also identified a common challenge. Much of this information exists in organizational silos, maintained using different standards, updated on different schedules, and shared inconsistently across jurisdictions. While these datasets often serve local needs effectively, their value increases substantially when they can be connected regionally.

This Regional Data Strategy provides a framework for transforming individual datasets into shared regional knowledge while preserving local ownership and responsibility.

A Regional Information Ecosystem

While gaps exist, the communities that were assessed had already accumulated a rich and diverse collection of geographic information maintained by organizations at every level of government. Local municipalities maintain detailed information about community infrastructure, public facilities, zoning, and local assets. Counties are responsible for countywide datasets such as parcels, addressing, transportation networks, and land records, while utility providers maintain the critical infrastructure necessary for the delivery of essential services. At the state level, agencies such as the Michigan Department of Transportation (MDOT), Michigan Department of Environment, Great Lakes, and Energy (EGLE), and the Michigan Department of Natural Resources (DNR) maintain authoritative statewide transportation, environmental, and regulatory datasets. Federal agencies further complement these resources by providing national reference datasets, aerial imagery, elevation models, hydrography, demographic information, and other foundational geospatial data.



This information moves through the region in both directions. Following the federated model described in Chapter 4, local and county organizations maintain authoritative information that WMSRDC aggregates and standardizes for regional and state use, while state and federal resources flow back down through WMSRDC into applications and datasets that local governments can immediately use.

The Regional Data Strategy applies that model to the region's information specifically and is guided by the six principles below.

1. Authoritative Data Stewardship

The organization closest to the information should remain responsible for maintaining its accuracy. Local governments maintain local infrastructure, counties maintain countywide datasets, utilities maintain utility infrastructure, and state agencies maintain statewide information. WMSRDC coordinates access, standards, and regional integration rather than assuming ownership of local information. This principle preserves accountability while reducing unnecessary duplication.

2. Collect Once, Use Many Times

Data should be collected once by the authoritative source and reused throughout the region whenever appropriate. A road centerline collected by one agency can support emergency response, transportation planning, utility coordination, asset management, and grant applications. Every additional use increases the return on investment of maintaining high-quality data.

3. Standardization Enables Collaboration

Organizations do not need identical systems to collaborate effectively. They do need common standards. Standardized field names, domains, coordinate systems, metadata, symbology, identifiers, and update procedures allow information to move efficiently between organizations while preserving local workflows. Regional standards should focus on interoperability rather than uniformity.

4. Quality Builds Trust

Every decision made using GIS is only as reliable as the information that supports it. Poor-quality or outdated data undermines confidence, leads to inefficient investments, and discourages organizations from sharing information with regional partners. Conversely, high-quality, well-maintained data strengthens collaboration and improves regional decision-making. For this reason, data quality should be treated as a continuous organizational responsibility, not a one-time cleanup effort.



5. Data Should Support Decisions

The objective is not to create the largest possible database. The objective is to provide information that supports better planning, operations, and decision-making. Every dataset maintained through the RIIMP should have a clearly defined business purpose.

6. Continuous Improvement

No regional dataset will ever be perfect. The Regional Data Strategy encourages continual improvement through routine maintenance, quality assurance, training, and collaboration rather than attempting to achieve perfection before sharing information.

Data Governance

Technology manages information while governance manages responsibility. Applying these six principles in practice requires governance policies that define who owns, maintains, edits, and views information. Additionally, it requires stakeholders to define how it is shared, how quality is evaluated, how changes are documented, and how standards are maintained. Clear governance improves confidence in regional datasets while reducing uncertainty regarding stewardship responsibilities.

The Regional Core Data Framework

The Readiness Assessment identified several datasets that provide value across nearly every participating organization. These foundational datasets, presented in Figure 4, should become the initial focus of regional standardization. They are further classified by their relative importance and by the anticipated difficulty of retrieving and maintaining them, as determined by WMSRDC and the project team in light of the assessment findings.

Administrative Boundaries: counties, municipal boundaries, townships, villages, regional boundaries, and school districts.

Transportation: road centerlines, functional classifications, bridges, culverts, traffic control devices, trails, and railroads.

Addressing: site addresses, address points, road names, and emergency service zones.

Parcels and Land Records: parcels, ownership, tax districts, public lands, and easements.

Public Facilities: government buildings, schools, fire stations, police facilities, EMS locations, public works facilities, and parks.

Utilities (where appropriate and subject to security considerations): water, sewer, stormwater, electric, natural gas, communications, and broadband.



Environmental Resources: wetlands, watersheds, floodplains, shorelines, conservation lands, soils, elevation, and land cover.

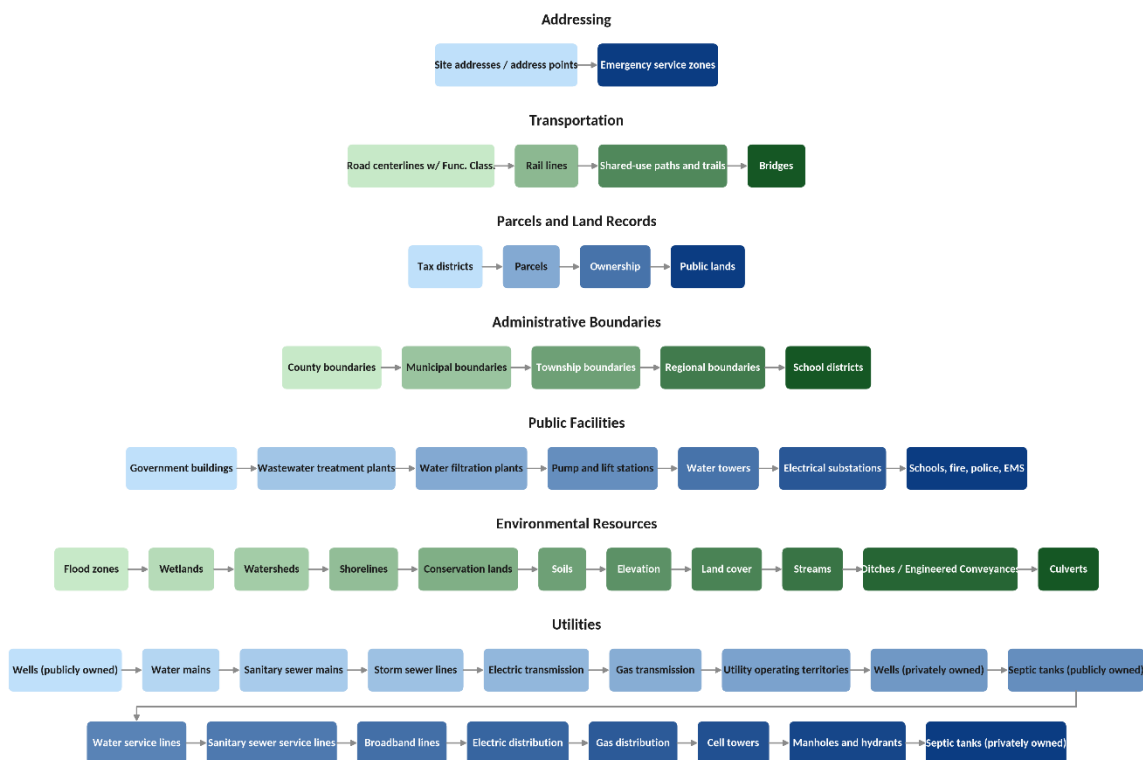


Figure 4. A flow chart displays the anticipated difficulty of acquisition for the core layers.

Capital Improvement Projects

One of the strongest themes identified during stakeholder interviews was the need for better coordination of infrastructure investments.

A standardized regional Capital Improvement Project dataset provides a mechanism for organizations to share planned infrastructure improvements before construction begins. This allows agencies to identify opportunities for collaboration, coordinate schedules, reduce repeated construction activities, and maximize public investment. For example, if a municipality plans to reconstruct a roadway, utility providers may choose to replace aging infrastructure before paving occurs rather than excavating the roadway after completion. Likewise, transportation agencies, counties, utilities, and local governments can identify opportunities to coordinate projects, combine funding, or jointly pursue grants.

Beyond operational coordination, CIP information provides valuable insight into future infrastructure priorities that supports economic development, transportation planning, grant



applications, and regional investment strategies. A shared regional Capital Improvement dataset transforms individual project schedules into a coordinated regional planning tool.

This regional approach to CIPs complements the Michigan Infrastructure Council's MiDIG portal, the statewide platform through which agencies share capital improvement plans to support "dig once" coordination across Michigan. Rather than each participating organization independently maintaining and uploading its own capital improvement data into MiDIG, WMSRDC's regional CIP dataset, compiled from the authoritative information each organization maintains, can serve as the single coordinated feed into the portal, consolidating what would otherwise be dozens of separate submissions into one upload. Individual agencies would still register and log into MiDIG directly, ensuring each remains visible and connected within the statewide system and satisfying MIC's participation goals, while WMSRDC absorbs the ongoing burden of coordinating with local organizations in an effort to keep the underlying data current.

Beyond the portal itself, WMSRDC should coordinate with the other regional agencies participating in the MIC's multi-regional pilot program as data standards are developed, particularly for the CIP dataset and the core datasets in Figure 4, so that the schemas and practices adopted throughout the WMSRDC study area remain consistent with those emerging statewide. Consistency across pilot regions ensures that regional data can be aggregated at the state level and that lessons, tools, and templates developed in one region transfer readily to the others.

Metadata and Documentation

Information has little value if users do not understand its origin, quality, or intended use. Every regional dataset should include standardized metadata describing its authoritative source, update frequency, contact information, coordinate system, collection methodology, accuracy, known limitations, and last revision date. Metadata increases confidence while supporting long-term sustainability.

Data Quality Management

Maintaining trusted information requires continuous quality management. Recommended practices include routine validation, automated quality checks, scheduled updates, field verification, version tracking, error reporting, and periodic audits. Quality assurance should become part of normal business operations rather than an occasional cleanup effort.

Data Sharing

The GIS Readiness Assessment demonstrated widespread interest in improving regional data sharing. The Assessment documented both the gap and the appetite to close it: 19 of 48 responding organizations report no regular data sharing today, and only 4 maintain written or



organization-wide data standards, while survey comments and interviews consistently pointed toward better access to one another's information. Successful sharing requires balancing accessibility with appropriate security. Information should generally be classified into three categories.

- *Public.* Information appropriate for public access, such as parks, trails, public facilities, and public planning maps.
- *Regional Partner.* Information shared among participating organizations, such as Capital Improvement Projects, transportation planning, asset inventories, and infrastructure coordination.
- *Restricted.* Information requiring additional protection, such as critical utility infrastructure, sensitive public safety information, security-sensitive facilities, and protected environmental resources.

This classification framework encourages collaboration while protecting sensitive information.

Summary

The Regional Data Strategy transforms geographic information from a collection of independent organizational datasets into a coordinated regional resource. By emphasizing authoritative stewardship, common standards, quality management, and responsible information sharing, the strategy enables organizations to maintain local ownership while contributing to a shared regional resource.

The GIS Readiness Assessment confirmed that several agencies within the WMSRDC operating territory already possess many of the datasets needed to support regional planning and decision-making. The opportunity is not to recreate these resources, but to better connect them through shared governance, standardized practices, and coordinated stewardship. The Regional Data Strategy provides the foundation upon which all other regional services are built.



CHAPTER 8: Regional Data Acquisition & Field Technologies

Building Physical Capabilities to Support Regional GIS

The Regional Data Strategy presented in the previous chapter establishes how information should be governed, standardized, maintained, and shared throughout the region. However, a successful regional information program also depends on the ability to efficiently collect new information and keep existing datasets current. As infrastructure changes, projects are completed, environmental conditions evolve, and new planning needs emerge, WMSRDC and its regional partners will require practical methods for documenting conditions in the field and integrating that information into the broader the RIIMP's governed regional datasets.

Modern GIS programs increasingly rely on a combination of mobile devices, Global Navigation Satellite System (GNSS) receivers, unmanned aircraft systems (UAS), remote sensing platforms, aerial imagery, LiDAR, and cloud-based processing environments. These technologies extend GIS beyond the office by connecting the physical world directly to the information systems used for planning, infrastructure management, environmental monitoring, emergency response, and decision-making.

Throughout the GIS Readiness Assessment and subsequent stakeholder discussions, participating organizations expressed interest in more efficient methods of collecting infrastructure information, documenting existing conditions, supporting asset inventories, and monitoring projects over time. Many organizations continue to rely on manual field inspections, paper records, consultant-led collection efforts, or aerial imagery that may only be updated every several years. While these approaches remain appropriate for certain applications, they can also be time-consuming, expensive, and difficult to sustain as infrastructure and environmental conditions continue to change.

The RIIMP provides an opportunity for WMSRDC to develop shared data acquisition capabilities that improve how information is collected, maintained, and integrated into regional workflows. Rather than expecting every community to independently purchase specialized equipment, maintain software, and develop technical expertise, WMSRDC can provide access to modern field and remote sensing technologies as shared regional services. This approach expands access to advanced capabilities while improving consistency, reducing duplication, and increasing the long-term value of regional data investments.



A Regional Data Acquisition Strategy

No single technology can address every regional data collection need. A successful data acquisition strategy should instead match the appropriate technology to the scale, accuracy, frequency, and purpose of each project.

Statewide and federal imagery programs provide broad geographic coverage and valuable historical context. Satellite imagery can support regional monitoring and change detection. LiDAR provides detailed elevation and surface information. Mobile devices support routine inspections and asset inventories. High-accuracy GNSS equipment supports precise field collection, while drones provide rapidly deployable aerial data for specific projects and locations.

Together, these technologies create a flexible regional data acquisition framework that allows WMSRDC and participating organizations to select the most appropriate collection method for each need. The objective is not to acquire every available technology, but to establish the capabilities necessary to collect reliable information efficiently and integrate it into the RIIMP.

This strategy should be guided by the same principle established in the Regional Data Strategy: collect information purposefully, maintain it authoritatively, and use it many times. Data acquisition should therefore begin with a clearly defined business need, expected deliverable, responsible steward, and long-term maintenance strategy.

Developing a Regional Drone Program

One of the most significant opportunities identified through stakeholder discussions is the development of a regional Unmanned Aircraft System, or UAS, program operated by WMSRDC.

Although drones are frequently associated with aerial photography, their potential value to the region extends considerably further. A regional drone program could support planning, infrastructure management, environmental monitoring, grant administration, public engagement, economic development, emergency response, and other WMSRDC program areas. When integrated with GIS, drone imagery becomes more than a collection of photographs; it becomes a current, measurable, and geographically referenced source of information that can support decisions throughout the project lifecycle.

Unlike traditional aerial imagery programs, which are generally collected on established multi-year cycles, drones allow information to be collected when and where it is needed. This capability is particularly valuable for projects where conditions change rapidly or where documentation is needed before, during, and after implementation. Construction projects, shoreline restoration, storm damage, habitat improvements, infrastructure projects, and grant-funded initiatives can all benefit from timely aerial documentation.



Perhaps most importantly, a regional drone program would allow communities that could not independently justify the cost, staffing, training, or administrative requirements of operating their own program to access modern aerial data collection capabilities through WMSRDC.

A Regional Service Rather Than Simply a Regional Asset

The greatest value of a WMSRDC drone program would not come from owning an aircraft. It would come from establishing a sustainable regional service.

Purchasing a drone is relatively straightforward. Developing the policies, staff expertise, regulatory compliance, processing workflows, data management practices, and service model necessary to use that equipment effectively requires considerably more planning. For this reason, the recommended approach is to integrate drone operations into the RIIMP as another shared technical service available to WMSRDC programs and participating organizations.

Local governments, road commissions, emergency management agencies, utilities, conservation organizations, watershed groups, parks departments, economic development organizations, and other regional partners could request aerial data collection when current imagery or documentation would improve planning, analysis, project management, or public communication. Some missions may directly support existing WMSRDC programs, while others could eventually be delivered as fee-for-service projects for organizations requiring specialized data collection.

This flexible model allows the program to grow alongside regional demand while maximizing the use of equipment and staff expertise. It also reinforces one of the central principles of this roadmap: specialized capabilities that may be difficult for individual communities to sustain can often be provided more efficiently as shared regional services.

Regional Flight Request and Project Management

As the program develops, WMSRDC should establish a standardized process for requesting and evaluating drone services. A web-based request system integrated with the Regional ArcGIS Online Cooperative could allow participating organizations to submit project information, identify the requested flight area on an interactive map, describe desired deliverables, provide supporting documentation, and identify project schedules and funding sources.

Each request could then move through a structured review process in which WMSRDC evaluates airspace restrictions, project feasibility, staffing requirements, flight time, processing needs, scheduling priorities, and estimated costs where applicable. This approach would provide consistency while creating a documented history of regional service requests, completed missions, and associated deliverables.



Over time, the same system could support mission scheduling, flight records, project status, data delivery, and program performance reporting. Integrating this workflow into the regional GIS platform would also make it possible to identify geographic patterns in service demand and better coordinate data acquisition activities across the region.

Infrastructure Planning and Documentation

Infrastructure planning represents one of the most practical applications of a regional drone program. Current aerial information can help document transportation corridors, construction projects, utility routes, shoreline infrastructure, drainage systems, culverts, bridges, development sites, brownfields, and other assets where visual context improves planning and decision-making.

Drone imagery can be particularly valuable for Capital Improvement Program coordination. Before construction begins, aerial imagery can document existing conditions and provide a common visual reference for agencies coordinating work within the same corridor. During construction, repeat flights can document progress and provide information for project management, public communication, and grant reporting. Following completion, updated imagery can establish a record of improvements and support future asset management activities.

Drones should generally be viewed as a supplement to professional engineering and field inspections rather than a replacement. Their value lies in expanding the information available to engineers, planners, inspectors, and decision-makers. Aerial imagery collected during a project can be reviewed alongside engineering documents, inspection reports, field observations, and GIS data to provide a more complete understanding of conditions over time.

Environmental Monitoring and Natural Resources

Environmental monitoring represents another particularly strong opportunity for regional drone services. Many WMSRDC initiatives involve wetlands, shorelines, habitat restoration, watershed management, forestry, invasive species, coastal resources, and conservation activities where conditions change over time and current imagery can provide substantial value.

Potential applications include shoreline restoration monitoring, wetland documentation, habitat improvements, tree planting and micro forest monitoring, invasive species documentation, stream restoration, watershed projects, coastal management, and post-storm assessments. Unlike statewide imagery programs that may only be updated every several years, drones allow imagery to be collected immediately before, during, and after project implementation.

This repeatability creates a valuable visual record of change. It can help demonstrate whether restoration activities are progressing as intended, identify areas requiring additional attention,



and provide documentation for funding agencies and project partners. When flights are repeated using consistent methods, the resulting information can also support long-term monitoring and change analysis.

Grant Administration, Communication, and Public Engagement

One of the clearest lessons from stakeholder discussions is that not every drone mission needs to produce a complex analytical product. In many cases, the primary value of aerial imagery may be communication.

High-quality aerial photographs and video can provide compelling documentation for grant applications, progress reports, public meetings, board presentations, StoryMaps, project websites, annual reports, educational materials, and community outreach. Aerial imagery can help residents, elected officials, funding agencies, and project partners understand the scale and context of projects in ways that traditional maps or written descriptions cannot always accomplish.

This storytelling function should be considered a legitimate component of the regional drone program. Effective communication can improve public understanding, demonstrate project accomplishments, strengthen grant reporting, and help organizations communicate the value of regional investments.

Operating a Sustainable Drone Program

While the cost of purchasing a capable drone may be relatively modest compared with other technology investments, the long-term success of a drone program depends upon the operational framework surrounding the aircraft.

WMSRDC will need to account for Federal Aviation Administration requirements, pilot certification, airspace authorization, mission planning, weather conditions, aircraft maintenance, battery management, flight logging, safety procedures, data processing, quality assurance, and long-term data storage. Portions of the region, particularly areas near controlled airports, may require additional airspace coordination. These requirements should be treated as normal operational considerations and incorporated into project scheduling and standard operating procedures.

An important consideration is that actual flight time often represents only a small portion of the total effort required for a drone project. Missions may require several hours of planning, equipment preparation, travel, flight operations, imagery processing, GIS integration, quality assurance, deliverable preparation, and data archiving. These staff requirements should be considered when establishing annual budgets, project schedules, and potential fee structures.



For this reason, WMSRDC should begin with a manageable number of clearly defined use cases and build operational experience before significantly expanding the program.

Drone Software and Data Processing

Collecting aerial imagery is only the first step in producing useful geospatial information. WMSRDC will also require tools and workflows for planning missions, processing imagery, managing project data, and publishing final products.

Mission planning software can support automated flight paths, repeatable missions, airspace awareness, camera configuration, and efficient data collection. Photogrammetry software can then transform overlapping photographs into GIS-ready products such as orthomosaics, elevation models, point clouds, and three-dimensional models.

WMSRDC should adopt a phased approach to software investment. During early program development, open-source processing technologies may provide sufficient capabilities for many projects while reducing recurring costs. As flight frequency and processing requirements increase, commercial platforms with stronger automation or direct ArcGIS integration may provide operational efficiencies that justify additional investment.

Regardless of the software selected, final products should integrate with the Regional ArcGIS Online Cooperative whenever appropriate. Imagery collected for one project may subsequently support planning, asset management, grant development, public communication, or other regional initiatives. Integrating these products into the broader regional information ecosystem ensures that the value of data acquisition extends beyond the original mission.

Regardless of the software selected, final products should integrate with the Regional ArcGIS Online Cooperative whenever appropriate. Imagery collected for one project may subsequently support planning, asset management, grant development, public communication, or other regional initiatives. Integration should be credit-conscious by design: large raster products such as orthomosaics, point clouds, and video are best served into the cooperative from managed external or network storage rather than accumulating as hosted content, since hosted storage consumes ArcGIS Online service credits continuously (see Chapter 14).

Remote Sensing Beyond Drones

Although drones represent an important opportunity, they should be viewed as one component of a broader regional remote sensing strategy.

WMSRDC and participating organizations already have access to information collected through statewide aerial imagery programs, satellite platforms, LiDAR, engineering surveys, utility inspections, street-level imagery, and other sources. Each provides different levels of geographic coverage, accuracy, resolution, cost, and update frequency.



The most effective regional strategy will combine these resources rather than relying on a single technology. Statewide imagery may provide an excellent regional basemap, while drones can provide current information for a specific project. LiDAR may support terrain analysis and infrastructure planning, while mobile GIS and GNSS equipment provide detailed asset information collected directly in the field.

By understanding the strengths and limitations of each technology, WMSRDC can help participating organizations select the most efficient data acquisition method for each project while reducing unnecessary fieldwork and avoiding duplicate collection efforts.

Mobile GIS and Field Data Collection

Building on the standardized mobile workflows described in Chapter 6, not every data collection need requires an aircraft. In many cases, the most valuable information is collected directly by employees performing their normal work.

Mobile GIS applications can allow public works staff, inspectors, planners, environmental professionals, emergency responders, and other employees to collect and update information directly from the field. Applications such as ArcGIS Field Maps, Survey123, and QuickCapture can support infrastructure inventories, inspections, asset verification, construction documentation, environmental monitoring, emergency response, and grant-funded projects.

WMSRDC should develop standardized field data collection workflows that integrate directly with the Regional ArcGIS Online Cooperative. This approach can reduce paper-based processes and duplicate data entry while improving the timeliness and consistency of regional information. Workflows should be designed with each agency's existing systems of record in mind, so that field-collected information lands where the agency actually manages its assets rather than creating a parallel dataset to maintain.

A small, shared inventory of rugged field tablets could also support WMSRDC staff and project-specific data collection activities. Where appropriate, equipment may be temporarily assigned to projects or used to demonstrate mobile GIS workflows to participating organizations before they make independent investments.

High-Accuracy GNSS Data Collection

As regional datasets mature, some projects will require greater positional accuracy than standard mobile devices can provide. WMSRDC should therefore evaluate the future acquisition of high-accuracy GNSS equipment for projects involving infrastructure assets, environmental monitoring, control points, or other applications where precise locations are important.

A shared GNSS capability could provide significant value to smaller communities that occasionally require high-accuracy collection but cannot justify purchasing and maintaining



specialized equipment independently. As with drone technology, the value lies in developing a regional service around the equipment rather than simply purchasing the hardware.

The required level of accuracy should always be determined by the business need. Not every dataset requires survey-grade positioning, and unnecessarily high accuracy can increase project costs without improving decision-making. WMSRDC can help participating organizations select collection methods appropriate to the intended use of the information.

Hardware and Computing Considerations

The cloud-based architecture of the Regional ArcGIS Online Cooperative significantly reduces the need for WMSRDC and participating organizations to maintain extensive on-premises GIS infrastructure. Most users accessing web maps, dashboards, field applications, and shared datasets will be able to do so using standard modern computers and mobile devices.

However, advanced GIS analysis, three-dimensional visualization, LiDAR processing, and drone photogrammetry require greater computing resources. WMSRDC should maintain several capable GIS workstations with sufficient memory, solid-state storage, and dedicated graphics processing capabilities to support these workloads.

As the program matures, WMSRDC should also consider a dedicated shared processing environment for computationally intensive tasks. Such a system could support not only drone imagery but also raster analysis, LiDAR processing, machine learning, artificial intelligence-assisted feature extraction, and other large geoprocessing workflows. Consolidating these capabilities into a shared environment would extend the usefulness of the investment beyond any single program or technology.

Data storage should also be planned from the beginning. Drone projects, LiDAR, imagery, video, and three-dimensional datasets can generate significant volumes of information. WMSRDC should establish storage, backup, metadata, retention, and archival policies to ensure that valuable project information remains accessible without creating uncontrolled long-term storage costs, whether on local infrastructure or in credit-metered cloud storage.

Recommended Technology Priorities

WMSRDC should approach hardware and data acquisition investments incrementally, focusing first on technologies that support multiple program areas and provide immediate regional value. While a summary can be found in Table 5 below, specific platform recommendations, configurations, and cost considerations are detailed in Appendix C (UAS platforms) and Appendix D (computing and processing hardware).



Technology	Initial Recommendation	Primary Purpose
Drone	Capable RGB mapping platform; RTK capability where budget and mission needs justify it	Project documentation, mapping, environmental monitoring, emergency support
Processing Software	Phased combination of mission planning, photogrammetry, and GIS integration tools	Convert field imagery into usable regional information
GIS Workstations	High-performance workstations with adequate memory, GPU capability, and SSD storage	ArcGIS Pro, imagery processing, LiDAR, and advanced analysis
Mobile Field Devices	Small shared inventory of rugged tablets	Field Maps, Survey123, inspections, and inventories
GNSS Equipment	Future shared high-accuracy receiver capability	Precise asset and field data collection
Data Storage	Managed network and/or cloud storage with backup and retention policies	Long-term imagery and project archive

Table 5. Recommended Technology

Technology purchases should be based on demonstrated program needs rather than the desire to acquire the most advanced equipment available. Equipment that supports multiple departments, projects, and regional partners should generally receive priority.

Phased Implementation Strategy

A regional data acquisition program should develop incrementally alongside WMSRDC's staffing, experience, and regional demand.

Phase One – Establish Core Capabilities

The initial phase should focus on building operational experience with manageable investments and clearly defined use cases. WMSRDC should obtain appropriate FAA Part 107 certification for designated staff, acquire a capable RGB mapping drone, establish standard operating procedures, develop data management practices, and begin with internal or closely coordinated WMSRDC projects.

Early missions should emphasize applications with clear value and manageable complexity, such as environmental monitoring, grant documentation, planning projects, project communications, and basic aerial mapping. Mobile field data collection should also expand during this phase through standardized ArcGIS workflows and a small inventory of shared field devices.



The objective of Phase One is not to create a comprehensive regional remote sensing program immediately. It is to build experience, establish safe and repeatable workflows, and demonstrate practical value.

Phase Two – Expand as a Regional Shared Service

Once WMSRDC has established operational experience, the program can expand to support participating communities and regional partners more formally. A regional flight request system should be implemented, standard deliverables developed, service priorities established, and potential fee-for-service structures evaluated.

During this phase, drone products, mobile data collection, and other field-acquired information should become increasingly integrated with the Regional ArcGIS Online Cooperative and the broader RIIMP.

Phase Three – Develop Advanced Remote Sensing Capabilities

As regional demand grows and specific business cases emerge, WMSRDC can evaluate more advanced technologies such as RTK-enabled aircraft, thermal sensors, LiDAR, automated feature extraction, artificial intelligence-assisted image analysis, expanded GNSS capabilities, and regional imagery archives.

These investments should be driven by demonstrated demand and measurable regional value. Advanced technology should be adopted when it improves service delivery, reduces costs, expands analytical capability, or addresses a clearly identified regional need.

Feasibility Assessment

Based on stakeholder interviews, survey findings, and subsequent discussions with WMSRDC staff, the development of a regional drone and field data acquisition program is both practical and achievable. The region has a diverse range of potential applications, including environmental monitoring, infrastructure planning, transportation projects, shoreline management, grant documentation, emergency response, and public engagement.

The greatest challenge is not the cost of purchasing equipment. It is establishing sustainable operational workflows that account for staffing, regulatory compliance, software, processing, data management, scheduling, and long-term program administration. Addressing these requirements through a phased implementation strategy will allow WMSRDC to develop experience and evaluate demand before making larger investments.

The range of potential applications supports the shared-service model recommended throughout this roadmap. Rather than encouraging each community to purchase and independently maintain specialized equipment, WMSRDC can develop regional expertise and



make these capabilities available where they provide the greatest value. This approach improves equipment utilization, promotes standardized collection practices, reduces duplication, and expands access to modern geospatial technology throughout the region.

Summary

The Regional Data Strategy establishes how information should be governed and shared, but maintaining trusted regional information also requires the ability to efficiently collect new information and document changing conditions. A coordinated approach to drones, mobile GIS, GNSS, remote sensing, imagery, and field technology provides WMSRDC with the tools necessary to keep regional information current while expanding the services available to participating organizations. Information collected in the field should flow into governed regional datasets, shared applications, and analytical workflows where it continues providing value long after the original project has concluded.

Among these opportunities, a regional drone program represents a particularly practical and achievable next step. By approaching drone operations as a shared service rather than simply an equipment purchase, WMSRDC can support environmental monitoring, infrastructure planning, grant administration, public communication, emergency response, and numerous other regional needs while extending advanced capabilities to communities that may not be able to develop them independently.

The recommended approach is deliberately incremental. WMSRDC should begin with core capabilities, develop operational experience, establish strong policies and workflows, and expand services as regional demand becomes clear. This strategy minimizes risk while allowing the program to grow alongside the broader RIIMP.

Ultimately, the value of these technologies will not be measured by the number of drones, tablets, sensors, or computers acquired. Their value will be measured by the quality of the information they produce and the decisions that information helps improve. Yet even well-governed information and modern collection technologies cannot create a successful regional program on their own; their value ultimately depends upon the organizations and people willing to share knowledge, coordinate activities, and work toward common goals, which is the subject of the next chapter.



CHAPTER 9: Regional Partnerships & Collaboration

Building a Regional Community Around Geographic Information

The RIIMP is founded on a simple but powerful idea: the greatest value of GIS is realized when organizations work together.

Chapter 2 established that the willingness to do so already exists, and the numbers behind that finding bear repeating here: of the organizations that responded to the readiness survey, all but one expressed openness to regional collaboration, and half explicitly expressed interest in participating in a pilot project (Appendix X). This willingness represents the greatest opportunity identified throughout the assessment.

Technology can connect systems. Data can connect information. But partnerships connect people.

The RIIMP is designed to strengthen those partnerships by creating a collaborative environment where organizations share knowledge, coordinate projects, pursue common goals, and collectively solve challenges that extend beyond individual jurisdictional boundaries. Rather than replacing local priorities, regional collaboration amplifies them by providing additional resources, broader perspectives, and stronger regional coordination.

Collaboration as a Regional Strategy

As the vision principles in Chapter 3 recognized, the challenges facing communities today rarely stop at municipal boundaries: transportation corridors, utilities, watersheds, emergency incidents, and economic development all cross jurisdictional lines, and housing, recreation, environmental stewardship, and workforce development increasingly require cooperation among many organizations. Because these issues are regional by nature, the information supporting them should also be regional.

The RIIMP provides the framework through which organizations can collaborate while maintaining local authority over their own operations. Rather than creating a centralized organization, WMSRDC becomes the facilitator that helps communities connect their people, information, and resources.

Building a Collaborative Regional Network

Regional collaboration extends beyond local governments. A successful RIIMP should intentionally connect organizations representing a broad range of disciplines:

- local units of government, including: cities, villages, townships, counties, road commissions, and drain commissioners



- infrastructure and public safety partners, including: utilities, emergency management, public safety, and transportation agencies
- development and stewardship organizations, including: economic development organizations, environmental organizations, and conservation districts; educational institutions
- tribal governments where applicable
- State of Michigan and federal agencies
- nonprofit organizations
- private-sector partners.

Each organization contributes unique expertise and authoritative information while benefiting from the knowledge and resources of others. The result is a regional network significantly stronger than any single organization could develop independently.

WMSRDC as the Regional Convener

One of WMSRDC's greatest strengths is its established role as a trusted regional organization. Unlike many local agencies, WMSRDC already works across jurisdictional boundaries, bringing together communities to address transportation, economic development, housing, environmental planning, resilience, and infrastructure challenges.

The RIIMP extends the Regional Information Integrator responsibilities defined in Chapter 4 into the partnership arena: facilitating communication among agencies, connecting organizations with common needs, identifying opportunities for joint projects, and coordinating grant partnerships. Rather than directing local activities, WMSRDC serves as the organization that helps partners work together more effectively.

The Regional GIS User Community

The Regional GIS User Group, whose purpose and meeting structure are defined in Chapter 5, serves as the operational heart of regional collaboration. Beyond its formal functions, the User Group creates a professional community, and its greatest value is often found not in formal presentations but in the conversations that occur between organizations facing similar challenges. These relationships frequently become the foundation for future partnerships and collaborative projects.

Communication Strategy

Successful regional collaboration requires regular and intentional communication. Organizations should not learn about regional initiatives only after projects have begun. Rather, communication should be continuous, transparent, and accessible. Examples of effective communication mechanisms may include:



- *Quarterly Regional GIS User Group Meetings.* These provide updates, technical presentations, project demonstrations, and networking opportunities.
- *Annual Regional GIS Summit* , WMSRDC should host an Annual Regional GIS Summit that brings together GIS professionals, organizational leadership, elected officials, state and federal agencies, educational institutions, and industry partners to showcase accomplishments, explore emerging technologies, strengthen regional partnerships, and establish priorities for the coming year. To maximize participation and reduce costs, the summit could be held in conjunction with the annual CMPASS Conference, leveraging an existing statewide event that many of the intended participants either already attend or would benefit from.
- *Quarterly Newsletter*, which can be effective at highlighting new regional datasets, technology updates, agency success stories, funding opportunities, upcoming training, project milestones, and regional accomplishments.
- *Regional GIS Website*, providing access to shared resources, documentation, training materials, governance information, data standards, the application catalog, meeting materials, and regional dashboards.

Together, these communication tools can help maintain momentum while ensuring that organizations remain informed and engaged.

Partnerships with Educational Institutions

Universities, community colleges, and technical schools represent valuable long-term partners in building regional GIS capacity. Educational partnerships can support student internships, applied research, workforce development, and instruction in GIS, drone operations, remote sensing, artificial intelligence, environmental monitoring, and transportation planning. These partnerships strengthen the regional workforce, connect directly to the workforce development strategy covered in Chapter 11, and introduce students to career opportunities within local government.

Partnerships with State and Federal Agencies

The RIIMP should align with existing statewide and national initiatives whenever possible.

Potential partners include:

- [Michigan Infrastructure Council \(MIC\)](#), including the MiDIG portal and the multi-regional pilot program of which this study is part
- [Michigan Department of Transportation \(MDOT\)](#)
- [Michigan Department of Environment, Great Lakes, and Energy \(EGLE\)](#)
- [Michigan State Police Emergency Management and Homeland Security Division](#)
- [Michigan Department of Natural Resources \(DNR\)](#)



- [Michigan Department of Agriculture and Rural Development \(MDARD\)](#)
- [Michigan Geographic Framework \(MGF\)](#)
- [Federal Emergency Management Agency \(FEMA\)](#)
- [U.S. Geological Survey \(USGS\)](#)
- [National Oceanic and Atmospheric Administration \(NOAA\)](#)
- [U.S. Census Bureau](#)
- [U.S. Department of Transportation \(USDOT\)](#)

Aligning regional data standards and workflows with state initiatives improves interoperability while reducing duplicate effort, and coordination with the other MIC pilot regions supports the statewide consistency objectives described in Chapter 7.

Regional Grant Strategy

Throughout the GIS Readiness Assessment, organizations consistently identified funding as one of the primary barriers to expanding GIS capabilities. The RIIMP creates significant opportunities to strengthen regional competitiveness for grants by demonstrating coordinated planning, shared resources, standardized information, and broad organizational participation.

Increasingly, grant programs prioritize regional collaboration and measurable community impact. Projects involving multiple jurisdictions frequently demonstrate greater return on investment, broader public benefit, improved long-term sustainability, and stronger organizational capacity. The RIIMP positions WMSRDC to coordinate these collaborative opportunities.

Potential Grant Sources

Potential funding opportunities include:

Federal Programs

- Federal Emergency Management Agency (FEMA)
- U.S. Department of Transportation (USDOT)
- Economic Development Administration (EDA)
- U.S. Environmental Protection Agency (EPA)
- National Oceanic and Atmospheric Administration (NOAA)
- U.S. Department of Agriculture (USDA)
- Broadband Equity, Access, and Deployment (BEAD)
- Federal Highway Administration (FHWA)

State of Michigan

- Michigan Department of Transportation



- EGLE
- Michigan Department of Natural Resources
- Michigan State Police
- Michigan Economic Development Corporation (MEDC)

Regional and Private Foundations

- Community Foundations
- Great Lakes foundations
- Infrastructure resilience initiatives
- Environmental organizations
- Corporate philanthropy
- Utility partnerships

Rather than pursuing grants independently, WMSRDC can help organize regional applications that demonstrate broad participation and measurable regional impact.

Strategies for Successful Grant Applications

Successful grant applications typically begin long before funding opportunities are announced. The RIIMP strengthens grant competitiveness by encouraging organizations to develop regional partnerships before funding becomes available, maintain high-quality authoritative datasets, coordinate Capital Improvement Projects, document infrastructure needs, maintain project readiness, demonstrate measurable regional benefit, and build relationships with funding agencies throughout the year.

Prepared organizations are significantly more competitive than organizations attempting to assemble partnerships after grant announcements are released.

Measuring Collaboration

Partnerships should be evaluated just as thoughtfully as technology investments. Potential measures include the number of participating organizations, User Group attendance, Steering Committee participation, shared datasets, collaborative projects, joint grant applications, regional applications deployed, cross-jurisdictional initiatives, training participation, and partner satisfaction. These measures feed directly into the performance framework presented in Chapter 12, and tracking them demonstrates the growth of regional collaboration over time.

Summary

The RIIMP is ultimately a partnership initiative supported by technology, not a technology initiative seeking partnerships.



The GIS Readiness Assessment confirmed that organizations throughout the region already recognize the value of collaboration. The opportunity now is to create a framework that allows those relationships to grow into long-term regional partnerships capable of addressing shared infrastructure, planning, emergency management, environmental, and economic development challenges.

By serving as the Regional Information Integrator and trusted convener, WMSRDC can help organizations move beyond isolated projects toward a collaborative regional network that shares knowledge, coordinates investments, pursues funding together, and continually strengthens the region's collective GIS capabilities. The technology described in previous chapters provides the tools, and the partnerships described in this chapter provide the relationships. The next chapter turns to the services that put both to work.



CHAPTER 10: Regional Services

Delivering Value Through Shared Services

The RIIMP is designed to provide practical services that help local governments, counties, utilities, and regional partners accomplish more together than they could independently.

As Chapter 2 documented, many organizations perform the same activities, maintaining infrastructure, managing assets, coordinating projects, collecting field information, preparing grant applications, and communicating with the public. All of this is done with limited staff, constrained budgets, and varying technical capacity. Rather than expecting every organization to independently develop the same capabilities, WMSRDC can provide a portfolio of regional services that reduces duplication, lowers implementation costs, improves consistency, and strengthens collaboration. As participation grows, these shared services become increasingly valuable, creating efficiencies and opportunities that benefit the region as a whole.

All regional services are delivered in coordination with, and in deference to, the county GIS programs described in Chapter 4. Where a county already provides GIS services to its communities, that county remains the first-line provider, and its communities will typically access regional resources through that existing relationship. WMSRDC's direct services are aimed at organizations without a county program to lean on. They are also aimed at genuinely-regional needs that no single county can address alone.

This chapter catalogs the recommended service portfolio. Several services are developed in detail elsewhere in this roadmap; their entries here summarize the service and point to the chapter that defines it.

Regional Technical Assistance

One of the most valuable services WMSRDC can provide is ongoing technical assistance. Many organizations have access to GIS software but lack the staff time or specialized expertise to fully utilize it; others rely on a single employee responsible for GIS alongside many other duties.

Technical assistance may include GIS consultation, ArcGIS Online administration, data migration, application configuration, workflow development, cartography and map production, spatial analysis, data conversion, metadata development, quality assurance, project planning, and troubleshooting. This service allows organizations to focus on their operational priorities while leveraging regional expertise when needed, and for many Foundational Participants it will be the first and most frequent point of contact with the program.



Shared Application Development

WMSRDC configures and maintains a library of standardized regional applications, viewers, dashboards, and ArcGIS Solutions that can be adapted to local needs, reducing development costs while keeping applications consistent, supported, and aligned with regional data standards. The application library, candidate solutions, and deployment model are defined in Chapter 6.

Mobile GIS and Field Data Collection

Standardized mobile workflows allow field staff to collect and update information directly where work occurs, supporting inventories, inspections, construction monitoring, damage assessment, and environmental monitoring while reducing paperwork and duplicate entry. The platform workflows are defined in Chapter 6, and the field technology strategy, including shared devices and high-accuracy GNSS, in Chapter 8.

Regional Drone and Remote Sensing Services

WMSRDC provides aerial data collection, imagery processing, and remote sensing support as a shared service, extending capabilities to communities that could not justify independent programs. The full program design, including the flight request process, operational requirements, phasing, and feasibility assessment, is presented in Chapter 8.

Capital Improvement Program Coordination

WMSRDC administers the shared regional CIP dataset and coordination service defined in Chapter 7, allowing participating organizations to share planned projects, identify overlapping work, coordinate construction schedules, combine funding opportunities, and improve public communication, while serving as the region's consolidated feed into the Michigan Infrastructure Council's MiDIG portal. Beyond construction coordination, shared CIP information supports grant applications, economic development, long-range transportation planning, and regional investment strategies.

Regional Data Collection and Asset Inventories

Many organizations continue developing or expanding inventories of roads, signs, utilities, facilities, parks, and other public assets. WMSRDC supports these efforts through standardized collection methods, regional data models aligned with the Core Data Framework in Chapter 7, and coordinated field services.

Where an agency already maintains a system of record such as Roadsoft, inventory work should populate that system rather than duplicate it: field collection can be designed so results flow into both the agency's operational system and the regional datasets, keeping the collect-once



principle intact. Standardized inventories improve consistency while reducing the effort required for future maintenance, and completed inventories flow directly into the regional datasets that support asset management, CIP coordination, and grant development.

Regional Analytics and Decision Support

GIS provides significantly greater value when information is transformed into actionable insight. WMSRDC should provide analytical services that support regional planning and informed decision-making, including infrastructure investment analysis, transportation accessibility, grant prioritization, demographic analysis, economic development site evaluation, environmental impact assessment, hazard mitigation analysis, asset condition assessment, service area analysis, and land suitability modeling. These services enable organizations to make decisions based upon objective information rather than intuition alone, and they are among the services most difficult for any individual organization to develop internally.

Business System Integration

As organizations mature, the value of GIS increasingly depends on its connection to the systems that run daily operations: asset management, permitting, work orders, and financial systems. WMSRDC can provide guidance and technical assistance for integrating the regional platform with these business systems, helping organizations avoid duplicate data entry and keep operational records and geographic records synchronized. For most organizations this begins as advisory support, with hands-on integration assistance reserved for Collaborative Participants and Strategic Partners whose systems and data practices are ready for it.

The clearest regional example is Roadsoft, the roadway asset management system developed by the Center for Technology & Training at Michigan Technological University and provided at no cost to Michigan's local agencies through MDOT's statewide asset management initiative. Roadsoft is used by virtually every road commission in the region and manages exactly the assets, roads, signs, culverts, and bridges, that the Regional Data Strategy identifies as core regional datasets. Because Roadsoft is built on the same Michigan Framework Basemap that underpins the region's data standards, the foundations for interoperability already exist. WMSRDC should work with participating road agencies, and with the CTT as opportunities arise, to establish repeatable workflows for exchanging information between Roadsoft and the Regional ArcGIS Online Cooperative, so that condition and asset data maintained in Roadsoft can inform regional dashboards, CIP coordination, and MiDIG reporting without duplicate data entry, while Roadsoft remains the authoritative system of record for the agencies that rely on it.

Public Information and Community Engagement

Communities increasingly expect access to accurate, timely, and interactive information. The RIIMP supports public engagement through interactive public maps, StoryMaps, project



dashboards, construction notifications, park and trail information, and community planning applications. These resources improve public understanding while reducing staff time spent responding to routine information requests.

Emergency Management Support

Geographic information plays a critical role before, during, and after emergency incidents. Regional GIS services can support emergency management with common operating pictures, evacuation mapping, critical infrastructure information, damage assessment applications, flood mapping, resource tracking, situation dashboards, recovery planning, and mutual aid coordination. The ability to rapidly share trusted information across jurisdictions strengthens regional preparedness and response, and it depends directly on the data sharing classifications established in Chapter 7.

Regional Reporting

Many organizations routinely prepare reports for elected officials, grant agencies, regulatory organizations, and the public. WMSRDC can support these efforts through standardized reporting tools that transform geographic information into meaningful performance measures, including infrastructure investment summaries, grant reporting, asset management reports, development trends, environmental indicators, and an annual State of Regional GIS Report. Consistent reporting demonstrates accountability while supporting informed decision-making.

A Service Model That Grows With the Region

The service portfolio is intentionally designed to evolve. During early implementation, WMSRDC should focus on technical assistance, shared applications, training, data coordination, and Capital Improvement coordination. These are the services that deliver value quickly and build trust. As participation expands, additional services may include drone operations at scale, advanced analytics, digital twins, artificial intelligence, IoT integration, regional monitoring systems, and predictive infrastructure management, the capabilities associated with Level 5 maturity in Chapter 3. This progression parallels the implementation phases presented in Chapter 13, allowing services to grow alongside regional capacity while ensuring that investments remain aligned with organizational needs.

Measuring Service Value

Like every component of the RIIMP, regional services should be evaluated through outcomes. Such outcomes include participating organizations, technical assistance requests completed, shared applications deployed, mobile inspections completed, regional datasets maintained, CIP projects coordinated, drone missions conducted, grant applications supported, public users served, and customer satisfaction. These measures feed directly into the performance



framework presented in Chapter 12, and tracking them demonstrates the return on investment provided through shared regional services.

Summary

The RIIMP transforms WMSRDC from a provider of individual GIS projects into a regional service organization that helps communities improve infrastructure management, planning, emergency response, and public service delivery.

Rather than asking each organization to independently develop specialized expertise, the program creates shared capabilities that can be leveraged throughout the region. Technical assistance, application deployment, mobile GIS, drone services, Capital Improvement Program coordination, regional analytics, and decision support become common resources available to participating agencies regardless of size or GIS maturity, delivered alongside and through the county programs that already serve many communities.

These services create value by reducing duplication, improving coordination, strengthening partnerships, and enabling organizations to focus on serving their communities rather than maintaining technology. Ultimately, the RIIMP is successful not because of the technology it deploys, but because of the services it provides and the outcomes it helps communities achieve. Delivering those services sustainably depends on the people behind them, and building that regional workforce is the subject of the next chapter.



CHAPTER 11: Workforce Development

Investing in the Region's Most Valuable Resource

The success of the RIIMP depends less on technology than it does on the people responsible for implementing and sustaining it.

Throughout the GIS Readiness Assessment, organizations consistently identified staffing, training, and workforce capacity as some of the greatest challenges limiting the growth of GIS. While software capabilities continue to improve and geographic data becomes increasingly available, many communities lack the personnel, technical expertise, or organizational capacity needed to fully utilize these resources.

This challenge is not unique to this initiative. Across the country, local governments are facing increasing demands on infrastructure management, emergency preparedness, asset management, and public service delivery while experiencing staffing shortages, retirements, and growing competition for technical professionals.

The RIIMP recognizes that technology alone will not address these challenges. Long-term success requires a deliberate investment in people through education, mentoring, collaboration, and professional development. By building regional knowledge alongside regional technology, WMSRDC can create a sustainable GIS community that continues to grow long after individual projects have been completed.

Workforce Development Philosophy

The RIIMP views workforce development as a continuous process rather than a series of isolated training events. Successful GIS organizations create environments where employees continue learning throughout their careers, share knowledge with colleagues, and adapt to evolving technology and organizational needs. Regional workforce development should therefore emphasize practical learning, peer collaboration, continuous improvement, leadership development, knowledge sharing, and organizational resilience.

Rather than creating GIS experts in every community, the objective is to build a regional network of knowledgeable professionals who support one another while strengthening

Assessment Findings

Chapter 2 established staffing as the region's greatest constraint: most GIS-adopting organizations operate with no dedicated GIS staff, training budgets are rare, and organizations described themselves as interested in growth but in need of significant support. Two additional workforce themes emerged that shape this chapter's recommendations.



Knowledge Is Concentrated

Several organizations rely heavily on one individual who possesses most of the organization's GIS knowledge. While these individuals often become highly effective, this concentration creates organizational risk: retirements, career changes, or extended absences can significantly impact GIS operations when institutional knowledge is not broadly shared. Building organizational resilience requires documenting workflows, expanding training, and developing additional GIS champions within each organization.

Organizations Want to Learn From Each Other

Stakeholder discussions revealed strong interest in peer learning: seeing how neighboring communities solve similar problems, configure applications, manage infrastructure, and support decision-making. This reinforces the importance of establishing an active Regional GIS User Group that serves not only as a technical forum but also as a professional learning community.

A Regional Training Program

WMSRDC should establish a comprehensive Regional GIS Training Program that provides consistent educational opportunities throughout the year. Training should focus on practical business applications rather than software demonstrations alone. The program is organized along two dimensions: the topic areas below define *what* is taught, and the learning paths that follow define *who* needs which topics, and at what depth. Recommended Training Program topic areas include:

- **GIS Fundamentals.** These concepts support organizations beginning their GIS journey.
 - Examples include basic GIS concepts, map interpretation, geographic data, spatial thinking, and terminology.
- **ArcGIS Online.** This topic supports organizations participating in the Regional ArcGIS Online Cooperative.
 - Examples include web maps, dashboards, groups, content management, sharing, security, and administration
- **Mobile GIS.** This category is closely tied to Infrastructure Management, but with a focus on the “boots on the ground” operators.
 - ArcGIS Field Maps, Survey123, QuickCapture, offline workflows, GPS data collection, and quality assurance, with classroom instruction followed by field exercises whenever practical.
- **Data Management.** This category directly supports the Regional Data Strategy in Chapter 7.
 - Examples include discussions of metadata, data standards, editing workflows, quality assurance, data stewardship, and version management.



- **Infrastructure Management.** This category generally connects GIS directly to daily operational responsibilities.
 - Examples include Asset inventories, road management, utility mapping, Capital Improvement Programs, inspection workflows, and work order integration.
- **Emerging Technologies.** As the program matures, this category will prepare organizations for the capabilities described at the upper levels of the maturity model.
 - Examples include drone operations, remote sensing, artificial intelligence, digital twins, reality capture, IoT, real-time dashboards, and predictive analytics.

Multiple Learning Paths

The topic areas above are a curriculum, not a course of study every participant completes in full. Each audience needs a different slice at a different depth. A field technician needs Mobile GIS hands-on and GIS Fundamentals only in passing. Furthermore, a county administrator may need neither of those in any technical depth but must instead understand what the investment returns. A GIS professional works across nearly the full catalog. The learning paths below define those slices for the region's five principal audiences.

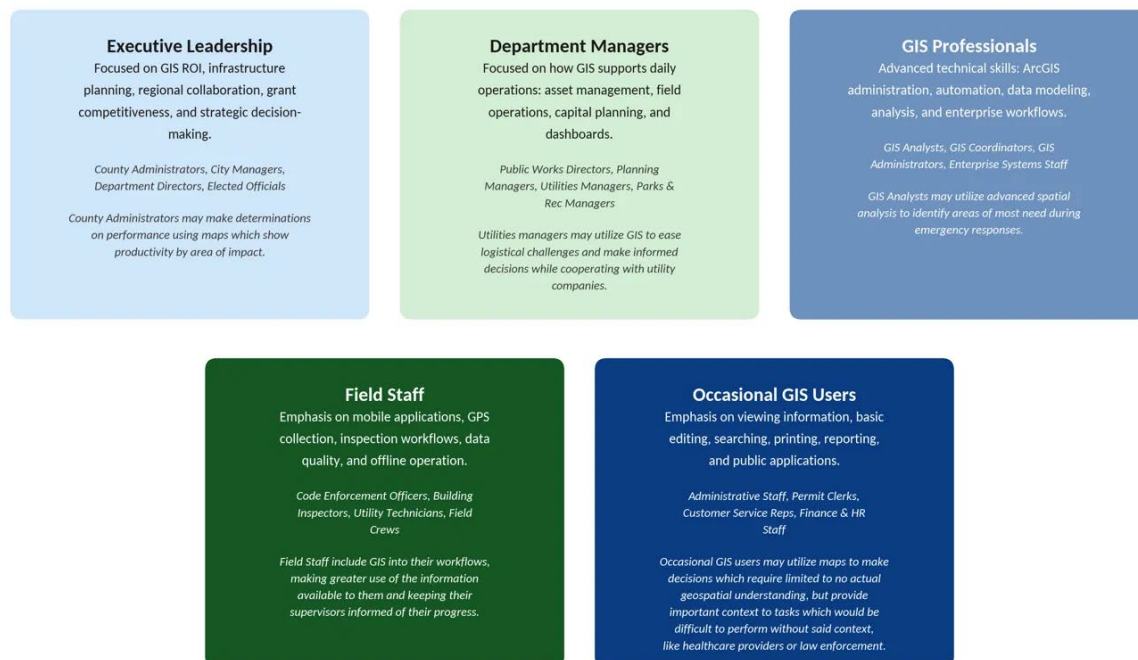


Figure 5. The Learning paths shown above are detailed with examples of staff that may fit into this categorization.



Executive Leadership

County administrators, city managers, department directors, and elected officials require an understanding of how GIS supports organizational decision-making rather than technical implementation. They are generally interested in GIS return on investment, infrastructure planning, regional collaboration, grant competitiveness, performance dashboards, and strategic decision-making.

Department Managers

Managers should understand how GIS supports daily operations: asset management, field operations, capital planning, dashboard interpretation, and workflow integration.

GIS Professionals

Advanced technical training should include ArcGIS administration, automation, data modeling, advanced analysis, system integration, application configuration, and enterprise workflows.

Field Staff

Training should emphasize mobile applications, GPS collection, inspection workflows, data quality, and offline operation.

Occasional GIS Users

Many employees utilize GIS only periodically. Their training should emphasize viewing information, basic editing, searching, printing, reporting, and public applications.

These paths align naturally with the participation tiers defined in Chapter 5. Foundational Participants will draw primarily from the fundamentals and occasional-user paths, while Collaborative Participants and Strategic Partners increasingly engage the professional and emerging-technology tracks.

Building Regional GIS Champions

Every participating organization should identify at least one individual who serves as its GIS Champion. A GIS Champion is not necessarily a full-time GIS professional; rather, they are someone who encourages GIS adoption, shares knowledge, coordinates with WMSRDC, participates in the User Group, identifies organizational needs, and promotes continuous improvement.

This model deliberately parallels the Michigan Infrastructure Council's Asset Management Champion Program, which has already introduced champion-based capacity building to



organizations across the state, including within this region. Where organizations have participated in that program, their Asset Management Champions are natural candidates for the GIS Champion role, and aligning the two programs strengthens the connection between the region's GIS development and the statewide asset management initiatives the MIC coordinates.

Developing GIS Champions throughout the region creates local leadership while strengthening regional communication.

A Regional Champions Registry

The value of champions multiplies when people can find them. WMSRDC should maintain a registry of the region's GIS Champions, Asset Management Champions, and other designated specialists such as certified drone pilots and data stewards, recording each champion's organization, county, and areas of expertise (e.g., asset management, ArcGIS Online administration, field data collection, parcel and addressing data). An interactive map or directory published through the Regional ArcGIS Online Cooperative would let any organization quickly answer a question the assessment showed is currently difficult: who nearby has already solved the problem I am facing?

The registry should follow the data sharing classifications established in Chapter 7. A coverage view showing participating organizations and expertise areas can be public, demonstrating the breadth of the regional network. The names and affiliations are shared at the Regional Partner tier, and direct contact information is not intended to be published at all. Introductions are instead intended to be brokered through WMSRDC or made in person through the User Group. Participation is opt-in, and champions control how they are listed.

Beyond convenience, the registry becomes the operational backbone of the mentoring relationships described below, gives new participants an immediate picture of the community they are joining, and offers the MIC a regional model for making champion networks visible statewide.

Mentoring and Peer Learning

One of the greatest strengths of a regional program is the ability for organizations to learn from one another. WMSRDC should facilitate mentoring relationships between organizations with mature GIS programs and those beginning to expand their capabilities, using the champions registry to match needs with nearby expertise, through application demonstrations, site visits, job shadowing, project collaboration, technical mentoring, shared documentation, and informal networking. Peer learning often produces practical solutions that cannot be replicated through formal classroom instruction alone.



Partnerships with Educational Institutions

Developing the next generation of GIS professionals requires strong partnerships with educational institutions, expanding on the partnership foundations described in Chapter 9. Potential collaborations include student internships, applied research, capstone projects, GIS certificate programs, guest lectures, workforce development initiatives, drone certification, environmental monitoring, and data collection projects. These partnerships help establish a pipeline of skilled professionals who understand both GIS technology and the needs of local government.

Knowledge Management

Training should extend beyond individual employees. Organizations should also preserve institutional knowledge through standard operating procedures, workflow documentation, training videos, data dictionaries, metadata, administrative guides, lessons learned, and application documentation. Documented knowledge directly addresses the concentration risk identified in this chapter's findings, reducing organizational exposure while improving long-term sustainability.

Measuring Workforce Development

The Regional GIS Training Program should be evaluated through performance indicators including training sessions delivered, participants trained, organizations represented, User Group attendance, GIS Champions identified, training satisfaction, new applications deployed following training, mentoring relationships established, certifications completed, and internship placements. These measures feed directly into the performance framework presented in Chapter 12, and tracking them demonstrates regional capacity growth over time.

A Culture of Continuous Learning

One of the defining characteristics of successful organizations is their ability to learn, adapt, and continuously improve. GIS and the broader geospatial technology landscape are evolving rapidly, with new applications, analytical capabilities, data collection methods, and emerging technologies becoming available every year. At the same time, organizational priorities shift, staffing changes occur, and public expectations continue to grow. Maintaining an effective regional GIS program therefore requires more than keeping software up to date; it requires a commitment to continually expanding the knowledge and skills of the people who use it.

The RIIMP should foster a culture of continuous learning in which professional development becomes an ongoing organizational value rather than an occasional training event. Through regular workshops, user group meetings, peer collaboration, knowledge sharing, and exposure to emerging technologies, WMSRDC can help ensure that participating organizations remain



prepared to meet changing business needs and capitalize on new opportunities. When learning becomes part of the region's culture, communities are better equipped to embrace innovation, adapt to evolving challenges, and continually improve the delivery of public services.

Summary

The GIS Readiness Assessment demonstrated that workforce development is one of the most significant opportunities for strengthening GIS throughout the region. While technology continues to advance rapidly, long-term success depends upon knowledgeable professionals who understand how geographic information supports infrastructure management, planning, emergency response, and organizational decision-making.

By establishing a comprehensive Regional GIS Training Program, developing GIS Champions, encouraging peer learning, and partnering with educational institutions, WMSRDC can build a resilient regional workforce capable of supporting the RIIMP for decades to come. Workforce development is not simply about teaching people to use software. It is about building a collaborative professional community that continually expands the region's capacity to manage information, solve problems, and improve public services.

Ultimately, the most valuable investment the region can make is not in technology; it is in the people who use it. With the program's framework, platform, data strategy, partnerships, services, and workforce strategy now defined, one question remains: how will the region know whether these investments are succeeding? That is the subject of the next chapter.



CHAPTER 12: Measuring Success

Building a Culture of Continuous Improvement

The RIIMP represents a long-term investment in regional collaboration, information management, and public service delivery. Like any strategic initiative, its success cannot be measured simply by the technology implemented or the number of applications deployed. Success must be evaluated by the value the program creates for participating organizations and the communities they serve.

Throughout this roadmap, WMSRDC has been positioned as the Regional Information Integrator, connecting people, data, technology, and partnerships to improve regional decision-making. Measuring success therefore requires evaluating how effectively these components work together to achieve broader organizational and regional goals.

Performance measurement serves several important purposes. It demonstrates accountability to member communities, helps prioritize future investments, identifies opportunities for improvement, supports grant reporting, and communicates the value of the RIIMP to elected officials, organizational leadership, and regional partners. Most importantly, performance measurement creates a culture of continuous improvement. Rather than viewing this roadmap as a document to be completed, it becomes a living strategy that is evaluated, refined, and strengthened over time.

A Performance Management Framework

The RIIMP should be evaluated through a balanced set of performance measures that reflect the full scope of the program. Performance should not be measured solely by technology metrics such as software licenses or datasets maintained. Instead, evaluation should consider how the program improves collaboration, operational efficiency, infrastructure coordination, workforce capacity, and organizational decision-making, shown in Figure 6.

This roadmap recommends evaluating performance across six strategic categories: Regional Participation, Information Management, Service Delivery, Workforce Development, Regional Collaboration, and Community Impact. These categories consolidate the measures introduced throughout this report, including the collaboration measures of Chapter 9, the service measures of Chapter 10, and the workforce measures of Chapter 11, into a single framework that provides a comprehensive picture of program performance while remaining understandable to both technical staff and executive leadership.

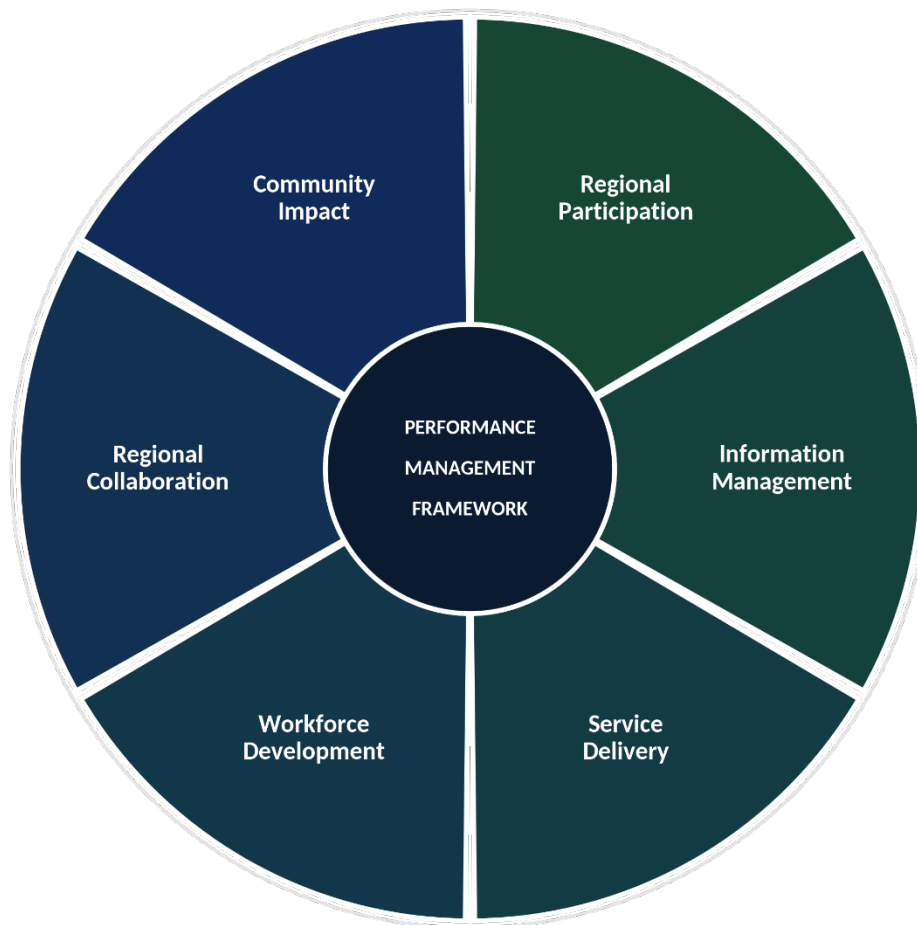


Figure 6. A growth wheel displaying the idealized goals of performance management on this project

Regional Participation

The first measure of success is participation. A regional program becomes more valuable as additional organizations contribute information, share knowledge, and utilize shared services.

Suggested performance indicators include:

- Number of participating organizations
- Percentage of communities participating
- Counties actively engaged



- Utility partners participating
- Active ArcGIS Online Cooperative users
- Regional GIS User Group attendance
- Steering Committee participation
- Number of shared regional applications deployed
- Distribution of organizations across the maturity levels defined in Chapter 3

The final indicator deserves particular attention. Chapter 3 established the region's starting maturity distribution: most organizations at Levels 1 and 2, a few approaching Level 4, none at Level 5. Tracking how that distribution shifts over time, how many organizations advance a level, how many townships move from no capability to Foundational participation, is the single clearest longitudinal measure of whether the program is accomplishing its central purpose. Participation counts show reach; maturity movement shows impact.

Information Management

Trusted information is the foundation of the RIIMP. Performance indicators should measure not only the quantity of information available, but also its quality, consistency, and usefulness.

Suggested indicators include:

- Authoritative datasets maintained
- Core datasets standardized (against the framework in Appendix F)
- Data quality scores
- Metadata completion rates
- Frequency of data updates
- Regional data-sharing agreements
- Capital Improvement Projects submitted, including projects fed to the MiDIG portal
- Quality assurance reviews completed

These measures help ensure that regional information remains accurate, current, and trusted.

Service Delivery

Regional services represent one of the primary ways WMSRDC delivers value to participating organizations. Performance should measure how effectively these services support local governments and regional partners. The indicators below consolidate the service measures introduced in Chapter 10.

Suggested indicators include:

- Technical assistance requests completed



- Shared applications deployed
- Mobile workflows implemented
- Drone missions completed
- Infrastructure inventories completed
- Analytical projects completed
- Public dashboards maintained
- Customer satisfaction

Monitoring service delivery helps ensure that WMSRDC's resources remain aligned with regional priorities.

Workforce Development

The GIS Readiness Assessment identified workforce capacity as one of the region's greatest constraints. Tracking workforce development over time demonstrates whether the region is increasing its ability to utilize GIS effectively. The indicators below consolidate the measures introduced in Chapter 11.

Suggested indicators include:

- Training sessions conducted
- Organizations participating in training
- Individuals trained
- GIS Champions identified, and champions registry participation
- Professional certifications earned
- Student internships completed
- Educational partnerships established
- User satisfaction with training

These measures help demonstrate the growth of regional GIS capacity over time.

Regional Collaboration

Because collaboration is central to the RIIMP, it should be evaluated as deliberately as any technical component. These indicators consolidate the partnership measures introduced in Chapter 9.

Suggested indicators include:

- Joint grant applications submitted
- Collaborative projects completed
- Cross-jurisdictional initiatives
- Shared Capital Improvement Projects



- Regional planning initiatives supported
- New partnership agreements
- Data-sharing collaborations
- Interagency working groups established

Unlike traditional GIS performance measures, these indicators demonstrate the strength of relationships throughout the region.

Community Impact

Ultimately, the RIIMP exists to improve public service delivery. While these benefits may be more difficult to quantify, they represent the program's greatest long-term value.

Potential indicators include:

- Infrastructure coordination achieved
- Grant funding awarded
- Economic development projects supported
- Emergency management initiatives enhanced
- Public engagement activities
- Asset management improvements
- Project delivery efficiencies
- Cost avoidance through regional coordination

These outcomes demonstrate how GIS contributes to broader organizational and community goals.

Key Performance Indicators

To simplify reporting, WMSRDC should establish a core set of Key Performance Indicators (KPIs) that are reported annually.

A recommended set includes:

**Table 6.** Recommended KPI's and Targets

KPI	Target
Participating Organizations	Increase annually
Regional GIS User Group Attendance	Increase annually
Shared Applications Deployed	Increase annually
Core Datasets Standardized	Expand annually
Technical Assistance Projects	Increase annually
Training Participants	Increase annually
Joint Grant Applications	Increase annually
Coordinated CIP Projects	Increase annually
Customer Satisfaction	≥90%
Regional Partnerships	Expand annually
Organizations Advancing Maturity Levels	Increase annually

Rather than establishing fixed numeric targets at the outset, WMSRDC should use the first year of implementation to establish baseline performance and develop realistic long-term objectives. Two baselines already exist in this report: the maturity distribution documented in Chapter 3, and the participation benchmarks from the readiness survey, including the 24 organizations that expressed willingness to join a pilot project. Growth-oriented targets are appropriate for the program's early phases. However, as participation approaches the region's 140 organizations and services mature, targets should shift from growth toward retention, satisfaction, and outcome measures, a transition the Steering Committee should revisit during the annual review.

Annual State of Regional GIS Report

One of the most effective ways to communicate progress is through the annual State of Regional GIS Report introduced in Chapter 10's reporting services. Prepared by WMSRDC, this report should summarize program accomplishments, performance metrics, regional participation, new datasets, applications deployed, training activities, grant successes, collaborative projects, financial investments, and priorities for the coming year. Publishing an annual report increases transparency while providing member communities with a clear understanding of the value generated through the RIIMP.

Executive Dashboard

Performance information should not exist solely in written reports. The Executive Performance Dashboard identified in Chapter 6's dashboard catalog should provide leadership with a real-time view of program performance, including participating organizations, active users, training attendance, shared applications, infrastructure projects, Capital Improvement coordination, grant activities, regional datasets, technical assistance, and performance trends. This dashboard



would serve to improve communication while making performance information readily accessible.

Measuring Return on Investment

One of the most common questions asked by organizational leadership is: "What value are we receiving from this investment?" While some benefits are financial, many are operational.

Financial value includes reduced duplicate software purchases, shared application development, coordinated grant funding, reduced consultant costs, and cost avoidance through shared services.

Operational value includes improved data quality, faster decision-making, better infrastructure coordination, reduced duplicate work, and improved emergency preparedness.

Strategic value includes stronger regional partnerships, improved planning, greater organizational capacity, increased resilience, and better long-term decision-making.

Evaluating return on investment should therefore consider both financial savings and improvements in organizational effectiveness.

Continuous Improvement

Performance measurement should not be viewed as an audit. Instead, it should function as a continuous improvement process. Each year, as part of the Annual Governance Review described in Chapter 5, WMSRDC should review performance measures, evaluate progress, identify challenges, update priorities, adjust work plans, modify training, improve services, update regional standards, and incorporate lessons learned. This process ensures that the RIIMP remains responsive to changing regional needs.

Celebrating Success

Recognizing accomplishments is an important part of sustaining long-term participation. WMSRDC should celebrate successful regional projects, outstanding partnerships, innovative applications, training achievements, grant awards, new participating organizations, and outstanding GIS Champions. Recognizing success reinforces collaboration while encouraging continued participation throughout the region.

Summary

The RIIMP is intended to create lasting improvements in regional collaboration, infrastructure management, and public service delivery. Measuring success ensures that these improvements are visible, measurable, and continually refined over time.



Rather than focusing solely on technical accomplishments, the recommended performance framework evaluates participation, information management, service delivery, workforce development, collaboration, and community impact. These measures reflect the broader purpose of the program: helping organizations make better decisions together through trusted information and strong regional partnerships.

By establishing an annual performance management process, WMSRDC demonstrates accountability, communicates return on investment, supports future funding opportunities, and ensures that the RIIMP continues evolving alongside the needs of the communities within the region.

Ultimately, success is not measured by the number of GIS applications deployed or datasets maintained. Success is measured by stronger partnerships, better decisions, improved infrastructure coordination, and more resilient communities. Achieving those outcomes requires translating everything this report has recommended into a practical sequence of actions, and that implementation roadmap is the subject of the final chapters.



CHAPTER 13: Implementation Roadmap

Turning Vision into Action

The RIIMP represents a long-term investment in regional collaboration, information management, and organizational capacity. Successfully implementing this vision requires more than completing a list of projects. It also requires building a sustainable program that grows alongside the needs and capabilities of participating organizations.

The GIS Readiness Assessment demonstrated that communities throughout the region begin this journey from different starting points. Some organizations already maintain mature GIS programs with dedicated staff and well-established workflows. Others are just beginning to explore how GIS can support their operations. This diversity is not a weakness. It is one of the defining characteristics of the region and reinforces the need for an implementation strategy that is flexible, scalable, and inclusive.

For this reason, the recommendations contained throughout this roadmap are organized into three progressive implementation phases. Each phase builds upon the accomplishments of the previous phase, allowing WMSRDC to demonstrate value early while creating the organizational, technical, and financial capacity needed to support long-term regional growth.

Rather than viewing implementation as a series of independent projects, the roadmap should be viewed as a continuous process of building regional capability, shown in Figure 7.

Governance supports technology. Technology supports data. Data supports services. Services strengthen partnerships. Partnerships improve decision-making. Together, these elements create a RIIMP that becomes increasingly valuable as participation grows.

Roadmap Guiding Principles

Implementation should remain guided by several core principles that have shaped this report from the beginning.

Build on Existing Investments

Communities have already invested significant time, funding, and expertise in GIS. The roadmap is intended to enhance those investments - not replace them.

Demonstrate Early Value

Early successes build confidence, strengthen partnerships, and encourage additional participation. Initial projects should focus on highly visible improvements that provide immediate benefits to participating organizations.



Scale Responsibly

Services should expand as participation, staffing, and funding increase. WMSRDC should avoid implementing capabilities that cannot be sustainably supported.

Remain Flexible

Technology, funding opportunities, and regional priorities will continue to evolve. The roadmap should be reviewed annually and adjusted as needed while remaining focused on the long-term vision.

Funding the Program

A sustainable program requires a funding strategy that matures alongside it. Costs fall into two categories that should be planned separately: *start-up costs*, incurred once to establish the program, and *operating costs*, which recur annually and grow with participation.

Costs fall into two categories that should be planned separately: start-up costs, incurred once to establish the program, and operating costs, which recur annually and grow with participation. Start-up costs include program branding and communication materials, governance formation, initial data standardization and migration, initial application configuration, and the staff time required to establish the program. Operating costs include ArcGIS Online Cooperative licensing (annual named-user subscriptions and consumption-based service credits), staffing (Appendix B presents the recommended staffing progression), training delivery, application maintenance, and program administration. Note that the program's initial funding request must cover both: the one-time start-up items plus the first year of operating costs, since licensing, staffing, and administration begin recurring from day one. Appendix [E] presents three licensing scenarios corresponding to growing levels of participation; these cover named-user subscriptions, with service credits and storage budgeted separately as consumption-dependent operating costs (Chapter 14). Funding sources should diversify by phase:

Phase One should be anchored by the Michigan Infrastructure Council's Regional Infrastructure Coordinating Hub funding, the same source supporting this study, supplemented by WMSRDC's operating budget and in-kind contributions from participating organizations. Early grant pursuits should target the planning and capacity-building programs identified in Chapter 9.

Phase Two adds two earned-revenue streams as services demonstrate value: modest participation contributions scaled to organizational size and tier, and fee-for-service work such as technical assistance, drone missions, and data collection projects. The benchmarking in Chapter 3 matters here: NEMCOG has sustained fee-based GIS services to small rural communities for years, demonstrating that this revenue model works in regions comparable to WMSRDC's. Grant funding shifts from planning grants toward implementation grants tied to



specific regional initiatives, where the coordinated partnerships built in Phase One strengthen competitiveness.

Phase Three sustains the program through a diversified mix in which no single source is load-bearing: participation contributions, fee-for-service revenue, grant funding, and WMSRDC's base budget. Consistent with Appendix B, positions responsible for permanent core functions should migrate toward stable funding sources over time, with grants reserved for launching new capabilities rather than sustaining essential ones. Diversification is itself the risk mitigation; a program funded from four sources survives the loss of any one.

The Steering Committee should review the funding mix annually alongside the performance measures in Chapter 12, with the explicit goal of reducing dependence on any single source over time.

Candidate Pilot Projects

The survey identified 24 organizations willing to participate in pilot projects, a remarkable level of volunteered commitment for a program that does not yet exist. The organizations that volunteered are listed below by county; the list reflects survey self-nomination only and implies no ranking or pre-selection.

Table 7. Organizations interested in participating in Pilot Projects by County

County	Self-Nominated Organizations
Lake	Lake County Road Commission; Village of Baldwin
Mason	Mason County Road Commission; Pere Marquette Township; Mason County Chamber Alliance
Muskegon	City of Muskegon; City of Roosevelt Park; City of Whitehall; Dalton Township; Fruitland Township; Muskegon County Road Commission; Village of Fruitport
Newaygo	City of Fremont; City of Newaygo
Oceana	Golden Township; Leavitt Township; Oceana County Drain Commission; Pentwater Township; Shelby Township; Village of Pentwater; Village of Rothbury; Village of Walkerville

This volunteer pool spans the full participation spectrum defined in Chapter 5: it includes organizations with no current GIS capability, organizations with part-time or outsourced GIS actively managing infrastructure data, and organizations with dedicated GIS staff that describe themselves as ready and already collaborating regionally. Pilot cohorts should therefore be



drawn to exercise all three participation tiers. At minimum, initial pilots should include one organization entering as a Foundational Participant, consuming shared maps and dashboards as a largely view-only user; one entering as a Collaborative Participant, using mobile field collection to contribute infrastructure data; and one entering at the Strategic Partner level, an organization with established GIS capability, potentially including its own ArcGIS Online organization, collaborating with the cooperative as a peer. Piloting all three tiers simultaneously validates the program's central claim that organizations of every maturity level receive value from day one, and produces onboarding templates for each tier that every subsequent participant inherits.

Regional CIP and MiDIG Pilot

Cohort: the region's road commissions, the survey's only cohort with 100 percent participation, plus interested counties.

Scope: stand up the shared CIP dataset for one construction season, coordinate schedules across jurisdictions, and deliver the region's first consolidated feed to the MiDIG portal, with Roadsoft remaining each agency's system of record as applicable (Chapter 10).

What it proves: the program's flagship coordination service works, and the region can meet the MIC's statewide participation goals through a single coordinated upload rather than dozens of independent ones.

Single-County Data Standardization Pilot

Cohort: Oceana County and its communities, the region's most engaged county in the survey.

Scope: standardize the priority core datasets from Table 4 for one county end to end, including stewardship assignments, metadata, and update procedures. *What it proves:* the Regional Data Strategy's standards work at full depth in one place before they're extended everywhere, producing templates every other county inherits.

Township Onboarding Pilot

Cohort: three to five townships and villages from the "interested but need significant support" readiness group, including volunteers such as those identified in the survey.

Scope: Foundational-tier onboarding, including access to the regional map viewer, one training path, and a GIS Champion designation per community.

What it proves: the program's central claim, that communities with no GIS capability can receive real value at low burden, tested with the exact population the assessment showed is hardest to reach.



Regional Champions Registry

Cohort: all participating organizations.

Scope: the registry and map described in Chapter 11, published through the cooperative under the Chapter 7 sharing classifications.

What it proves: a fast, inexpensive, visible early win that makes the regional network tangible and gives the first State of Regional GIS Report its centerpiece.

Together these pilots exercise every core component of the program, governance, data, platform, services, workforce, and partnerships, at small scale before regional rollout, and their results supply the baselines the performance framework in Chapter 12 requires.

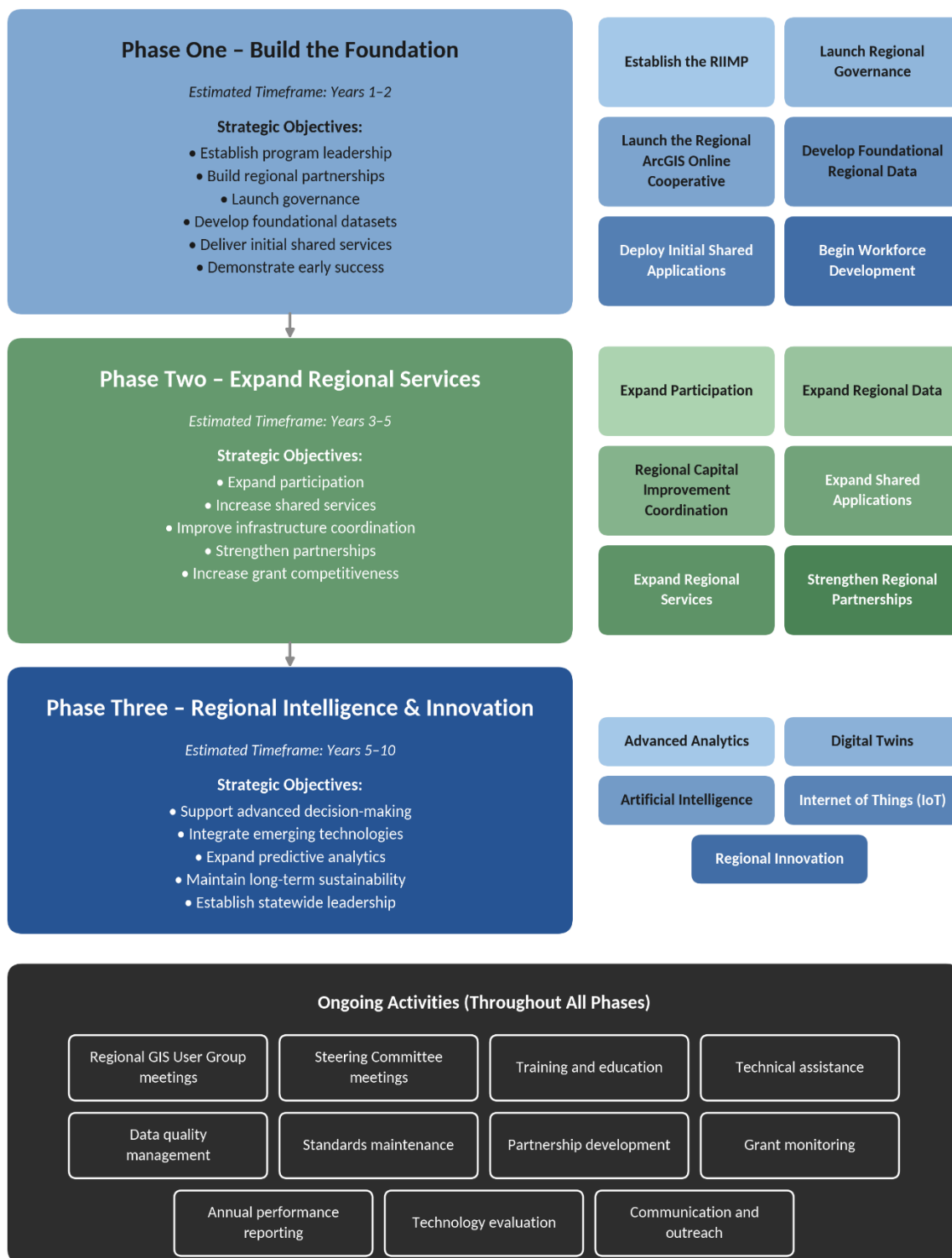


Figure 7. Outline of the phases and initiatives of the implementation roadmap



Phase One – Build the Foundation

Estimated Timeframe: Years 1–2

The first phase focuses on establishing the organizational and technical foundation of the RIIMP. Success during this phase depends upon building trust, demonstrating value, and creating the governance and infrastructure necessary to support future growth.

The emphasis should be on creating a sustainable program rather than deploying a large number of applications.

Strategic Objectives

- Establish program leadership
- Build regional partnerships
- Launch governance
- Develop foundational datasets
- Deliver initial shared services
- Demonstrate early success

Initiative 1 – Establish the RIIMP

The first priority is formally establishing the program within WMSRDC, and the most consequential early decision is staffing it honestly. The Phase One workload described throughout this roadmap exceeds a single position, and concentrating on the entire program in one person would recreate, at regional scale, the knowledge concentration risk this report warns member organizations about (Chapters 11 and 14). Appendix B recommends approximately 1.0 to 2.0 FTE for Phase One, divided into two complementary roles. The first is a Regional GIS Program Manager who owns relationships and priorities, including governance, member and state coordination, grants, communications, and the training program's design. The second is a GIS Specialist who owns the platform and the data, including cooperative administration, data standardization, application deployment, and technical assistance. The specialist capacity may initially be a part-time position or contracted technical services, expanding to a full position as participation and funding grow.

Key actions in this initiative include:

- Designate the Program Manager role and confirm its incumbent's existing duties are reassigned or reduced accordingly
- Secure initial GIS Specialist capacity (staff, shared position, or contracted services) per Appendix B
- Define the division of responsibilities between the two roles



- Develop annual work plans
- Establish funding priorities consistent with the funding strategy above
- Develop program branding and communication materials
- Adopt this roadmap as the guiding implementation document

Deliverable:

A formally established RIIMP with defined roles, dedicated capacity, and clearly assigned responsibilities.

Initiative 2 – Launch Regional Governance

Implementation should begin by establishing the governance structure described in Chapter 5.

Key actions include:

- Form the Regional GIS Steering Committee
- Launch the Regional GIS User Group
- Adopt governance policies
- Define participation procedures
- Establish annual meeting schedules
- Develop operating procedures

Deliverable:

A functioning governance framework with active regional participation.

Initiative 3 – Launch the Regional ArcGIS Online Cooperative

Once governance is established, WMSRDC should begin developing the Shared Regional GIS Platform.

Key actions include:

- Configure ArcGIS Online
- Establish security policies
- Create organizational groups
- Define user roles
- Develop content organization standards
- Configure administrative workflows

Deliverable:

A centrally administered ArcGIS Online Cooperative available to participating organizations.



Initiative 4 – Develop Foundational Regional Data

Initial efforts should focus on creating and standardizing the regional core datasets identified in Chapter 7.

- Roads and rail, established from existing state layers already in hand
- Addresses and parcels, building on county-maintained sources
- Water, sanitary sewer, and storm sewer systems, mains first, with service lines incorporated as available
- Electric and gas transmission
- Culverts and bridges, beginning with existing county inventories
- Key utility facilities: wastewater treatment plants, water filtration plants, pump and lift stations, water towers, and electrical substations
- Utility operating territories, with ownership and contact information carried as attributes

Key actions include:

- Identify authoritative data stewards
- Develop regional data standards
- Create metadata requirements
- Establish update procedures
- Develop quality assurance workflows

Deliverable:

A trusted regional foundation of standardized geographic information.

Initiative 5 – Deploy Initial Shared Applications

Early applications should emphasize high value with minimal complexity.

Suggested deployments include:

- Regional Map Viewer
- Executive Dashboard
- Infrastructure Viewer
- Public Information Maps
- Address Viewer
- Basic mobile data collection

These applications demonstrate immediate value while familiarizing organizations with the Regional GIS Platform.



Initiative 6 – Begin Workforce Development

The first year should establish the Regional GIS Training Program.

Activities include:

- GIS Fundamentals
- ArcGIS Online
- Mobile GIS
- Data standards
- User Group meetings
- Technical workshops

Deliverable:

A sustainable regional training program with broad organizational participation.

Phase One Success Indicators

By the end of Phase One:

- RIIMP established
- Governance operational
- Regional GIS User Group active
- ArcGIS Online Cooperative operational
- Foundational datasets standardized
- Initial shared applications deployed
- Regional training program established
- Strong organizational participation
- Regional CIP and MiDIG pilot completed, with the region's first consolidated project feed delivered to the MiDIG portal

Phase Two – Expand Regional Services

Estimated Timeframe: Years 3–5

With the foundational framework established, Phase Two focuses on expanding regional participation, increasing shared services, and strengthening regional coordination.

The emphasis shifts from implementation to integration.

Organizations begin moving beyond individual GIS projects toward coordinated regional operations.

Strategic Objectives



- Expand participation
- Increase shared services
- Improve infrastructure coordination
- Strengthen partnerships
- Increase grant competitiveness

Initiative 1 – Expand Participation

Continue recruiting:

- Municipalities
- Counties
- Utilities
- Educational institutions
- Transportation agencies
- Regional organizations

Participation should become representative of the entire WMSRDC region.

Initiative 2 – Expand Regional Data

Develop additional regional datasets including:

- Electric and gas distribution systems, as utility partners are willing to share them
- Streams, ditches, and flood zones
- Emergency response layers
- Shared-use paths and trails from MDOT multimodal sources, and sidewalks
- Broadband infrastructure
- Cell towers, manholes, and hydrants
- Wells and septic systems, publicly owned first
- Municipal system reach
- Additional layers per the Figure 4 classification

Data should continue aligning with the Regional Data Strategy. Note that the sequencing of utility data is deliberate: transmission-level infrastructure and key facilities are established in Phase One, while distribution systems follow in Phase Two, after the program has demonstrated the security practices, sharing classifications (Chapter 7), and mutual trust that sensitive infrastructure data requires. Furthermore, the region's base imagery needs are met through WMSRDC's existing imagery program enrollment; the drone program supplements it where site-level currency or resolution beyond scheduled statewide collections is required.



Initiative 3 – Regional Capital Improvement Coordination

Phase One's pilot demonstrated the model with the region's road commissions: a standardized regional CIP dataset, built to the schema in Chapter 7, coordinating one construction season and delivering the region's first consolidated feed to the Michigan Infrastructure Council's MiDIG portal. Phase Two converts that pilot into a standing regional service.

The regional CIP dataset does not duplicate MiDIG; it completes the region's presence within it. MiDIG's statewide value depends on participation, and many small agencies lack the capacity to maintain their own submissions. The regional dataset provides the local coordination workflows, dashboards, schedule alignment, and data stewardship that individual agencies engage with directly, while WMSRDC delivers the consolidated result to MiDIG on the region's behalf, with each agency registered and visible in the statewide system per Chapter 7.

Key actions include:

- Expand the contributing cohort beyond road commissions to municipalities, counties, drain commissions, and utilities
- Establish the annual construction-season coordination cycle: project submission, conflict review, coordination meetings, and schedule alignment
- Deploy the CIP dashboards from Chapter 6's application library
- Formalize the recurring MiDIG submission workflow and calendar with the MIC
- Connect CIP data to grant coordination, so planned projects strengthen regional applications
- Extend utility coordination, including dig-once opportunities identified before paving and reconstruction projects

This initiative carries weight: coordinated capital improvement information was among the most heavily emphasized objectives of the study's funding, and the progression from pilot to regional service is the clearest demonstration the program can offer that the MIC's investment in this region is producing statewide value.

Initiative 4 – Expand Shared Applications

Additional applications may include:

- Asset management
- Utility inspections
- Public works
- Development review
- Environmental monitoring
- Emergency operations



- Executive dashboards
- Regional reporting

Application development should continue emphasizing standardized regional solutions.

Initiative 5 – Expand Regional Services

Introduce:

- Drone services
- Remote sensing
- Advanced field collection
- Technical consulting
- Infrastructure analytics
- Regional reporting
- Data acquisition support

These services expand WMSRDC's role as a regional service provider.

Initiative 6 – Strengthen Regional Partnerships

Expand collaboration through:

- Universities
- Utilities
- State agencies
- Federal partners
- Nonprofits
- Private industry

Develop coordinated regional grant initiatives and multi-jurisdictional project partnerships.

Phase Two Success Indicators

By the end of Phase Two:

- Regional participation significantly expanded
- Shared services widely utilized
- Regional CIP coordination operational
- Additional datasets standardized
- Grant partnerships established
- Technical assistance program expanded
- Regional applications widely adopted



Phase Three – Regional Intelligence & Innovation

Estimated Timeframe: Years 5–10

By Phase Three, the RIIMP has matured into an established regional service supporting planning, infrastructure management, emergency preparedness, and organizational decision-making. These initiatives correspond to the Level 5 capabilities described in the maturity model and the mature-phase services identified in Chapter 10. The descriptions here focus on sequencing rather than redefinition.

The focus shifts from implementation to innovation.

Strategic Objectives

- Support advanced decision-making
- Integrate emerging technologies
- Expand predictive analytics
- Maintain long-term sustainability
- Establish statewide leadership

Initiative 1 – Advanced Analytics

Develop regional analytical capabilities supporting:

- Infrastructure investment
- Asset lifecycle planning
- Transportation analysis
- Economic development
- Hazard mitigation
- Climate resilience
- Environmental planning

Initiative 2 – Digital Twins

Evaluate digital twin technologies supporting:

- Transportation systems
- Utilities
- Public facilities
- Watersheds
- Community planning

Digital twins provide enhanced visualization and decision support for complex infrastructure systems.



Initiative 3 – Artificial Intelligence

Explore AI applications including:

- Automated quality assurance
- Feature extraction
- Predictive maintenance
- Infrastructure condition assessment
- Report generation
- Decision support
- Workflow automation

AI should complement, not replace human expertise.

Initiative 4 – Internet of Things (IoT)

Integrate sensor networks supporting:

- Flood monitoring
- Weather
- Utilities
- Traffic
- Environmental monitoring
- Infrastructure performance

Real-time information enhances situational awareness and operational decision-making.

Initiative 5 – Regional Innovation

Continue evaluating emerging technologies while maintaining compatibility with the governance framework and regional standards established during earlier phases.

Innovation should always support organizational goals rather than technology for its own sake.

Phase Three Success Indicators

By the conclusion of Phase Three:

- RIIMP fully operational
- Mature regional partnerships
- Advanced analytics routinely utilized
- Predictive decision support implemented
- Regional services recognized statewide
- WMSRDC recognized as a leader in regional geospatial collaboration



Ongoing Activities

While implementation occurs in phases, several activities should continue throughout the life of the program.

These include:

- Regional GIS User Group meetings
- Steering Committee meetings
- Training and education
- Technical assistance
- Data quality management
- Standards maintenance
- Partnership development
- Grant monitoring
- Annual performance reporting
- Technology evaluation
- Communication and outreach

These recurring activities ensure the RIIMP remains active, responsive, and continuously improving.

Annual Roadmap Review

This review is the same annual cycle described in Chapters 5 and 12, viewed through its implementation lens: one annual review, evaluating governance, performance, and roadmap progress together, producing a single updated work plan. Although this roadmap establishes a long-term strategic direction, implementation should remain adaptive.

Each year, WMSRDC and the Regional GIS Steering Committee should review:

- Progress toward objectives
- Performance measures
- Regional priorities
- Funding opportunities
- Organizational participation
- Emerging technologies
- Lessons learned

This review should result in an updated annual work plan that continues advancing the long-term vision while responding to changing regional needs.



Summary

The Implementation Roadmap translates the vision presented throughout this report into a practical strategy for action. Organized around three progressive phases, the roadmap allows WMSRDC to build organizational capacity, demonstrate early success, expand regional services, and ultimately establish a mature RIIMP that supports communities effectively within the scope of the initiative.

Importantly, the roadmap is not intended to be rigid. It provides direction rather than prescription, allowing WMSRDC to adapt implementation as technology evolves, funding opportunities emerge, and regional priorities change.

Success will not be measured by the completion of individual projects alone. It will be measured by stronger partnerships, better information, more coordinated infrastructure investments, increased organizational capacity, and a region that increasingly works together to solve shared challenges.

The roadmap establishes the path forward; the next chapter addresses the risks that could slow it and the strategies for managing them.



CHAPTER 14: Managing Risk & Ensuring Long-Term Success

Planning for Long-Term Success

The RIIMP represents a long-term investment in regional collaboration, information management, and organizational capacity. While the recommendations presented throughout this roadmap provide a practical strategy for implementation, every long-term initiative faces uncertainty. Technology evolves, organizational priorities shift, staffing changes occur, and funding opportunities fluctuate. Recognizing these realities is an important part of responsible planning.

The purpose of this chapter is not to identify reasons the RIIMP might fail. Rather, it is to identify the challenges that may arise during implementation and present strategies for addressing them proactively.

One of the most encouraging findings of the GIS Readiness Assessment was that the greatest risks facing the region are not technological. The region already possesses the technology, data, and organizational interest necessary to build a successful regional GIS program. The primary challenges relate to sustaining participation, developing organizational capacity, and maintaining long-term collaboration. These are challenges that can be successfully managed through thoughtful leadership, clear governance, and continuous communication.

Understanding Risk

Changes in leadership, budgets, staffing, technology, and organizational priorities are inevitable over the life of a multi-year program. Successful organizations do not eliminate risk; they prepare for it. The RIIMP has been intentionally designed to remain flexible and scalable so that implementation can continue even as circumstances evolve. Throughout this report, recommendations have emphasized incremental implementation, shared responsibility, and continuous improvement, principles that provide resilience by allowing the program to adapt without losing sight of its long-term vision.

Organizational Risks

The GIS Readiness Assessment consistently demonstrated that organizational factors represent the greatest implementation challenge.

Sustaining Leadership Support



Regional initiatives require visible and consistent leadership, and changes in elected officials, administrators, department directors, or organizational priorities may influence participation over time. Maintaining executive support requires continual communication regarding the value of the program: WMSRDC should regularly demonstrate how the RIIMP contributes to infrastructure planning, cost savings, grant competitiveness, operational efficiency, public service delivery, and regional collaboration. When leadership understands the business value of GIS, long-term support becomes significantly more sustainable.

Staff Capacity

Many participating organizations operate with limited staffing, and employees responsible for GIS frequently manage numerous additional responsibilities. Limited staff time may slow implementation, delay data maintenance, or reduce participation in regional initiatives. The RIIMP directly addresses this challenge through shared services, technical assistance, standardized applications, regional training, documentation, and peer collaboration. Rather than increasing organizational workload, the program should reduce it.

Knowledge Retention

As the assessment found and Chapter 11 addresses in detail, GIS expertise is often concentrated within a small number of employees, and retirements, promotions, or staff turnover can significantly affect organizational capacity. Reducing this risk requires workflow documentation, standard operating procedures, cross-training, GIS Champions, mentoring, and shared technical resources. Institutional knowledge should belong to organizations, not individuals.

Financial Risks

Like any long-term initiative, implementation depends upon sustainable funding. Potential challenges include budget limitations, delayed grant funding, changing organizational priorities, and broader economic conditions.

The phased implementation strategy presented in Chapter 13 reduces financial risk by allowing WMSRDC to expand services gradually while demonstrating value, and the funding strategy in that chapter reduces it further through diversification: a program funded through participation contributions, fee-for-service revenue, grants, and WMSRDC's base budget survives the loss of any single source. Additional strategies include pursuing regional grants, leveraging shared services, building partnerships, expanding participation incrementally, and prioritizing high-value initiatives. Demonstrating early success, particularly through the pilot projects identified in Chapter 13, will strengthen future funding opportunities.



Technology Risks

Technology changes rapidly. New software platforms, cloud services, artificial intelligence, and data collection methods continue reshaping the GIS industry, and attempting to build around today's tools alone creates long-term risk. The RIIMP mitigates general technology risk by emphasizing configurable solutions over custom development, cloud-based services that receive new capabilities through the platform itself, standards-based interoperability, scalable architecture, and continuous evaluation. Technology should support organizational goals rather than dictate them.

Platform and Vendor Dependency

The technology strategy in Chapter 6 deliberately standardizes on a single vendor's cloud platform. This is the right choice for the region, but it concentrates three cost and control exposures that governance must monitor rather than assume away.

First, licensing terms. The benchmarking in Chapter 3 illustrates this risk concretely: Michigan's most successful regional GIS consortium now manages collaboration constraints imposed by licensing decisions made decades ago. This roadmap therefore treats platform architecture and licensing terms as a standing governance concern rather than a one-time procurement question.

Second, consumption-based costs. ArcGIS Online charges service credits for hosted storage, analysis, and premium services, meaning the cooperative's operating costs grow with participation, data volume, and application usage, and per-credit pricing is set by the vendor and subject to change at renewal. Success itself is therefore a cost driver. Mitigations include annual credit budgeting and utilization review as a standing Steering Committee agenda item, consumption monitoring and alerts within the cooperative, serving high-volume content such as imagery and drone deliverables from managed external storage rather than accumulating it as hosted content (Chapter 8), credit-conscious application design standards, and negotiating multi-year terms with credit allotments sized to the participation growth anticipated in Chapter 13.

Third, product lifecycle. Software-as-a-service cuts both ways, and the program should be honest about both edges. The good: participating organizations always run the current version, new capabilities arrive automatically without upgrade projects, and security patches deploy without local IT effort, an arrangement dramatically better than the retired-desktop-software position some peer agencies now occupy (Chapter 3). The bad: the same mechanism means the vendor alone decides when a feature, application, or interface is finished, and when that decision comes, the region's only option is to adapt to the vendor's timeline. Esri has consolidated and retired multiple web and mobile applications in recent years, each retirement



obligating users to migrate workflows, rebuild configurations, and retrain staff on schedules they did not choose. A regional program multiplies this exposure: a retired application does not disrupt one organization's workflow but every participating organization's at once.

The mitigation is procedural rather than architectural. WMSRDC should maintain standing phase-out procedures: monitor vendor lifecycle and deprecation announcements as a routine administrative duty, communicate upcoming retirements to participants through the User Group well before deadlines, prefer configurable, widely adopted application patterns over niche products with uncertain futures, document application configurations so rebuilds are routine rather than archaeology, and budget staff time annually for migration work as a normal operating cost rather than treating each retirement as a surprise. Handled this way, vendor-driven change becomes a scheduled maintenance activity; unhandled, it becomes a recurring crisis.

Data Risks

Information becomes less valuable when it is incomplete, inconsistent, or outdated. Potential risks include inconsistent standards, duplicate information, delayed updates, poor metadata, and limited quality assurance. The Regional Data Strategy in Chapter 7 addresses these challenges through authoritative stewardship, regional standards, metadata requirements, quality assurance, routine maintenance, and shared governance. Maintaining trusted information is a continuous process rather than a one-time effort.

Collaboration Risks

Regional collaboration depends upon active participation, and potential challenges include declining meeting attendance, uneven organizational participation, communication gaps, differing priorities, and limited engagement. The governance framework in Chapter 5 reduces these risks through the User Group, the Steering Committee, regular communication, annual work plans, shared decision-making, and transparent governance. Ultimately, organizations remain engaged when they experience real value from participation, which is why the early, visible wins prioritized in Chapter 13 matter as much for risk management as for momentum.

Change Management

Implementing a regional program requires organizational change. New technology, workflows, governance structures, and partnerships naturally require adjustment. Successful change management depends upon early communication, clear expectations, practical training, leadership support, demonstrating early success, celebrating accomplishments, and listening to participant feedback. Organizations should never feel that change is being imposed upon them; they should recognize that the RIIMP exists to help them achieve their own organizational goals more effectively.



Maintaining Program Momentum

Many strategic plans lose momentum after initial implementation. The RIIMP is designed to avoid this outcome through the recurring structures established in earlier chapters: annual work plans, regular User Group meetings, Steering Committee oversight, the annual State of Regional GIS Report and performance dashboards from Chapter 12, continuous training, regional success stories, and recognition of participating organizations. Visible progress encourages continued participation while demonstrating the ongoing value of the program.

Risk Management Matrix

The following table summarizes the principal implementation risks and recommended mitigation strategies.

Table 8. Potential Risk, Impact, and Mitigation

Potential Risk	Potential Impact	Recommended Mitigation
Limited Staffing	Slower implementation	Shared services, training, technical assistance
Leadership Changes	Reduced participation	Executive communication, annual reporting, demonstrated value
Funding Constraints	Delayed initiatives	Phased implementation, grant development, partnerships
Staff Turnover	Loss of expertise	Documentation, cross-training, GIS Champions
Technology Changes	Platform obsolescence	Cloud-first strategy, open standards, continuous evaluation
Data Quality	Reduced confidence	Data governance, quality assurance, metadata
Declining Participation	Reduced collaboration	Active User Group, communication, visible successes
Licensing & Consumption Costs	Rising operating costs	Annual credit budgeting, consumption monitoring, external storage for high-volume content, diversified funding, multi-year terms
Product Retirements	Forced migration of shared workflows	Lifecycle monitoring, early User Group communication, configurable application patterns, documented configurations, budgeted migration time

Turning Challenges into Opportunities

Many of the challenges identified throughout this chapter also represent opportunities. Staffing shortages create opportunities for shared regional services. Funding challenges encourage stronger regional partnerships. Organizational diversity promotes innovation and knowledge sharing. Emerging technologies create new opportunities for efficiency. Regional collaboration



strengthens grant competitiveness. Viewed through this perspective, risk management becomes another mechanism for continuous improvement.

Summary

Implementing the RIIMP will require sustained leadership, active participation, and continued investment from WMSRDC and its regional partners. Like any long-term initiative, the program will encounter challenges related to staffing, funding, technology, organizational priorities, and collaboration. These challenges should be expected rather than viewed as barriers to success.

Fortunately, the recommendations presented throughout this roadmap have been intentionally designed to address these risks. Shared services reduce staffing demands, regional governance promotes transparency, standardized data improves trust, phased implementation and diversified funding support financial sustainability, and continuous training strengthens organizational capacity. Together, these strategies create a program that is both flexible and resilient, one that adapts to change, learns from experience, and continually improves regardless of changing organizational circumstances.

Ultimately, the greatest strength of the RIIMP is not the technology it employs but the collaborative relationships it fosters. As organizations continue working together, sharing information, and building trust, the program becomes increasingly capable of adapting to new opportunities and overcoming future challenges. What remains is to bring the roadmap's themes together and begin, and that is the subject of the final chapter.



CHAPTER 15: Conclusion & Call to Action

A Regional Opportunity

Throughout the course of this study, one message became increasingly clear: WMSRDC is well-positioned to become a leader in regional infrastructure information management.

The GIS Readiness Assessment confirmed that organizations throughout the region already recognize the value of GIS. Local governments, counties, utilities, emergency management agencies, transportation organizations, and regional partners are using geographic information to improve planning, manage infrastructure, support emergency response, protect natural resources, and deliver better public services.

Perhaps even more importantly, the assessment revealed something that cannot be purchased with software or funding: a willingness to collaborate. Of the organizations that responded to the survey, all but one expressed openness to regional collaboration, and half volunteered for a pilot project before the program existed. While each organization faces unique challenges, the assessment demonstrated that many of those challenges are shared, and that shared understanding provides the foundation upon which the RIIMP is built.

More Than a GIS Strategy

This roadmap can be described as a GIS strategic plan, but its recommendations extend well beyond technology. At its core, this report presents a strategy for improving how information supports decision-making: coordinating infrastructure investments, sharing authoritative information, strengthening emergency preparedness and grant competitiveness, and reducing duplicated effort across the region. GIS provides the technology that makes these outcomes possible, but the true value lies in the relationships, governance, and collaboration that develop around that technology. This is fundamentally a strategy for regional capacity building, and its success will be measured in those terms, through the outcomes framework of Chapter 12, not in licenses purchased, maps published, or applications deployed.

Building on Existing Strengths

The region is not starting from the beginning. Communities have already invested in GIS, counties maintain valuable datasets, utilities have developed sophisticated infrastructure information, regional organizations already collaborate on transportation, planning, housing, environmental initiatives, and economic development, and state agencies continue investing in statewide geographic information. The recommendations presented throughout this report build upon these strengths rather than replacing them. The objective is not to create an entirely



new system; it is to better connect the systems, information, expertise, and organizations that already exist.

WMSRDC's Opportunity

Regional planning commissions have always served as organizations that bring communities together to address challenges that extend beyond local boundaries. The recommendations contained in this roadmap expand that role. By establishing the RIIMP, WMSRDC becomes more than a planning organization: the Regional Information Integrator, a trusted technology partner, a regional training provider, a convener of local governments, a coordinator of shared services, and a catalyst for regional innovation. This leadership role aligns naturally with WMSRDC's existing mission while creating new opportunities to serve member communities.

The Long-Term Vision

If the recommendations presented throughout this roadmap are successfully implemented, the strategies and tactics undertaken by this organization will be recognized as a model for regional collaboration, infrastructure information management, and data-driven decision-making. Geographic information will no longer exist as isolated datasets maintained by individual organizations, but as a connected regional network of trusted information, shared appropriately, maintained by its authoritative source, and leveraged to support planning, operations, emergency management, economic development, and public investment throughout the region.

Communities will routinely coordinate infrastructure projects using shared Capital Improvement Program information, allowing transportation agencies, utilities, and local governments to better align investments, reduce redundant construction, and maximize the impact of public funding. Grant applications will become more competitive by demonstrating regional collaboration, standardized data, and coordinated planning. Decision-makers at every level will have access to timely, authoritative information through shared dashboards, applications, and analytical tools.

Perhaps most importantly, organizations of every size, including those with limited GIS staff or technical resources, will have access to enterprise-quality geospatial technology, regional expertise, and shared services through WMSRDC. By lowering barriers to participation and fostering a culture of collaboration, the RIIMP will enable communities to accomplish collectively what would be difficult or impossible to achieve independently.

A Roadmap, Not a Destination

No strategic roadmap can anticipate every technological advancement, organizational change, or future opportunity. Artificial intelligence, digital twins, autonomous infrastructure



monitoring, and technologies that have not yet emerged will continue changing how geographic information is collected, analyzed, and utilized. This report is intentionally designed to remain flexible: rather than prescribing every future action, it establishes a governance framework, organizational philosophy, and implementation strategy capable of adapting as new opportunities arise. Its recommendations should be viewed as a living roadmap, kept current through the annual review cycle established in Chapters 5, 12, and 13.

A Shared Responsibility

While WMSRDC is uniquely positioned to lead and coordinate the RIIMP, its long-term success cannot be achieved by any single organization acting alone. The program is founded on the principle that regional collaboration is a shared responsibility, requiring the active participation and continued commitment of communities, counties, utilities, transportation agencies, emergency management organizations, educational institutions, state and federal partners, nonprofit organizations, and private industry. Each brings unique expertise, resources, and perspectives that strengthen the region's collective ability to plan, manage, and invest in its infrastructure.

Every contribution, whether maintaining an authoritative dataset, participating in the User Group, attending a training session, coordinating a Capital Improvement Project, or partnering on a grant application, strengthens the regional program. Individually, these efforts may seem incremental; collectively, they create capabilities and opportunities that far exceed what any community could accomplish independently.

Moving Forward Together

The opportunity now is to move from planning to implementation, and the first steps are already mapped: the first twelve months are sequenced in Appendix A, the candidate pilot projects and their volunteer cohorts are identified in Chapter 13, and the staffing and funding strategies to support them are defined alongside. As participation grows, so too will the value of the program.

Over time, the region will transition from sharing technology to sharing knowledge. From sharing data to sharing decisions. From coordinating projects to coordinating regional investment. From individual GIS programs to a connected regional information ecosystem.

Call to Action

The region has a unique opportunity to become a statewide leader in regional collaboration through infrastructure information management. The foundation for success is already in place: communities have invested in GIS technology, organizations maintain valuable information, regional partnerships have been established, and stakeholders have demonstrated a clear



willingness to work together. What remains is a shared commitment to transform that collective interest into coordinated action.

This roadmap provides a practical and achievable framework for doing so. By investing in strong governance, trusted information, shared technology, workforce development, and strategic partnerships, WMSRDC can deliver lasting value to every participating community, regardless of size, staffing, or existing GIS capability. The vision is clear, the strategy has been established, and the path forward is well defined. Now is the time to move from planning to action and build that future together.

APPENDIX A

First Twelve Months from Strategy to Action



First 12 Months: From Strategy to Action

The first year of implementation will be critical to establishing the organizational, technical, and collaborative foundation of the RIIMP. The objective during this period should not be to implement every recommendation contained in this roadmap. Instead, WMSRDC should focus on establishing the structures, relationships, staffing capacity, and initial services necessary to demonstrate value and support sustainable growth.

Early implementation should emphasize achievable actions that create momentum while building the foundation for more advanced regional capabilities. Governance, staffing, stakeholder engagement, shared technology, foundational data, and a limited number of high-value pilot projects should receive the greatest attention during the first 12 months. More complex initiatives should generally build upon this foundation rather than compete with it for early resources. These include advanced remote sensing, UAS operations, digital twins, artificial intelligence, and large-scale infrastructure integration.

The following action plan provides a recommended sequence for the first year of implementation. Individual activities may overlap, and the schedule should remain flexible based on available funding, staffing, procurement requirements, and partner readiness.

Months 1–3: Establish Program Leadership and Governance

The first priority should be establishing clear ownership of the implementation process. Consistent with Chapter 13 and Appendix B, this means two decisions, not one: designating the Regional GIS Program Manager, with that person's existing duties reassigned or reduced accordingly, and securing initial GIS Specialist capacity, whether as a part-time position, a shared position, or contracted technical services. The Phase One workload described in this roadmap exceeds a single position, and beginning with one person "until activity increases" risks recreating, at regional scale, the knowledge concentration risk this report warns member organizations about.

During this period, WMSRDC should formally establish the Regional GIS Steering Committee to provide strategic guidance and organizational oversight. Initial membership should represent a cross-section of regional stakeholders, including counties, municipalities, road commissions, emergency management, utilities, planning organizations, and other key partners. The Steering Committee should help establish initial priorities, review implementation progress, and ensure that regional activities remain aligned with participant needs.

WMSRDC should also organize the first meeting of the Regional GIS User Group. Unlike the Steering Committee, the User Group should remain broadly accessible and operationally focused. Early meetings should provide opportunities for participants to share current projects,



identify common challenges, discuss available datasets and applications, and establish relationships among GIS professionals and staff who use spatial information as part of other job responsibilities.

Initial governance activities should include development of basic operating principles for the regional program. These should address participation, data ownership, data stewardship, access, security, application administration, and decision-making. The objective should not be to create an overly complex governance structure, but to establish enough clarity to support early collaboration and reduce uncertainty as shared services are introduced.

Key actions during Months 1–3 include:

- Designate the Regional GIS Program Manager and secure initial GIS Specialist capacity per Appendix B
- Establish the Regional GIS Steering Committee including county GIS program staff
- Convene the first Regional GIS User Group meeting
- Confirm initial organizational participation and identify key points of contact
- Establish a regular communication and meeting schedule
- Develop initial governance principles and participation expectations
- Confirm first-year implementation priorities
- Begin identifying staffing and funding requirements
- Establish coordination with the Michigan Infrastructure Council regarding pilot-region consistency and MiDIG participation

Primary outcome: A clearly defined program structure with identified leadership, participating organizations, and mechanisms for ongoing regional coordination.

Months 3–6: Build the Shared Technology and Data Foundation

Once the initial governance structure is in place, WMSRDC should begin establishing the technical foundation for shared regional services. A primary activity during this period should be implementation of the Regional ArcGIS Online Cooperative shared technology environment. WMSRDC should establish administrative standards, organizational roles, naming conventions, folder structures, security practices, application templates, and procedures for managing shared content.

The initial technology environment should remain intentionally focused. Rather than attempting to migrate every available dataset or application, WMSRDC should identify a limited set of high-value regional datasets and services beginning with the Phase One priority datasets identified in Chapter 13 and classified in Figure 7. Priority should be given to information that is widely used, supports multiple organizations, or is important to regional planning and infrastructure coordination.



At the same time, WMSRDC should begin developing a Regional Data Inventory. The inventory should identify important datasets maintained throughout the region, the organization responsible for each dataset, update frequency, availability, format, known limitations, and potential value for regional use. This inventory will provide the foundation for future data governance, data sharing, application development, and investment decisions.

Initial regional data standards should also be developed during this period. These standards should focus on practical issues such as coordinate systems, metadata, naming conventions, unique identifiers, data ownership, update responsibilities, and minimum documentation requirements. Standards should initially be applied to a small number of priority datasets and expanded over time based on experience.

Key actions during Months 3–6 include:

- Configure the Regional ArcGIS Online Cooperative
- Establish administrative, security, and content management standards
- Develop an initial Regional Data Inventory
- Identify authoritative data owners and stewards
- Select an initial group of regional foundational datasets
- Develop baseline regional data standards and metadata expectations
- Identify opportunities to reduce duplicate data maintenance
- Establish initial data-sharing and update workflows

Primary outcome: A functioning shared technology environment supported by an initial inventory of regional information, clearly identified data stewards, and practical standards for managing shared data.

Months 4–8: Launch Early Services and Demonstration Projects

The first year should produce visible results. WMSRDC should select a small number of early projects that address documented regional needs, can be implemented within a reasonable timeframe, and demonstrate the practical value of regional GIS collaboration.

Early projects should be drawn from the candidate pilot projects identified in Chapter 13, each of which comes with an evidence-based cohort: the Regional CIP and MiDIG pilot with the region's road commissions, the single-county data standardization pilot, the township onboarding pilot, and the regional champions registry. Not all four need to launch simultaneously; the Steering Committee should sequence them against capacity, with the champions registry as the natural first quick win and the CIP pilot timed to the construction season so its first consolidated MiDIG submission lands within the year if the calendar allows.



WMSRDC should avoid launching too many applications during the first year. One or two well-designed and actively used applications will provide greater long-term value than a large collection of applications without clear ownership, maintenance procedures, or user adoption. Early projects should therefore be treated as demonstration projects that establish repeatable approaches for application development, deployment, training, and support.

Where appropriate, WMSRDC should also begin providing limited technical assistance to participating organizations. This may include helping organizations evaluate existing GIS data, configure mobile data collection workflows, identify opportunities to use available regional services, or connect local information to shared regional applications.

Key actions during Months 4–8 include:

- Launch the first Chapter 13 pilot projects as sequenced by the Steering Committee
- Define project objectives, users, data requirements, and ownership
- Develop and deploy initial shared applications
- Establish repeatable application development and maintenance procedures
- Provide targeted technical assistance to participating organizations
- Document lessons learned from early implementation
- Share project results through the Regional GIS User Group and other regional communication channels

Primary outcome: Visible, practical examples of regional GIS collaboration that demonstrate value to participating organizations and establish models for future shared services.

Months 6–10: Expand Participation, Training, and Partnerships

As initial services become available, WMSRDC should broaden engagement across the region. Organizations that were not involved during the initial implementation period should be invited to participate in the User Group, contribute to the Regional Data Inventory, access shared resources, and identify future service needs.

Training should become a regular component of the program during this period. Initial training should focus on practical topics that support adoption of the new regional environment and address common needs identified through the readiness assessment. Training may include introductory GIS concepts, ArcGIS Online, web mapping, mobile data collection, data management, metadata, dashboards, and the use of shared regional applications.

WMSRDC should also begin formalizing partnerships with organizations that can contribute data, expertise, technology, training, or funding. These may include counties, universities and colleges, state agencies, federal agencies, utilities, professional associations, and private-sector



partners. Partnership development should be aligned with specific program objectives rather than pursued solely for the purpose of increasing participation.

During this period, WMSRDC should begin implementing the funding strategy defined in Chapter 13: confirming continuation funding through the MIC's RICH Hub structure, pursuing the planning and capacity-building grants identified in Chapter 9, and laying the groundwork for the Phase Two participation contributions and fee-for-service revenue. The regional program should identify grant opportunities, shared procurement opportunities, and other funding mechanisms that can support continued implementation. Having an established governance structure, documented regional participation, and successful early projects will strengthen future funding applications.

Key actions during Months 6–10 include:

- Expand outreach to additional regional organizations
- Establish a recurring GIS training and knowledge-sharing program
- Conduct workshops based on common regional needs
- Formalize priority partnerships with external organizations
- Identify grant and funding opportunities aligned with roadmap priorities
- Develop reusable project descriptions, regional need statements, and supporting materials for grant applications
- Identify opportunities for shared procurement or coordinated data acquisition

Primary outcome: Broader regional participation, increased workforce capacity, stronger external partnerships, and an emerging funding strategy to support program growth.

Months 9–12: Evaluate Progress and Prepare for Phase Two

The final portion of the first year should focus on evaluating progress, documenting results, and establishing priorities for continued implementation. WMSRDC should review the first year against the performance framework established in this roadmap (Chapter 12) and develop a baseline for measuring future progress.

Evaluation should consider both quantitative and qualitative outcomes. Measures may include the number of participating organizations, shared datasets, active users, deployed applications, training sessions, technical assistance requests, partnerships, grant applications, and documented examples of improved coordination or reduced duplication. Feedback should also be collected from participating organizations to identify what is working, where additional support is needed, and which priorities should receive greater attention during the following year.



The Steering Committee should use this information to develop a Year Two Work Program. The work program should identify specific projects, staffing requirements, technology investments, data priorities, partnership opportunities, and funding needs. It should also determine whether contracted or part-time specialist capacity should convert to a dedicated position.

By the end of the first year, WMSRDC should also publish the first edition of the State of Regional GIS Report named in Chapters 10 and 12. This document can communicate accomplishments to participating organizations, WMSRDC leadership, elected officials, funding partners, and the broader region. Demonstrating measurable progress will be important for maintaining participation and building support for continued investment.

Key actions during Months 9–12 include:

- Measure first-year performance against established indicators.
- Gather feedback from participating organizations.
- Review the effectiveness of governance and participation structures.
- Evaluate adoption and use of initial applications and services.
- Identify remaining gaps and emerging priorities.
- Assess staffing and resource requirements for continued growth.
- Develop the Year Two Work Program and budget priorities.
- Publish a first-year progress summary.

Primary outcome: A documented record of first-year accomplishments, measurable performance baselines, and a clearly defined work program for continued expansion.



Table 1. *First-Year Implementation Priorities at a Glance*

Timeframe	Priority	Key Deliverable
Months 1–3	Program Leadership	Regional GIS Program Manager designated and specialist capacity secured
Months 1–3	Governance	Regional GIS Steering Committee established
Months 1–3	Collaboration	Regional GIS User Group launched
Months 2–4	Program Administration	Initial governance and participation framework
Months 3–6	Shared Technology	Regional ArcGIS Online Cooperative established
Months 3–6	Data Management	Regional Data Inventory initiated
Months 3–6	Data Governance	Initial standards and stewardship responsibilities established
Months 4–8	Demonstration Projects	One to three high-value regional projects deployed or underway
Months 4–10	Technical Assistance	Initial support services provided to participating organizations
Months 6–10	Workforce Development	Recurring training and knowledge-sharing program launched
Months 6–10	Partnerships	Priority external partnerships and funding opportunities identified
Months 9–12	Performance Management	First-year baseline performance measures established
Months 10–12	Continued Implementation	Year Two Work Program developed
Month 12	Accountability	First-year progress summary published

Recommended First-Implementation-Year Success Measures

The first year should be evaluated primarily on whether WMSRDC has established a sustainable foundation for continued regional collaboration rather than on the total number of technologies or applications deployed. Recommended first-year indicators include:

- A designated Regional GIS Program Manager and secured specialist capacity with clearly defined division of responsibilities
- An active Regional GIS Steering Committee with regular participation
- A functioning Regional GIS User Group with recurring meetings
- A shared regional GIS technology environment with documented administrative standards
- An initial inventory of priority regional datasets and identified data stewards
- Adoption of baseline regional data governance and documentation practices
- Deployment or active development of at least one high-value shared regional application
- Establishment of a recurring GIS training and knowledge-sharing program



- Documented participation from organizations representing multiple counties and organizational types
- Identification or pursuit of external funding and partnership opportunities
- Establishment of baseline performance indicators for future measurement
- Adoption of a defined Year Two Work Program

The First-Implementation-Year Standard for Success

The first 12 months should be considered successful if WMSRDC has moved the RIIMP from a strategic concept to an active regional service. By the end of the first year, participating organizations should have a clear understanding of the program, a meaningful way to participate, access to initial shared resources, and visible evidence that regional collaboration can improve access to information and GIS capabilities.

The first year should establish credibility, relationships, and repeatable processes. It should create enough structure to support growth without creating unnecessary bureaucracy and deliver enough practical value to maintain participation without attempting to implement the entire roadmap at once. If these foundations are established successfully, WMSRDC will be well positioned to move into the broader expansion of regional services envisioned in Phase Two of the implementation roadmap.

APPENDIX B

Recommended Staffing Strategy



Recommended Staffing Strategy

Purpose

This appendix details the staffing model that Chapter 13's Initiative 1 and the first-year plan in Appendix A. The long-term success of the RIIMP will depend as much on staff capacity as it does on technology, data, and funding. WMSRDC can establish the program with a relatively modest initial staffing commitment, but responsibilities will increase as regional participation grows, shared applications are deployed, data acquisition services expand, and participating organizations increasingly rely on WMSRDC for technical assistance and regional coordination.

This appendix presents a phased staffing strategy aligned with the three implementation phases described in the Implementation Roadmap. The recommendations are intended to provide a planning framework rather than prescribe a rigid organizational structure. Actual staffing decisions should be based on program demand, available funding, participation levels, existing WMSRDC staff capabilities, and the extent to which specialized services are provided internally or through consultants and regional partners.

The recommended approach is to begin with clear program leadership and dedicated GIS capacity, use consultants and partnerships strategically for specialized needs, and add staff only as sustained demand demonstrates the need for additional capacity. This approach allows WMSRDC to build the program responsibly while avoiding the risks associated with either understaffing a successful regional initiative or expanding personnel costs before sufficient demand exists.

Staffing Principles

Several principles should guide staffing decisions throughout implementation.

Establish Clear Ownership

The RIIMP should have a clearly identified staff leader responsible for implementation, coordination, and accountability. GIS responsibilities should not be distributed informally among multiple employees without a clearly designated program owner.

Build Capacity Incrementally

Staffing should grow alongside regional participation and service demand. WMSRDC should avoid attempting to build a complete regional GIS department before the program has established its workload, funding model, and level of participation.



Protect Technical Staff from Becoming Only Help Desk Support

As participation grows, routine support requests can consume substantial staff time. Governance, documentation, standardized applications, training, and clearly defined service levels should be used to preserve staff capacity for higher-value regional initiatives.

Separate Program Leadership from Technical Production as the Program Grows

During early implementation, one employee may perform both strategic and technical responsibilities. As the program matures, these roles should become increasingly distinct. Program leadership requires time for partnerships, governance, funding, planning, and coordination, while technical staff require time to maintain data, applications, systems, and projects.

Use Consultants Strategically

Consultants can provide valuable specialized expertise during implementation, particularly for system architecture, complex application development, UAS program development, cybersecurity, advanced remote sensing, and other specialized activities. However, WMSRDC should develop sufficient internal knowledge to manage the program, maintain institutional continuity, and avoid long-term dependence on outside organizations for routine operations.

Recommended Staffing Model

The staffing model should evolve across three implementation phases.

Table 1. *Implementation Phase recommendations*

Implementation Phase	Approximate Timeframe	Recommended Core GIS Staffing	Primary Focus
Phase One – Build the Foundation	Years 1–2	1.0–2.0 FTE	Program establishment, governance, ArcGIS Online, core data, training, initial applications
Phase Two – Expand Regional Services	Years 3–5	2.0–4.0 FTE	Regional services, data coordination, CIP, UAS, applications, technical assistance
Phase Three – Regional Intelligence & Innovation	Years 5–10	4.0–6.0+ FTE	Mature regional services, advanced analytics, automation, remote sensing, innovation

These staffing levels represent recommended planning ranges rather than automatic hiring targets. WMSRDC may require fewer or more staff depending on the number of participating organizations, the scope of services offered, the use of consultants, and the amount of existing staff capacity assigned to the program.



Phase One – Build the Foundation

Estimated Timeframe: Years 1–2

The first phase requires strong leadership and sufficient technical capacity to establish the RIIMP correctly. The primary objective should be to build a sustainable foundation rather than immediately creating a large service organization.

At minimum, WMSRDC should identify one person with clear responsibility for leading the program. Ideally, the initial staffing structure would include approximately 1.0 to 2.0 full-time equivalent positions dedicated to GIS and regional information management.

Regional GIS Program Manager / GIS Coordinator

Recommended Timing: Immediate

Recommended Staffing: 1.0 FTE

The most important initial staffing need is a Regional GIS Program Manager. This individual should serve as the primary owner of the RIIMP and coordinate implementation across WMSRDC departments and participating organizations.

Primary responsibilities should include:

- Leading implementation of the GIS roadmap.
- Administering the RIIMP
- Coordinating the Regional GIS Steering Committee
- Organizing and supporting the Regional GIS User Group
- Managing the Regional ArcGIS Online Cooperative
- Establishing data governance and standards
- Coordinating regional datasets
- Developing annual work plans
- Managing consultants and technology vendors
- Supporting grant development
- Coordinating partnerships with local, county, state, federal, educational, and private-sector organizations
- Tracking program performance and reporting progress to WMSRDC leadership

The position should combine technical GIS knowledge with strong communication, project management, and organizational skills. The Regional GIS Program Manager should not be viewed solely as a GIS technician. The position is responsible for building and managing a regional program.



During the earliest stage of implementation, this individual may also perform significant technical work. However, as participation and service demand increase, the role should increasingly focus on program leadership, governance, partnerships, and strategic coordination.

GIS Specialist / GIS Analyst

Recommended Timing: From program establishment, at 0.5 FTE minimum via staff, shared position, or contracted services

Recommended Staffing: 0.5–1.0 FTE initially, expanding to 1.0 FTE

A GIS Specialist or GIS Analyst should provide the technical capacity necessary to implement and maintain the program.

Primary responsibilities may include:

- Data development and maintenance.
- ArcGIS Online content management.
- Web map and application configuration.
- Dashboard development.
- Mobile GIS workflows.
- Data quality assurance.
- Metadata.
- Cartography.
- Spatial analysis.
- Technical support.
- Training assistance.
- Field data collection.
- UAS data processing.

Brief periods where the Program Manager covers technical work are inevitable, but specialist capacity should exist from program establishment. A Program Manager absorbing the technical role by default is the first staffing trigger below firing on day one. Sustained regional service delivery will eventually require dedicated technical production capacity.

The addition of a GIS Specialist is particularly important because it allows the Program Manager to focus on regional coordination rather than becoming consumed by routine data maintenance and application support.

The objective during Phase One should be to establish internal ownership while using outside expertise strategically for specialized implementation needs.



Phase Two – Expand Regional Services

Estimated Timeframe: Years 3–5

As participation grows, the workload associated with the RIIMP will expand substantially. WMSRDC may be administering users and applications, maintaining regional datasets, coordinating Capital Improvement Program information, conducting training, supporting field data collection, operating a UAS program, assisting with grants, and responding to technical assistance requests from participating organizations.

At this stage, a single GIS employee will no longer provide sufficient capacity for a mature regional program.

WMSRDC should plan for approximately 2.0 to 4.0 GIS and information management FTEs during Phase Two, depending on participation and service demand.

Regional GIS Program Manager

The Program Manager should continue leading the overall program but transition away from routine technical production.

Primary responsibilities should increasingly focus on:

- Strategic planning.
- Governance.
- Regional partnerships.
- Program administration.
- Funding and grants.
- Service development.
- Executive communication.
- Steering Committee coordination.
- Performance measurement.
- Long-term technology strategy.

This separation is important. If the Program Manager remains responsible for every data edit, application request, map, and support question, the strategic development of the program may stall as operational demands increase.

GIS Analyst / Application Specialist

Recommended Timing: Phase Two

Recommended Staffing: 1.0 FTE

As shared applications become a central regional service, WMSRDC should maintain dedicated capacity for application configuration and GIS analysis.



Responsibilities may include:

- Web application development and configuration.
- ArcGIS Solutions deployment.
- Dashboards.
- Mobile applications.
- Workflow automation.
- Spatial analysis.
- Data visualization.
- Technical assistance.
- User support.
- Application documentation.

This position should focus on turning regional information into practical tools that participating organizations can use in daily operations.

GIS Data Coordinator / Data Specialist

Recommended Timing: Phase Two, based on data volume

Recommended Staffing: 0.5–1.0 FTE

As the Regional Core Data Framework expands, maintaining trusted information will become a significant responsibility.

Potential responsibilities include:

- Regional data coordination.
- Data quality assurance.
- Metadata.
- Data standards.
- ETL and data integration.
- Data update workflows.
- Authoritative source coordination.
- Capital Improvement Program data.
- State and federal data integration.
- Data publication.

This position becomes particularly valuable as information begins flowing among local agencies, counties, WMSRDC, and state partners.

Depending on workload, these responsibilities may initially remain part of the GIS Analyst position before developing into a dedicated role.



UAS / Field Technology Responsibilities

Recommended Timing: Phase Two

Recommended Staffing: Initially assigned as a secondary responsibility

WMSRDC does not necessarily need a dedicated drone pilot when establishing its UAS program. Instead, one or more GIS or planning staff members can obtain FAA Part 107 certification and perform UAS operations as part of broader responsibilities.

At least two staff members should eventually be capable of supporting UAS operations to provide scheduling flexibility and program continuity.

Responsibilities may include:

- Mission planning.
- Flight operations.
- Regulatory compliance.
- Flight logging.
- Equipment maintenance.
- Field data collection.
- Photogrammetry processing.
- GIS integration.
- Data archiving.

If regional UAS demand becomes substantial, these responsibilities may eventually justify a dedicated Remote Sensing or Field Technology Specialist.

This structure begins separating program management, application development, and data management while maintaining flexibility in specialized service areas.

Phase Three – Regional Intelligence & Innovation

Estimated Timeframe: Years 5–10

By Phase Three, the RIIMP may be supporting a substantial number of organizations and a broad portfolio of regional services. WMSRDC could be maintaining shared applications, coordinating regional data, supporting infrastructure planning, operating UAS and remote sensing services, providing training, conducting advanced analysis, and developing automated information workflows.

At this level of maturity, WMSRDC should anticipate approximately 4.0 to 6.0 or more dedicated FTEs, depending on program participation and the extent to which services are delivered internally.



The exact organizational structure should be based on demonstrated workload rather than established in advance. Potential roles include the following.

Regional GIS & Information Program Manager

The program leadership position should continue focusing on:

- Strategy.
- Governance.
- Partnerships.
- Funding.
- Program development.
- Executive communication.
- Regional coordination.
- Innovation.
- Long-term sustainability.

At this stage, the position may evolve into a broader Regional Information Program Manager, Geospatial Services Manager, or similar leadership role reflecting responsibilities beyond traditional GIS.

Senior GIS Analyst / Application Developer

This role would support more sophisticated applications and workflows, including:

- Advanced web applications.
- Workflow automation.
- System integration.
- APIs.
- Advanced spatial analysis.
- Enterprise data workflows.
- Custom application development where appropriate.
- Artificial intelligence-assisted workflows.

GIS Data Engineer / Data Coordinator

As regional data integration becomes more sophisticated, WMSRDC may require greater expertise in:

- Automated data pipelines.
- ETL.
- Database management.
- APIs.



- Data synchronization.
- Quality assurance.
- Regional data architecture.
- Integration with state and local systems.

The role would help ensure that information can move efficiently through the connected regional information ecosystem.

Remote Sensing & Field Technology Specialist

If UAS, LiDAR, imagery, GNSS, and field data acquisition become established regional services, a dedicated specialist may be justified.

Responsibilities could include:

- UAS program operations.
- Photogrammetry.
- LiDAR processing.
- Remote sensing.
- GNSS collection.
- Imagery management.
- Field technology.
- Equipment management.
- Training.
- Advanced data acquisition.

GIS Specialist / Technician

As service demand grows, a GIS Specialist or Technician can provide essential operational support.

Responsibilities may include:

- Data editing.
- Map production.
- Application maintenance.
- User support.
- Field data collection.
- Quality assurance.
- Documentation.
- Routine processing.

This position allows senior technical staff to focus on more complex regional projects.



Training & Outreach Responsibilities

A mature regional program will require ongoing communication, training, and user support. Initially, these responsibilities should remain distributed among the GIS team and existing WMSRDC communications or planning staff.

If training and participation become substantial, WMSRDC may eventually designate a staff member to coordinate:

- Regional GIS User Group activities.
- Training programs.
- Documentation.
- User onboarding.
- Outreach.
- Success stories.
- Program communications.

A dedicated GIS training position is not recommended during initial implementation, but the workload should be monitored as participation grows.

This structure should be considered a potential long-term model rather than an immediate staffing requirement.

Staffing by Program Function

The following table illustrates how staffing responsibilities may evolve as the program matures.

Table 2. *Phased staffing recommendations*

Program Function	Phase One	Phase Two	Phase Three
Program Leadership	GIS Program Manager	GIS Program Manager	GIS & Information Program Manager
ArcGIS Online Administration	Program Manager / GIS Specialist	GIS Analyst	GIS Analyst / Administrator
Data Governance	Program Manager	Data Coordinator	Data Engineer / Coordinator
Application Development	GIS Specialist / Consultant	GIS Analyst	Senior GIS Analyst / Developer
Technical Assistance	Program Manager / GIS Specialist	GIS Team	GIS Team / Technician
Training	Program Manager / Partners	GIS Team	GIS Team / Outreach Support
UAS Operations	Trained Existing Staff	Shared GIS Staff Role	Remote Sensing Specialist if justified



Imagery Processing	GIS Specialist / Consultant	GIS Analyst / UAS Staff	Remote Sensing Specialist
CIP Coordination	Program Manager / Planning Staff	Program Manager / Data Coordinator	Integrated Regional Team
Advanced Analytics	Consultant / GIS Staff	GIS Analyst	Senior Analyst / Data Engineer
Automation & AI	Limited / Consultant	Emerging Capability	Dedicated Technical Capability
Grant Support	Program Manager / Existing Staff	Program Manager / GIS Team	Integrated Program Function

Staffing Triggers

WMSRDC should avoid adding positions solely because a particular implementation year has been reached. New positions should be considered when measurable workload demonstrates a sustained need.

Potential staffing triggers include:

Table 3. *Potential staffing triggers*

Indicator	Potential Staffing Response
Program Manager spends substantial time on routine technical production	Add or expand GIS Analyst capacity
Application and support requests consistently exceed available capacity	Add GIS Specialist or Application Specialist
Regional data maintenance becomes a significant recurring workload	Add Data Coordinator capacity
UAS and remote sensing requests become frequent and sustained	Consider dedicated Remote Sensing Specialist
Increasing automation and integration requirements	Add Data Engineer or advanced technical capacity
Training and onboarding demand becomes substantial	Assign or add training/outreach capacity
Service requests consistently exceed established response targets	Review staffing and service model
Fee-for-service revenue or grants can sustain additional capacity	Evaluate targeted staff expansion

Using staffing triggers allows the organization to expand based on demonstrated need rather than assumptions.



Internships and Educational Partnerships

Internships can provide valuable additional capacity while strengthening the regional geospatial workforce pipeline.

WMSRDC should consider developing recurring internships with colleges and universities serving the region. Potential student activities include:

- Data collection.
- Data quality assurance.
- Metadata.
- Cartography.
- Application testing.
- UAS data processing.
- Environmental monitoring.
- Research.
- Documentation.

Interns should supplement professional staff rather than serve as substitutes for permanent positions responsible for critical systems and services.

A structured internship program can provide students with practical experience while introducing future professionals to regional planning and public-sector GIS.

Consultants and Specialized Support

Even a mature internal GIS team should not be expected to maintain expertise in every technology.

Consultants and specialized partners may remain appropriate for:

- Major system architecture.
- Cybersecurity.
- Complex custom development.
- Specialized UAS operations.
- Advanced LiDAR acquisition.
- Large-scale imagery collection.
- Specialized remote sensing.
- Enterprise integration.
- Advanced artificial intelligence.
- Major data migration.
- Independent technical review.



The objective should be to maintain sufficient internal expertise to define requirements, manage projects, evaluate deliverables, and sustain routine operations while using external expertise for specialized or temporary needs.

Funding Staffing Growth

Consistent with the phased funding strategy in Chapter 13, staffing growth should be supported through a diversified funding strategy.

Potential funding mechanisms include:

- WMSRDC operating funds.
- State and federal grants.
- Program-specific grants.
- Shared-service agreements.
- Participating agency contributions.
- Project-based fees.
- Fee-for-service technical assistance.
- UAS and data acquisition services.
- Training programs.
- Cost-sharing partnerships.

WMSRDC should avoid relying exclusively on short-term grants to support positions responsible for permanent core program functions. Grants can be valuable for launching new capabilities and demonstrating demand, but long-term positions should eventually have a sustainable funding base.

A blended funding model may provide the strongest long-term approach. Core program leadership and administration can be supported through stable organizational funding, while expanded services may be supported through grants, participation agreements, and project-specific revenue.



Recommended Staffing Priorities

WMSRDC should prioritize staffing investments in the following order:

Table 4. *Investment prioritization*

Priority	Position or Capacity	Rationale
1	Regional GIS Program Manager / Coordinator	Establishes clear ownership and leadership
2	GIS Specialist / Analyst	Provides technical capacity for implementation and service delivery
3	GIS Data Coordinator	Supports growing regional data governance and integration
4	Application / Advanced GIS Capacity	Expands shared applications and technical services
5	Remote Sensing & Field Technology Capacity	Supports UAS, imagery, LiDAR, and advanced collection as demand grows
6	GIS Technician / Support Capacity	Provides scalable operational support
7	Data Engineering / Automation Capacity	Supports a mature regional information ecosystem

Recommended Staffing Roadmap

A practical staffing progression for WMSRDC could be:

Years 1–2

Establish a **Regional GIS Program Manager** as the clear owner of the program and provide at least **0.5 to 1.0 FTE of additional GIS technical capacity** through a dedicated employee, reassigned staff capacity, or contracted support.

Recommended total dedicated capacity: approximately 1.0–2.0 FTE.

Years 3–5

Maintain the Program Manager and expand dedicated technical staffing to support applications, data, technical assistance, training, CIP coordination, and UAS services.

A likely structure would include:

- 1 Regional GIS Program Manager.
- 1 GIS Analyst / Application Specialist.
- 0.5–1.0 FTE of additional data, GIS, or field technology capacity.

Recommended total dedicated capacity: approximately 2.0–4.0 FTE.



Years 5–10

Expand staffing based on demonstrated regional service demand. A mature program may include:

- 1 Regional GIS & Information Program Manager.
- 1 Senior GIS Analyst / Application Developer.
- 1 GIS Data Coordinator or Data Engineer.
- 1 Remote Sensing / Field Technology Specialist.
- 1 GIS Specialist or Technician.
- Additional support capacity as participation and services require.

Potential mature program capacity: approximately 4.0–6.0 or more FTE.

Recommended Initial Approach

The most important staffing decision WMSRDC can make is to establish clear ownership of the RIIMP.

A roadmap of this scope cannot be sustainably implemented as an informal secondary responsibility without dedicated time and accountability. Governance meetings must be organized, regional partners engaged, ArcGIS Online administered, standards developed, applications maintained, data coordinated, grants pursued, training delivered, and program performance measured.

For this reason, WMSRDC should prioritize establishing a dedicated Regional GIS Program Manager or Coordinator during the initial implementation phase. The position should be supported by technical GIS capacity as early as practical, either through a GIS Specialist, shared internal staff, contracted assistance, or a combination of these resources.

As the program grows, WMSRDC should deliberately separate strategic program management from technical production. This transition will be essential to maintaining both effective regional leadership and high-quality service delivery.

Conclusion

The RIIMP should begin with a relatively lean staffing model and expand as participation, funding, and service demand increase. WMSRDC does not need to establish a large GIS department before implementation begins, but the program does require clear leadership and sufficient dedicated capacity to maintain momentum.

During the first phase, the highest priority should be establishing a Regional GIS Program Manager or Coordinator supported by technical GIS capacity. As the program expands,



additional staff should be added to support application development, data coordination, technical assistance, UAS and remote sensing services, and advanced information management.

Over the long term, the program may evolve into a small multidisciplinary regional geospatial and information services team. The exact structure should remain flexible and should be driven by demonstrated workload, sustainable funding, and the needs of participating organizations.

The objective is not to build the largest GIS staff possible. It is to build the right level of capacity at the right time. By aligning staffing growth with the phased implementation roadmap, WMSRDC can develop a sustainable team capable of supporting the RIIMP while ensuring that personnel investments continue to produce measurable value for the communities served by this initiative.

APPENDIX C

Recommended UAS Platforms



Recommended UAS Platforms

Purpose

This appendix supports the UAS program design presented in Chapter 8; the procurement paths below correspond to that chapter's phased program development. As part of the RIIMP, WMSRDC should consider establishing an Unmanned Aircraft System (UAS) capability to support infrastructure planning, environmental monitoring, project documentation, emergency response, grant administration, public communication, and other regional program areas. The appropriate aircraft will depend on the intended mission, required data products, regulatory and procurement requirements, and the level of investment WMSRDC is prepared to make in developing the program.

Platform selection for a public agency now begins with regulatory eligibility rather than price or capability. In December 2025, the FCC added the products of the dominant consumer and prosumer drone manufacturers, along with all foreign-produced UAS and critical components, to its Covered List, and the American Security Drone Act prohibits the procurement and operation of covered aircraft by federal agencies, contractors, and grant recipients. Because WMSRDC's anticipated drone applications include federally funded work, these restrictions apply to the program regardless of WMSRDC's own funding mix. The practical consequence deserves plain statement: the consumer-priced tier of the drone market is not available to this program. The aircraft evaluated in this appendix therefore carry what is honestly a compliance premium rather than a capability premium; a compliant entry platform costs several times what an equivalent consumer aircraft would for routine RGB imagery, and this appendix recommends them anyway because no eligible alternative exists.

This comparison is intended to support future procurement planning rather than recommend a single aircraft for immediate purchase. UAS technology continues to evolve rapidly, and WMSRDC should conduct a final market and regulatory review before acquisition to confirm current models, pricing, availability, data-security requirements, domestic-content requirements, and compatibility with anticipated software and processing workflows. This review is not a formality. Regulatory status described in this appendix, including FCC Covered List entries, equipment authorization status, and conditional-approval expiration dates, is current as of June 2026 and is subject to ongoing change. Platform eligibility must be re-verified at the time of procurement in consultation with procurement and legal counsel as appropriate.

Comparison of Recommended UAS Platforms



Table 1. Potential UAS platform comparison

Platform	Aircraft Type	Representative Specifications	Primary Capabilities	Approximate Cost*	Potential WMSRDC Fit
Parrot ANAFI USA	Compact enterprise multirotor	Approximately 32-minute flight time; lightweight and highly portable; visible and thermal imaging	Rapid deployment, inspections, emergency response, environmental reconnaissance, project documentation	\$7,000–\$10,000	Recommended entry platform
Freefly Astro Max with Sony LR1	Professional enterprise multirotor	RTK positioning; 61 MP Sony LR1 mapping payload; interchangeable payload architecture; approximately 3 kg payload capability	High-resolution photogrammetry, mapping, inspection, repeatable data acquisition, future sensor expansion	\$23,000–\$50,000+ complete system	Strong professional platform for a long-term regional GIS and mapping program
Inspired Flight IF800 Tomcat	Medium-lift enterprise multirotor	Up to approximately 54 minutes maximum flight time depending on configuration; approximately 3 kg payload capacity; modular sensor integration	LiDAR, photogrammetry, thermal imaging, specialized sensors, infrastructure inspection	\$23,000+ aircraft; approximately \$35,000–\$75,000+ with professional payloads	Strong option where interchangeable sensors and future LiDAR capabilities are priorities
WingtraOne GEN II	VTOL fixed-wing mapping UAS	Vertical takeoff and landing; PPK positioning; interchangeable mapping cameras; optimized for efficient large-area coverage	Large-area orthomosaics, transportation corridors, shorelines, environmental monitoring, regional mapping	\$25,000–\$40,000+	Strong specialized platform for large-area mapping
Skydio X10	Compact enterprise multirotor	visible/thermal/zoom sensor package with onboard autonomy	inspection, infrastructure documentation, transportation asset inspection, emergency response	\$15,000–\$28,000	Strong multipurpose inspection option, particularly for transportation infrastructure;



not a dedicated
mapping
platform.

*Costs are approximate planning-level estimates and may vary significantly based on aircraft configuration, controllers, batteries, payloads, RTK or PPK capabilities, software, training, warranties, support, and procurement contracts. Final pricing and specifications should be verified during procurement.

Parrot ANAFI USA

The Parrot ANAFI USA is the recommended entry platform for the program. Blue UAS listed, NDAA and TAA compliant, and assembled in the United States, it occupies the lowest price point currently available to a grant-funded public agency, generally in the approximate \$7,000 to \$10,000 range. Its lightweight, highly portable design combines visible and thermal imaging, supports rapid deployment, and packs small enough for routine field carry.

For WMSRDC, this platform covers the program's earliest real needs: public communication and outreach imagery, rapid-response reconnaissance, environmental documentation, thermal observation, and automated small-area mapping in the range of a few hundred acres per project. This scope aligns well with the documentation needs anticipated during early program development, and its modest cost allows WMSRDC to build pilot hours, operating procedures, and regional demand before committing to larger investments.

Its limitations are the same ones noted for compact aircraft generally: its capabilities are more limited for advanced photogrammetry and specialized sensor integration than the larger professional platforms evaluated in this appendix, and its small sensor produces mapping products suited to planning-level deliverables, grant exhibits, and natural-resource documentation rather than engineering-grade survey work. For these reasons, it should not serve as the primary aircraft supporting a comprehensive regional mapping program; that role belongs to the professional mapping tier as regional demand develops.

It is worth stating plainly that no compliant aircraft currently exists at true consumer prices. The low-cost tier of the U.S. market is occupied by covered-list manufacturers whose aircraft cannot be procured or operated with federal funds, and WMSRDC should not operate a mixed fleet that requires tracking individual aircraft eligibility against funding sources. This compliance premium also reinforces the shared-service model at the heart of this roadmap: an individual township cannot justify several thousand dollars for occasional aerial photography, but the region sharing a single compliant aircraft across many organizations can, which is precisely the gap the regional drone service exists to close.



Freefly Astro Max

The Freefly Astro Max represents a more substantial investment but is particularly well aligned with the long-term vision of a professional regional GIS and remote sensing program. When equipped with a high-resolution mapping payload such as the Sony LR1, the platform can support detailed photogrammetry, orthomosaic production, three-dimensional modeling, infrastructure documentation, and other professional geospatial applications.

Its RTK capabilities and modular payload architecture provide a foundation that can grow alongside the RIIMP. WMSRDC could initially use the platform for high-resolution RGB mapping and project documentation while retaining the ability to evaluate additional sensors as regional demand develops.

This scalability makes the Astro Max particularly well suited to the phased implementation strategy recommended in this report. The primary disadvantage is the higher initial investment required for a complete operational system, including the aircraft, mapping payload, batteries, accessories, software, training, and supporting computing infrastructure.

For WMSRDC, the Astro Max should be considered a leading candidate if the organization intends to develop repeatable, high-quality aerial mapping as a formal regional service.

Inspired Flight IF800 Tomcat

The Inspired Flight IF800 Tomcat is designed for organizations requiring a flexible professional aircraft capable of carrying multiple types of sensors. Its payload capacity allows the platform to support high-resolution cameras, LiDAR systems, thermal sensors, and other specialized equipment.

This flexibility could provide significant long-term value if WMSRDC expects its UAS program to evolve into a broader regional remote sensing service. Rather than purchasing separate aircraft for every application, a modular platform may allow different payloads to be deployed based on project requirements.

The IF800 is particularly relevant if LiDAR is considered a realistic future capability. Drone-based LiDAR can support terrain mapping, vegetation analysis, infrastructure documentation, and other applications where traditional imagery alone may be insufficient.

However, the platform also introduces greater cost and operational complexity. WMSRDC should consider this class of aircraft when a clear regional business case exists for advanced sensors rather than purchasing a heavy-lift platform solely for potential future capabilities.



WingtraOne GEN II

The WingtraOne GEN II is a specialized mapping platform designed to efficiently collect information across larger geographic areas. Unlike traditional multirotor aircraft, the WingtraOne takes off and lands vertically before transitioning to efficient fixed-wing forward flight.

This design makes the platform particularly well suited to transportation corridors, shorelines, large environmental projects, watersheds, development sites, and other applications where substantial geographic coverage is required. Its survey-oriented workflow and PPK positioning capabilities make it a strong option for professional aerial mapping.

For WMSRDC, the WingtraOne would likely be most appropriate as a specialized future platform rather than the first aircraft acquired. While highly effective for large-area mapping, it is less flexible for applications requiring prolonged hovering, close infrastructure inspection, thermal observation, or flexible project photography.

Wingtra's newer WingtraRAY platform should also be included in any future evaluation of this category. In addition to expanded coverage, reported at over 1,300 acres in a single flight with RGB payloads, and interchangeable RGB, LiDAR, and multispectral sensor options, the WingtraRAY carries NDAA-compliance, Blue UAS, and Green UAS credentials that directly address the procurement eligibility considerations described in the Purpose of this appendix. If WMSRDC pursues large-area mapping capability, the current Wingtra model line and its compliance status at the time of procurement should be evaluated rather than assuming the specific model referenced here remains current.

As regional demand for large-area mapping develops, a VTOL fixed-wing aircraft could complement a multipurpose multirotor platform and significantly expand WMSRDC's regional data acquisition capabilities.

Skydio X10

The Skydio X10 is a U.S.-manufactured autonomous enterprise multirotor combining visible, thermal, and zoom imaging with onboard autonomy designed for close-range inspection in complex environments, including GPS-denied conditions. Its Blue UAS-listed variant and domestic manufacture place it among the most procurement-safe platforms available, with complete systems generally in the approximate \$15,000 to \$28,000 range depending on configuration.

For WMSRDC, the X10's strongest fit is transportation and infrastructure inspection: bridges, culverts, towers, and facilities where autonomous obstacle avoidance and high-quality thermal and zoom imagery matter more than mapping accuracy. These capabilities align directly with



the transportation use cases identified throughout this roadmap and with the inspection services described in Chapters 8 and 10.

The important caveat is that the X10 is an inspection platform, not a survey or mapping platform. It should not be selected as the program's mapping aircraft, and it is best considered when regional inspection demand, particularly from road commissions and utilities, justifies a dedicated inspection capability alongside, rather than instead of, the entry and professional mapping tiers.

Mission Planning and Data Processing Software

Selecting an aircraft is only one component of establishing a successful UAS program. WMSRDC will also require software to plan and execute missions, process collected imagery, perform quality assurance, and integrate resulting products into the RIIMP. In practice, the software workflow can have as much influence on the efficiency and long-term value of a UAS program as the aircraft itself.

UAS software generally falls into two primary categories. Mission planning software is used to define flight areas, establish altitude and image overlap, create automated flight paths, manage repeatable missions, and support safe and efficient data collection. Data processing software converts the hundreds or thousands of individual images collected during a flight into useful geospatial products such as orthomosaics, point clouds, digital surface models, elevation products, three-dimensional models, and analytical datasets.

WMSRDC should avoid selecting software solely because it is bundled with a particular aircraft. Instead, the organization should evaluate the complete workflow from mission request through final data publication. The preferred software environment should support the aircraft selected, integrate with WMSRDC's GIS environment, produce appropriate geospatial deliverables, and remain financially sustainable as the number and size of projects increase.

Photogrammetry and Data Processing Software Options

Processing software transforms raw UAS imagery into information that can be used within GIS and other professional workflows. Depending on the mission, WMSRDC may need to produce orthomosaics, point clouds, digital surface models, elevation products, three-dimensional meshes, measurements, or other derived datasets.

Several commercial and open-source processing environments are available, each with different strengths.



Table 2. *Commercial and Open-source software comparisons*

Software	Primary Role	Key Capabilities	Cost Approach	Potential WMSRDC Fit
ArcGIS Drone2Map	GIS-integrated photogrammetry	Orthomosaics, point clouds, surface models, 3D products, direct integration with the ArcGIS ecosystem	Commercial licensing	Strong fit for streamlined integration with ArcGIS Pro and ArcGIS Online
Site Scan for ArcGIS	Cloud-based UAS management and processing	Flight management, cloud processing, project management, imagery products, ArcGIS integration	Commercial subscription	Strong option if WMSRDC develops a larger collaborative UAS program and prioritizes centralized cloud workflows
Pix4Dmatic / PIX4Dsurvey	Professional photogrammetry and mapping	Large-image projects, orthomosaics, point clouds, terrain products, survey-oriented workflows	Commercial licensing	Strong professional option for high-resolution mapping and advanced photogrammetry
Agisoft Metashape Professional	Desktop photogrammetry	Orthomosaics, dense point clouds, elevation models, 3D models, flexible processing workflows	Commercial perpetual or version-based licensing	Strong value for local processing and technical control
OpenDroneMap / WebODM	Open-source photogrammetry	Orthomosaics, point clouds, elevation models, 3D products, self-hosted processing	Open source; hosting and hardware costs apply	Strong option for cost-conscious processing and future shared regional infrastructure
RealityCapture	High-performance photogrammetry and 3D reconstruction	Rapid image processing, detailed meshes, reality capture, visualization	Commercial licensing model	Useful for advanced 3D modeling and reality-capture applications



ArcGIS Drone2Map

ArcGIS Drone2Map is likely to be one of the most straightforward processing options for WMSRDC because of the proposed Regional ArcGIS Online Cooperative and the broader use of ArcGIS throughout the RIIMP. Drone2Map can process drone imagery into products that can be readily used in ArcGIS Pro, ArcGIS Online, dashboards, web applications, and other GIS workflows.

This integration can reduce the number of steps required to move information from flight collection into operational applications. For staff already familiar with the ArcGIS environment, the learning curve may also be lower than adopting an entirely separate photogrammetry ecosystem.

Drone2Map should be considered a strong initial option when WMSRDC's primary objective is producing GIS-ready imagery and elevation products that will be published and used within the regional GIS environment.

Site Scan for ArcGIS

Site Scan for ArcGIS provides a more comprehensive cloud-based environment for managing UAS operations and processing imagery. It is designed to support mission planning, fleet and project management, cloud processing, and integration with the broader ArcGIS ecosystem.

This approach may become particularly valuable if WMSRDC's UAS program expands into a formal regional service with multiple pilots, numerous projects, repeat collection activities, and a need for centralized project administration. Cloud processing can also reduce dependence on individual high-performance workstations, although recurring subscription and data storage costs should be considered.

For an initial program with a limited number of flights, Site Scan may provide more capability than is immediately necessary. However, it should be evaluated as the program grows and operational coordination becomes more complex.

Pix4D

Pix4D provides a mature professional photogrammetry ecosystem and is widely used for mapping, surveying, construction, and other geospatial applications. Software such as PIX4Dmatic can support large image datasets and high-resolution mapping projects, while related applications can support point-cloud analysis and conversion of photogrammetric products into more usable GIS and CAD information.

Pix4D may be particularly appropriate if WMSRDC develops a substantial professional mapping service or requires advanced control over photogrammetric processing. The primary



considerations are licensing costs, training requirements, and determining whether its advanced capabilities provide sufficient additional value beyond tools already available within the ArcGIS ecosystem.

Agisoft Metashape Professional

Agisoft Metashape Professional provides a powerful desktop-based photogrammetry environment capable of producing orthomosaics, point clouds, digital elevation products, textured three-dimensional models, and other outputs from overlapping imagery.

One of its primary advantages is local processing and a high degree of technical control. This can be useful when WMSRDC wishes to maintain project data within its own computing environment or avoid recurring cloud-processing costs. It may also provide a cost-effective professional processing option for staff comfortable managing more technical workflows.

Metashape should be considered a strong alternative or complementary processing environment where local control, flexible processing, and advanced photogrammetry are priorities.

OpenDroneMap and WebODM

OpenDroneMap and its web-based interface, WebODM, provide an open-source alternative for processing drone imagery. These tools can generate many of the same fundamental products required for regional GIS applications, including orthomosaics, point clouds, elevation models, and three-dimensional products.

An open-source processing environment could align well with WMSRDC's long-term objective of developing shared regional technical capabilities. A dedicated processing workstation or server could potentially support WebODM and allow WMSRDC to process projects without per-project cloud fees.

However, open-source software does not eliminate costs. WMSRDC would still need appropriate computing hardware, storage, system administration, staff expertise, and technical support. The primary advantage is greater control over the processing environment and the potential to reduce recurring software expenses as project volume increases.

Recommended Software Strategy

WMSRDC should adopt a phased software strategy that mirrors the phased development of the UAS program.

During the initial phase, WMSRDC should prioritize simplicity and integration. The manufacturer's supported flight software should generally be used for aircraft operation and routine mission planning, while a GIS-integrated processing environment such as ArcGIS



Drone2Map may provide the most direct pathway from raw imagery to usable regional GIS products. If WMSRDC already has access to applicable ArcGIS licensing, this approach may also reduce the need to immediately introduce additional software platforms.

As the program grows, WMSRDC should evaluate more specialized tools based on demonstrated needs. Advanced mission planning software such as UgCS may become valuable for corridor mapping, terrain-following missions, and repeatable long-term monitoring. Pix4D or Agisoft Metashape may provide additional photogrammetric control for complex projects, while Site Scan for ArcGIS may become attractive if WMSRDC needs centralized cloud-based management of a larger regional UAS program.

OpenDroneMap and WebODM should also be evaluated as potential components of a future shared processing environment. A self-hosted processing system could provide a cost-effective method for handling increasing imagery volumes while giving WMSRDC greater control over data storage and processing infrastructure.

A potential phased software approach is summarized below. Note that these are the UAS program's own development phases as described in Chapter 8, not the roadmap-wide implementation phases of Chapter 13. The UAS program advances through its phases within the broader roadmap, with aircraft acquisition beginning no earlier than late roadmap Phase One, consistent with the first-year guidance in Appendix A, and drone services formally launching as a regional offering in roadmap Phase Two.

Table 3. *UAS Mission Planning software comparison*

UAS Program Phase (Chapter 8)	Mission Planning	Processing	Primary Objective
Phase 1 – Initial Program	Manufacturer-supported flight software	ArcGIS Drone2Map and/or Agisoft Metashape	Establish reliable workflows and produce GIS-ready deliverables
Phase 2 – Regional Shared Service	Manufacturer software with advanced tools such as UgCS where needed	Drone2Map, Pix4D, Metashape, Site Scan, or WebODM based on project requirements	Support multiple project types and increased flight volume
Phase 3 – Advanced Remote Sensing	Advanced multi-platform and repeatable mission planning	Integrated desktop, cloud, and/or self-hosted high-performance processing	Support large datasets, advanced sensors, automation, LiDAR, and regional-scale services



Software Selection Criteria

Before selecting mission planning or processing software, WMSRDC should evaluate each platform against a consistent set of criteria.

Table 4. *UAS evaluation categories and considerations.*

Evaluation Category	Key Considerations
Aircraft Compatibility	Support for the selected UAS platform, camera, payload, and flight controller
Mission Types	Grid mapping, corridor mapping, terrain following, inspections, repeat missions, and specialized collection
Output Products	Orthomosaics, point clouds, elevation models, contours, 3D models, thermal products, and other required deliverables
GIS Integration	Compatibility with ArcGIS Pro, ArcGIS Online, standard geospatial formats, and regional data workflows
Processing Location	Desktop, cloud, or self-hosted processing and associated security considerations
Automation	Batch processing, templates, repeatable workflows, APIs, and future workflow automation
Data Security	Storage location, data transmission, cloud hosting, account management, and organizational security requirements
Scalability	Ability to handle larger projects, additional pilots, increased imagery volumes, and future sensors
Technical Support	Documentation, training, vendor support, user community, and long-term product development
Total Cost of Ownership	Licensing, subscriptions, cloud processing, storage, hardware, administration, and training

Recommended Initial Software Configuration

For an initial WMSRDC UAS program, a practical software configuration would consist of the selected aircraft manufacturer's supported flight application for routine aircraft operation and mission execution, combined with a dedicated photogrammetry processing environment capable of producing standard GIS deliverables.

Because the RIIMP is expected to rely heavily on ArcGIS, ArcGIS Drone2Map should be strongly evaluated as the initial GIS-oriented processing platform. Its integration with ArcGIS Pro and ArcGIS Online can simplify the process of turning collected imagery into information that can be published, analyzed, and reused throughout the regional program.

WMSRDC should also evaluate Agisoft Metashape Professional or OpenDroneMap/WebODM as complementary local-processing options. These platforms can provide greater control over processing and may help manage long-term costs as the number of UAS projects increases.



For more advanced mission planning, UgCS should be evaluated when WMSRDC begins conducting repeatable corridor, shoreline, environmental monitoring, or terrain-sensitive missions. There may be little need to purchase advanced planning software during the earliest stages of the program if the selected aircraft's native software adequately supports initial mission requirements.

The recommended approach is therefore not to purchase every available software package at program launch. WMSRDC should begin with the smallest software environment capable of safely operating the aircraft, producing reliable GIS-ready deliverables, and integrating those products into the regional information ecosystem. Additional software should be introduced only when project requirements demonstrate a clear operational need.

The Complete UAS Technology Ecosystem

A sustainable UAS program should ultimately be viewed as an integrated technology ecosystem rather than a collection of individual products. The aircraft collects information, mission planning software ensures that information is collected consistently, processing software transforms raw imagery into usable products, and GIS integrates those products with other regional information. Consistent with Chapters 8 and 14, archived imagery and derived products (Long-Term Archive step below) should reside on managed local or external storage and be served into the cooperative as needed, rather than accumulating as credit-metered hosted content.

The complete workflow can be summarized as:

Project Need → Mission Planning → Flight & Data Collection → Photogrammetric Processing → Quality Assurance → GIS Integration → Publication & Analysis → Long-Term Archive

Each component of this workflow should be considered during procurement. Selecting an aircraft without considering software compatibility, processing requirements, computing infrastructure, and final GIS integration can create unnecessary costs and operational inefficiencies. Conversely, designing the complete workflow from the beginning allows WMSRDC to establish a scalable system in which data can move efficiently from field collection into the RIIMP.

The goal should not simply be to fly a drone or produce aerial imagery. The goal should be to create reliable, repeatable workflows that transform remotely collected information into trusted regional data that can support planning, infrastructure management, environmental monitoring, emergency response, grant administration, and better decision-making throughout WMSRDC's scope of influence.



Recommended Procurement Paths

The appropriate UAS investment depends largely on how WMSRDC intends to develop the program. Two general procurement paths should be considered.

Lower-Cost Pilot Program

If WMSRDC's initial objective is to develop staff experience, establish operational procedures, support project documentation, conduct environmental monitoring, and evaluate regional demand, a compact enterprise aircraft may provide an appropriate starting point. This path aligns with the sequencing above: acquisition and experience-building occur late in roadmap Phase One, after the foundation-year priorities in Appendix A are established, so that the drone program is operational when regional services launch in Phase Two.

This approach allows WMSRDC to:

- Establish FAA Part 107 operational experience.
- Develop flight and safety procedures.
- Test data processing workflows.
- Support internal WMSRDC projects.
- Evaluate demand from regional partners.
- Demonstrate the value of UAS technology before making larger investments.

A multipurpose aircraft with visible and thermal capabilities may provide the greatest flexibility during this initial stage.

Professional Regional Mapping Program

If WMSRDC intends to establish high-resolution photogrammetry and aerial mapping as a formal regional service, a more substantial investment may be justified. A professional mapping platform, supporting payloads, batteries, processing software, training, and computing infrastructure could require an initial investment of approximately \$30,000 to \$50,000 or more.

This approach would provide a stronger foundation for:

- Repeatable orthomosaic production.
- High-resolution infrastructure mapping.
- Construction documentation.
- Environmental monitoring.
- Three-dimensional modeling.
- Regional shared services.
- Future sensor expansion.



Based on the capabilities evaluated in this appendix, a platform such as the Freefly Astro Max with a professional mapping payload represents a strong example of this type of long-term investment.

Specialized Future Capabilities

As the RIIMP matures, WMSRDC may determine that no single aircraft can efficiently support every regional need. A future UAS fleet could therefore include complementary platforms designed for different mission types.

A multipurpose multirotor aircraft could support inspections, documentation, environmental monitoring, and rapid deployment. A dedicated mapping platform could support high-resolution photogrammetry and repeatable data acquisition. A VTOL fixed-wing platform could support large-area and corridor mapping, while a medium-lift aircraft could carry LiDAR or other specialized sensors.

Any expansion should be driven by demonstrated regional demand and a clearly defined business case. WMSRDC should avoid purchasing specialized equipment based solely on potential future applications when those services can initially be obtained through partnerships, contractors, or other agencies.



Recommended Evaluation Criteria

Before selecting a UAS platform, WMSRDC should evaluate potential aircraft using a consistent set of criteria that reflects both immediate and long-term program needs.

Table 5. *Evaluation categories and considerations.*

Evaluation Category	Key Considerations
Mission Requirements	Mapping, inspection, thermal imaging, emergency response, environmental monitoring, or project documentation
Data Quality	Camera resolution, positional accuracy, RTK/PPK support, repeatability, and compatibility with required deliverables
Flight Performance	Endurance, wind resistance, operating temperature, weather resistance, and geographic coverage
Payload Flexibility	Integrated sensors versus interchangeable cameras, LiDAR, thermal, or future payloads
Regulatory & Procurement Compliance	FAA requirements, funding restrictions, domestic-content requirements, NDAA or other applicable procurement considerations
Software Integration	Compatibility with ArcGIS, photogrammetry software, mission planning tools, and regional data workflows
Data Security	Data transmission, storage, cloud dependencies, account management, and organizational cybersecurity policies
Operational Complexity	Training requirements, maintenance, transportation, deployment time, and staffing needs
Total Cost of Ownership	Aircraft, payloads, batteries, software, warranties, training, maintenance, storage, and processing infrastructure
Vendor Support	Technical support, replacement parts, training resources, warranties, and long-term product support

Recommended Approach

WMSRDC should avoid selecting an aircraft based solely on maximum technical capability. The most advanced platform is not necessarily the platform that provides the greatest value. The selected UAS should align with the services WMSRDC intends to provide, the skills of available staff, anticipated project demand, and the organization's ability to sustainably operate and maintain the system.

For an initial program focused primarily on project documentation, environmental monitoring, grant reporting, emergency support, and occasional mapping, a smaller enterprise platform may provide the strongest return on investment. If WMSRDC intends to establish repeatable, high-quality aerial mapping as a core regional service, investment in a professional mapping platform may be more appropriate from the outset.



A medium-lift or specialized large-area mapping aircraft should generally be considered only when regional demand demonstrates a clear need for LiDAR, interchangeable professional sensors, or frequent large-area data acquisition.

Regardless of the platform selected, the aircraft should be viewed as one component of a broader operational system. Training, regulatory compliance, mission planning, data processing, quality assurance, GIS integration, storage, and long-term program administration will ultimately determine the value of the investment.

Conclusion

Several capable non-DJI UAS platforms could support the RIIMP, but no single aircraft is ideal for every potential mission. Compact enterprise aircraft provide accessible entry points for documentation, inspection, thermal imaging, and rapid response. Professional multirotor platforms provide stronger mapping capabilities and opportunities for future sensor expansion, while VTOL fixed-wing and medium-lift aircraft can support specialized large-area mapping and advanced remote sensing applications.

WMSRDC should therefore approach UAS procurement as a service-planning decision rather than simply an equipment purchase. The organization should first define the services it intends to provide, identify the data products required to support those services, and then select the aircraft and supporting technology best suited to produce those outcomes.

A phased procurement strategy provides the greatest flexibility. WMSRDC can begin with a platform that addresses immediate, high-value needs, develop operational experience, evaluate regional demand, and expand into more advanced capabilities as the RIIMP matures. This approach reduces financial and operational risk while creating a practical pathway toward a sustainable regional UAS and remote sensing program.

APPENDIX D

Recommended GIS Computing & Processing Hardware



Recommended GIS Computing & Processing Hardware

Purpose

The RIIMP will increase WMSRDC's use of Geographic Information Systems, aerial imagery, remote sensing, three-dimensional data, and other computationally intensive technologies. While the proposed Regional ArcGIS Online Cooperative operates entirely in the cloud and can be accessed using standard office computers, advanced GIS analysis and data processing require substantially greater computing resources.

Activities such as processing UAS imagery, creating orthomosaics, analyzing LiDAR point clouds, working with large raster datasets, performing three-dimensional visualization, running advanced geoprocessing models, and applying artificial intelligence or machine learning can place significant demands on computer processors, memory, graphics hardware, storage, and network infrastructure. Attempting to perform these activities on standard office computers may result in slow processing, application instability, and inefficient use of staff time.

WMSRDC should therefore establish a tiered computing strategy that separates routine GIS use from advanced GIS and imagery processing. Most employees will not require specialized hardware. Instead, WMSRDC should maintain a limited number of high-performance GIS workstations and, as program demand grows, consider developing a centralized processing and storage environment that can support multiple program areas.

The objective is not to build a large data center or purchase unnecessarily expensive equipment. The goal is to provide sufficient computing capacity for current needs while establishing a scalable foundation for future GIS, UAS, LiDAR, remote sensing, automation, and analytical workflows.

Recommended Computing Strategy

WMSRDC's computing environment should be organized around three general levels of capability:

1. *Standard GIS Workstations* for routine ArcGIS Pro use, map production, data editing, and moderate spatial analysis.
2. *Advanced GIS and Imagery Processing Workstations* for UAS photogrammetry, LiDAR, large raster datasets, three-dimensional GIS, and computationally intensive geoprocessing.
3. *Shared Processing and Storage Infrastructure* for large datasets, centralized processing, automation, backups, and future advanced analytical capabilities.



This tiered approach allows WMSRDC to direct technology investments toward the users and workflows that actually require additional computing power.

Standard GIS Workstation

A standard GIS workstation should support routine professional GIS activities, including ArcGIS Pro, desktop mapping, data editing, moderate geoprocessing, web GIS administration, application configuration, and basic three-dimensional visualization.

This configuration should be appropriate for most WMSRDC staff who regularly use GIS but are not routinely processing large imagery or LiDAR datasets.

Table 1. *Components and specifications (Standard Workstation).*

Component	Recommended Specification
Processor	Modern Intel Core Ultra 7 / Core i7 or AMD Ryzen 7-class processor
CPU Cores	Approximately 8–16 high-performance cores
Memory	32 GB minimum; 64 GB preferred
Graphics	Dedicated NVIDIA or equivalent professional-capable GPU with 8 GB or more VRAM
Primary Storage	1 TB NVMe solid-state drive
Secondary Storage	2 TB or greater SSD where local project storage is required
Network	1 Gigabit Ethernet minimum; Wi-Fi 6 or newer
Displays	Dual 27-inch monitors or equivalent high-resolution workspace
Operating System	Current 64-bit Windows professional operating system

For new GIS workstation purchases, WMSRDC should generally consider 64 GB of memory the preferred baseline. Although 32 GB may be adequate for many routine GIS activities, the additional memory provides greater flexibility for ArcGIS Pro, large datasets, multiple applications, and future analytical requirements.

Approximate Planning-Level Cost

A professionally configured standard GIS workstation will generally require an investment of approximately \$2,000 to \$3,500, excluding monitors and specialized peripherals.

Advanced GIS and Imagery Processing Workstation

WMSRDC should maintain at least one high-performance workstation dedicated to advanced GIS, UAS imagery processing, LiDAR, three-dimensional visualization, and other computationally intensive workloads. If multiple staff members regularly perform these activities, a second advanced workstation may eventually be justified.



This system would support applications and workflows such as the following, including the processing environments evaluated in Appendix C:

- ArcGIS Pro
- ArcGIS Drone2Map
- Agisoft Metashape Professional
- Pix4D
- OpenDroneMap and WebODM
- LiDAR processing
- Large raster analysis
- Three-dimensional GIS
- Point-cloud processing
- Remote sensing
- Machine learning
- Artificial intelligence-assisted feature extraction

Recommended Advanced Workstation Configuration

Table 2. *Components and specifications (Advanced Workstation).*

Component	Recommended Specification
Processor	High-end AMD Ryzen 9, Threadripper, Intel Core Ultra 9, or comparable workstation-class processor
CPU Cores	Approximately 16–32 high-performance cores, depending on workload
Memory	128 GB recommended; 64 GB minimum
Graphics	NVIDIA GPU with 16–24 GB or more VRAM
Primary Storage	2 TB high-performance NVMe SSD
Active Project Storage	4–8 TB high-performance NVMe or SSD storage
Archive Connectivity	High-speed connection to centralized network storage
Network	10 Gigabit Ethernet preferred
Power Protection	Uninterruptible Power Supply (UPS)
Displays	Dual high-resolution professional displays
Operating System	Current 64-bit Windows professional operating system

The most important components for this class of workstation are sufficient system memory, fast local storage, and a capable graphics processor. UAS imagery, point clouds, and large raster datasets can quickly consume tens or hundreds of gigabytes of storage during active processing. Fast NVMe storage can therefore have a significant impact on workflow performance.



A GPU with substantial dedicated memory is also increasingly important. While not every GIS or photogrammetry process is GPU accelerated, modern three-dimensional visualization, imagery processing, artificial intelligence, and machine learning workflows increasingly benefit from powerful graphics hardware.

Approximate Planning-Level Cost

A high-performance GIS and imagery processing workstation will generally require an investment of approximately \$5,000 to \$10,000, depending on processor, GPU, memory, and storage configuration.

For WMSRDC's anticipated initial needs, a workstation in approximately the \$6,000 to \$8,000 range would likely provide a strong balance between performance and cost without moving into highly specialized or unnecessarily expensive hardware.

Recommended Initial Advanced Workstation

For planning purposes, an initial WMSRDC advanced processing workstation should target approximately the following configuration:

Table 3. *Components and configurations (Advanced Workstation).*

Component	Suggested Initial Configuration
CPU	16–24 core high-performance processor
RAM	128 GB
GPU	NVIDIA GPU with 16–24 GB VRAM
Operating System Drive	2 TB NVMe SSD
Processing Workspace	4 TB or larger high-performance NVMe SSD
Network	10 GbE
Backup	Centralized network and/or cloud backup
UPS	Appropriately sized battery backup

This configuration should provide substantial capability for ArcGIS Pro, UAS photogrammetry, LiDAR, remote sensing, and advanced analytical workflows while remaining practical for a regional planning organization.

Why Local High-Speed Storage Matters

Large geospatial datasets should not always be processed directly from network storage.

UAS projects may contain thousands of high-resolution images. Photogrammetric processing can create temporary files, dense point clouds, elevation models, orthomosaics, and three-dimensional products that are several times larger than the original source imagery. LiDAR and other remote sensing datasets can create similar storage demands.



For computationally intensive projects, WMSRDC should use a workflow in which active project data is copied to high-speed local NVMe storage for processing. Once processing and quality assurance are complete, final products and required source information can be transferred to centralized storage for long-term management and backup.

A recommended workflow is:

Central Storage → Local Processing Workspace → Processing & Quality Assurance → Final GIS Products → Central Archive

This approach provides high processing performance while maintaining centralized control of long-term project information.

Shared Network Storage

As the RIIMP grows, WMSRDC will accumulate increasingly large volumes of information. This centralized environment is also the 'managed external storage' referenced in Chapters 8 and 14: large imagery, point clouds, and derived products reside here and are served into the Regional ArcGIS Online Cooperative as needed, rather than accumulating as credit-metered hosted content.

Potential storage requirements include:

- UAS source imagery
- Orthomosaics
- LiDAR point clouds
- Digital elevation models
- Three-dimensional models
- Aerial imagery
- Satellite imagery
- GIS project files
- Geodatabases
- Field data
- Video
- Historical project information

WMSRDC should establish centralized network-attached storage or equivalent server-based storage rather than allowing large datasets to accumulate independently on employee workstations.



Recommended Initial Shared Storage

Table 4. *Components and specifications (Shared Storage).*

Component	Recommended Specification
Usable Storage Capacity	40–80 TB initial usable capacity
Drive Configuration	Enterprise or NAS-class drives with appropriate redundancy
Storage Architecture	RAID or equivalent fault-tolerant storage configuration
Network Connectivity	10 GbE minimum for GIS processing users
SSD Cache	Recommended where supported and appropriate
Snapshots	Automated snapshots or file versioning
Expansion	Ability to add storage as program needs increase
Power Protection	UPS
Backup	Separate local and/or cloud backup

WMSRDC should distinguish between storage redundancy and backup. RAID protects against certain hardware failures but does not protect against accidental deletion, ransomware, corruption, fire, theft, or other disasters. Critical information should therefore exist in more than one independent location.

Approximate Planning-Level Cost

A professional shared storage system with approximately 40–80 TB of usable capacity may require an initial investment of approximately \$8,000 to \$20,000, depending on performance, redundancy, drive type, support, and expansion capabilities.

Recommended Data Storage Tiers

Not all information requires the same level of performance or long-term retention. WMSRDC should consider organizing geospatial information into several storage tiers.

Table 5. *Data Tier and Purpose.*

Storage Tier	Purpose	Example Data
Tier 1 – Active Processing	Maximum performance	Current UAS projects, active LiDAR analysis, large raster processing
Tier 2 – Operational Data	Routine staff access	GIS datasets, current imagery, project deliverables, shared files
Tier 3 – Archive	Long-term preservation	Historical imagery, completed projects, source data
Tier 4 – Backup	Disaster recovery	Protected copies of critical operational and archival information

This tiered approach allows expensive high-performance storage to be reserved for data that requires it while less frequently accessed information is maintained on more cost-effective storage.



Backup and Data Protection

WMSRDC should implement a formal backup strategy for GIS, imagery, UAS, and other regional information.

A commonly recommended principle is the 3-2-1 backup strategy:

- Maintain at least three copies of important information.
- Store those copies on at least two different types of systems or media.
- Maintain at least one copy in a separate physical or cloud location.

For example, WMSRDC could maintain:

1. The active operational copy on centralized storage.
2. A local backup on a separate storage device or system.
3. An off-site or cloud-based backup.

For the off-site copy, cloud object storage provides an economical third leg, provided its role is strictly backup rather than sole archive. The local storage environment remains the primary copy of all project information; the cloud copy is limited by retention policy to final products, authoritative datasets, and source imagery worth preserving, rather than every intermediate file from every flight. This arrangement keeps recurring cloud costs modest and predictable, and, because WMSRDC always holds a complete local copy, changing cloud providers never requires paying to retrieve data, only redirecting future backups.

Backup procedures should be automated wherever possible and periodically tested to confirm that information can actually be restored. Two protections specific to the Regional ArcGIS Online Cooperative should be implemented from the start. First, WMSRDC should confirm that the organization's recycle bin is enabled, which retains most deleted items for 14 days before permanent removal. This guards against accidental item deletion, but it is not a backup: users can still delete permanently, restored items do not retain their sharing settings, and the bin offers no protection against data being corrupted or overwritten within a service that was never deleted. Second, WMSRDC should therefore implement a scheduled backup process, using the ArcGIS API for Python or equivalent tooling, that automatically exports the cooperative's hosted feature services to versioned files on the centralized storage environment, daily for actively edited authoritative layers and weekly for static content, with a retention rotation that preserves multiple restore points. These exports become part of the 3-2-1 arrangement described above, ensuring that the authoritative data organizations entrust to the cooperative always exists outside the cloud platform that hosts it.



Particular attention should be given to information that would be difficult or expensive to recreate, including original UAS imagery, historical aerial imagery, field-collected data, processed remote sensing products, and authoritative regional datasets.

Shared Processing Server

During the initial implementation of the RIIMP, one or more advanced workstations should provide sufficient processing capability for most WMSRDC needs. However, as project volume increases, WMSRDC should evaluate a centralized processing server.

A shared processing server could support:

- Large photogrammetry projects
- WebODM or other self-hosted processing environments
- Automated GIS processing
- Raster analysis
- LiDAR processing
- Scheduled geoprocessing
- Data transformation
- Machine learning
- Artificial intelligence
- Regional data update workflows

Unlike a standard file server, a processing server would be specifically configured for computationally intensive workloads.

Recommended Future Processing Server

Table 6. *Components and specifications (Shared Server).*

Component	Recommended Specification
Processor	24–64 or more CPU cores depending on workloads
Memory	256–512 GB RAM
GPU	One or more professional or high-performance NVIDIA GPUs with substantial VRAM
System Storage	Mirrored enterprise SSDs
Processing Storage	High-speed NVMe storage
Network	10–25 GbE
Management	Remote administration and monitoring
Power	UPS and appropriate power infrastructure
Backup	Integration with centralized storage and backup environment

Approximate Planning-Level Cost



A capable shared processing server could range from approximately \$15,000 to \$40,000 or more, depending on GPU configuration, memory, storage, support, and redundancy.

This investment is not recommended as an immediate requirement. WMSRDC should first establish actual processing demand using high-performance workstations. A centralized server should be considered when shared workloads, automation requirements, or processing volumes demonstrate a clear operational need.

Physical Server Versus Cloud Processing

WMSRDC should not assume that every future processing requirement must be addressed through locally owned hardware. Cloud computing can provide temporary access to substantial processing resources without requiring WMSRDC to purchase equipment that may remain underutilized.

A hybrid approach may provide the greatest flexibility.

Local Hardware Is Generally Best When:

- Workloads are frequent and predictable.
- Large datasets would be expensive or slow to upload repeatedly.
- Data should remain within WMSRDC-controlled infrastructure.
- Staff require consistent access to processing resources.
- Long-term hardware utilization justifies the investment.

Cloud Processing Is Generally Best When:

- Workloads are occasional but extremely large.
- Temporary access to substantial computing resources is needed.
- Specialized GPU resources are required only periodically.
- Rapid scaling is more important than long-term ownership.
- A software platform already provides managed cloud processing.

For WMSRDC, the recommended strategy is to maintain sufficient local capability for routine GIS and imagery processing while using cloud services selectively for unusually large or specialized workloads.

ArcGIS Online Does Not Require a Local GIS Server

An important distinction should be made between the proposed Regional ArcGIS Online Cooperative and the processing infrastructure described in this appendix.

ArcGIS Online, the platform underlying the cooperative described in Chapter 6, is a cloud-hosted Software as a Service environment. WMSRDC does not need to purchase or maintain a local GIS



server simply to administer ArcGIS Online, host web maps, deploy dashboards, configure applications, or provide access to participating organizations.

Standard modern computers and reliable internet connectivity are sufficient for most ArcGIS Online administrative and user activities.

The hardware recommendations in this appendix are intended for workloads that occur outside routine web GIS use, including:

- ArcGIS Pro
- UAS photogrammetry
- LiDAR
- Large raster processing
- Advanced geoprocessing
- Three-dimensional GIS
- Remote sensing
- Machine learning
- Automated data processing

This distinction can help WMSRDC avoid unnecessary infrastructure investments during the early phases of implementation.

Mobile and Field Hardware

WMSRDC should also consider a small inventory of mobile devices to support field data collection, demonstrations, and project-specific deployments, implementing the field technology strategy described in Chapter 8.

Recommended Field Device Characteristics

Table 7. *Components and capabilities (Mobile).*

Component	Recommended Capability
Operating System	Current iOS, iPadOS, Android, or Windows platform compatible with required GIS applications
Display	Approximately 8–12 inches
Connectivity	Wi-Fi and cellular where practical
GPS/GNSS	Integrated location services; external GNSS compatibility
Storage	128 GB minimum; 256 GB preferred for offline imagery
Durability	Rugged device or protective field case
Battery	Full-day field operation or external battery capability
Applications	ArcGIS Field Maps, Survey123, QuickCapture, and other required field applications



For most field GIS activities, a modern tablet with an appropriate protective case may provide better value than a highly specialized rugged computer. Fully rugged devices should be reserved for environments where operating conditions justify the additional cost.

WMSRDC could initially maintain approximately two to four shared field tablets for staff use, training, demonstrations, and project-specific collection activities. This should fulfill

High-Accuracy GNSS Hardware

Where higher positional accuracy is required, WMSRDC should consider a shared external GNSS receiver that can connect to tablets or mobile devices.

The appropriate receiver should be selected based on actual accuracy requirements. Many infrastructure inventories do not require survey-grade positioning, while other applications may require submeter or centimeter-level accuracy.

Potential capabilities include:

- Submeter positioning
- Real-time kinematic correction
- Network RTK
- Centimeter-level collection
- Bluetooth connectivity
- Integration with ArcGIS Field Maps and other field applications

A shared regional GNSS capability could allow WMSRDC and smaller participating communities to access high-accuracy data collection without requiring every organization to independently purchase specialized equipment, delivered as one of the regional field services cataloged in Chapter 10.

Network Infrastructure

High-performance computers provide limited value if large datasets must move through an inadequate network.

As WMSRDC begins working with UAS imagery, LiDAR, and other large geospatial datasets, network performance will become increasingly important.

The recommended internal network architecture should include:

- 1 GbE minimum for general office users.
- 10 GbE connectivity for advanced GIS workstations and centralized storage.
- 10 GbE or greater backbone connectivity between processing and storage systems.
- Modern managed network switches.



- Appropriate network segmentation and cybersecurity controls.
- Reliable high-speed internet connectivity for cloud services and large data transfers.

WMSRDC does not need to upgrade every workstation to 10 GbE. High-speed connectivity should initially focus on GIS processing workstations, storage systems, and future processing infrastructure.

Uninterruptible Power and Environmental Protection

High-performance workstations, storage systems, and servers should be protected by appropriately sized Uninterruptible Power Supply systems.

A UPS can:

- Protect equipment from power fluctuations.
- Allow systems to shut down safely during outages.
- Reduce the risk of data corruption.
- Protect active processing jobs.
- Improve the reliability of storage infrastructure.

Centralized storage and future server equipment should also be located in an appropriate environment with adequate ventilation, cooling, physical security, and restricted access.

Recommended Initial Hardware Investment

These hardware stages correspond to the roadmap implementation phases in Chapter 13. Note that computing investments should arrive alongside the program activities that require them, not ahead of them.

Phase One – Establish Core GIS and Processing Capability

Initial investments should focus on the equipment necessary to support the Regional ArcGIS Online Cooperative, ArcGIS Pro, UAS program development, and advanced GIS analysis.

Table 8. *Hardware, quantity, and cost).*

Hardware	Recommended Initial Quantity	Approximate Planning Cost
Standard GIS Workstation	1–3 as needed	\$2,000–\$3,500 each
Advanced GIS/Imagery Workstation	1	\$6,000–\$8,000
Shared GPS-enabled Field Tablets	2–4	\$500–\$1,500 each
UPS Equipment	As required	\$500–\$2,000
Initial Storage Expansion	Based on existing infrastructure	Variable



This initial approach allows WMSRDC to begin implementing advanced GIS and UAS workflows without immediately investing in a dedicated server environment.

Phase Two – Expand Shared Storage and Processing

As data volumes and regional service demands increase, WMSRDC should consider:

- 40–80 TB or greater centralized storage.
- 10 GbE networking for GIS systems.
- Additional advanced workstations.
- Shared high-accuracy GNSS equipment.
- Expanded backup and cloud archival capacity.

Phase Three – Develop Centralized Processing Infrastructure

A dedicated processing server should be considered only when workload and service demand justify the investment.

Potential future capabilities include:

- Shared photogrammetry processing.
- Automated regional data updates.
- LiDAR processing.
- Machine learning.
- Artificial intelligence-assisted analysis.
- Advanced remote sensing.
- Regional-scale geoprocessing.



Planning-Level Hardware Budget

The following table provides a general planning framework for building WMSRDC's GIS computing environment over time.

Table 9. *Investment Level, Components, and Cost.*

Investment Level	Typical Components	Approximate Cost
Core GIS Capability	Standard GIS workstations and field devices	\$5,000–\$15,000
Advanced Processing Capability	High-performance imagery workstation, local high-speed storage, UPS	\$7,000–\$12,000
Regional Storage Environment	40–80 TB centralized storage, backup, 10 GbE networking	\$10,000–\$25,000
Advanced Shared Processing	High-performance server, GPUs, large memory capacity, high-speed storage	\$15,000–\$40,000+
Mature Regional Environment	Combined workstations, storage, networking, backup, and shared processing	\$40,000–\$100,000+ implemented incrementally

These estimates are intended for long-term planning and should not be interpreted as a recommendation that WMSRDC make all investments simultaneously. The RIIMP is specifically designed to allow computing infrastructure to expand as demand and available funding increase.

Recommended Hardware Priorities

Based on the implementation strategy presented throughout this report, WMSRDC should prioritize hardware investments in the order presented in Table 10.



Table 10. *Priority Investment and Rationale.*

Priority	Investment	Rationale
1	High-performance GIS and imagery workstation	Provides immediate capability for ArcGIS Pro, UAS imagery, LiDAR, and advanced GIS
2	Adequate high-speed local processing storage	Prevents storage performance from limiting advanced workflows
3	Shared field tablets	Supports mobile GIS, training, demonstrations, and project collection
4	Centralized geospatial storage and backup	Becomes increasingly important as imagery and project volumes grow
5	10 GbE networking for GIS processing systems	Supports efficient movement of large imagery and LiDAR datasets
6	Shared high-accuracy GNSS equipment	Expands regional field collection capabilities
7	Dedicated processing server	Recommended only when sustained workload demonstrates a need

Procurement Considerations

WMSRDC should use performance requirements rather than specific computer model numbers whenever possible when purchasing GIS hardware. Individual processors, graphics cards, and workstation models change frequently, while the underlying workload requirements remain relatively consistent.

Hardware procurement should consider:

- Application requirements
- Expected project sizes
- Memory capacity and future expansion
- GPU memory
- Storage performance
- Storage expansion
- Network connectivity
- Warranty and technical support
- Replacement cycles
- Energy and cooling requirements
- Total cost of ownership



For advanced GIS and imagery workstations, WMSRDC should prioritize systems that can be upgraded over time. Additional memory, storage, and graphics capabilities can extend the useful life of a workstation and reduce the need for complete replacement.

Recommended Replacement Cycle

GIS workstations used for computationally intensive applications should generally be evaluated on a shorter replacement cycle than standard office computers.

A reasonable planning framework can be found in Table 11 below.

Table 11. *Hardware and Evaluation Cycle.*

Hardware Type	Suggested Evaluation Cycle
Standard Office Computer	4–6 years
Standard GIS Workstation	4–5 years
Advanced Processing Workstation	3–5 years
Shared Storage	5–7 years with ongoing drive replacement and expansion
Processing Server	4–6 years
Field Tablets	3–5 years

Replacement should be based on performance and operational needs rather than age alone. A well-configured workstation may remain useful for many years, particularly if memory and storage can be upgraded.

Recommended Initial Configuration for WMSRDC

For the initial implementation of the RIIMP, WMSRDC should focus on a relatively modest but capable computing environment.

The recommended starting configuration is:

- One advanced GIS and imagery processing workstation with approximately 128 GB of RAM, a high-performance multicore processor, a GPU with at least 16 GB of dedicated memory, and at least 4 TB of fast local processing storage.
- Standard GIS-capable workstations with approximately 64 GB of RAM for staff regularly using ArcGIS Pro.
- Two to four shared field tablets for mobile GIS, training, and project-specific collection.
- Reliable centralized storage and backup for GIS and UAS project information.
- 10 GbE connectivity between the advanced processing workstation and centralized storage where practical.
- UPS protection for critical workstations and storage systems.



This configuration should provide sufficient capability to establish the Regional ArcGIS Online Cooperative, support professional desktop GIS, begin processing UAS imagery, work with LiDAR and remote sensing datasets, and develop advanced regional applications without requiring an immediate investment in dedicated server infrastructure.

As program demand increases, WMSRDC can expand storage, add additional processing workstations, and eventually evaluate a centralized processing server.

Conclusion

The RIIMP does not require WMSRDC to build a large or complex data center. Because the proposed Regional ArcGIS Online Cooperative is cloud hosted, most users will be able to participate using standard modern computers and mobile devices.

However, advanced GIS, UAS imagery, LiDAR, remote sensing, three-dimensional visualization, and emerging artificial intelligence applications require greater computing capabilities than typical office workloads. A limited number of strategically configured high-performance systems can provide these capabilities without requiring specialized hardware for every employee.

WMSRDC should therefore adopt a phased computing strategy that begins with capable GIS workstations and high-performance local processing, expands into centralized storage and high-speed networking as data volumes increase, and introduces shared server infrastructure only when sustained regional demand justifies the investment.

The recommended approach prioritizes flexibility and scalability. Computing resources should grow alongside the RIIMP, allowing WMSRDC to invest in capabilities when they provide demonstrated value rather than attempting to anticipate every future technology requirement at the beginning of implementation.

Ultimately, computing infrastructure should remain largely invisible to the organizations and communities that benefit from it. Its purpose is to provide WMSRDC staff with the tools necessary to efficiently transform large and complex datasets into useful regional information. When properly designed, these investments will support not only GIS and UAS operations, but a broader range of future capabilities in remote sensing, infrastructure analytics, automation, artificial intelligence, and data-driven regional planning.

APPENDIX E

**Phased ArcGIS Online Licensing Scenarios & Cost
Estimates**

ArcGIS Online Licensing Quote Request Reflecting Phased Adoption Scenarios

Prepared by: GEOACE LLC

Prepared for: Esri (quote request)

On behalf of: West Michigan Shoreline Regional Development Commission (WMSRDC)

Date: June 18, 2026

WMSRDC is conducting a feasibility study for a regional GIS-based asset management system spanning five counties (Lake, Mason, Muskegon, Newaygo, and Oceana), in coordination with the Michigan Infrastructure Council (MIC). The three scenarios below request pricing for ArcGIS Online named user licensing across the anticipated stages of regional adoption. WMSRDC currently holds a single ArcGIS Online Professional Plus license; each scenario builds on that baseline to illustrate how licensing scales as regional participation and field data collection increase.

WMSRDC anticipates a “soft cap” of around 40 different participating agencies, a number of which already hold ArcGIS licensing within their respective organizations, so this quote hovers around that number with the assumption that the existing named users are onboarded as collaborators.

Scenario 1: Early-Stage Adoption

User Type	Quantity	New This Stage
ArcGIS Online Professional (NOT professional plus)	1	—
ArcGIS Online Mobile Worker	3	+3
ArcGIS Online Viewer	25	+25

The early stage represents the initial regional pilot. WMSRDC utilizes a Professional license as the single authoring and administration seat, used to build and publish the shared web maps, dashboards, and feature layers that partner jurisdictions will consume. Three Mobile Worker licenses enable a small number of participants to begin collecting infrastructure asset data in the field using ArcGIS Field Maps, establishing a two-way data flow from the outset rather than a publish-only deployment. A block of 25 Viewer licenses extends read-only access to staff across the participating county and local government units, allowing them to view shared infrastructure data and dashboards without contributing edits. This configuration validates the regional model at low cost while demonstrating both publication and field-collection capability to MIC.



Scenario 2: Mid Stage Adoption

User Type	Quantity	New This Stage
ArcGIS Online Professional	1	—
ArcGIS Online Creator	1	+1
ArcGIS Online Mobile Worker	10	+8
ArcGIS Online Viewer	25	—

The mid stage reflects growing adoption as more jurisdictions commit to the regional system and field data collection expands across the five counties. Mobile Worker licensing increases from two to ten as additional local units bring field crews online to inventory and inspect assets. A single Creator license is introduced to distribute authoring capacity in the event of WMSRDC staff expansion: a WMSRDC staff member can now build and maintain their own maps, apps, and survey forms without depending solely on the Professional seat. The Viewer pool holds steady at 25, since broad read-only access was already established in the early stage and the growth at this point is concentrated in active contributors rather than passive consumers. Additionally, it's assumed that some participants have broken off to acquire their own organizations within ArcGIS. This stage demonstrates that the regional platform supports genuine multi-organization collaboration.

Scenario 3: Late-Stage Adoption

User Type	Quantity	New This Stage
ArcGIS Online Professional	1	+1
ArcGIS Online Creator	1	+0
ArcGIS Online Mobile Worker	15	+5
ArcGIS Online Viewer	30	+5

The late stage represents a mature, fully collaborative regional deployment. The Viewer count is shown at 30, as some former view-only users are reclassified upward into Mobile Worker roles as their involvement deepens; the headline story at this stage is the shift from consumption toward contribution.

Beyond Late Stage: Evaluating ArcGIS Enterprise

Once the regional deployment reaches the scale described in Scenario 3, WMSRDC and its partners should assess a transition from ArcGIS Online to ArcGIS Enterprise. At a mature stage with multiple power users, sustained field operations, a large authoring community, and an expanding volume of shared infrastructure data — a self-hosted or dedicated Enterprise environment can offer greater control over data residency, integration with internal IT and asset management systems, predictable cost at scale, and tighter alignment with the MIC MIDIG portal and statewide consistency goals. We recommend treating the late-stage ArcGIS Online configuration as the threshold for a formal Enterprise evaluation rather than an endpoint, and we would be glad to receive Enterprise pricing alongside the named-user quotes above for planning purposes.



Quote Request Summary

Please provide pricing for each of the three scenarios above as discrete, standalone quotes so WMSRDC can model cost at each stage of adoption. Quantities reflect cumulative totals at each stage (not incremental add-ons), with the “New This Stage” column provided for reference. We would also welcome indicative ArcGIS Enterprise pricing for the mature-stage evaluation described above.



ADDENDUM 1.

Added August 14, 2026

ArcGIS Online Service Credit Consumption by Adoption Stage (Estimate)

The scenarios above price ArcGIS Online named-user seats. Service credits are a separate licensing resource. They meter storage, geocoding, tile generation, and spatial analysis — and are estimated below across the same Early, Mid, and Late adoption stages and the same 40-agency soft cap used above, so WMSRDC and MIC can review both cost tracks side by side.

Methodology and Assumptions

A note on rate inflation: the city, village, and township rates above are set somewhat higher than the raw client benchmarks they draw on, to account for core layers present in WMSRDC's planned regional data model that typically aren't part of GEOACE's municipal benchmarking portfolio. These tend to be layers that carry regional rather than individual-agency value (e.g., transmission electric infrastructure) so a single city, village, or township's own GIS footprint would not normally include them, even though WMSRDC's shared system is expected to. This adjustment is a qualitative judgment call and not a data-driven figure.

- City rate is estimated at 300 credits/month per participant. Anchored on two active GEOACE municipal clients in Ohio, the City of Pataskala (population ~18,500) and the City of Zanesville (population ~26,000), each of which currently consumes approximately 200 credits/month. This rate does not change between the two despite a roughly 40% population difference, indicating that at this scale credit consumption is driven by service usage and layer count rather than population; it is treated here as a flat per-agency rate rather than a population-scaled figure. The rate is adjusted upward to 300 credits/month to reflect WMSRDC's more extensive planned core layer list, which exceeds what either comparable client currently maintains.
- Township rate is estimated at 90 credits/month per participant. No directly comparable township client exists in GEOACE's current portfolio. This rate is assumed at roughly 30% of the city rate, reflecting smaller staff capacity, a lighter GIS footprint, and the lower-density, rural character typical of townships in the WMSRDC service area. This is among the least-validated figures in this estimate and should be revisited as real township usage data becomes available.
- Village rate is estimated at 120 credits/month per participant. Anchored on one active GEOACE village client in Ohio (Obetz), this rate is assumed at roughly 40% of the city rate, reflecting full incorporated status but a much smaller scale of operations than a city. There are 14 villages across WMSRDC's five-county service area.
- County rate is estimated at 900 credits/month per participant. Anchored on Holmes County, Ohio (population ~44,300), an active GEOACE client. Muskegon County is excluded from this tier, as it maintains its own independent GIS infrastructure and is not considered a realistic participant in this initiative. Of the remaining four counties (Lake, Mason, Newaygo, and Oceana), Newaygo (population ~50,000) sits closest to Holmes County's population, with Lake and Oceana considerably smaller; the Holmes County rate is applied flat across this tier given the single available comparable.



Participant Mix Rationale

The participant mix and pace of adoption are benchmarked against REGIS, an established regional GIS consortium covering Kent, Ottawa, Allegan, Montcalm, Ionia, and Barry Counties. REGIS's service area has a combined population of roughly 1.3 million — about 4.3 times WMSRDC's approximately 300,000 — and its current 19-agency membership is weighted toward cities (9 cities, 7 townships, 1 village, and 2 special districts), reflecting a more urbanized region. Applying REGIS's own participation ratio (roughly one participating agency per 68,500 residents) to WMSRDC's population would predict only 4–5 mature-stage participants, which is well below WMSRDC's stated 40-agency soft cap. This suggests WMSRDC's funding structure cannot mirror REGIS's fee-based model at a comparable scale, and that outside revenue such as grants will likely need to play a larger and more frequent role. Given the rural composition of WMSRDC's service area (86 townships against only 14 cities and 14 villages across all five counties) this estimate assumes townships form the bulk of participants at every stage, with a smaller proportion of cities than REGIS's mix and one to two county-level participants layered in at the Mid and Late stages.

Adoption Stage Estimate

Note: even the Early-stage figures below should be read as a generous upper bound rather than an expected starting point. WMSRDC begins this initiative with zero participating agencies; the Early-stage scenario already assumes a functioning, 15-agency pilot cohort has been recruited and onboarded. In practice, the opening months of the program will likely operate below this floor while the first partner agencies are identified, engaged, and brought onto the platform. These figures should be treated as a ceiling for the initial pilot period, not a guaranteed baseline.

Stage	Cities (@300/mo)	Townships (@90/mo)	Villages (@150/mo)	Counties (@900/mo)	Total Agencies	Monthly Credits	Annual Credits
Early	2	11	1	1	15	2,610	31,320
Mid	3	20	3	2	28	4,860	58,320
Late	4	30	4	2	40	6,180	74,160

At full (Late-stage) adoption, estimated ArcGIS Online service credit consumption across all agency tiers totals approximately 6,180 credits/month (74,160 credits/year). This range of roughly 31,320 to 74,160 credits annually from Early to Late stage should be read alongside the named-user licensing quotes above as a companion estimate for the same phased rollout, not as a substitute for it.

Estimated Cost by Stage

Dollar figures below apply a rate of \$120 per 1,000 credits, per the State of Michigan's active ESRI Master Purchase Agreement (Contract MA180000000018, Change Notice 26), which extends purchasing access to eligible Michigan public agencies including WMSRDC.

Stage	Monthly Credits	Monthly Cost	Annual Credits	Annual Cost
Early	2,610	\$313.20	31,320	\$3,758.40



Stage	Monthly Credits	Monthly Cost	Annual Credits	Annual Cost
Mid	4,860	\$583.20	58,320	\$6,998.40
Late	6,180	\$741.60	74,160	\$8,899.20

Note: this pricing reflects the current rate under Michigan's active statewide contract against an expiration date before March 31, 2028. Credit pricing under this contract has historically increased at each renewal cycle, so the dollar figures above should be treated as a near-term planning estimate rather than a fixed rate for the full multi-year adoption timeline. Later stages, particularly Late-stage adoption, should be expected to cost somewhat more than shown here once the contract renews.

License-Included Credit Allowance (Not Guaranteed)

Each named-user license in the Esri quote above bundles a baseline of service credits at no additional cost, which could offset part of the purchased-credit estimate above. Per-seat allotments:

- Creator and above (Creator, and the ArcGIS Online Professional seat) receive 500 credits/year
- Contributor or Mobile Worker receive 250 credits/year
- Viewer receives 0 credits/year.

This offset is not guaranteed. It assumes the exact license mix proposed in Scenarios 1–3 of the quote above is what WMSRDC actually purchases at each stage. If the final purchase differs (e.g., fewer Creator or Professional seats, a different Mobile Worker/Viewer split, or a scaled-down configuration) the included-credit allotment changes accordingly. This should be read as a best-case reduction against the purchased-credit estimate, not a guaranteed one, and is kept in its own subsection for that reason rather than folded into the core cost estimate above.

Stage	Included-Credit Seats	Included Credits/yr	\$ Value	Net Annual Cost*
Early	1 Professional + 3 Mobile Worker	1,250	\$150.00	\$3,608.40
Mid	1 Professional + 1 Creator + 10 Mobile Worker	3,500	\$420.00	\$6,578.40
Late	1 Professional + 1 Creator + 15 Mobile Worker	4,750	\$570.00	\$8,329.20

*Net Annual Cost = the Estimated Cost by Stage figure above less the \$ value of included credits (e.g., Early: \$3,758.40 – \$150.00 = \$3,608.40). Viewer seats (25/25/30 across the three stages) contribute no included credits and are omitted from the seat basis above.

First Twelve Months of Implementation: Realistic Bridge Estimate

The Early-stage figures above represent a functioning, 15-agency cohort and, as noted, are a ceiling rather than an expected starting point. A more realistic estimate for WMSRDC's actual first 12 months (i.e., accommodating two pilot agencies while WMSRDC and GEOACE build out



the shared regional core layers) is approximately 16,000 credits for the full year. This reflects a slow ramp: several core layers will sit as empty schemas early in the year awaiting data, while others (for example, a parcel or address layer with an existing county-wide footprint) may carry meaningful data from day one. Notably, this total is just over half of the Early stage's own annual total (31,320 credits/year) and is a reasonable reflection of a partial-year ramp with only two pilot agencies active while the rest of the region's core layers are still being populated.

Metric	Value
Year 1 total credits	16,000
Year 1 cost (@ \$120/1,000 credits)	\$1,920.00
License-included credits (Scenario 1 seats: 1 Professional + 2 Mobile Worker + Viewers)	1,000
\$ value of included credits	\$120.00
Net additional credits to purchase	15,000
Net Year 1 cost	\$1,800.00

This estimate uses a slightly-modified named-user seat mix from Scenario 1 of the Esri licensing quote above (Early-Stage Adoption). As with the license-included credit allowance described in previous subsections, this offset is not guaranteed. It depends on WMSRDC purchasing that specific seat mix for Year 1 and is provided here as a planning figure rather than a committed cost.



APPENDIX F

Core Layers



Layer Name	Category	WMSRDC Priority	Anticipated Acquisition Effort
County boundaries	Administrative Boundaries	N/A (Acquired)	Low
Municipal boundaries (cities/villages)	Administrative Boundaries	N/A (Acquired)	Low
Township boundaries	Administrative Boundaries	N/A (Acquired)	Low
Regional boundaries	Administrative Boundaries	N/A (Acquired)	Low
School districts	Administrative Boundaries	Medium - Phase Two	Low
Road centerlines with Functional Classifications	Transportation	N/A (Acquired)	Low
Rail lines	Transportation	Medium - Phase Two	Low
Shared-use paths and trails	Transportation	Medium - Phase Two	Low
Bridges	Transportation	Medium - Phase Two	Moderate
Site addresses / address points	Addressing	Medium - Phase Two	Moderate
Emergency service zones	Addressing	Medium - Phase Two	Moderate
Parcels	Parcels and Land Records	High - Phase One	Moderate
Ownership	Parcels and Land Records	High - Phase One	Moderate
Tax districts	Parcels and Land Records	Medium - Phase Two	Low
Public lands	Parcels and Land Records	High - Phase One	High
Government buildings	Public Facilities	Medium - Phase Two	Low
Wastewater treatment plants	Public Facilities	High - Phase One	Low
Water filtration plants	Public Facilities	High - Phase One	Low
Pump and lift stations	Public Facilities	High - Phase One	Low
Water towers	Public Facilities	High - Phase One	Low
Electrical substations	Public Facilities	High - Phase One	Low
Schools, fire, police, EMS locations	Public Facilities	Medium - Phase Two	Low
Water mains	Utilities	High - Phase One	Moderate
Water service lines	Utilities	High - Phase One (as available)	High

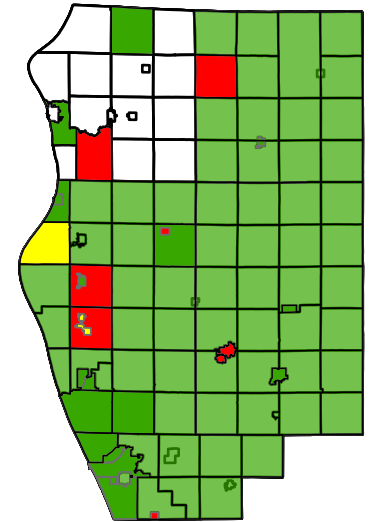
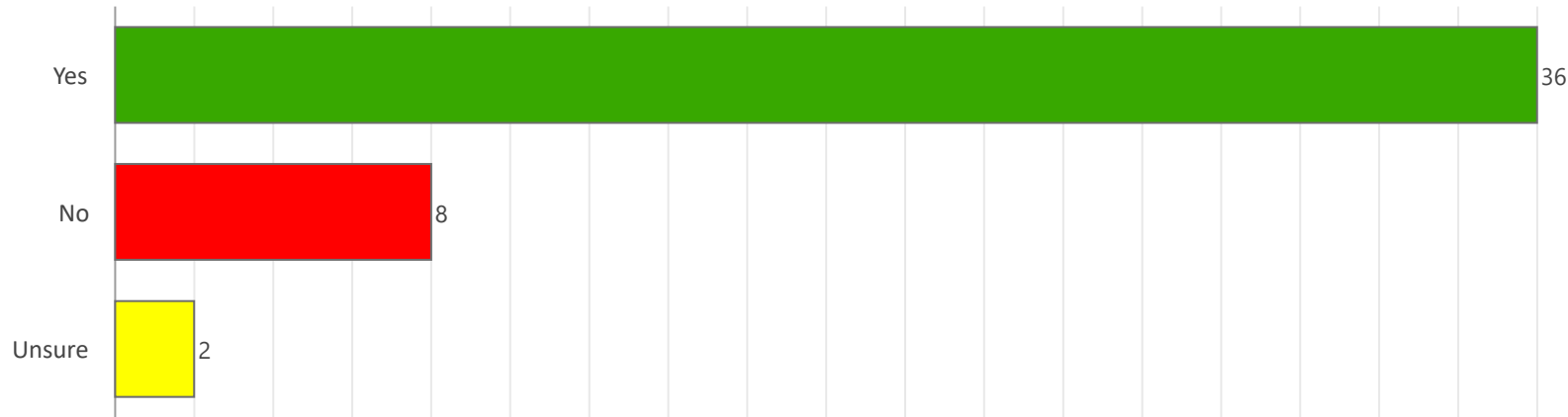


Layer Name	Category	WMSRDC Priority	Anticipated Acquisition Effort
Sanitary sewer mains	Utilities	High - Phase One	Moderate
Sanitary sewer service lines	Utilities	High - Phase One (as available)	High
Storm sewer lines	Utilities	High - Phase One	Moderate
Broadband lines	Utilities	High - Phase One	High
Electric transmission	Utilities	High - Phase One	Moderate
Gas transmission	Utilities	High - Phase One	Moderate
Electric distribution	Utilities	Medium - Phase Two	High
Gas distribution	Utilities	Medium - Phase Two	High
Utility operating territories (with contacts)	Utilities	High - Phase One	Moderate
Wells (publicly owned)	Utilities	Medium - Phase Two	Low
Wells (privately owned)	Utilities	Low - Phase Two	Moderate
Septic tanks (publicly owned)	Utilities	Medium - Phase Two	Moderate
Septic tanks (privately owned)	Utilities	Low - Phase Three	
Cell towers	Utilities	Medium - Phase Two	High
Manholes and hydrants	Utilities	Medium - Phase Two	High
Flood zones	Environmental Resources	Medium - Phase Two	Low
Wetlands	Environmental Resources	Medium - Phase Two	Low
Watersheds	Environmental Resources	Medium - Phase Two	Low
Shorelines	Environmental Resources	Low - Phase Three	Low
Conservation lands	Environmental Resources	Low - Phase Three	Low
Soils	Environmental Resources	Low - Phase Three	Low
Elevation	Environmental Resources	Low - Phase Three	Low
Land cover	Environmental Resources	Low - Phase Three	Low
Streams	Environmental Resources	Low - Phase Three	Low
Ditches/Engineered Water Conveyances	Environmental Resources	Low - Phase Three	Moderate
Culverts	Environmental Resources	Low - Phase Three	Moderate

APPENDIX G

Survey Responses and Results

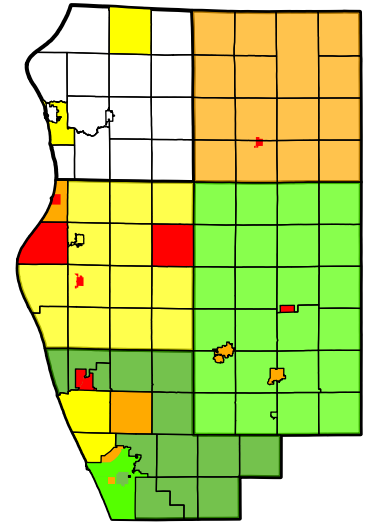
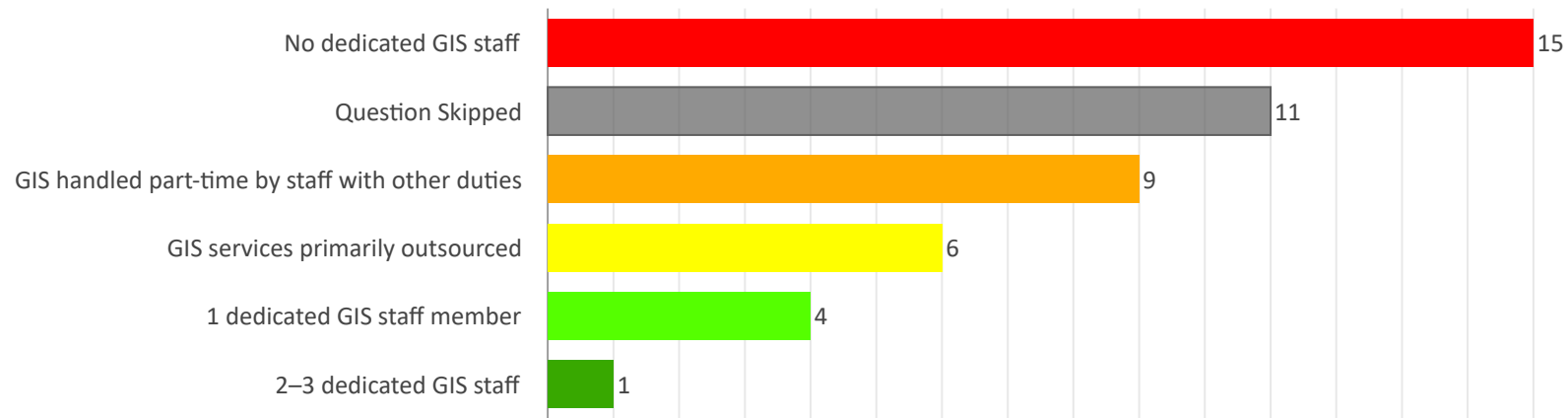
Does your agency currently use GIS?



City of Fremont	Yes
City of Fremont	No
City of Hart	Yes
City of Montague	Yes
City of Muskegon	Yes
City of Newaygo	Yes
City of North Muskegon	Yes
City of Norton Shores	Yes
City of Roosevelt Park	Yes
City of White Cloud	Yes
City of Whitehall	Yes
Consumers Energy	Yes
Dalton Township	Yes
Freesoil Township	Yes
Fruitland Township	Yes
Golden Township	Unsure
Golden Township	Yes
Grant Township	No
ITC Transmission	Yes
Lake County	Yes
Lake County Emergency Services	Yes
Lake County Road Commission	Yes
Laketon Township	Yes
Leavitt Township	Yes

Mason County Chamber Alliance	No
Mason County Drain Commision	Yes
Mason County Road Commission	Yes
Muskegon County	Yes
Muskegon County Road Commission	Yes
Muskegon County Road Commission	Yes
Muskegon County Water Resource Commission	Yes
Newaygo County	Yes
Newaygo County	Yes
Newaygo County Road Commission	Yes
Oceana County	Yes
Oceana County Drain Commision	Yes
Oceana County Road Commission	Yes
Pentwater Township	Yes
Pere Marquette Township	Yes
Riverton Township	No
Sauble Township	No
Shelby Township	No
Village of Baldwin	Yes
Village of Fruitport	No
Village of Pentwater	Yes
Village of Rothbury	Unsure
Village of Shelby	Yes
Village of Walkerville	No

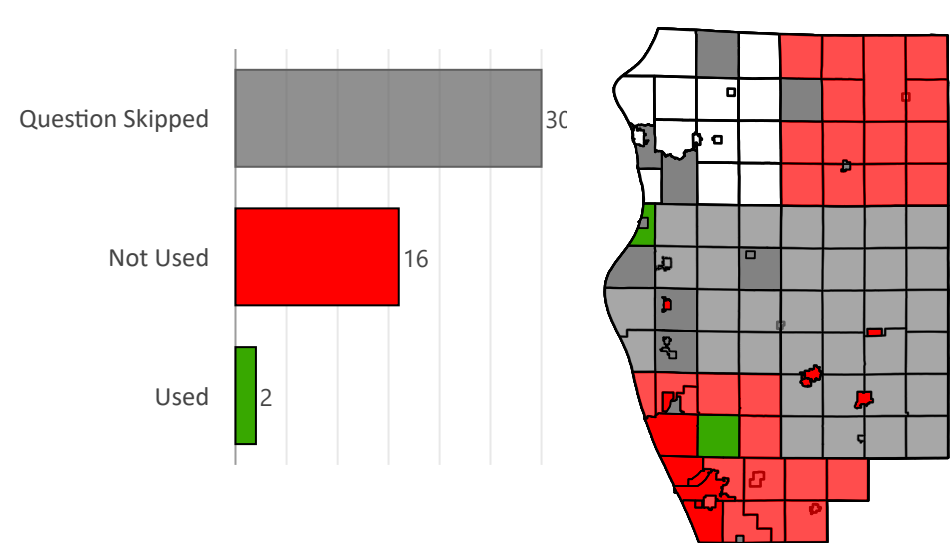
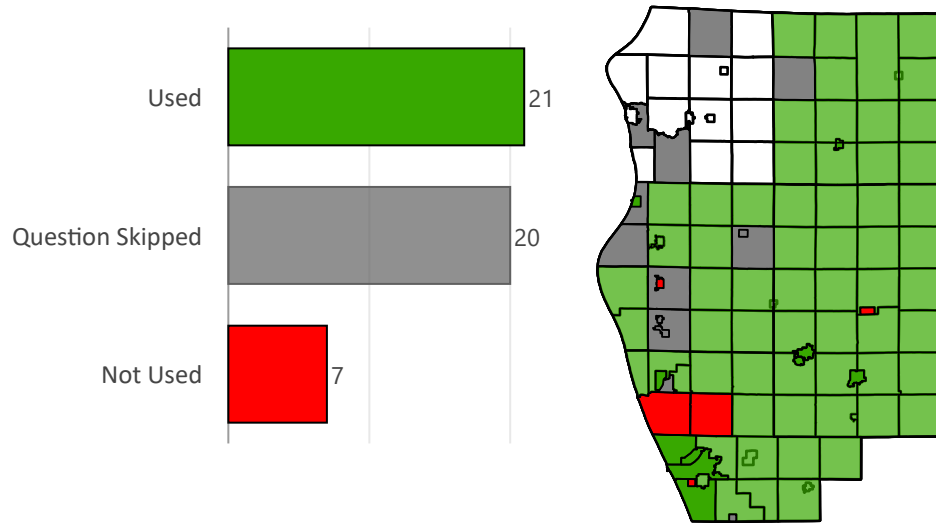
What best describes how GIS is staffed in your organization?



City of Fremont	GIS handled part-time by staff with other duties
City of Fremont	
City of Hart	GIS services primarily outsourced
City of Montague	No dedicated GIS staff
City of Muskegon	1 dedicated GIS staff member
City of Newaygo	GIS handled part-time by staff with other duties
City of North Muskegon	GIS handled part-time by staff with other duties
City of Norton Shores	1 dedicated GIS staff member
City of Roosevelt Park	GIS handled part-time by staff with other duties
City of White Cloud	No dedicated GIS staff
City of Whitehall	No dedicated GIS staff
Consumers Energy	GIS team of 4+ staff
Dalton Township	GIS handled part-time by staff with other duties
Freesoil Township	GIS services primarily outsourced
Fruitland Township	GIS services primarily outsourced
Golden Township	
Golden Township	No dedicated GIS staff
Grant Township	
ITC Transmission	GIS team of 4+ staff
Lake County	GIS handled part-time by staff with other duties
Lake County Emergency Services	No dedicated GIS staff
Lake County Road Commission	No dedicated GIS staff
Laketon Township	GIS services primarily outsourced
Leavitt Township	No dedicated GIS staff

Mason County Chamber Alliance	
Mason County Drain Commission	No dedicated GIS staff
Mason County Road Commission	GIS handled part-time by staff with other duties
Muskegon County	2-3 dedicated GIS staff
Muskegon County Road Commission	No dedicated GIS staff
Muskegon County Road Commission	No dedicated GIS staff
Muskegon County Water Resource Commission	
Newaygo County	1 dedicated GIS staff member
Newaygo County	1 dedicated GIS staff member
Newaygo County Road Commission	No dedicated GIS staff
Oceana County	GIS services primarily outsourced
Oceana County Drain Commission	No dedicated GIS staff
Oceana County Road Commission	GIS handled part-time by staff with other duties
Pentwater Township	GIS handled part-time by staff with other duties
Pere Marquette Township	GIS services primarily outsourced
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	No dedicated GIS staff
Village of Fruitport	
Village of Pentwater	No dedicated GIS staff
Village of Rothbury	
Village of Shelby	No dedicated GIS staff
Village of Walkerville	

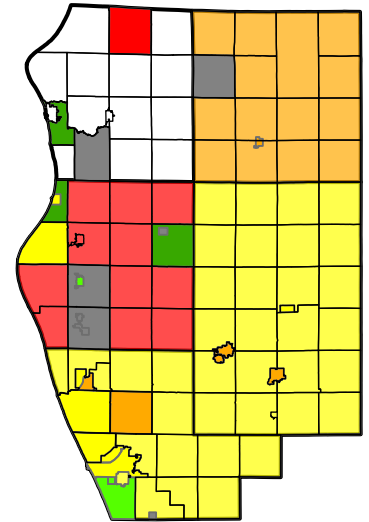
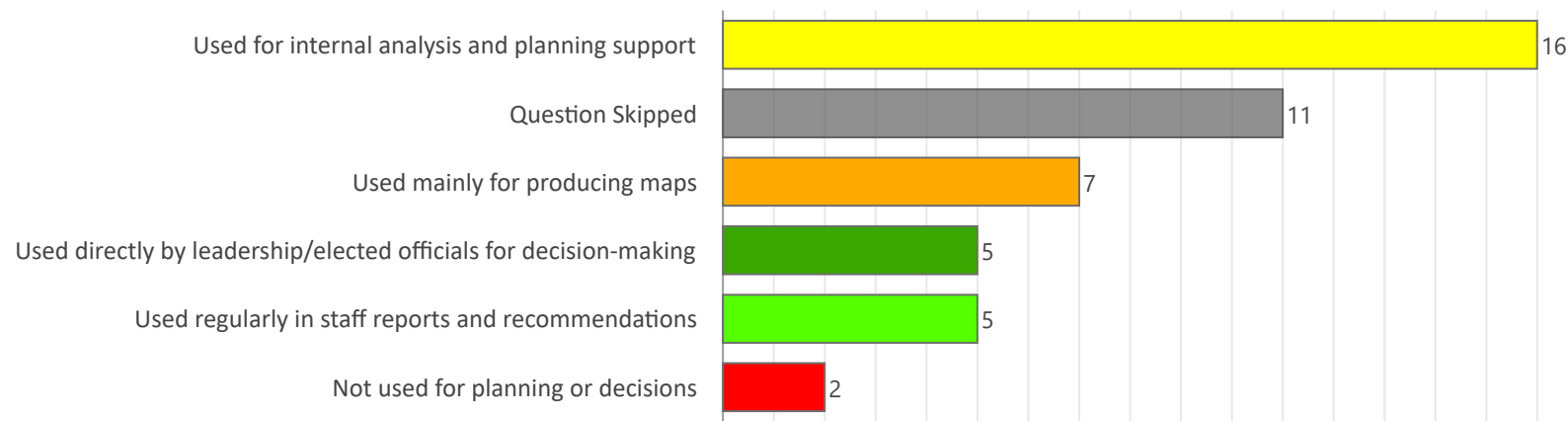
Which GIS platforms does your organization currently use?



Agency Name	Esri (ArcGIS Pro / Online / Enterprise)	QGIS
City of Fremont	Used	Not Used
City of Fremont		
City of Hart	Used	
City of Montague	Used	Not Used
City of Muskegon	Used	Not Used
City of Newaygo	Used	Not Used
City of North Muskegon	Used	Not Used
City of Norton Shores	Used	Not Used
City of Roosevelt Park	Not Used	Not Used
City of White Cloud	Not Used	Not Used
City of Whitehall		
Consumers Energy		
Dalton Township	Not Used	Used
Freesoil Township		
Fruitland Township	Not Used	Not Used
Golden Township		
Golden Township		
Grant Township		
ITC Transmission	Used	
Lake County	Used	
Lake County Emergency Services	Used	Not Used
Lake County Road Commission	Not Used	Not Used
Laketon Township	Used	Not Used
Leavitt Township		

Agency Name	Esri (ArcGIS Pro / Online / Enterprise)	QGIS
Mason County Chamber Alliance		
Mason County Drain Commission	Used	
Mason County Road Commission	Used	
Muskegon County	Used	Not Used
Muskegon County Road Commission		
Muskegon County Road Commission		
Muskegon County Water Resource Commission		
Newaygo County	Used	
Newaygo County	Used	
Newaygo County Road Commission	Used	Not Used
Oceana County	Used	
Oceana County Drain Commission	Used	
Oceana County Road Commission	Not Used	Not Used
Pentwater Township		Used
Pere Marquette Township		
Riverton Township		
Sauble Township		
Shelby Township		
Village of Baldwin	Used	
Village of Fruitport		
Village of Pentwater	Used	
Village of Rothbury		
Village of Shelby	Not Used	Not Used
Village of Walkerville		

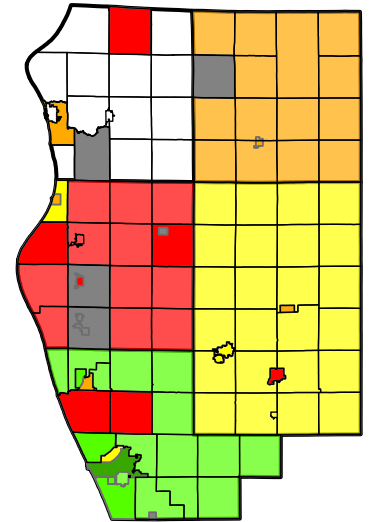
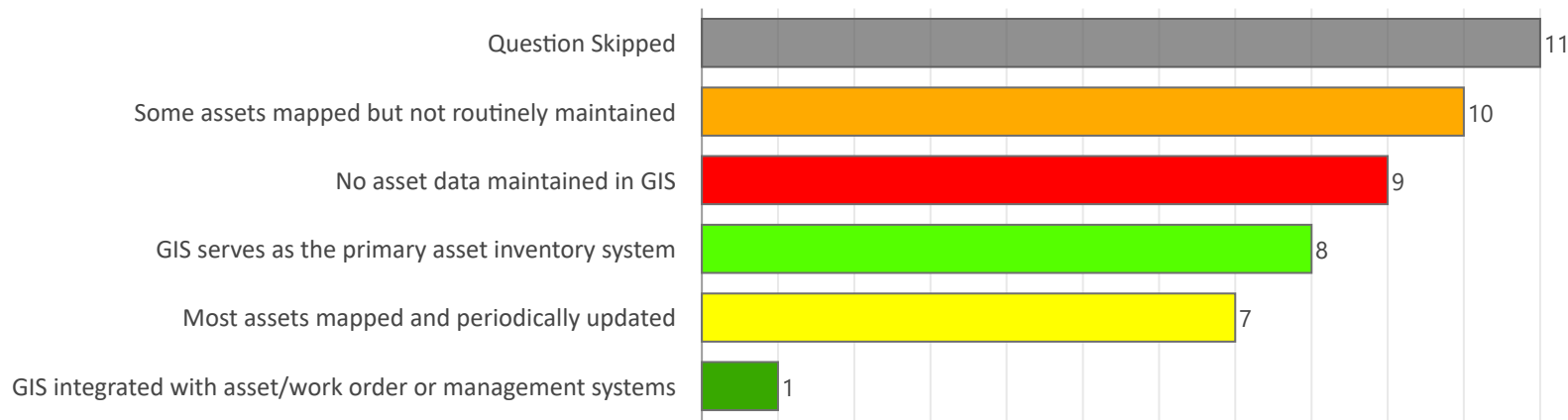
How is GIS typically used in planning, infrastructure management, or decision-making?



City of Fremont	Used mainly for producing maps
City of Fremont	
City of Hart	Used for internal analysis and planning support
City of Montague	Used for internal analysis and planning support
City of Muskegon	Used for internal analysis and planning support
City of Newaygo	Used mainly for producing maps
City of North Muskegon	Used for internal analysis and planning support
City of Norton Shores	Used regularly in staff reports and recommendations
City of Roosevelt Park	Used regularly in staff reports and recommendations
City of White Cloud	Used for internal analysis and planning support
City of Whitehall	Used mainly for producing maps
Consumers Energy	Used for internal analysis and planning support
Dalton Township	Used mainly for producing maps
Freesoil Township	Not used for planning or decisions
Fruitland Township	Used for internal analysis and planning support
Golden Township	
Golden Township	Used for internal analysis and planning support
Grant Township	
ITC Transmission	Used regularly in staff reports and recommendations
Lake County	Used mainly for producing maps
Lake County Emergency Services	Used mainly for producing maps
Lake County Road Commission	Used directly by leadership/elected officials for decision-making
Laketon Township	Used for internal analysis and planning support
Leavitt Township	Used directly by leadership/elected officials for decision-making

Mason County Chamber Alliance	
Mason County Drain Commission	Used for internal analysis and planning support
Mason County Road Commission	Used for internal analysis and planning support
Muskegon County	Used for internal analysis and planning support
Muskegon County Road Commission	Used regularly in staff reports and recommendations
Muskegon County Road Commission	Used directly by leadership/elected officials for decision-making
Muskegon County Water Resource Commission	
Newaygo County	Used for internal analysis and planning support
Newaygo County	Used for internal analysis and planning support
Newaygo County Road Commission	Used for internal analysis and planning support
Oceana County	Not used for planning or decisions
Oceana County Drain Commission	Used for internal analysis and planning support
Oceana County Road Commission	Used regularly in staff reports and recommendations
Pentwater Township	Used directly by leadership/elected officials for decision-making
Pere Marquette Township	Used directly by leadership/elected officials for decision-making
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	Used mainly for producing maps
Village of Fruitport	
Village of Pentwater	Used for internal analysis and planning support
Village of Rothbury	
Village of Shelby	Used regularly in staff reports and recommendations
Village of Walkerville	

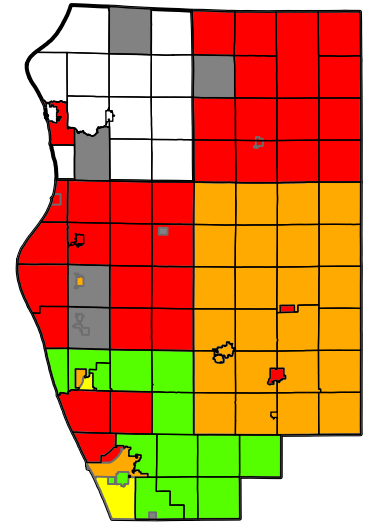
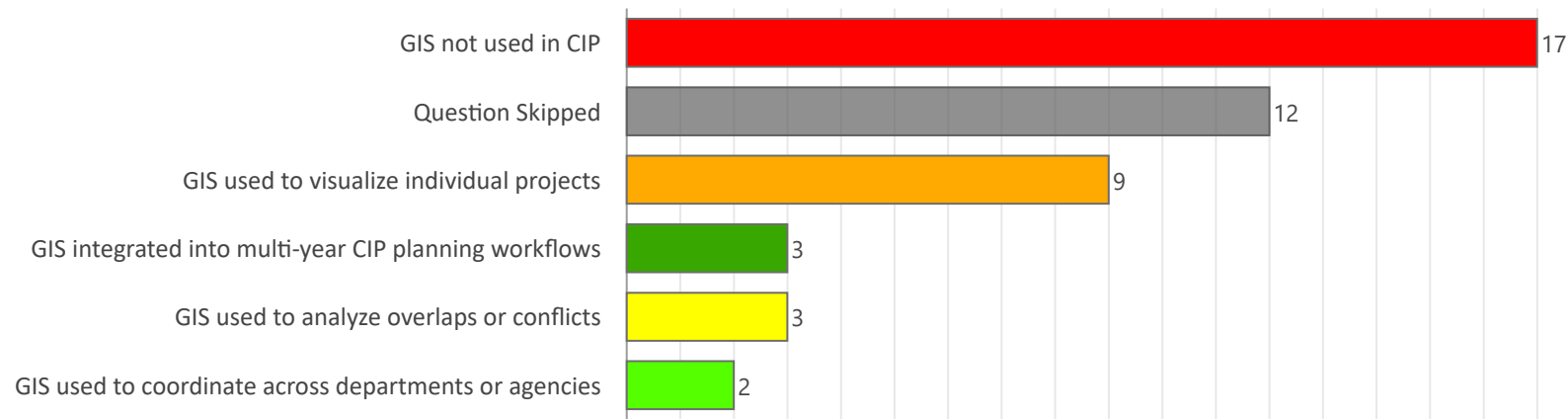
How integrated is GIS with your infrastructure asset management practices?



City of Fremont	Most assets mapped and periodically updated
City of Fremont	
City of Hart	Some assets mapped but not routinely maintained
City of Montague	GIS serves as the primary asset inventory system
City of Muskegon	GIS integrated with asset/work order or management systems
City of Newaygo	No asset data maintained in GIS
City of North Muskegon	Most assets mapped and periodically updated
City of Norton Shores	GIS serves as the primary asset inventory system
City of Roosevelt Park	GIS serves as the primary asset inventory system
City of White Cloud	Some assets mapped but not routinely maintained
City of Whitehall	Some assets mapped but not routinely maintained
Consumers Energy	GIS serves as the primary asset inventory system
Dalton Township	No asset data maintained in GIS
Freesoil Township	No asset data maintained in GIS
Fruitland Township	No asset data maintained in GIS
Golden Township	
Golden Township	No asset data maintained in GIS
Grant Township	
ITC Transmission	GIS serves as the primary asset inventory system
Lake County	Some assets mapped but not routinely maintained
Lake County Emergency Services	Most assets mapped and periodically updated
Lake County Road Commission	Some assets mapped but not routinely maintained
Laketon Township	GIS serves as the primary asset inventory system
Leavitt Township	No asset data maintained in GIS

Mason County Chamber Alliance	
Mason County Drain Commission	Some assets mapped but not routinely maintained
Mason County Road Commission	Some assets mapped but not routinely maintained
Muskegon County	GIS serves as the primary asset inventory system
Muskegon County Road Commission	GIS serves as the primary asset inventory system
Muskegon County Road Commission	GIS serves as the primary asset inventory system
Muskegon County Water Resource Commission	
Newaygo County	Most assets mapped and periodically updated
Newaygo County	Most assets mapped and periodically updated
Newaygo County Road Commission	Most assets mapped and periodically updated
Oceana County	No asset data maintained in GIS
Oceana County Drain Commission	No asset data maintained in GIS
Oceana County Road Commission	GIS serves as the primary asset inventory system
Pentwater Township	Most assets mapped and periodically updated
Pere Marquette Township	Some assets mapped but not routinely maintained
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	Some assets mapped but not routinely maintained
Village of Fruitport	
Village of Pentwater	Some assets mapped but not routinely maintained
Village of Rothbury	
Village of Shelby	No asset data maintained in GIS
Village of Walkerville	

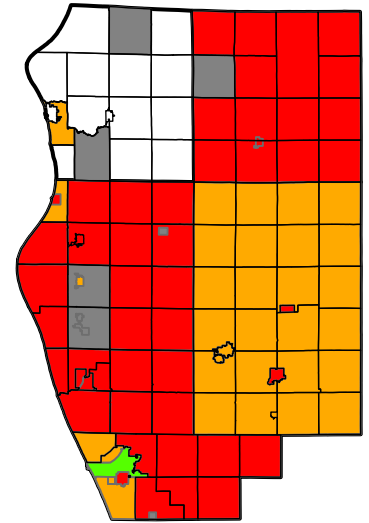
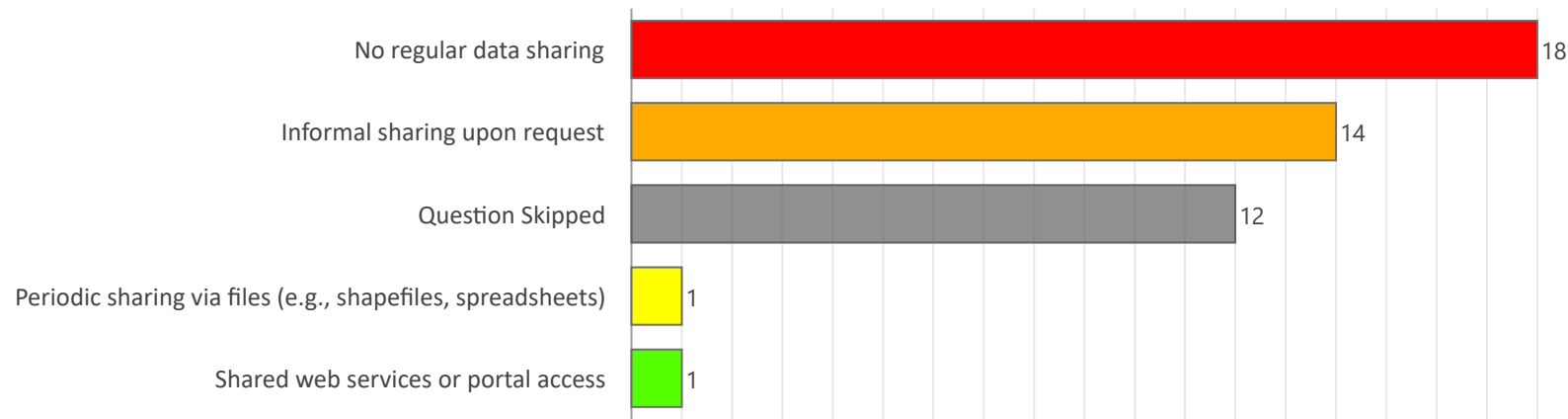
How is GIS used in your Capital Improvement Planning (CIP) process?



City of Fremont	GIS used to visualize individual projects
City of Fremont	
City of Hart	GIS used to visualize individual projects
City of Montague	GIS used to visualize individual projects
City of Muskegon	GIS used to visualize individual projects
City of Newaygo	GIS not used in CIP
City of North Muskegon	GIS not used in CIP
City of Norton Shores	GIS used to analyze overlaps or conflicts
City of Roosevelt Park	GIS used to coordinate across departments or agencies
City of White Cloud	GIS not used in CIP
City of Whitehall	GIS used to analyze overlaps or conflicts
Consumers Energy	GIS used to coordinate across departments or agencies
Dalton Township	GIS not used in CIP
Freesoil Township	
Fruitland Township	GIS not used in CIP
Golden Township	
Golden Township	GIS not used in CIP
Grant Township	
ITC Transmission	GIS integrated into multi-year CIP planning workflows
Lake County	GIS not used in CIP
Lake County Emergency Services	GIS not used in CIP
Lake County Road Commission	GIS used to analyze overlaps or conflicts
Laketon Township	GIS not used in CIP
Leavitt Township	GIS not used in CIP

Mason County Chamber Alliance	
Mason County Drain Commission	GIS used to visualize individual projects
Mason County Road Commission	GIS not used in CIP
Muskegon County	GIS used to coordinate across departments or agencies
Muskegon County Road Commission	GIS integrated into multi-year CIP planning workflows
Muskegon County Road Commission	GIS integrated into multi-year CIP planning workflows
Muskegon County Water Resource Commission	
Newaygo County	GIS used to visualize individual projects
Newaygo County	GIS used to visualize individual projects
Newaygo County Road Commission	GIS used to visualize individual projects
Oceana County	GIS not used in CIP
Oceana County Drain Commission	GIS not used in CIP
Oceana County Road Commission	GIS integrated into multi-year CIP planning workflows
Pentwater Township	GIS not used in CIP
Pere Marquette Township	GIS not used in CIP
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	GIS not used in CIP
Village of Fruitport	
Village of Pentwater	GIS not used in CIP
Village of Rothbury	
Village of Shelby	GIS used to visualize individual projects
Village of Walkerville	

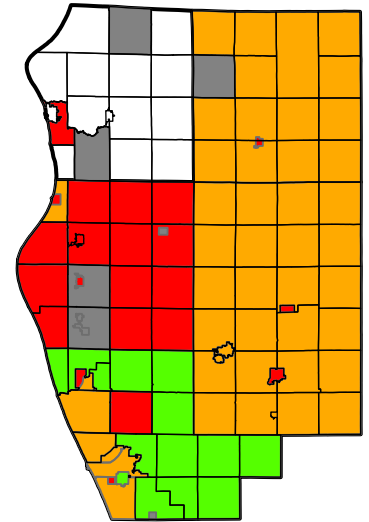
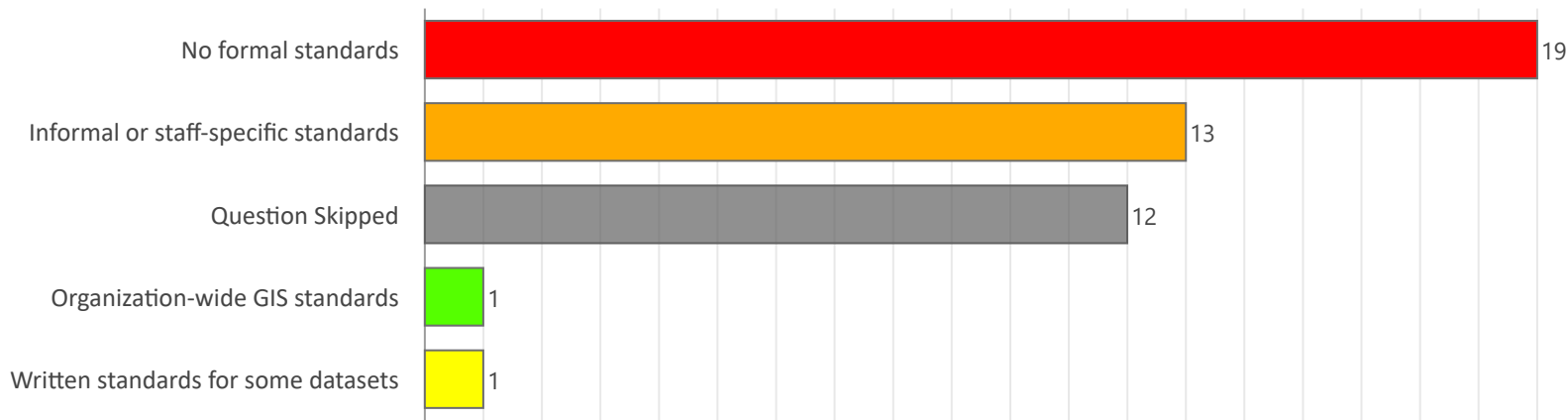
How does your organization share GIS data with WMSRDC or other regional partners?



City of Fremont	Informal sharing upon request
City of Fremont	
City of Hart	Informal sharing upon request
City of Montague	No regular data sharing
City of Muskegon	Shared web services or portal access
City of Newaygo	No regular data sharing
City of North Muskegon	Informal sharing upon request
City of Norton Shores	Informal sharing upon request
City of Roosevelt Park	Informal sharing upon request
City of White Cloud	No regular data sharing
City of Whitehall	No regular data sharing
Consumers Energy	No regular data sharing
Dalton Township	No regular data sharing
Freesoil Township	
Fruitland Township	No regular data sharing
Golden Township	
Golden Township	No regular data sharing
Grant Township	
ITC Transmission	Informal sharing upon request
Lake County	No regular data sharing
Lake County Emergency Services	No regular data sharing
Lake County Road Commission	No regular data sharing
Laketon Township	Informal sharing upon request
Leavitt Township	No regular data sharing

Mason County Chamber Alliance	
Mason County Drain Commission	No regular data sharing
Mason County Road Commission	No regular data sharing
Muskegon County	No regular data sharing
Muskegon County Road Commission	Informal sharing upon request
Muskegon County Road Commission	Informal sharing upon request
Muskegon County Water Resource Commission	
Newaygo County	Informal sharing upon request
Newaygo County	Informal sharing upon request
Newaygo County Road Commission	Informal sharing upon request
Oceana County	No regular data sharing
Oceana County Drain Commission	No regular data sharing
Oceana County Road Commission	Periodic sharing via files (e.g., shapefiles, spreadsheets)
Pentwater Township	Informal sharing upon request
Pere Marquette Township	Informal sharing upon request
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	No regular data sharing
Village of Fruitport	
Village of Pentwater	No regular data sharing
Village of Rothbury	
Village of Shelby	Informal sharing upon request
Village of Walkerville	

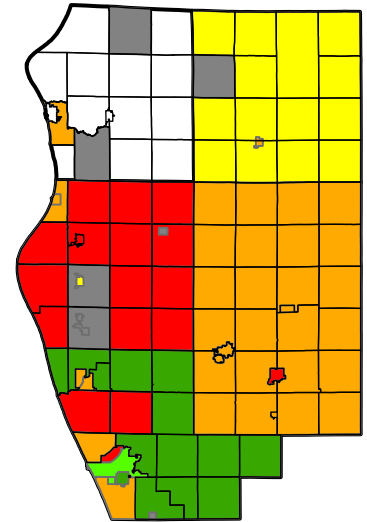
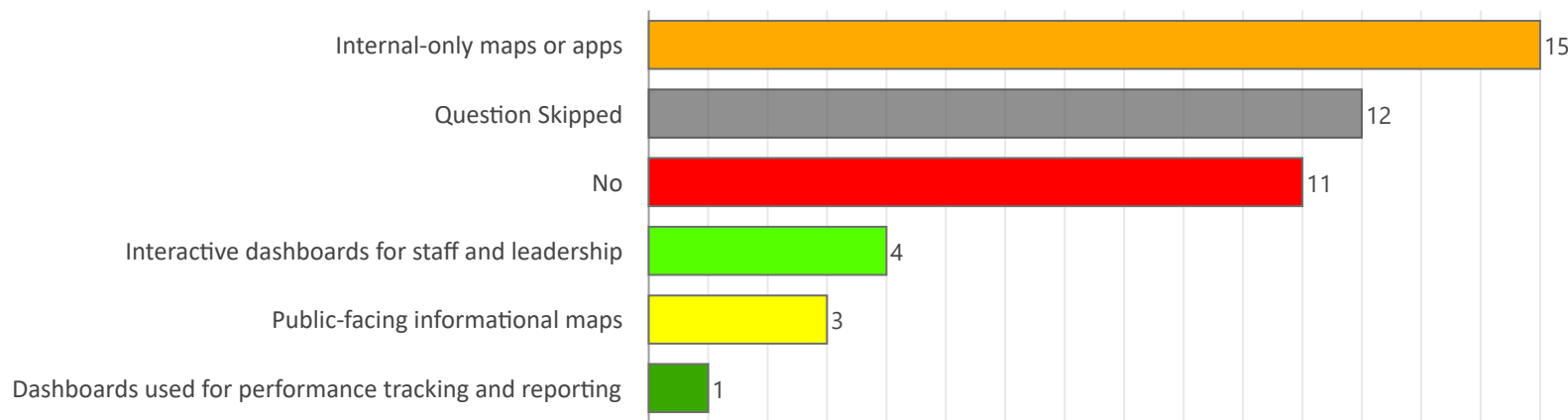
Which statement best describes your GIS data standards and maintenance practices?



City of Fremont	Informal or staff-specific standards
City of Fremont	
City of Hart	No formal standards
City of Montague	No formal standards
City of Muskegon	Informal or staff-specific standards
City of Newaygo	No formal standards
City of North Muskegon	Informal or staff-specific standards
City of Norton Shores	Informal or staff-specific standards
City of Roosevelt Park	No formal standards
City of White Cloud	No formal standards
City of Whitehall	Informal or staff-specific standards
Consumers Energy	Organization-wide GIS standards
Dalton Township	No formal standards
Freesoil Township	
Fruitland Township	Informal or staff-specific standards
Golden Township	
Golden Township	No formal standards
Grant Township	
ITC Transmission	Organization-wide GIS standards
Lake County	Informal or staff-specific standards
Lake County Emergency Services	No formal standards
Lake County Road Commission	No formal standards
Laketon Township	Informal or staff-specific standards
Leavitt Township	No formal standards

Mason County Chamber Alliance	
Mason County Drain Commission	No formal standards
Mason County Road Commission	Informal or staff-specific standards
Muskegon County	Organization-wide GIS standards
Muskegon County Road Commission	No formal standards
Muskegon County Road Commission	No formal standards
Muskegon County Water Resource Commission	
Newaygo County	Written standards for some datasets
Newaygo County	Informal or staff-specific standards
Newaygo County Road Commission	Informal or staff-specific standards
Oceana County	No formal standards
Oceana County Drain Commission	No formal standards
Oceana County Road Commission	Informal or staff-specific standards
Pentwater Township	Informal or staff-specific standards
Pere Marquette Township	No formal standards
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	No formal standards
Village of Fruitport	
Village of Pentwater	No formal standards
Village of Rothbury	
Village of Shelby	No formal standards
Village of Walkerville	

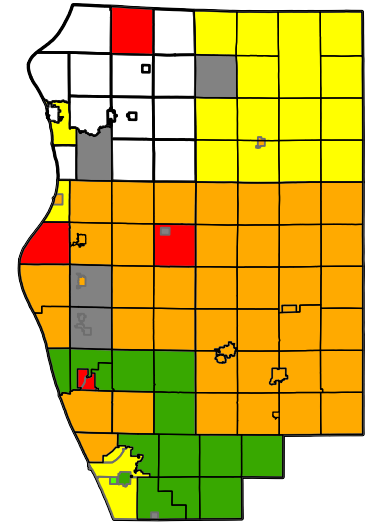
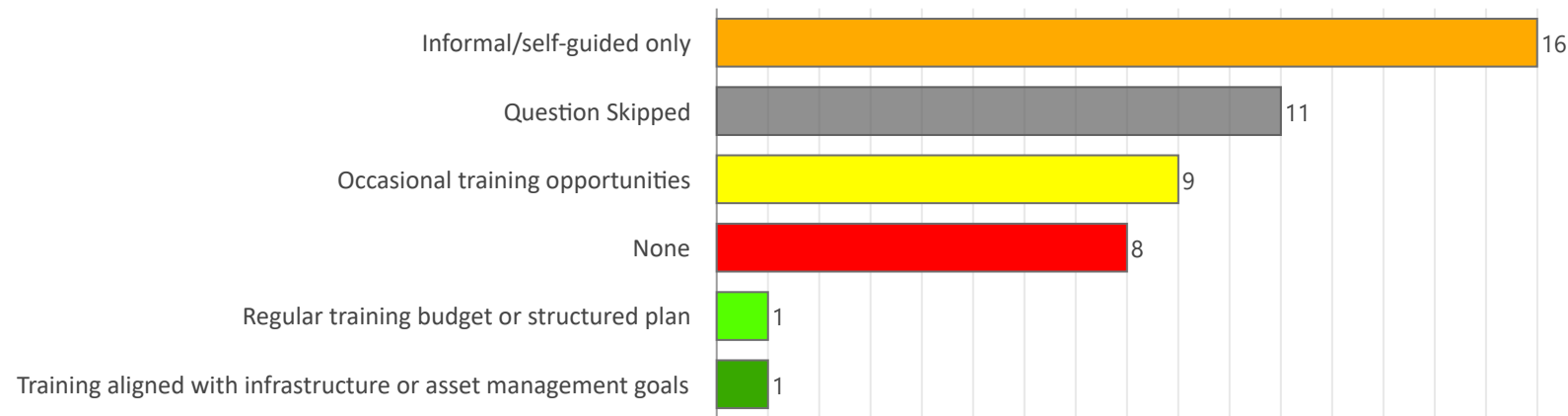
Do you use GIS dashboards or web applications to communicate infrastructure or planning information?



City of Fremont	Internal-only maps or apps
City of Fremont	
City of Hart	Internal-only maps or apps
City of Montague	Internal-only maps or apps
City of Muskegon	Interactive dashboards for staff and leadership
City of Newaygo	No
City of North Muskegon	No
City of Norton Shores	Internal-only maps or apps
City of Roosevelt Park	Interactive dashboards for staff and leadership
City of White Cloud	Internal-only maps or apps
City of Whitehall	Internal-only maps or apps
Consumers Energy	Public-facing informational maps
Dalton Township	No
Freesoil Township	
Fruitland Township	No
Golden Township	
Golden Township	No
Grant Township	
ITC Transmission	Public-facing informational maps
Lake County	Public-facing informational maps
Lake County Emergency Services	Internal-only maps or apps
Lake County Road Commission	Internal-only maps or apps
Laketon Township	Internal-only maps or apps
Leavitt Township	No

Mason County Chamber Alliance	
Mason County Drain Commission	No
Mason County Road Commission	Interactive dashboards for staff and leadership
Muskegon County	Dashboards used for performance tracking and reporting
Muskegon County Road Commission	No
Muskegon County Road Commission	Internal-only maps or apps
Muskegon County Water Resource Commission	
Newaygo County	Public-facing informational maps
Newaygo County	Internal-only maps or apps
Newaygo County Road Commission	No
Oceana County	No
Oceana County Drain Commission	Interactive dashboards for staff and leadership
Oceana County Road Commission	No
Pentwater Township	Internal-only maps or apps
Pere Marquette Township	Internal-only maps or apps
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	Internal-only maps or apps
Village of Fruitport	
Village of Pentwater	Internal-only maps or apps
Village of Rothbury	
Village of Shelby	Public-facing informational maps
Village of Walkerville	

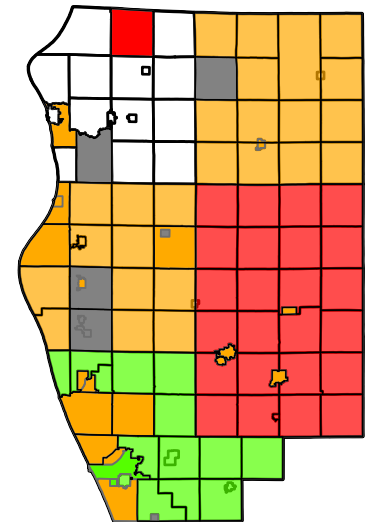
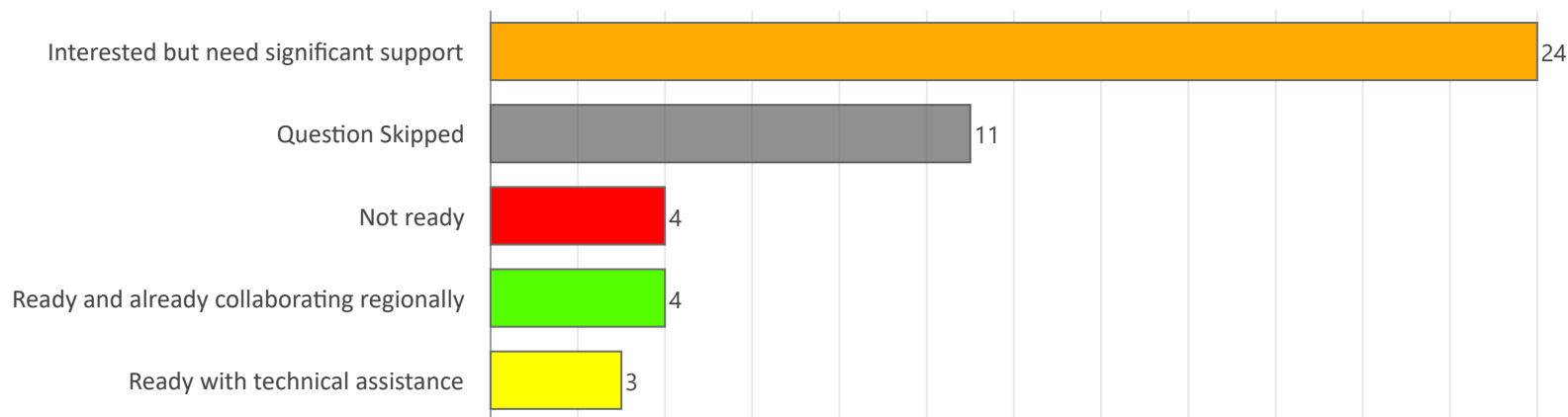
What level of GIS training or professional development is supported in your organization?



City of Fremont	Informal/self-guided only
City of Fremont	
City of Hart	Informal/self-guided only
City of Montague	None
City of Muskegon	Occasional training opportunities
City of Newaygo	Informal/self-guided only
City of North Muskegon	Occasional training opportunities
City of Norton Shores	Occasional training opportunities
City of Roosevelt Park	Regular training budget or structured plan
City of White Cloud	Informal/self-guided only
City of Whitehall	None
Consumers Energy	Training aligned with infrastructure or asset management goals
Dalton Township	Informal/self-guided only
Freesoil Township	None
Fruitland Township	Informal/self-guided only
Golden Township	
Golden Township	None
Grant Township	
ITC Transmission	Regular training budget or structured plan
Lake County	Occasional training opportunities
Lake County Emergency Services	None
Lake County Road Commission	None
Laketon Township	Informal/self-guided only
Leavitt Township	None

Mason County Chamber Alliance	
Mason County Drain Commission	Occasional training opportunities
Mason County Road Commission	Informal/self-guided only
Muskegon County	Training aligned with infrastructure or asset management goals
Muskegon County Road Commission	Informal/self-guided only
Muskegon County Road Commission	Informal/self-guided only
Muskegon County Water Resource Commission	
Newaygo County	Occasional training opportunities
Newaygo County	Informal/self-guided only
Newaygo County Road Commission	Informal/self-guided only
Oceana County	Informal/self-guided only
Oceana County Drain Commission	None
Oceana County Road Commission	Occasional training opportunities
Pentwater Township	Occasional training opportunities
Pere Marquette Township	Occasional training opportunities
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	Informal/self-guided only
Village of Fruitport	
Village of Pentwater	Informal/self-guided only
Village of Rothbury	
Village of Shelby	Informal/self-guided only
Village of Walkerville	

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?



City of Fremont	Interested but need significant support
City of Fremont	
City of Hart	Interested but need significant support
City of Montague	Interested but need significant support
City of Muskegon	Ready and already collaborating regionally
City of Newaygo	Interested but need significant support
City of North Muskegon	Interested but need significant support
City of Norton Shores	Interested but need significant support
City of Roosevelt Park	Ready and already collaborating regionally
City of White Cloud	Interested but need significant support
City of Whitehall	Interested but need significant support
Consumers Energy	Not ready
Dalton Township	Interested but need significant support
Freesoil Township	Not ready
Fruitland Township	Interested but need significant support
Golden Township	
Golden Township	Interested but need significant support
Grant Township	
ITC Transmission	Ready with technical assistance
Lake County	Interested but need significant support
Lake County Emergency Services	Not ready
Lake County Road Commission	Not ready
Laketon Township	Interested but need significant support
Leavitt Township	Interested but need significant support

Mason County Chamber Alliance	
Mason County Drain Commission	Interested but need significant support
Mason County Road Commission	Interested but need significant support
Muskegon County	Ready and already collaborating regionally
Muskegon County Road Commission	Ready with technical assistance
Muskegon County Road Commission	Ready with technical assistance
Muskegon County Water Resource Commission	
Newaygo County	Ready with technical assistance
Newaygo County	Not ready
Newaygo County Road Commission	Interested but need significant support
Oceana County	Interested but need significant support
Oceana County Drain Commission	Interested but need significant support
Oceana County Road Commission	Ready and already collaborating regionally
Pentwater Township	Interested but need significant support
Pere Marquette Township	Interested but need significant support
Riverton Township	
Sauble Township	
Shelby Township	
Village of Baldwin	Interested but need significant support
Village of Fruitport	
Village of Pentwater	Interested but need significant support
Village of Rothbury	
Village of Shelby	Interested but need significant support
Village of Walkerville	

Foundational Layers

Agency Name	Administrative boundaries	Parcels / tax parcels	Address points	Road centerlines	Aerial imagery / basemaps
City of Fremont	Use	Use	Use	Use	Use
City of Fremont					
City of Hart	Use	Use	Use	Use	Use
City of Montague	Use	Use	Use	Use	Use
City of Muskegon	Use	Use	Use	Use	Use
City of Newaygo	Use	Use	Use	Use	Use
City of North Muskegon	Use	Use	Use	Use	Use
City of Norton Shores	Use	Use	Use	Use	Use
City of Roosevelt Park	Use and Maintain	Use and Maintain	Use and Maintain	Use	Use
City of White Cloud	Use	Use	Use	Use	Use
City of Whitehall	Use	Use	Use	Use	Use and Maintain
Consumers Energy	Use	Use	Use	Use	Use
Dalton Township	Use	Use	Don't Use or Maintain	Don't Use or Maintain	Use
Freesoil Township					
Fruitland Township	Use	Use	Use	Use	Use
Golden Township					
Golden Township	Use	Use	Use	Use	Use
Grant Township					
ITC Transmission	Use	Use	Use	Use	Use
Lake County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Lake County Emergency Services	Use	Use	Use	Use	Use
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain	Use and Maintain
Laketon Township	Use	Use	Use		Use
Leavitt Township	Don't Use or Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance					
Mason County Drain Commision	Use	Use	Use	Use	Use
Mason County Road Commission	Don't Use or Maintain				
Muskegon County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Muskegon County Road Commission	Use	Use	Use	Use	Use
Muskegon County Road Commission	Use	Use	Use	Use	Use
Muskegon County Water Resource Commission					
Newaygo County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Newaygo County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Newaygo County Road Commission	Use and Maintain	Don't Use or Maintain		Use and Maintain	Use
Oceana County	Use	Use	Use	Use	Use
Oceana County Drain Commision	Use	Use	Use	Don't Use or Maintain	Use
Oceana County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
Pentwater Township	Use		Use		Use
Pere Marquette Township	Use and Maintain	Use and Maintain	Use and Maintain	Use	Use and Maintain
Riverton Township					
Sauble Township					
Shelby Township					
Village of Baldwin		Use			Use
Village of Fruitport					
Village of Pentwater	Use	Use	Use	Don't Use or Maintain	Use
Village of Rothbury					
Village of Shelby	Use	Use	Don't Use or Maintain	Don't Use or Maintain	Use
Village of Walkerville					

Transportation Layers

Agency Name	Roads (local jurisdiction)	Bridges	Sidewalks / Trails	Traffic control devices	Transit routes / stops
City of Fremont	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Fremont					
City of Hart	Use	Use	Use	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Use	Don't Use or Maintain	Use	Use	Don't Use or Maintain
City of Muskegon	Use and Maintain	Use	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Newaygo	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of North Muskegon	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Norton Shores	Use	Use	Use	Use	Use
City of Roosevelt Park	Use	Don't Use or Maintain	Use and Maintain	Use	Don't Use or Maintain
City of White Cloud	Use	Use	Use	Use	Use
City of Whitehall	Use	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Consumers Energy	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Dalton Township	Use	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Golden Township					
Golden Township	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Grant Township					
ITC Transmission	Use				
Lake County	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Lake County Emergency Services	Use	Use	Use	Use	Use
Lake County Road Commission	Use	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Leavitt Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance					
Mason County Drain Commision	Use				
Mason County Road Commission	Use	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Muskegon County Road Commission	Use and Maintain	Use and Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain
Muskegon County Road Commission	Use	Use	Use	Use	Don't Use or Maintain
Muskegon County Water Resource Commission					
Newaygo County	Use and Maintain	Use and Maintain		Don't Use or Maintain	Don't Use or Maintain
Newaygo County	Use and Maintain	Don't Use or Maintain	Use	Don't Use or Maintain	Don't Use or Maintain
Newaygo County Road Commission	Use and Maintain	Use and Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain
Oceana County	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Drain Commision	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use
Oceana County Road Commission	Use and Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pentwater Township	Use	Use			
Pere Marquette Township	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Riverton Township					
Sauble Township					
Shelby Township					
Village of Baldwin	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Fruitport					
Village of Pentwater	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Rothbury					
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Walkerville					

Water Layers

Agency Name	Drinking Water	Wastewater Collection	Stormwater	Drainage	Floodplains	Watersheds / hydrology
City of Fremont	Use	Use	Don't Use or Maintain	Use	Don't Use or Maintain	Don't Use or Maintain
City of Fremont						
City of Hart	Use	Use	Use	Use	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Use	Use	Use	Use	Use	Use
City of Muskegon	Use and Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
City of Newaygo	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of North Muskegon	Use and Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Norton Shores	Use and Maintain	Use and Maintain	Use and Maintain	Use	Use	Use
City of Roosevelt Park	Use and Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of White Cloud	Use	Use	Use	Use	Use	Use
City of Whitehall	Use	Use	Use	Use	Use	Use
Consumers Energy	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Dalton Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Golden Township						
Golden Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use	Use	Use
Grant Township						
ITC Transmission						
Lake County	Use	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Lake County Emergency Services	Use	Use	Use	Use	Use	Use
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township	Don't Use or Maintain	Use	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
Leavitt Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance						
Mason County Drain Commision			Use	Use		Use
Mason County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain	Don't Use or Maintain
Muskegon County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Use	Use
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Use and Maintain	Use	Use	Use
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Use	Use	Use	Use
Muskegon County Water Resource Commission						
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Use and Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain
Newaygo County	Use	Use	Use	Use and Maintain	Don't Use or Maintain	Use
Newaygo County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use	Use
Oceana County Drain Commision	Don't Use or Maintain	Don't Use or Maintain	Use	Use	Use	Use
Oceana County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Use
Pentwater Township			Use	Use		
Pere Marquette Township	Use and Maintain	Use and Maintain	Use and Maintain	Use	Use	Use
Riverton Township						
Sauble Township						
Shelby Township						
Village of Baldwin	Use	Use	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Fruitport						
Village of Pentwater	Use and Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Rothbury						
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Walkerville						

Utility Layers

Agency Name	Electric Distribution	Natural Gas Distribution	Streetlights	Renewable Energy
City of Fremont	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
City of Fremont				
City of Hart	Use	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Muskegon	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
City of Newaygo	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of North Muskegon	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Norton Shores	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
City of Roosevelt Park	Use	Use	Use	Don't Use or Maintain
City of White Cloud	Use	Use	Use	Use
City of Whitehall	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Consumers Energy	Use	Use	Use	Don't Use or Maintain
Dalton Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Golden Township				
Golden Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Grant Township				
ITC Transmission	Use and Maintain	Use		Use
Lake County	Use	Use	Don't Use or Maintain	Don't Use or Maintain
Lake County Emergency Services	Use	Use	Use	Use
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
Leavitt Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance				
Mason County Drain Commision				
Mason County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Water Resource Commission				
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Drain Commision	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pentwater Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pere Marquette Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Riverton Township				
Sauble Township				
Shelby Township				
Village of Baldwin	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Fruitport				
Village of Pentwater	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Rothbury				
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Walkerville				

Communication Layers

Agency Name	Broadband service areas	Fiber routes	Wireless towers	Public facilities with connectivity
City of Fremont	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use
City of Fremont				
City of Hart	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Muskegon	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Newaygo	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of North Muskegon	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Norton Shores	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Roosevelt Park	Use	Use	Don't Use or Maintain	Use
City of White Cloud	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use
City of Whitehall	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Consumers Energy	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Dalton Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Golden Township				
Golden Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Grant Township				
ITC Transmission				
Lake County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Lake County Emergency Services	Don't Use or Maintain	Don't Use or Maintain	Use	Don't Use or Maintain
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Leavitt Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance				
Mason County Drain Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County	Use	Use	Use	Use
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Water Resource Commission				
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Drain Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pentwater Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pere Marquette Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Riverton Township				
Sauble Township				
Shelby Township				
Village of Baldwin	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Fruitport				
Village of Pentwater	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Rothbury				
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Walkerville				

Facility Layers

Agency Name	Public buildings	Parks and recreation facilities	Public safety facilities	Schools (if applicable)
City of Fremont	Don't Use or Maintain	Use	Don't Use or Maintain	Don't Use or Maintain
City of Fremont				
City of Hart	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Use	Use	Use	Don't Use or Maintain
City of Muskegon	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Newaygo	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of North Muskegon	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Norton Shores	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Roosevelt Park	Use and Maintain	Use and Maintain	Use and Maintain	Use
City of White Cloud	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Whitehall	Use	Use	Use	Don't Use or Maintain
Consumers Energy	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Dalton Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Golden Township				
Golden Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Grant Township				
ITC Transmission		Use		
Lake County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Lake County Emergency Services	Use	Use	Use	Use
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Leavitt Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance				
Mason County Drain Commission	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Water Resource Commission				
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County	Don't Use or Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain
Newaygo County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County	Use and Maintain	Use and Maintain	Don't Use or Maintain	Use
Oceana County Drain Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pentwater Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Pere Marquette Township	Use and Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain
Riverton Township				
Sauble Township				
Shelby Township				
Village of Baldwin	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Fruitport				
Village of Pentwater	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Rothbury				
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Walkerville				

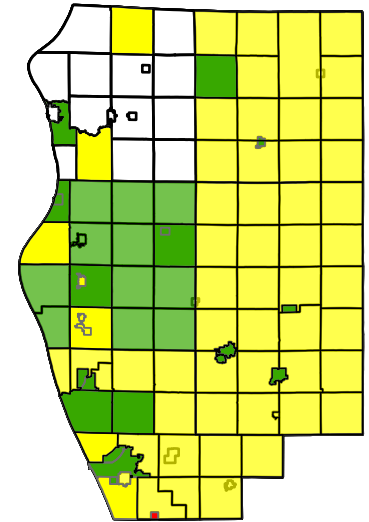
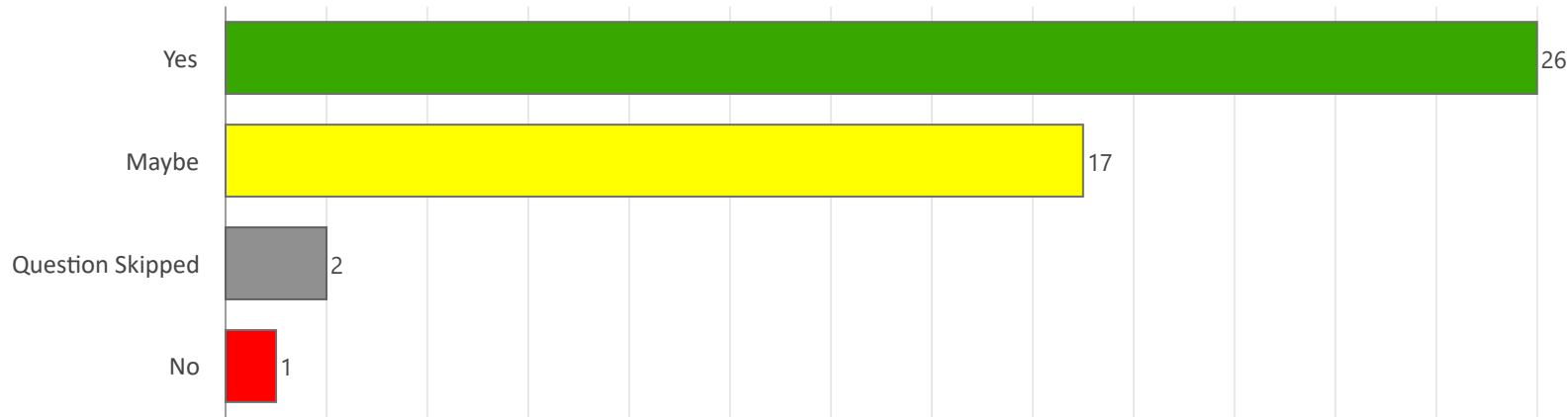
Condition Layers

Agency Name	Asset condition ratings	Inspection results	Maintenance history	Risk or criticality scores
City of Fremont	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Fremont				
City of Hart	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Use and Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Muskegon	Use	Use	Don't Use or Maintain	Don't Use or Maintain
City of Newaygo	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of North Muskegon	Don't Use or Maintain	Use and Maintain	Use and Maintain	Don't Use or Maintain
City of Norton Shores	Don't Use or Maintain	Use and Maintain	Use and Maintain	Use
City of Roosevelt Park	Use and Maintain	Use and Maintain	Use and Maintain	Use
City of White Cloud	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Whitehall	Use	Use	Use	Use
Consumers Energy	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Dalton Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Golden Township				
Golden Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Grant Township				
ITC Transmission				
Lake County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Lake County Emergency Services	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Use
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Leavitt Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Chamber Alliance				
Mason County Drain Commision	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
Mason County Road Commission	Use	Use	Use	Don't Use or Maintain
Muskegon County	Use	Use and Maintain	Use and Maintain	Use
Muskegon County Road Commission	Use and Maintain	Use and Maintain	Use	Don't Use or Maintain
Muskegon County Road Commission	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Muskegon County Water Resource Commission				
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County Road Commission	Use and Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain
Oceana County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County Drain Commision	Don't Use or Maintain	Use	Use	Don't Use or Maintain
Oceana County Road Commission	Use and Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain
Pentwater Township	Don't Use or Maintain	Use	Use	Don't Use or Maintain
Pere Marquette Township	Don't Use or Maintain	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain
Riverton Township				
Sauble Township				
Shelby Township				
Village of Baldwin	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Fruitport				
Village of Pentwater	Use	Use	Don't Use or Maintain	Don't Use or Maintain
Village of Rothbury				
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain

Capital Improvement Plan (CIP) Layers

Agency Name	Capital Improvement Projects (current)	Planned or future CIP Projects	Construction limits / project extents	Permits
City of Fremont	Use	Use	Don't Use or Maintain	Don't Use or Maintain
City of Fremont				
City of Hart	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Montague	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Muskegon	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
City of Newaygo				
City of North Muskegon				
City of Norton Shores	Use	Use	Use	Use
City of Roosevelt Park	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
City of White Cloud				
City of Whitehall	Use	Use	Use	Use
Consumers Energy	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Dalton Township				
Freesoil Township	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Fruitland Township				
Golden Township				
Golden Township				
Grant Township				
ITC Transmission				
Lake County				
Lake County Emergency Services				
Lake County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Laketon Township				
Leavitt Township				
Mason County Chamber Alliance				
Mason County Drain Commision	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	
Mason County Road Commission				
Muskegon County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Muskegon County Road Commission	Use and Maintain	Use and Maintain	Use and Maintain	Use
Muskegon County Road Commission	Use and Maintain	Use and Maintain	Use and Maintain	Use and Maintain
Muskegon County Water Resource Commission				
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Newaygo County Road Commission	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Oceana County				
Oceana County Drain Commision				
Oceana County Road Commission	Don't Use or Maintain	Use and Maintain	Don't Use or Maintain	Don't Use or Maintain
Pentwater Township				
Pere Marquette Township				
Riverton Township				
Sauble Township				
Shelby Township				
Village of Baldwin				
Village of Fruitport				
Village of Pentwater				
Village of Rothbury				
Village of Shelby	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain	Don't Use or Maintain
Village of Walkerville				

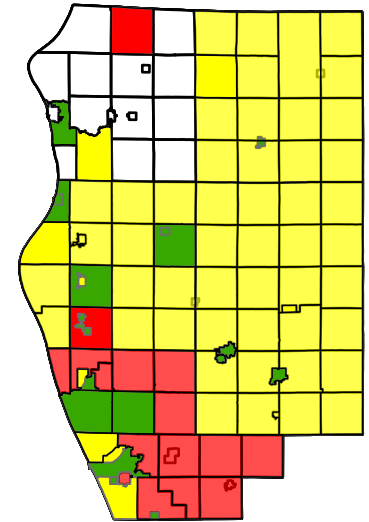
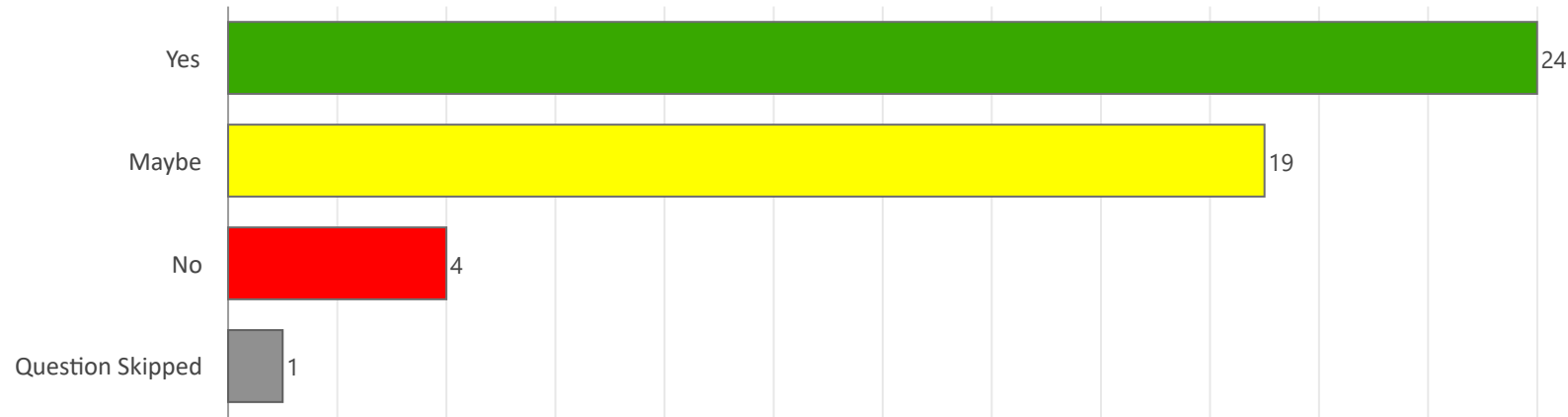
Would Regional level GIS information be beneficial to your agency?



City of Fremont	Yes
City of Fremont	Yes
City of Hart	Yes
City of Montague	Yes
City of Muskegon	Yes
City of Newaygo	Yes
City of North Muskegon	Yes
City of Norton Shores	Maybe
City of Roosevelt Park	Yes
City of White Cloud	Yes
City of Whitehall	Yes
Consumers Energy	Maybe
Dalton Township	Yes
Freesoil Township	Maybe
Fruitland Township	Yes
Golden Township	Maybe
Golden Township	Yes
Grant Township	Maybe
ITC Transmission	Maybe
Lake County	Maybe
Lake County Emergency Services	
Lake County Road Commission	Maybe
Laketon Township	Maybe
Leavitt Township	Yes

Mason County Chamber Alliance	Yes
Mason County Drain Commision	Maybe
Mason County Road Commission	Yes
Muskegon County	Maybe
Muskegon County Road Commission	Maybe
Muskegon County Road Commission	Yes
Muskegon County Water Resource Commission	
Newaygo County	Maybe
Newaygo County	Maybe
Newaygo County Road Commission	Maybe
Oceana County	Yes
Oceana County Drain Commision	Yes
Oceana County Road Commission	Maybe
Pentwater Township	Yes
Pere Marquette Township	Yes
Riverton Township	Maybe
Sauble Township	Yes
Shelby Township	Yes
Village of Baldwin	Yes
Village of Fruitport	No
Village of Pentwater	Yes
Village of Rothbury	Maybe
Village of Shelby	Maybe
Village of Walkerville	Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?



City of Fremont	Yes
City of Fremont	Yes
City of Hart	Maybe
City of Montague	Maybe
City of Muskegon	Yes
City of Newaygo	Yes
City of North Muskegon	Maybe
City of Norton Shores	Maybe
City of Roosevelt Park	Yes
City of White Cloud	Maybe
City of Whitehall	Yes
Consumers Energy	Maybe
Dalton Township	Yes
Freesoil Township	No
Fruitland Township	Yes
Golden Township	Maybe
Golden Township	Yes
Grant Township	No
ITC Transmission	Maybe
Lake County	Maybe
Lake County Emergency Services	Maybe
Lake County Road Commission	Yes
Laketon Township	Maybe
Leavitt Township	Yes

Mason County Chamber Alliance	Yes
Mason County Drain Commision	Maybe
Mason County Road Commission	Yes
Muskegon County	No
Muskegon County Road Commission	Yes
Muskegon County Road Commission	Yes
Muskegon County Water Resource Commission	
Newaygo County	Maybe
Newaygo County	No
Newaygo County Road Commission	Maybe
Oceana County	Maybe
Oceana County Drain Commision	Yes
Oceana County Road Commission	Maybe
Pentwater Township	Yes
Pere Marquette Township	Yes
Riverton Township	Maybe
Sauble Township	Maybe
Shelby Township	Yes
Village of Baldwin	Yes
Village of Fruitport	Yes
Village of Pentwater	Yes
Village of Rothbury	Yes
Village of Shelby	Maybe
Village of Walkerville	Yes

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	Todd M Blake	City Manager	citymanager@fremontmi.gov	231-924-2101	Administrative

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Use
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Use
- Renewable energy assets - Don't Use or Maintain

Communication Layers

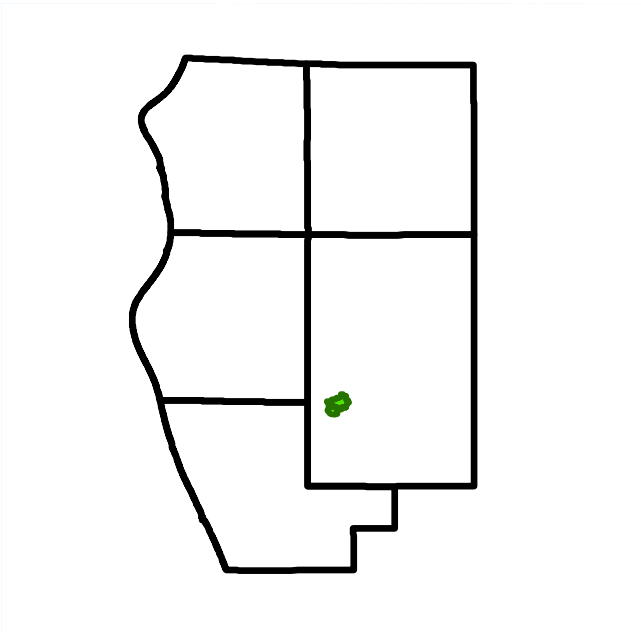
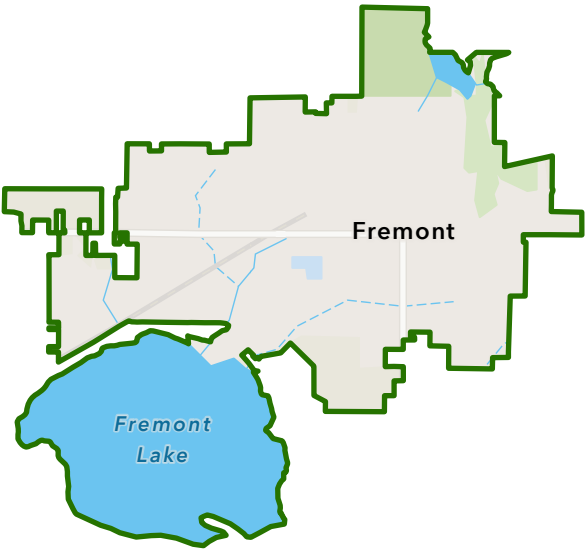
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Use

CIP Layers

- Capital improvement projects - Use
- Planned or future CIP projects - Use
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Use
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	Greg Dunbar	dpw director	dpwdir@fremontmi.gov	231-638-2557	Fremont DPW

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

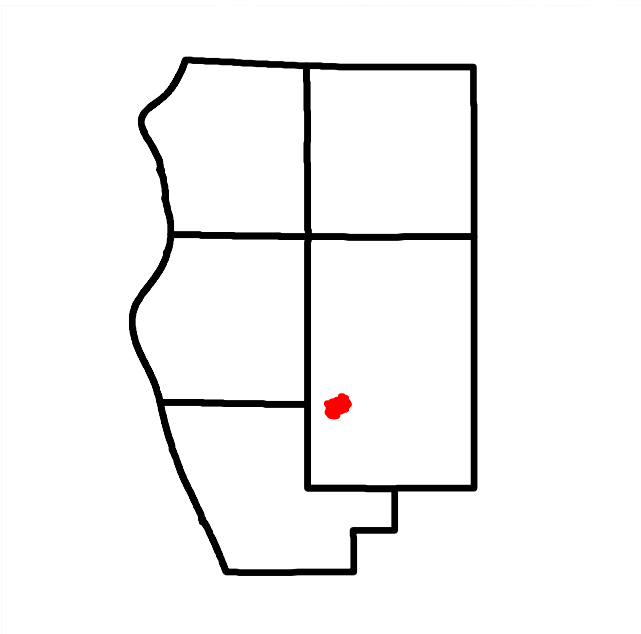
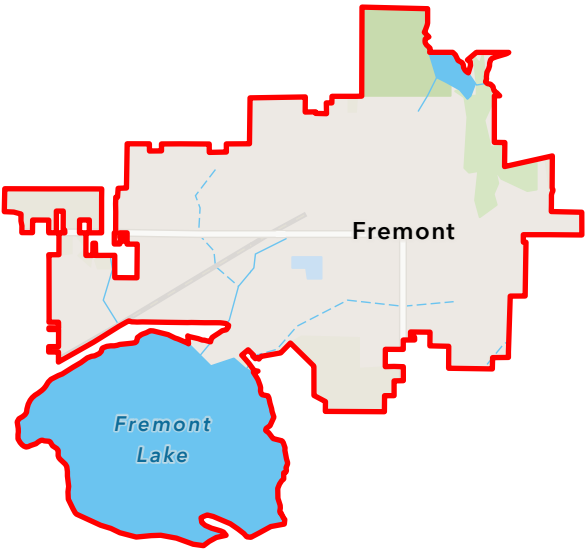
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Nichole Kleiner	City Manager	nkleiner@cityofhart.org	231-873-3546	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS services primarily outsourced

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Use
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Use
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

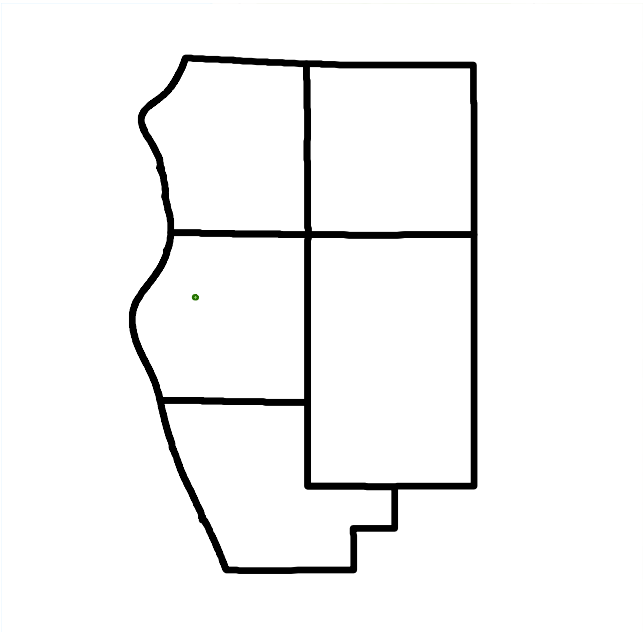
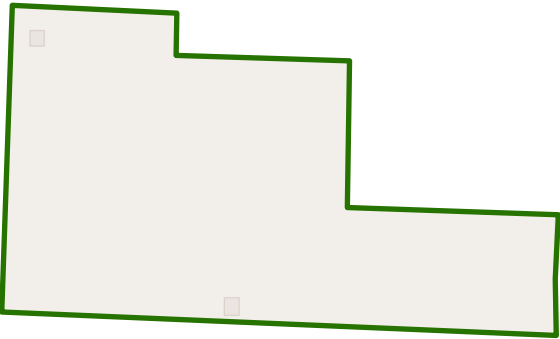
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Jeff Auch	City Manager	manager@cityofmontague.org	231-332-6758	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Use
- Traffic control devices - Use
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

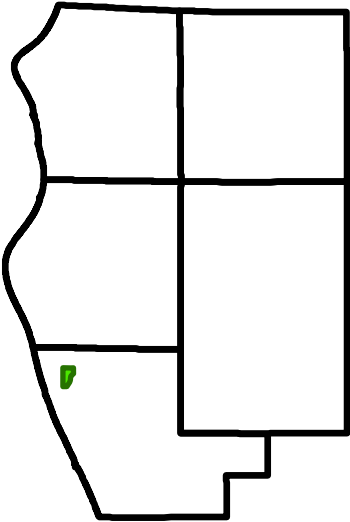
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Use
- Parks and recreation facilities - Use
- Public safety facilities - Use
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Dan VanderHeide	Director of Public Works	dan.vanderheide@shorelinecity.com	231-724-6993	City Engineer

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

1 dedicated GIS staff member

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS integrated with asset/work order or management systems

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Shared web services or portal access

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Interactive dashboards for staff and leadership

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready and already collaborating regionally

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Use
- Sidewalks / Trails - Use and Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Don't Use or Maintain
- Floodplains - Use
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Use
- Renewable energy assets - Don't Use or Maintain

Communication Layers

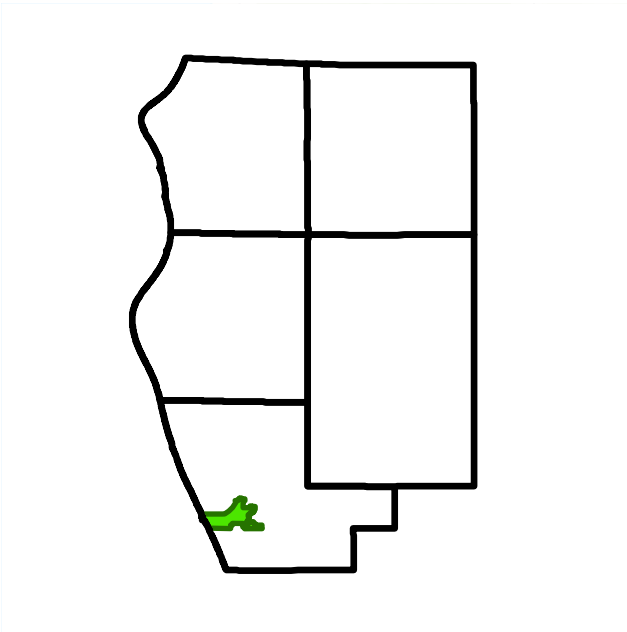
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	Jon Schneider	City Manager	jon@newaygo.gov	231-652-1657	Administration

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

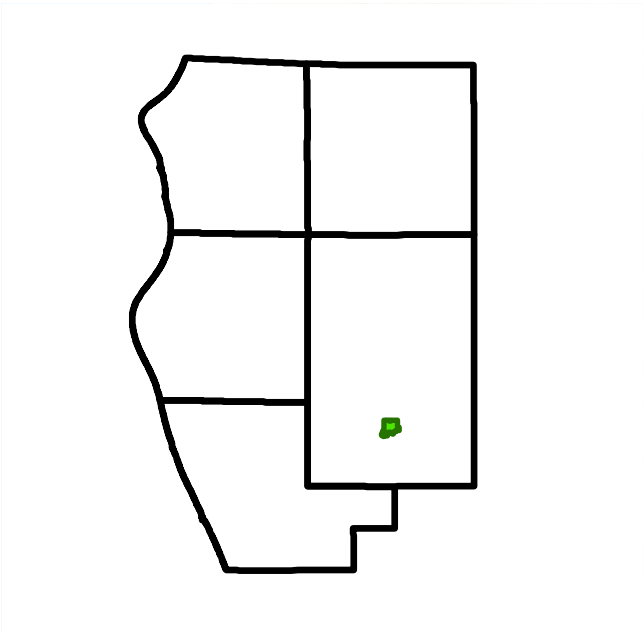
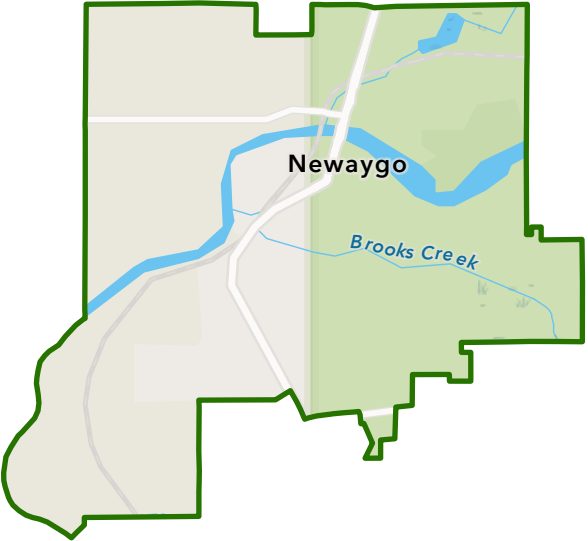
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Sam Janson	City Manager	sjanson@northmuskegon.org	231-744-1621	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

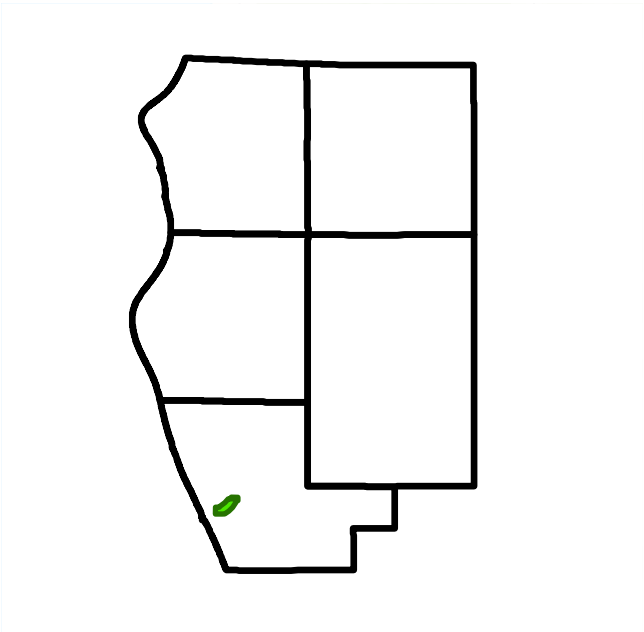
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	James Murphy	Director of Public Works	jmurphy@nortonshores.org	231-799-6803	Public Works

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

1 dedicated GIS staff member

How is GIS typically used in planning, infrastructure management, or decision-making?

Used regularly in staff reports and recommendations

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to analyze overlaps or conflicts

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Use
- Traffic control devices - Use
- Transit routes / stops - Use

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Use
- Renewable energy assets - Don't Use or Maintain

Communication Layers

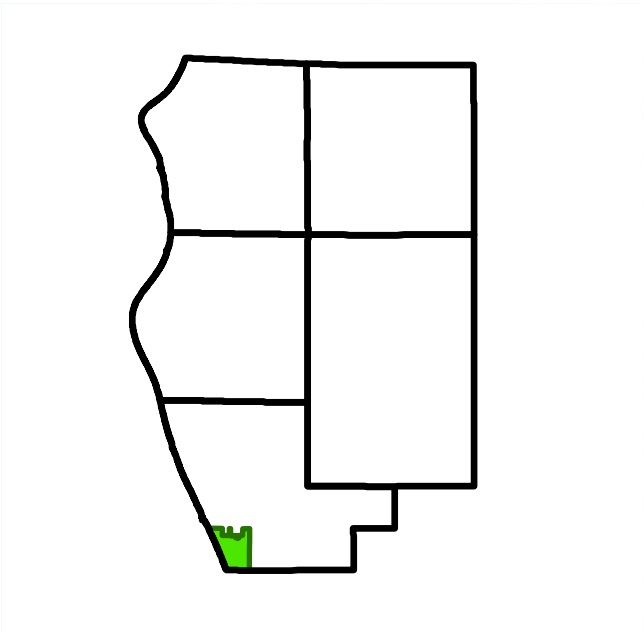
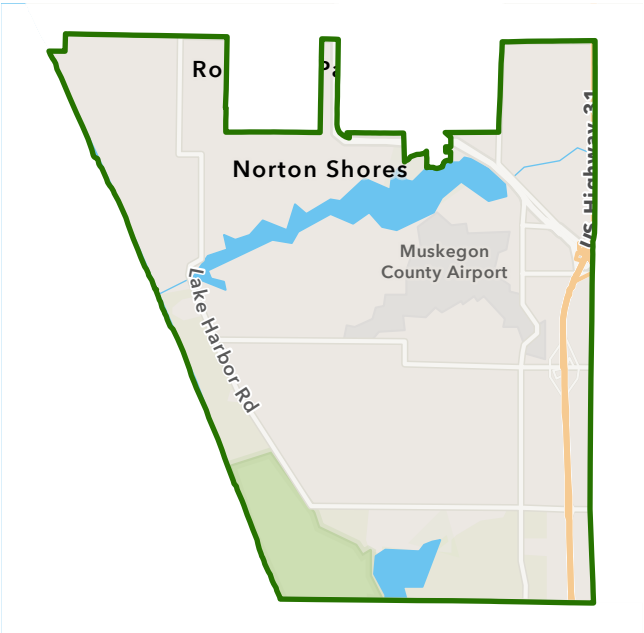
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- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Use
- Planned or future CIP projects - Use
- Construction limits / project extents - Use
- Permits / right-of-way activities - Use

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Jared Olson	City Manager	jolson@rooseveltpark.org	231-755-3721	City Official

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used regularly in staff reports and recommendations

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to coordinate across departments or agencies

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Interactive dashboards for staff and leadership

What level of GIS training or professional development is supported in your organization?

Regular training budget or structured plan

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready and already collaborating regionally

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Use and Maintain
- Traffic control devices - Use
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Use
- Natural gas distribution - Use
- Streetlights - Use
- Renewable energy assets - Don't Use or Maintain

Communication Layers

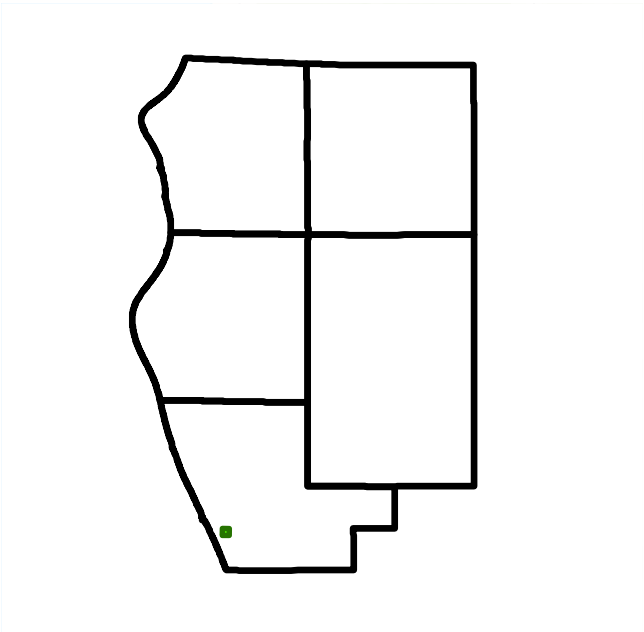
- Broadband service areas - Use
- Fiber routes - Use
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Use

CIP Layers

- Capital improvement projects - Use and Maintain
- Planned or future CIP projects - Use and Maintain
- Construction limits / project extents - Use and Maintain
- Permits / right-of-way activities - Use and Maintain

Facility Layers

- Public buildings - Use and Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Use and Maintain
- Schools - Use



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	April Storms	city manager	citymanager@cityofwhitecloud.org	231-689-1194	admin

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Use
- Traffic control devices - Use
- Transit routes / stops - Use

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Use
- Natural gas distribution - Use
- Streetlights - Use
- Renewable energy assets - Use

Communication Layers

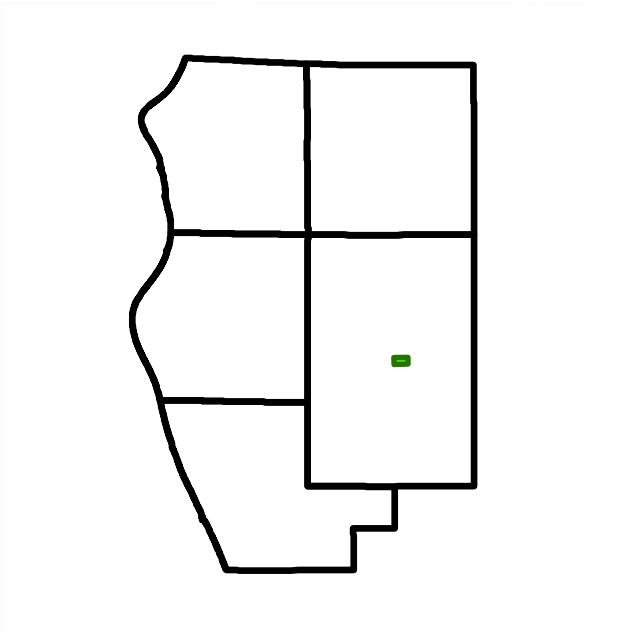
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Use

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Dan Tavernier	City Manager	tavernier@cityofwhitehall.org	586-823-3588	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to analyze overlaps or conflicts

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

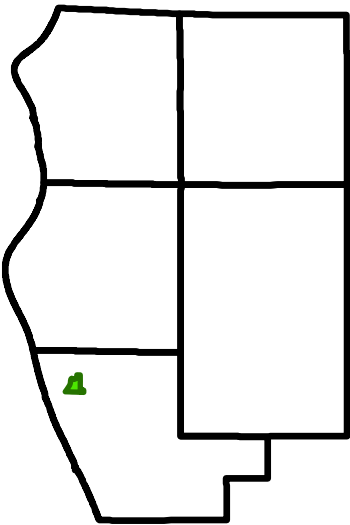
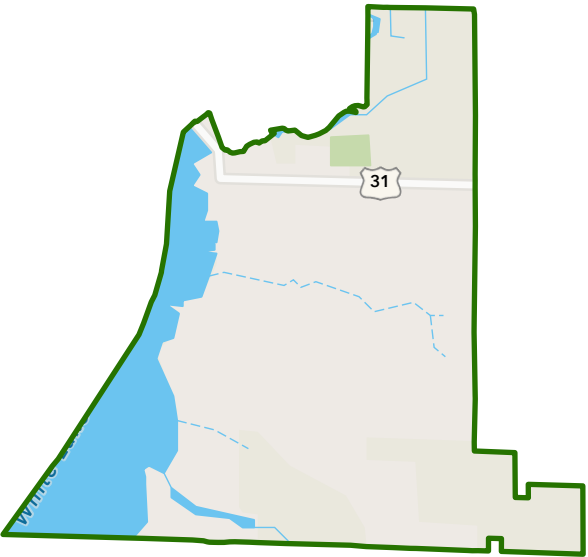
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- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Use
- Planned or future CIP projects - Use
- Construction limits / project extents - Use
- Permits / right-of-way activities - Use

Facility Layers

- Public buildings - Use
- Parks and recreation facilities - Use
- Public safety facilities - Use
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
	Richard Donald Houtteman	Community Affairs Manager	richard.houtteman@cmsenergy.com	231-375-9379	Community Affairs

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS team of 4+ staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to coordinate across departments or agencies

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

Organization-wide GIS standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Public-facing informational maps

What level of GIS training or professional development is supported in your organization?

Training aligned with infrastructure or asset management goals

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Not ready

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Use
- Natural gas distribution - Use
- Streetlights - Use
- Renewable energy assets - Don't Use or Maintain

Communication Layers

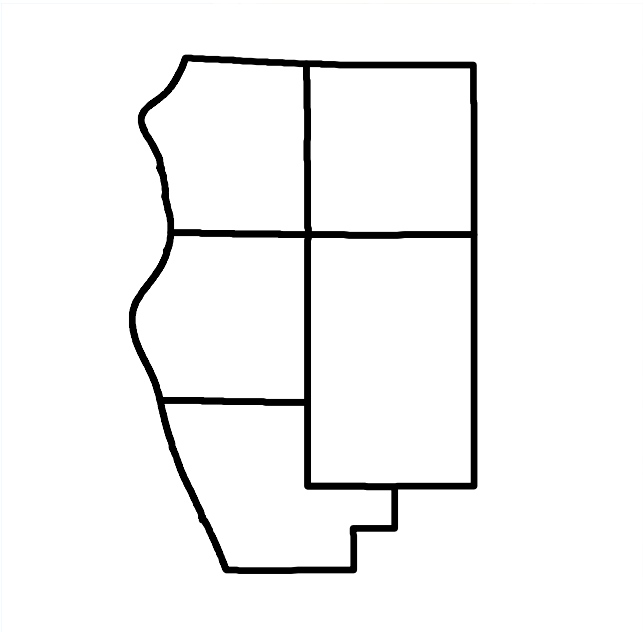
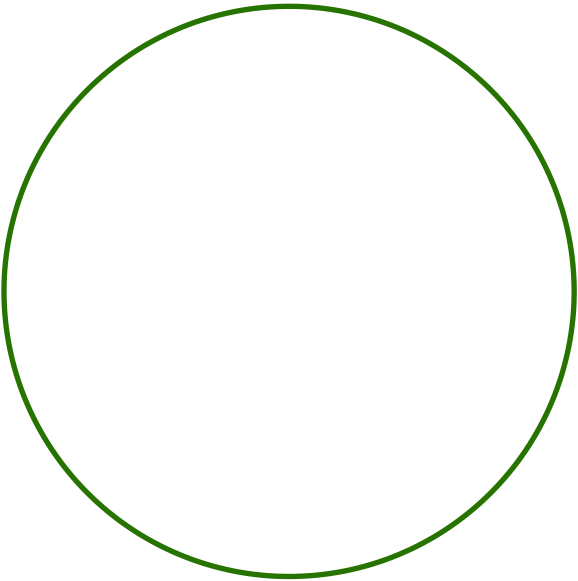
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Stephen Kerr	Zoning Administrator	stephen.kerr@daltontownship.org	231-332-6706	Zoning

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Don't Use or Maintain
- Road centerlines - Don't Use or Maintain
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Use
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

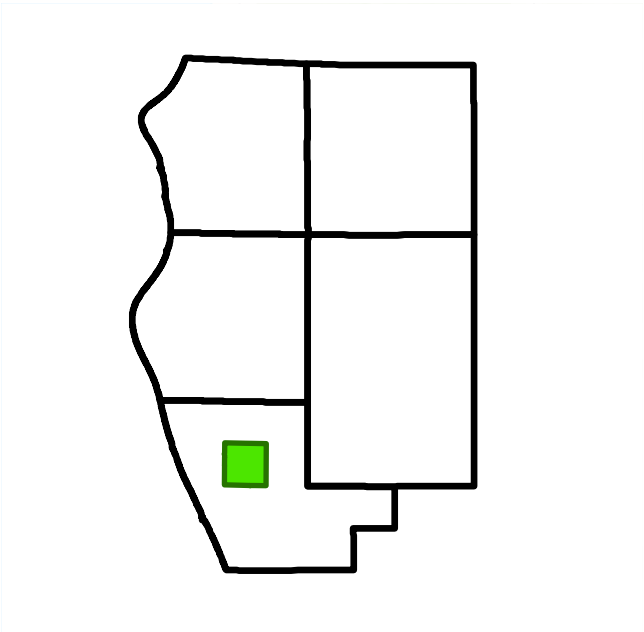
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- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Mason County	Lynda Papes	Clerk	fstwpclerk@gmail.com		

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS services primarily outsourced

How is GIS typically used in planning, infrastructure management, or decision-making?

Not used for planning or decisions

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Not ready

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

No

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) - Don't Use or Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
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Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

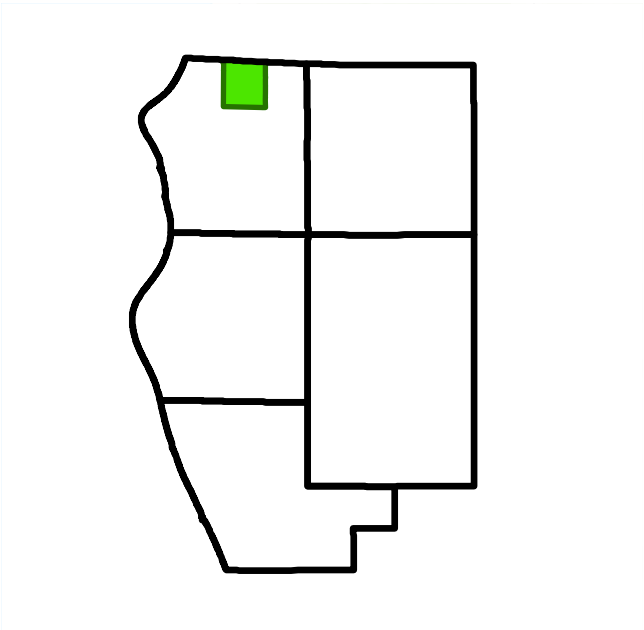
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- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Jeff Marcinkowski	Supervisor	supervisor@fruitlandmi.gov	231-766-3208	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS services primarily outsourced

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
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- Transit routes / stops - Don't Use or Maintain

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Utility Layers

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- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

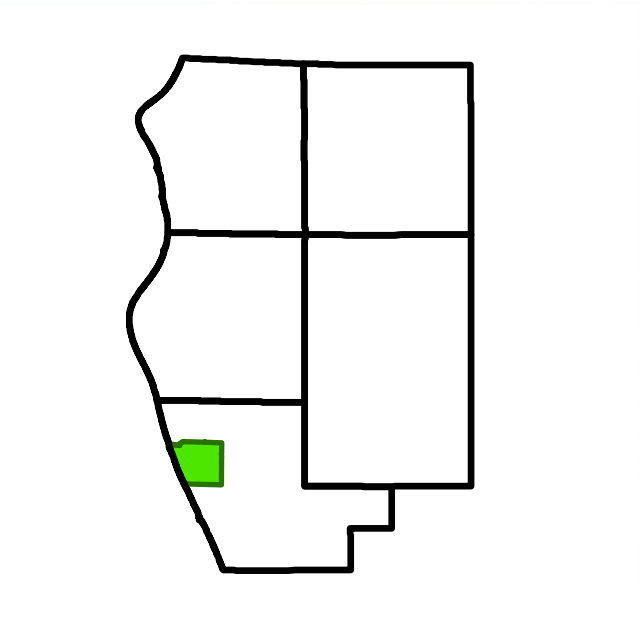
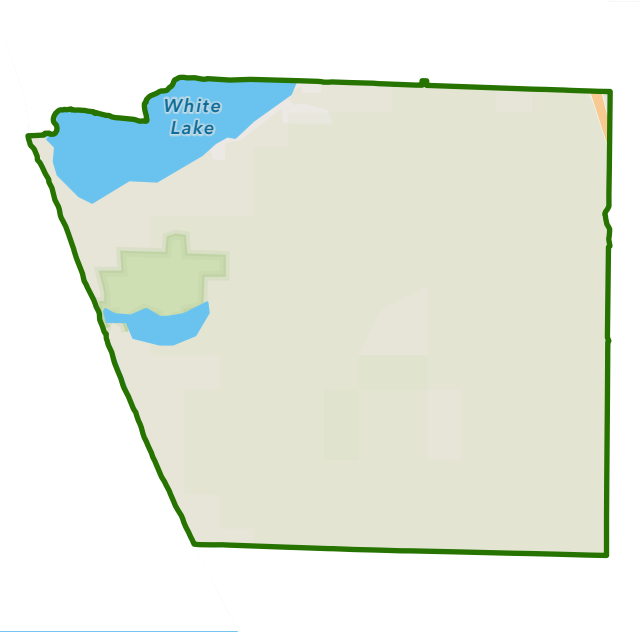
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- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Connie J Cargill	Treasurer	treasurer@goldentownshipmi.gov	231-873-4413	Board

Does your agency currently use GIS?

Unsure

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

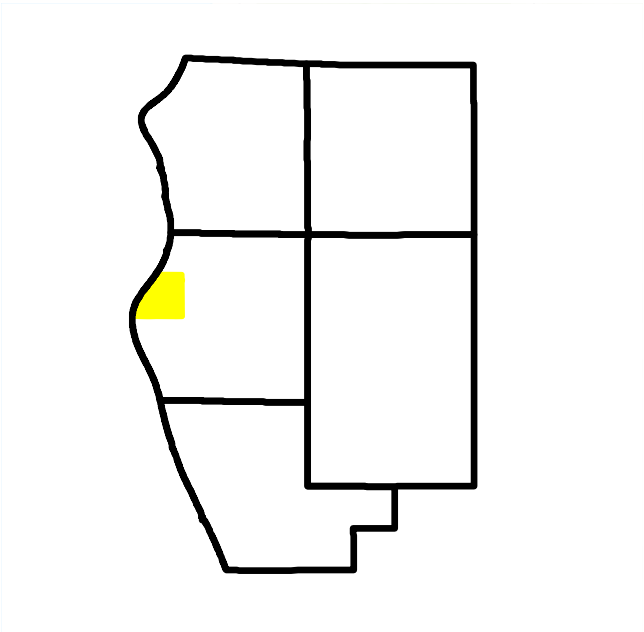
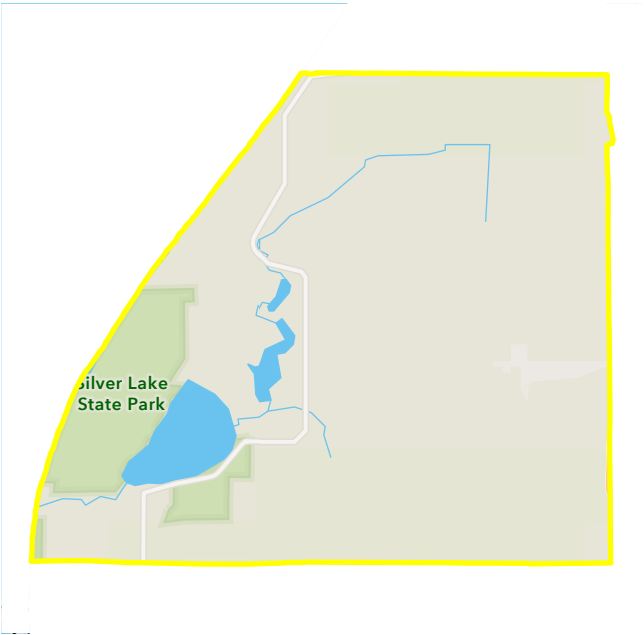
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Barbie Eaton	Assessor	assessor@goldentownshipmi.gov	231-873-4413	Assessing

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

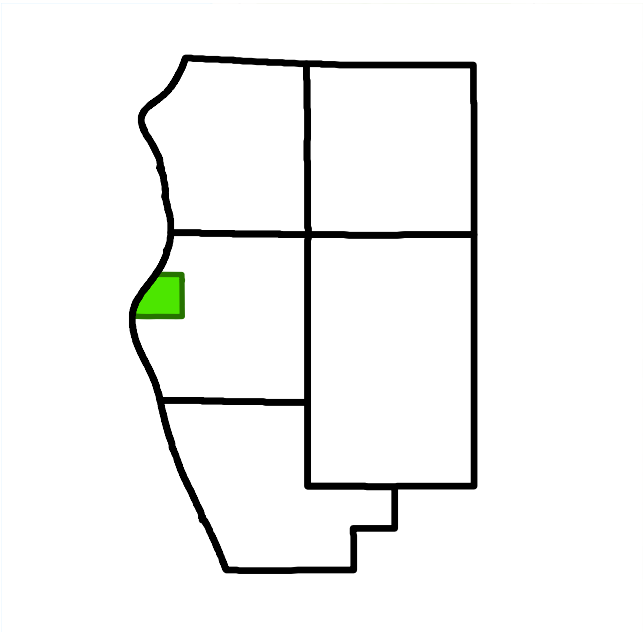
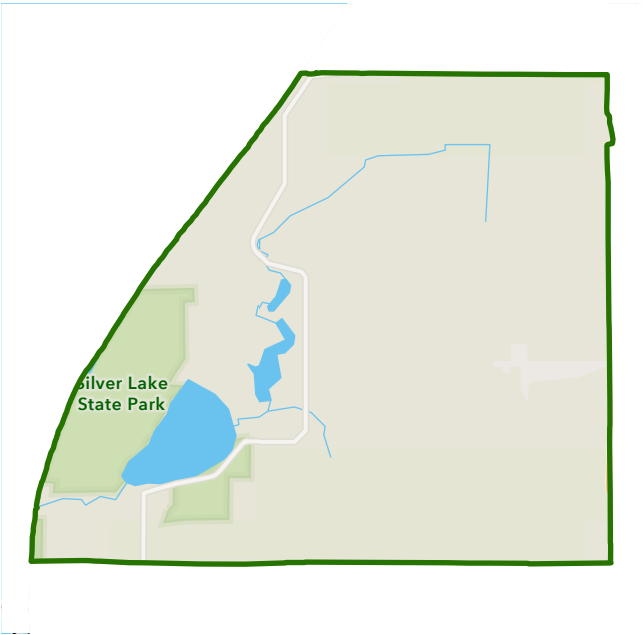
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Joanne Heck	Treasurer	jheckgranttp@gmail.com	231-557-1349	

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

No

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

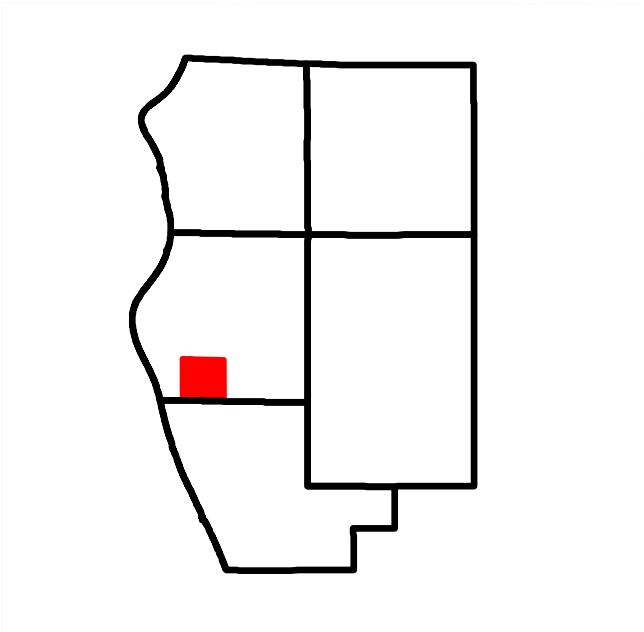
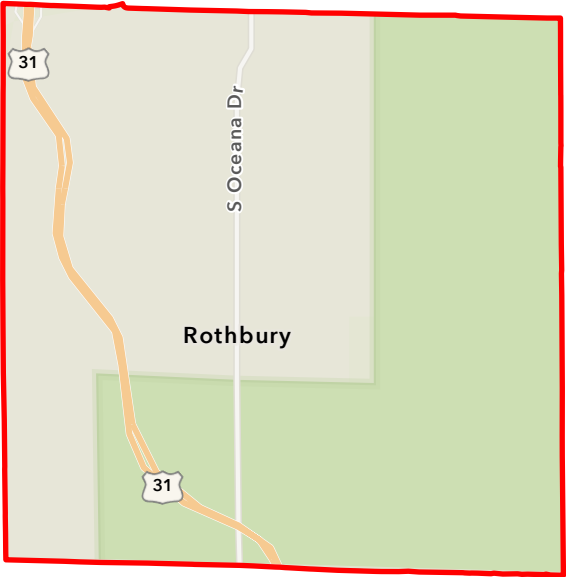
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
	Julie Burrell	Area Manager	jburrell@itctransco.com	231-335-1985	Local Government & Community Affairs

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS team of 4+ staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used regularly in staff reports and recommendations

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS integrated into multi-year CIP planning workflows

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Organization-wide GIS standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Public-facing informational maps

What level of GIS training or professional development is supported in your organization?

Regular training budget or structured plan

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready with technical assistance

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution - Use and Maintain
- Natural gas distribution - Use
- Streetlights -
- Renewable energy assets - Use

Communication Layers

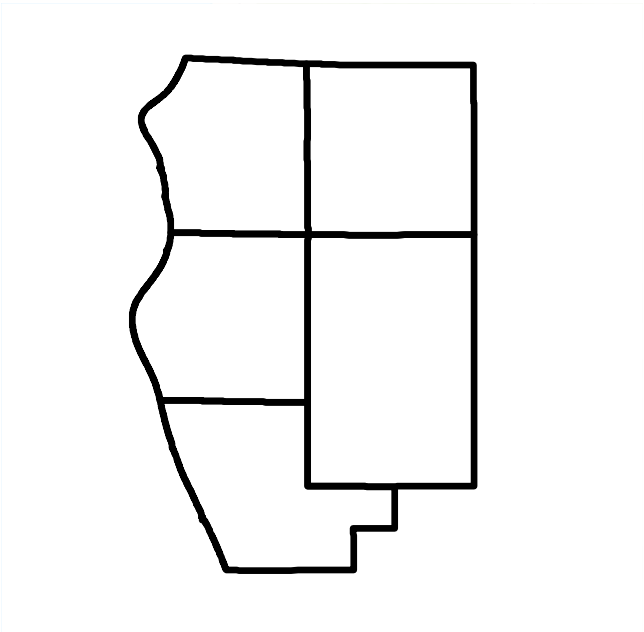
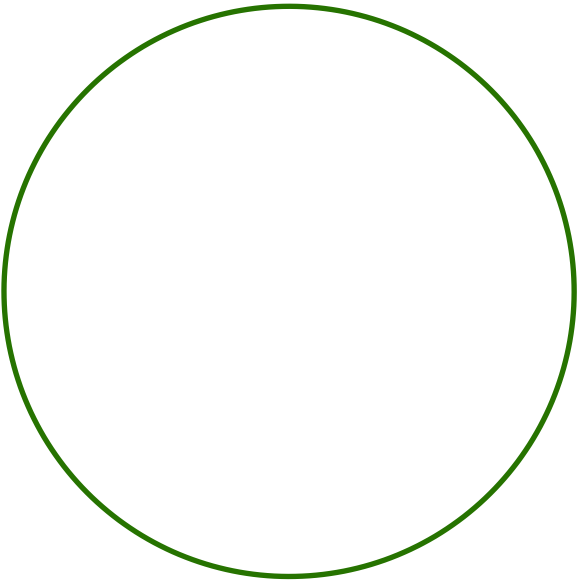
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities - Use
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Lake County	Tobi Lake	County Administrator	tlake@co.lake.mi.us	231-745-6231	Administration

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Public-facing informational maps

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Use and Maintain
- Road centerlines - Use and Maintain
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Use
- Natural gas distribution - Use
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

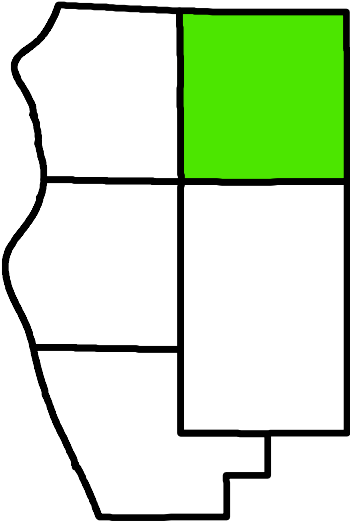
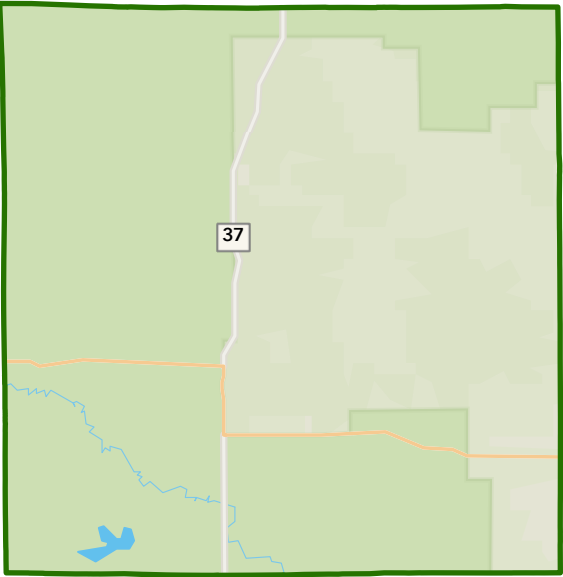
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Lake County	Jake Carter	Director	jcarter@co.lake.mi.us	231-745-6205	Emergency Management

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Not ready

Would Regional level GIS information be beneficial to your agency?

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Use
- Traffic control devices - Use
- Transit routes / stops - Use

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Use
- Natural gas distribution - Use
- Streetlights - Use
- Renewable energy assets - Use

Communication Layers

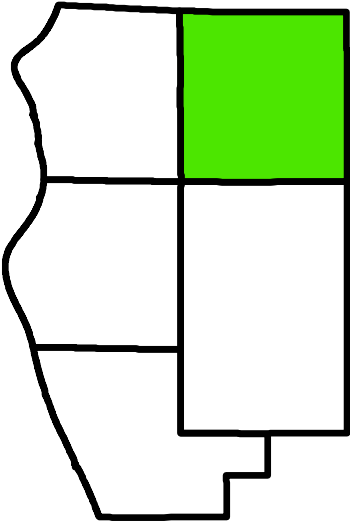
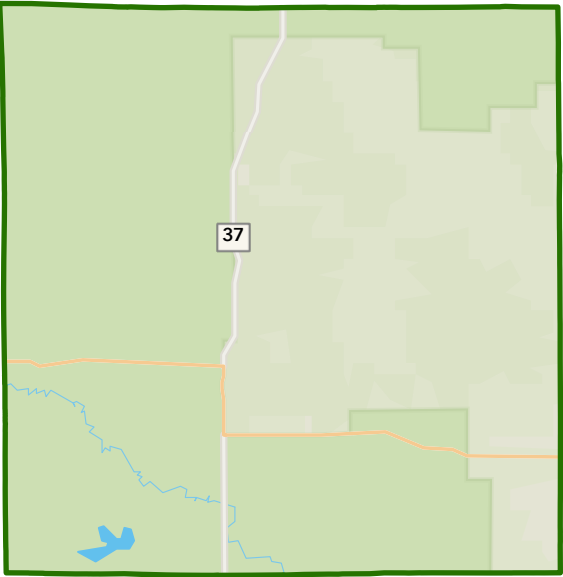
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Use
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Use
- Parks and recreation facilities - Use
- Public safety facilities - Use
- Schools - Use



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Lake County	Leroy Williams,Jr	Manager	lwilliams@lcrc-roads.com	231-745-4666	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used directly by leadership/elected officials for decision-making

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to analyze overlaps or conflicts

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Not ready

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Don't Use or Maintain
- Parcels / tax parcels - Don't Use or Maintain
- Address points - Don't Use or Maintain
- Road centerlines - Don't Use or Maintain
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

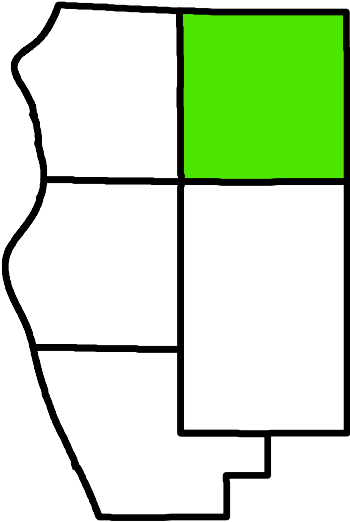
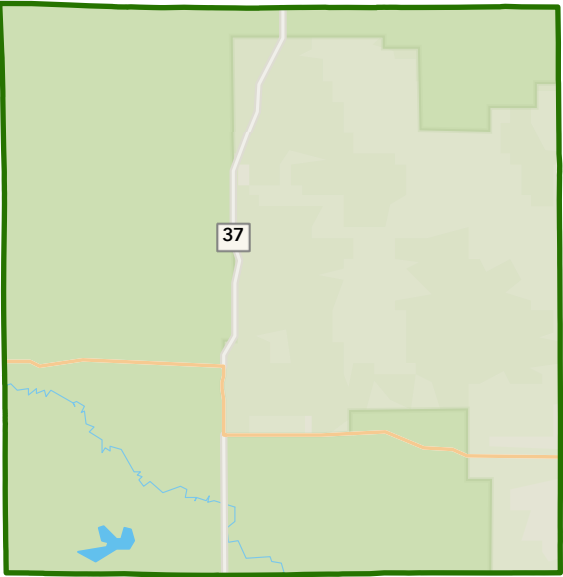
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Kim Arter	Supervisor	karter@laketontwpmi.gov	231-744-2454	All

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS services primarily outsourced

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points -
- Road centerlines -
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Don't Use or Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Use
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Use
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Use
- Renewable energy assets - Don't Use or Maintain

Communication Layers

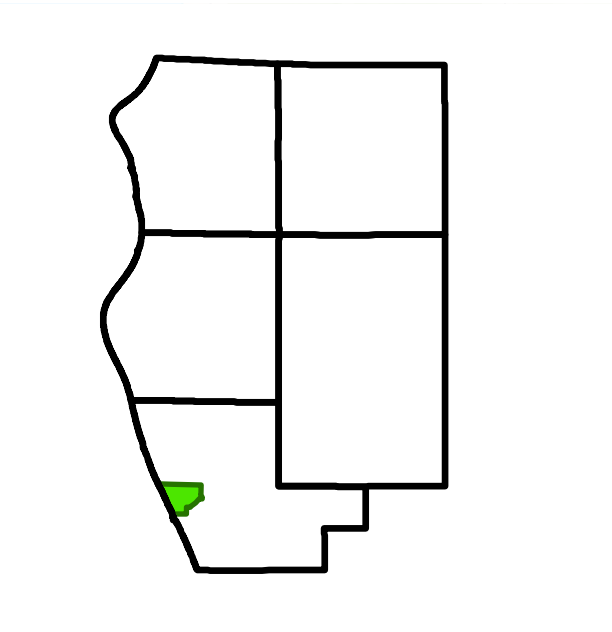
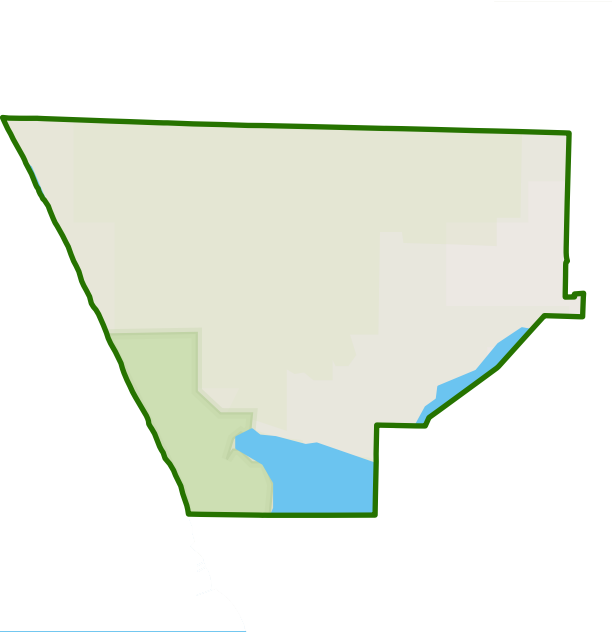
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	James Yancey	Deputy Treasurer	Treas	231-742-1080	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used directly by leadership/elected officials for decision-making

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Don't Use or Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Don't Use or Maintain
- Road centerlines - Don't Use or Maintain
- Aerial imagery / basemaps - Don't Use or Maintain

Transportation Layers

- Roads (local jurisdiction) - Don't Use or Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

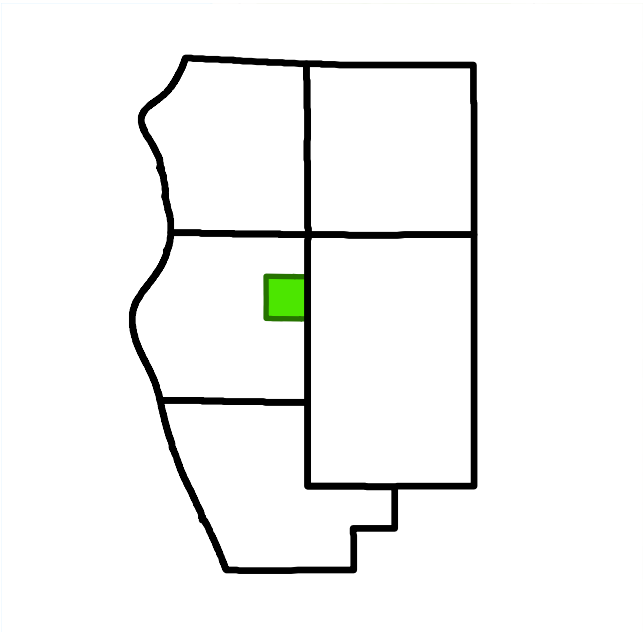
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- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Mason County	Kristi Zimmerman	Economic Development Director	zimmermank@rightplace.org	616-970-8978	Chamber Alliance of Mason County

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

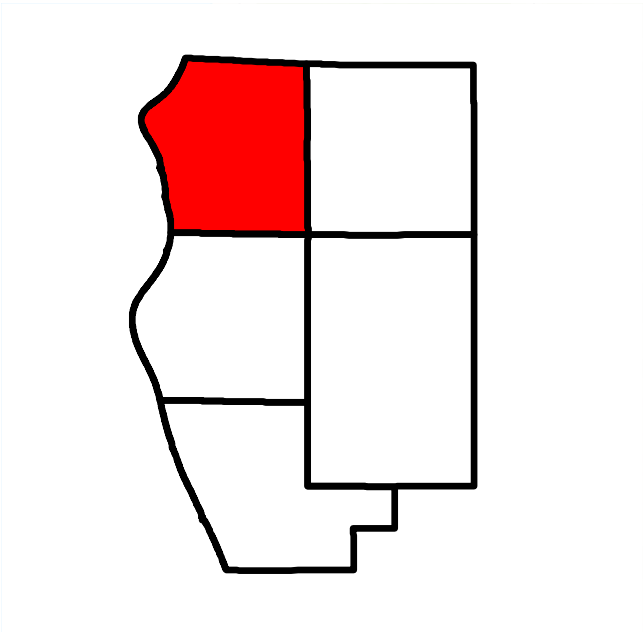
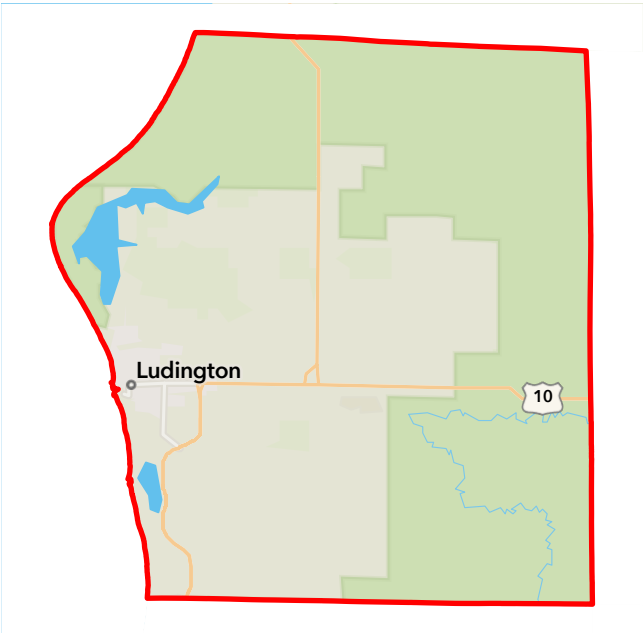
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Mason County	Larry Protasiewicz	Drain Commissioner	lprotasiewicz@masoncountymi.gov	231-907-2269	DPW

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains -
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

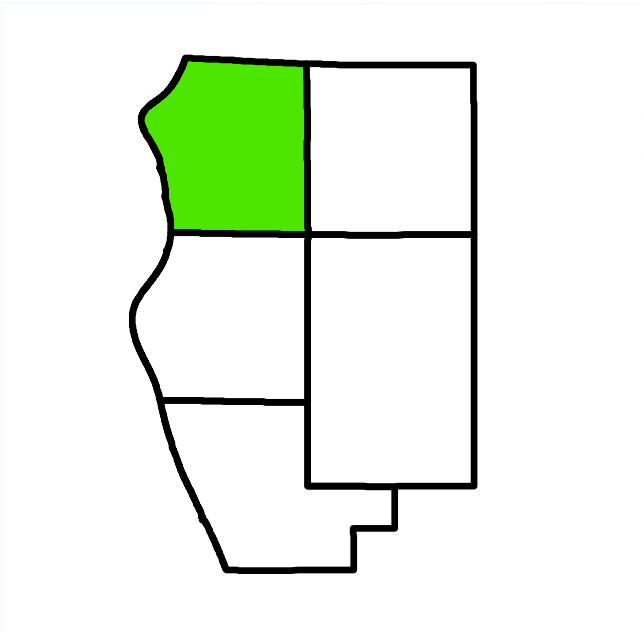
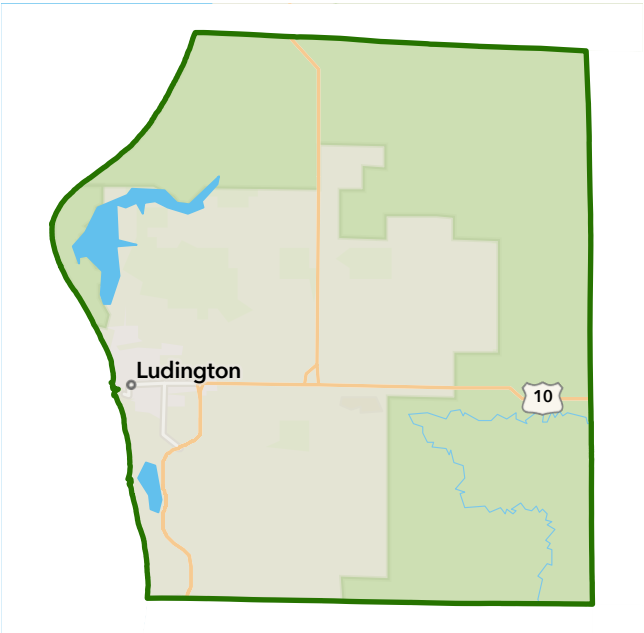
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Mason County	Steven Wessels	Managing Director	swessels@masoncountyroads.com	231-757-2882	MCRC

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Interactive dashboards for staff and leadership

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Don't Use or Maintain
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Use
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

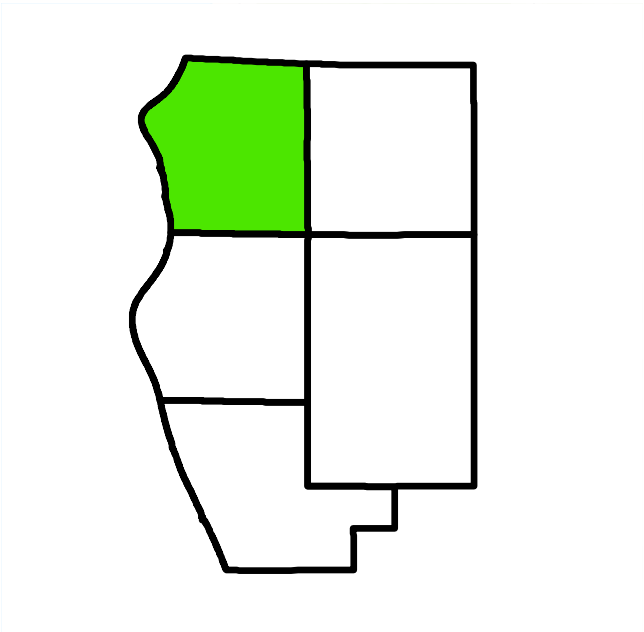
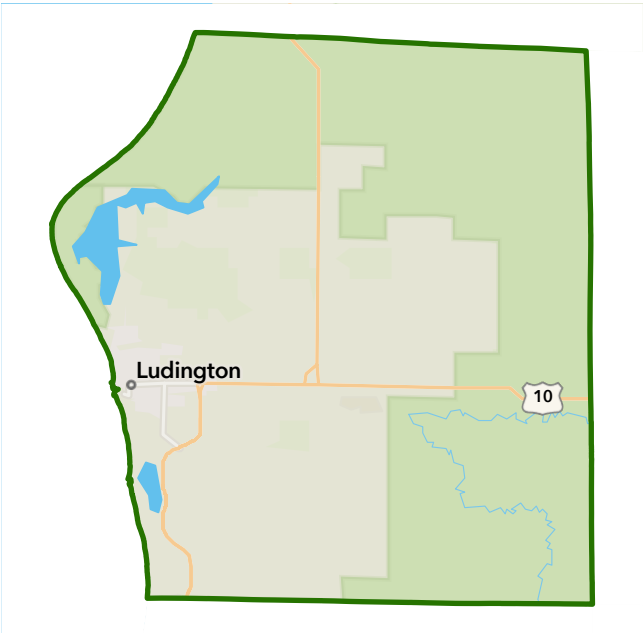
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Thomas Van Bruggen	GIS Administrator	vanbruggenth@co.muskegon.mi.us	213-724-4458	GIS / DPW

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

2–3 dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to coordinate across departments or agencies

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

Organization-wide GIS standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Dashboards used for performance tracking and reporting

What level of GIS training or professional development is supported in your organization?

Training aligned with infrastructure or asset management goals

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready and already collaborating regionally

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

No

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Use and Maintain
- Road centerlines - Use and Maintain
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Use and Maintain
- Sidewalks / Trails - Use and Maintain
- Traffic control devices - Use and Maintain
- Transit routes / stops - Use and Maintain

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Use and Maintain
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

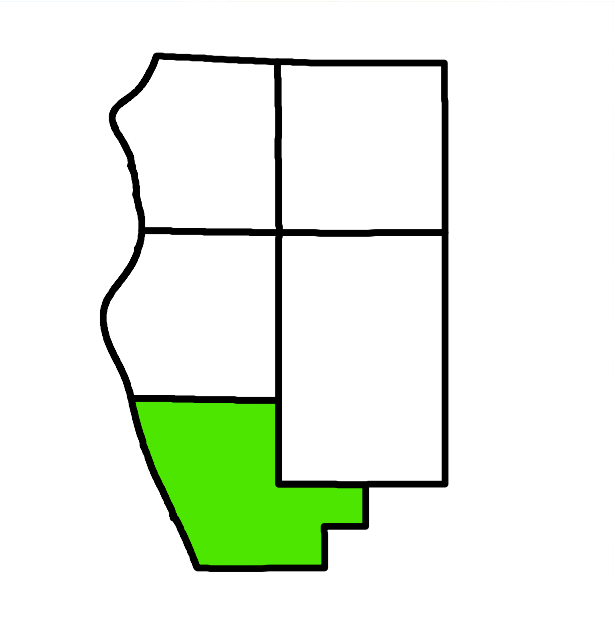
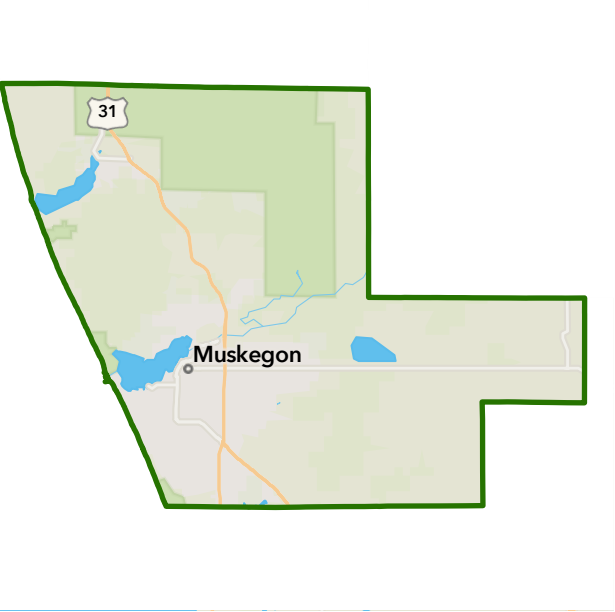
- Broadband service areas - Use
- Fiber routes - Use
- Wireless towers - Use
- Public facilities with connectivity - Use

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Use and Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Use and Maintain
- Schools - Use and Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Scott Saigeon	County Highway Engineer	ssaigeon@muskegoncountyroads.org	231-788-7253	Engineering

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used regularly in staff reports and recommendations

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS integrated into multi-year CIP planning workflows

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready with technical assistance

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Use and Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Use and Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

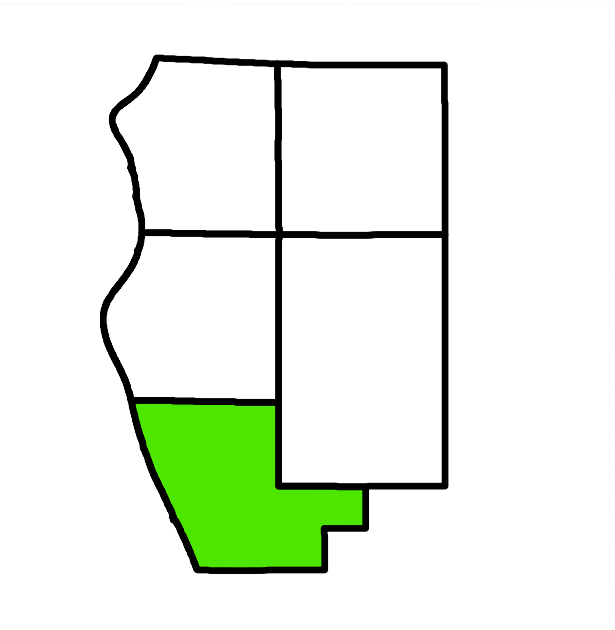
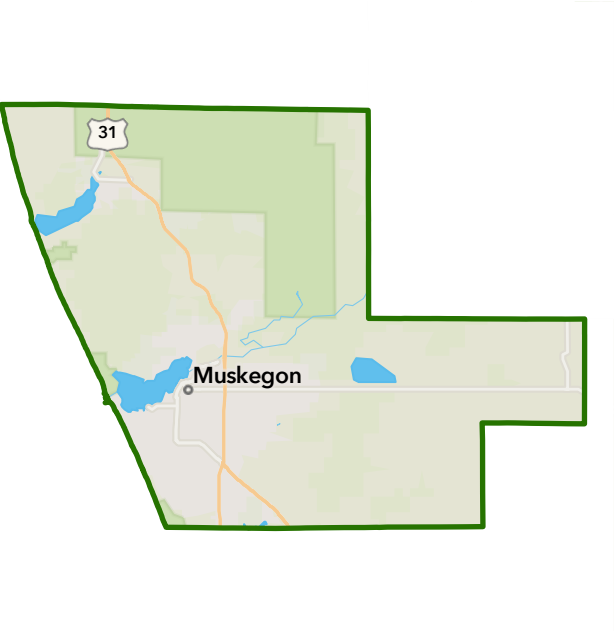
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Use and Maintain
- Planned or future CIP projects - Use and Maintain
- Construction limits / project extents - Use and Maintain
- Permits / right-of-way activities - Use

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Paul Bouman	Director of Engineering	pbouman@muskegoncountyroads.org	231-788-7240	Engineering

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used directly by leadership/elected officials for decision-making

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS integrated into multi-year CIP planning workflows

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready with technical assistance

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails - Use
- Traffic control devices - Use
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

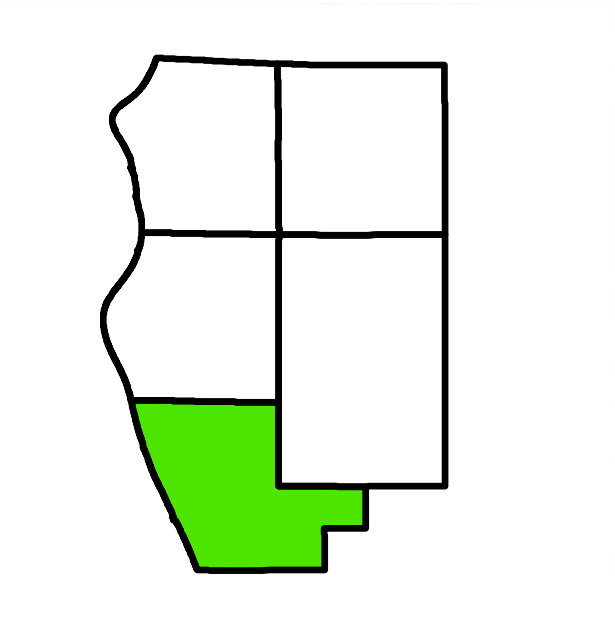
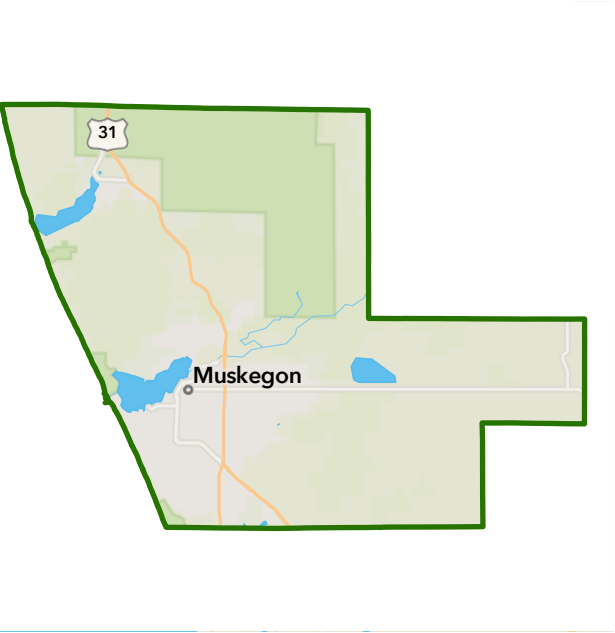
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Use and Maintain
- Planned or future CIP projects - Use and Maintain
- Construction limits / project extents - Use and Maintain
- Permits / right-of-way activities - Use and Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Stephanie Barrett	Water Resources Commissioner	BarrettSt@co.muskegon.mi.us	231-724-6219	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

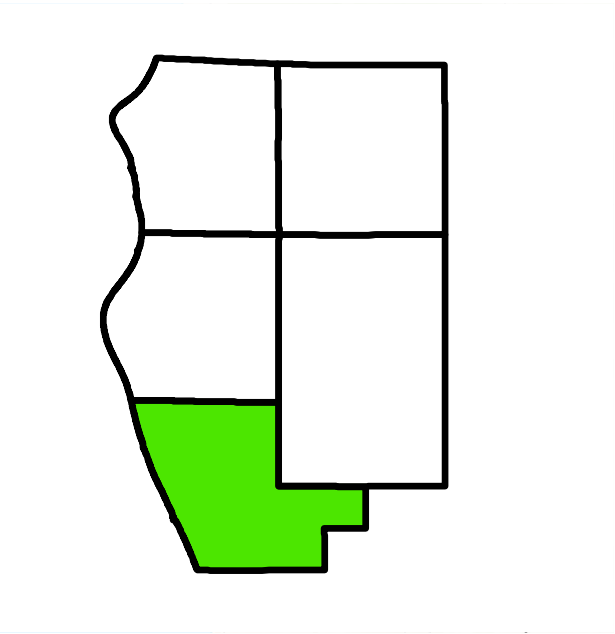
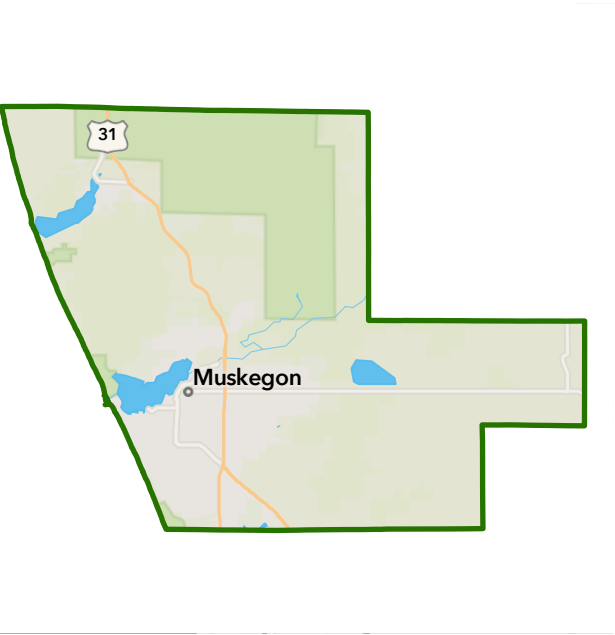
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	Christopher Wren	County Administrator	chrisw@newaygocountymi.gov	231-689-7203	Administration

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

1 dedicated GIS staff member

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Written standards for some datasets

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Public-facing informational maps

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready with technical assistance

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Use and Maintain
- Road centerlines - Use and Maintain
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Use and Maintain
- Sidewalks / Trails -
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Use and Maintain
- Floodplains - Use and Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

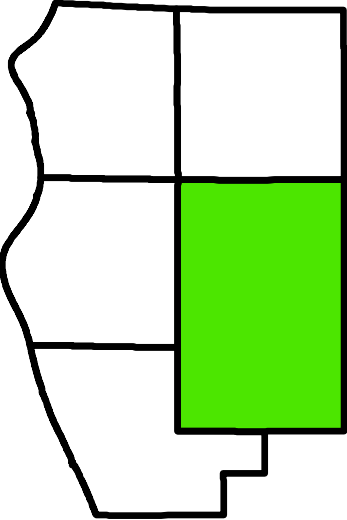
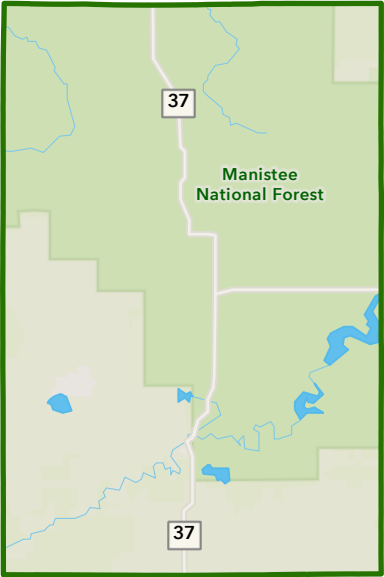
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- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	John Warden	GIS Coordinator	johnw@newaygocountymi.gov	231-689-7371	GIS

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

1 dedicated GIS staff member

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Not ready

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

No

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Use and Maintain
- Road centerlines - Use and Maintain
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Use
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use
- County drains - Use and Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

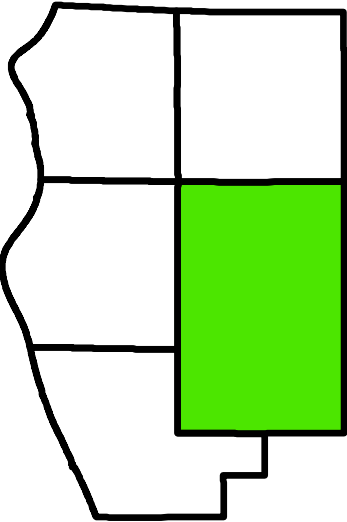
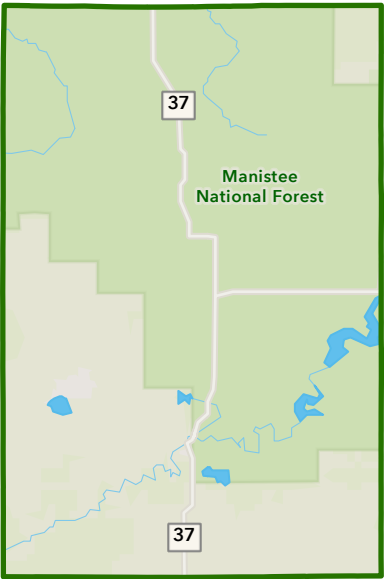
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- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Use and Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Newaygo County	Derek Wawczyk	Manager	Derekw@newaygoroads.org		

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Don't Use or Maintain
- Address points - Use and Maintain
- Road centerlines - Use and Maintain
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Use and Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Use and Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

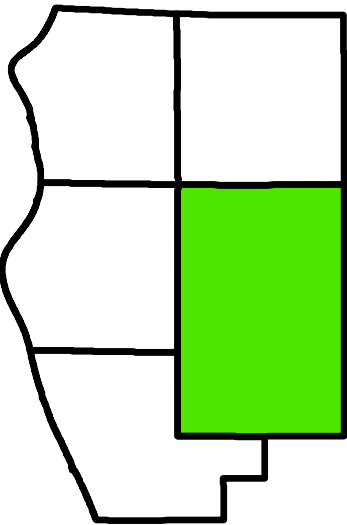
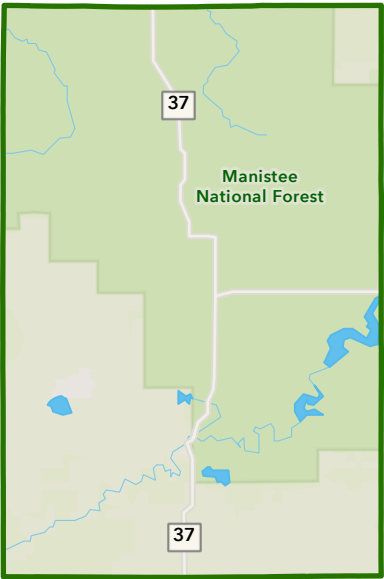
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Keith Edwards	Deputy Supervisor and Zoning Administrator	zoningadministrator@pentwatertownshipmi.gov	231-869-6231	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS services primarily outsourced

How is GIS typically used in planning, infrastructure management, or decision-making?

Not used for planning or decisions

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

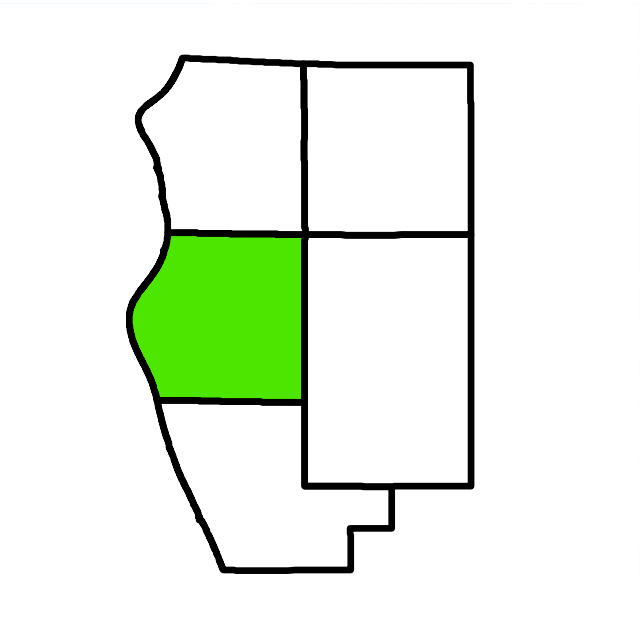
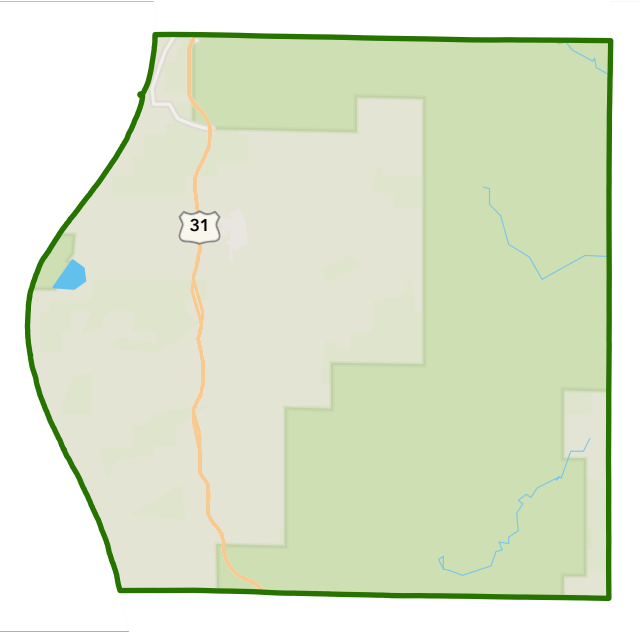
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Use and Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Use



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Michelle Martin	Oceana County Drain Commissioner	mmartin@oceana.mi.us	231-873-3887	Drain Commissioner

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Interactive dashboards for staff and leadership

What level of GIS training or professional development is supported in your organization?

None

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Don't Use or Maintain
- Road centerlines - Don't Use or Maintain
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Use

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

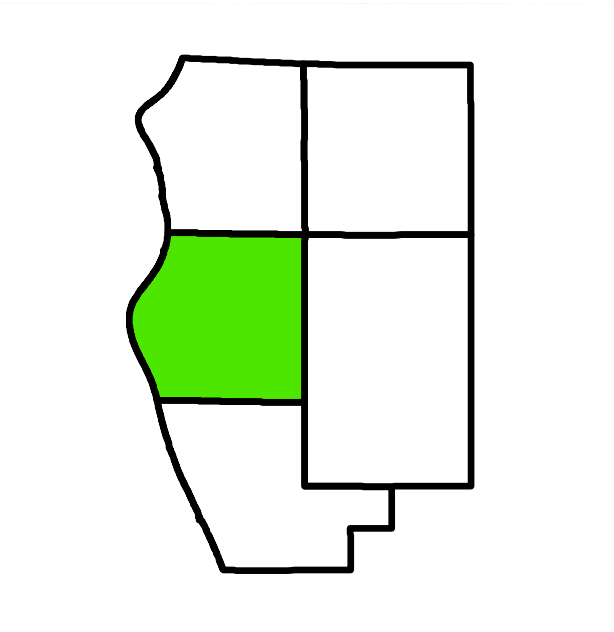
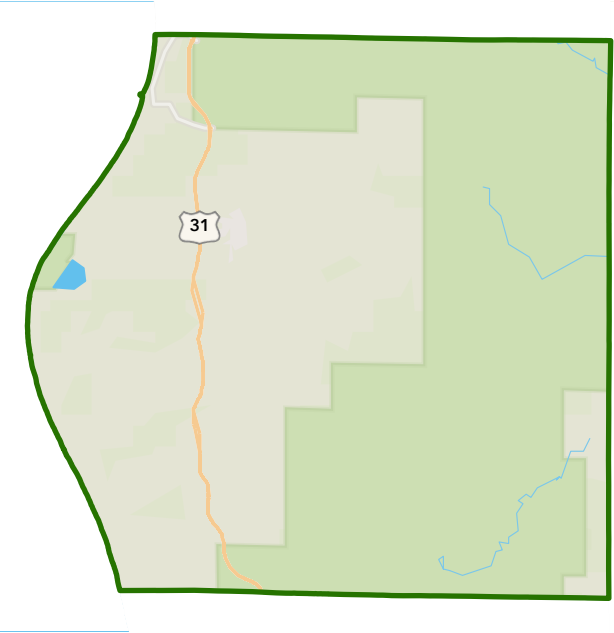
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Cole Shafer		cshafer@oceanacrc.org		

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used regularly in staff reports and recommendations

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

GIS serves as the primary asset inventory system

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS integrated into multi-year CIP planning workflows

How does your organization share GIS data with WMSRDC or other regional partners?

Periodic sharing via files (e.g., shapefiles, spreadsheets)

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

No

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Ready and already collaborating regionally

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Don't Use or Maintain
- Parcels / tax parcels - Don't Use or Maintain
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Don't Use or Maintain

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Use and Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Don't Use or Maintain
- Wastewater collection - Don't Use or Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

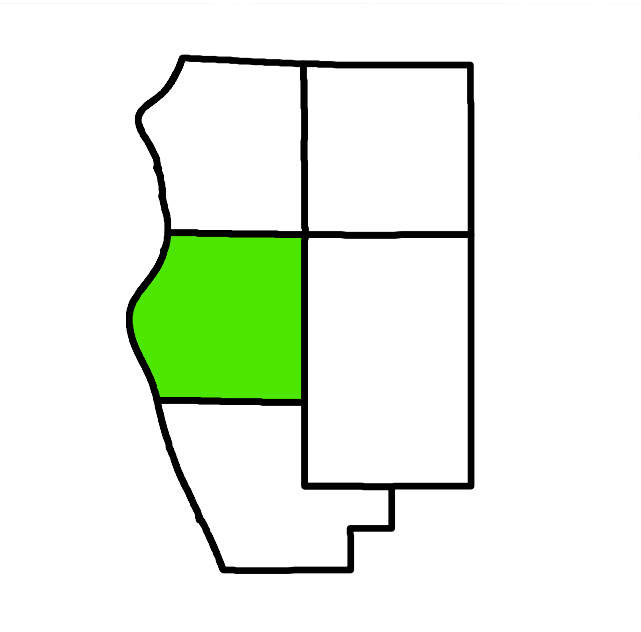
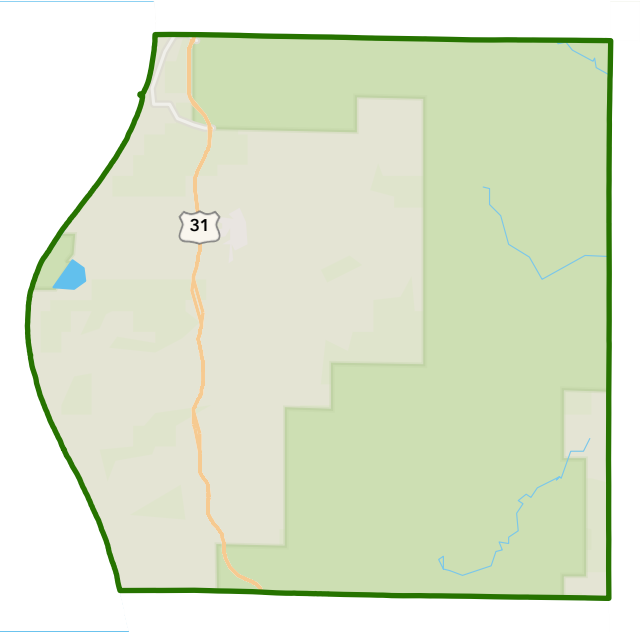
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Use and Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Lynne Cavazos	Supervisor	supervisor@pentwatertownshipmi.gov	231-869-6231	Pentwater Township

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS handled part-time by staff with other duties

How is GIS typically used in planning, infrastructure management, or decision-making?

Used directly by leadership/elected officials for decision-making

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Most assets mapped and periodically updated

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

Informal or staff-specific standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Use
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure - Use
- County drains - Use
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

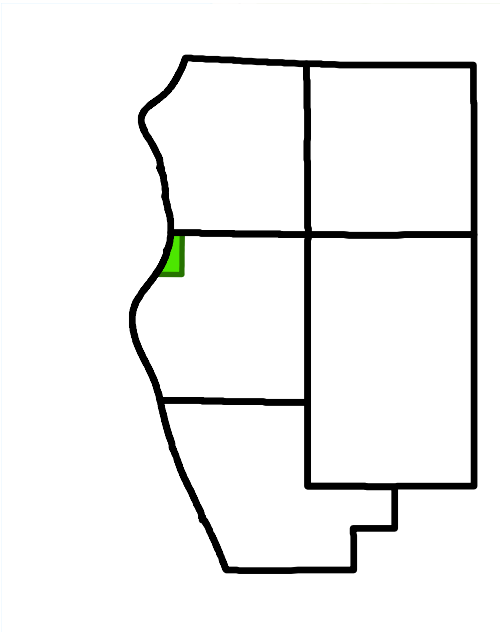
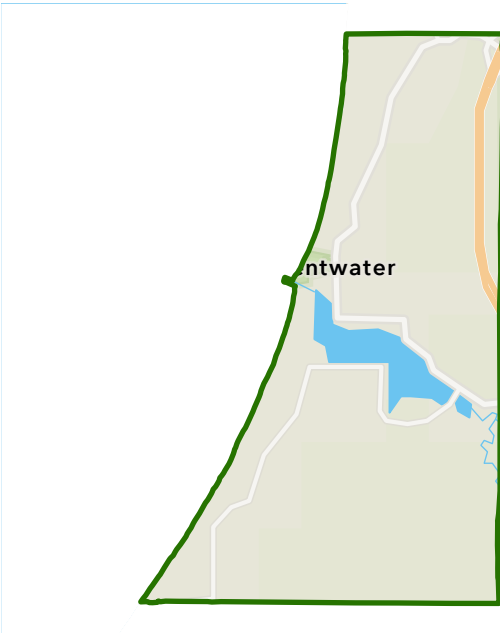
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Mason County	Kelly Smith	Supervisor	supervisor@pmtwp.org	231-845-1277	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

GIS services primarily outsourced

How is GIS typically used in planning, infrastructure management, or decision-making?

Used directly by leadership/elected officials for decision-making

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Occasional training opportunities

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use and Maintain
- Parcels / tax parcels - Use and Maintain
- Address points - Use
- Road centerlines - Use
- Aerial imagery / basemaps - Use and Maintain

Transportation Layers

- Roads (local jurisdiction) - Use and Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Use and Maintain
- County drains - Use
- Floodplains - Use
- Watersheds / hydrology - Use

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

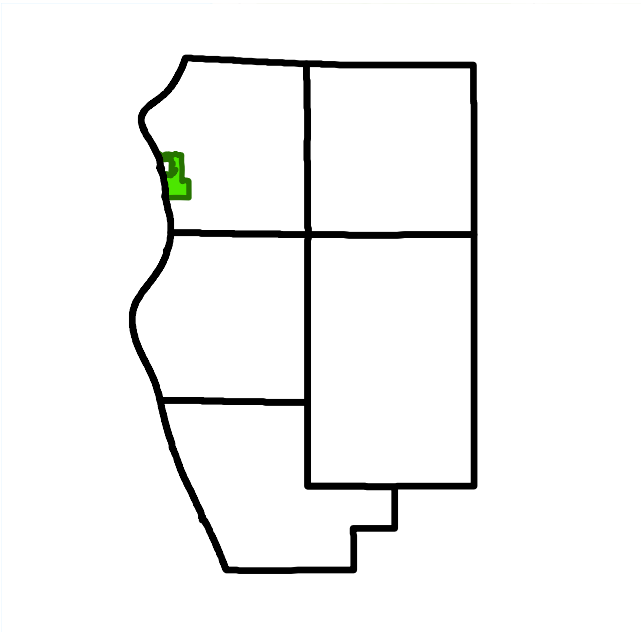
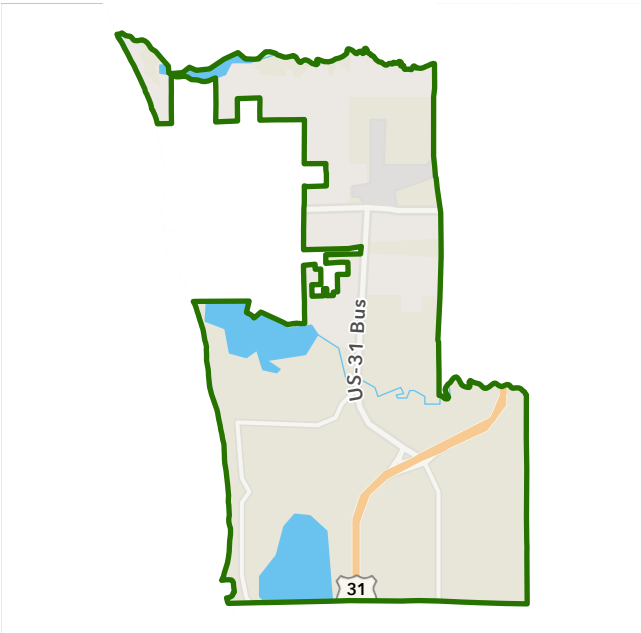
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Use and Maintain
- Parks and recreation facilities - Use and Maintain
- Public safety facilities - Use and Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Mason County	GARY L DITTMER	Supervisor	g_dittmer@hotmail.com	231-233-5032	

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
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Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

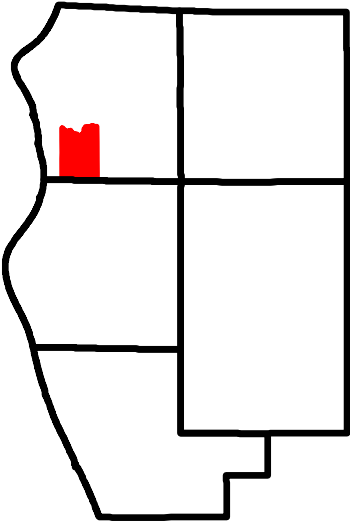
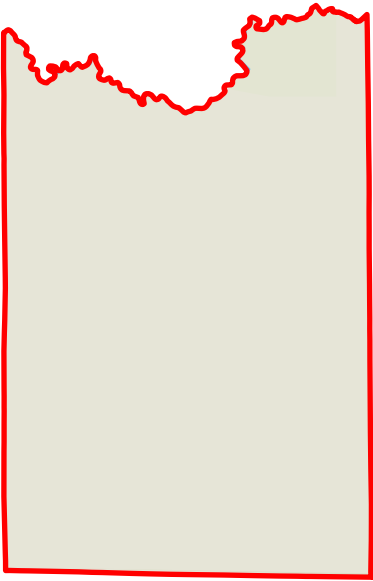
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Lake County	Mary Ann Nugent	Sauble Township Supervisor	saublesupervisor@gmail.com		

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
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- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

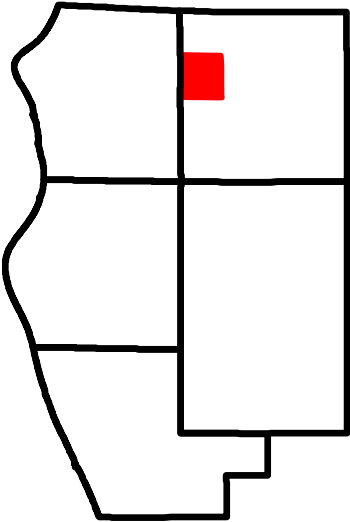
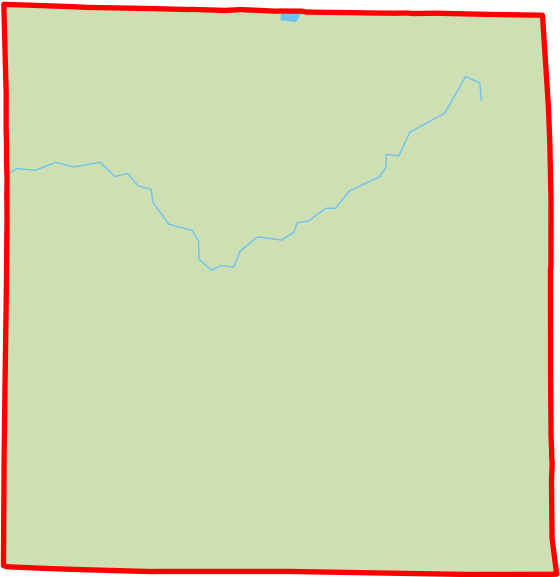
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- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Richard A Raffaelli	Shelby Township	rraffaelli@petersonfarmsinc.com	214-674-2539	Supervisor

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries -
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- Address points -
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- Aerial imagery / basemaps -

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- Transit routes / stops -

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Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

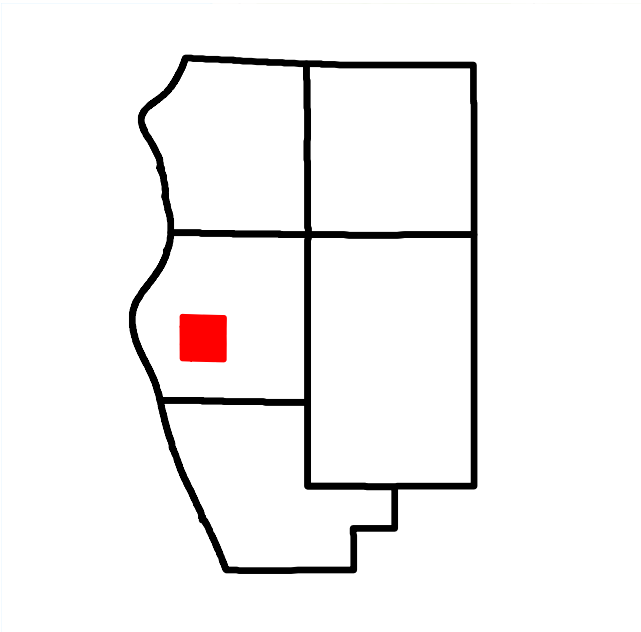
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- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Lake County	Theresa Lamb	Office Manager	vobtheresalamb@gmail.com	231-745-3587	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used mainly for producing maps

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels - Use
- Address points -
- Road centerlines -
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Don't Use or Maintain
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use
- Wastewater collection - Use
- Stormwater infrastructure - Use and Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

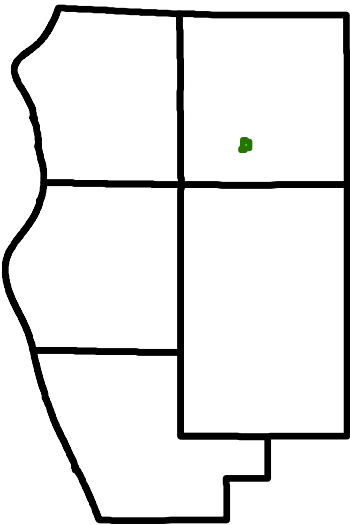
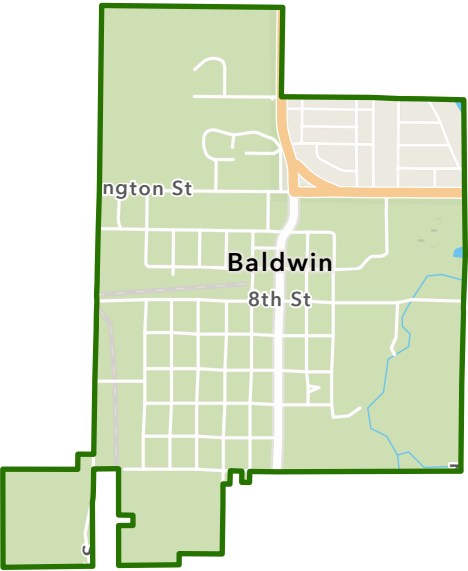
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Muskegon County	Amy Haack	Clerk	amy@fruitportvillage.org	231-865-3577	

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

No

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

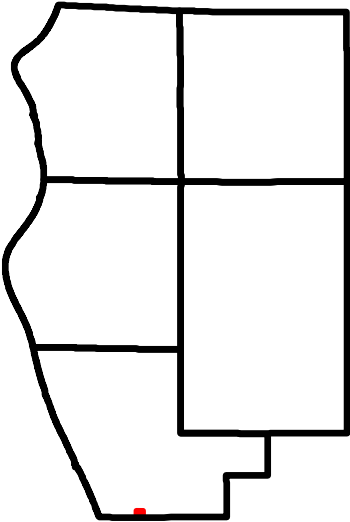
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	James "Toby" VanEss	Village Manager	jvaness@pentwatervillage.org	231-869-8301	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used for internal analysis and planning support

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

Some assets mapped but not routinely maintained

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS not used in CIP

How does your organization share GIS data with WMSRDC or other regional partners?

No regular data sharing

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Internal-only maps or apps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Don't Use or Maintain
- Road centerlines - Don't Use or Maintain
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Use
- Bridges - Don't Use or Maintain
- Sidewalks / Trails - Don't Use or Maintain
- Traffic control devices - Don't Use or Maintain
- Transit routes / stops - Don't Use or Maintain

Water Layers

- Drinking water distribution - Use and Maintain
- Wastewater collection - Use and Maintain
- Stormwater infrastructure - Don't Use or Maintain
- County drains - Don't Use or Maintain
- Floodplains - Don't Use or Maintain
- Watersheds / hydrology - Don't Use or Maintain

Utility Layers

- Electric distribution - Don't Use or Maintain
- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

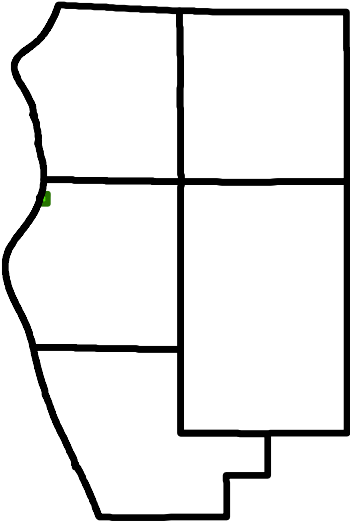
- Broadband service areas - Don't Use or Maintain
- Fiber routes - Don't Use or Maintain
- Wireless towers - Don't Use or Maintain
- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Brandy Williams	Clerk	clerk@villageofrothbury.com	231-894-2385	

Does your agency currently use GIS?

Unsure

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

Foundational Layers

- Administrative boundaries -
- Parcels / tax parcels -
- Address points -
- Road centerlines -
- Aerial imagery / basemaps -

Transportation Layers

- Roads (local jurisdiction) -
- Bridges -
- Sidewalks / Trails -
- Traffic control devices -
- Transit routes / stops -

Water Layers

- Drinking water distribution -
- Wastewater collection -
- Stormwater infrastructure -
- County drains -
- Floodplains -
- Watersheds / hydrology -

Utility Layers

- Electric distribution -
- Natural gas distribution -
- Streetlights -
- Renewable energy assets -

Communication Layers

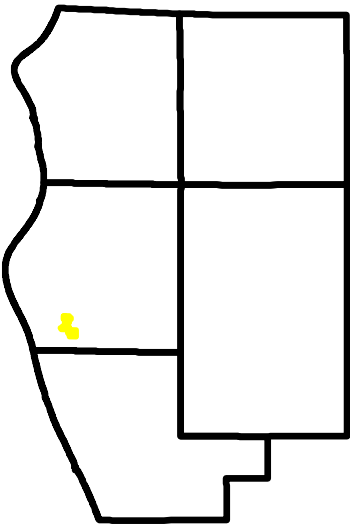
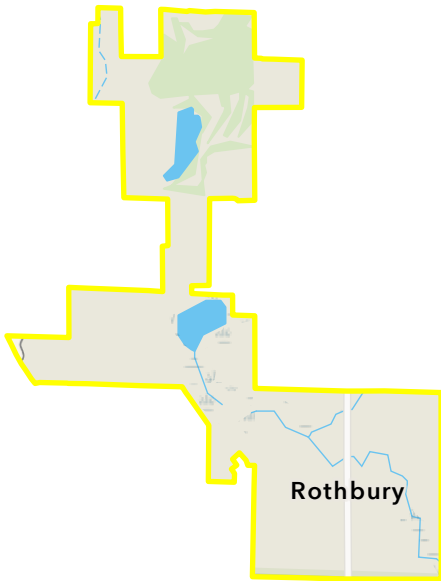
- Broadband service areas -
- Fiber routes -
- Wireless towers -
- Public facilities with connectivity -

CIP Layers

- Capital improvement projects -
- Planned or future CIP projects -
- Construction limits / project extents -
- Permits / right-of-way activities -

Facility Layers

- Public buildings -
- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	Phil Morse	Village Administrator	administrator@shelbyvillage.com	231-861-4401	

Does your agency currently use GIS?

Yes

What best describes how GIS is staffed in your organization?

No dedicated GIS staff

How is GIS typically used in planning, infrastructure management, or decision-making?

Used regularly in staff reports and recommendations

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

No asset data maintained in GIS

How is GIS used in your Capital Improvement Planning (CIP) process?

GIS used to visualize individual projects

How does your organization share GIS data with WMSRDC or other regional partners?

Informal sharing upon request

Which statement best describes your GIS data standards and maintenance practices?

No formal standards

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

Public-facing informational maps

What level of GIS training or professional development is supported in your organization?

Informal/self-guided only

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Interested but need significant support

Would Regional level GIS information be beneficial to your agency?

Maybe

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Maybe

Additional Comments

Foundational Layers

- Administrative boundaries - Use
- Parcels / tax parcels - Use
- Address points - Don't Use or Maintain
- Road centerlines - Don't Use or Maintain
- Aerial imagery / basemaps - Use

Transportation Layers

- Roads (local jurisdiction) - Don't Use or Maintain
- Bridges - Don't Use or Maintain
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Utility Layers

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- Natural gas distribution - Don't Use or Maintain
- Streetlights - Don't Use or Maintain
- Renewable energy assets - Don't Use or Maintain

Communication Layers

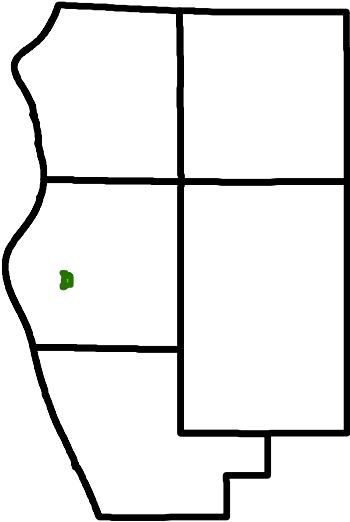
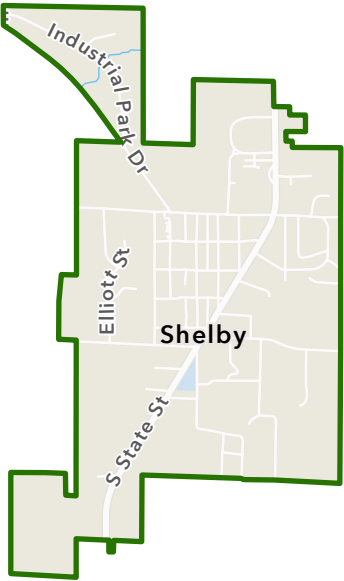
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- Public facilities with connectivity - Don't Use or Maintain

CIP Layers

- Capital improvement projects - Don't Use or Maintain
- Planned or future CIP projects - Don't Use or Maintain
- Construction limits / project extents - Don't Use or Maintain
- Permits / right-of-way activities - Don't Use or Maintain

Facility Layers

- Public buildings - Don't Use or Maintain
- Parks and recreation facilities - Don't Use or Maintain
- Public safety facilities - Don't Use or Maintain
- Schools - Don't Use or Maintain



WMSRDC Notes:

GEOACE Notes:

County	Primary Contact Name	Primary Contact Title	Primary Contact Email	Primary Contact Phone	Primary Contact Department
Oceana County	James Yancey	Waste Water Operator	jhysr981@gmail.com	231-742-1080	DPW

Does your agency currently use GIS?

No

What best describes how GIS is staffed in your organization?

How is GIS typically used in planning, infrastructure management, or decision-making?

How integrated is GIS with your infrastructure asset management practices (roads, utilities, facilities, etc.)?

How is GIS used in your Capital Improvement Planning (CIP) process?

How does your organization share GIS data with WMSRDC or other regional partners?

Which statement best describes your GIS data standards and maintenance practices?

Do you use GIS dashboards or web applications to communicate infrastructure or planning information?

What level of GIS training or professional development is supported in your organization?

How ready is your organization to participate in a WMSRDC-led regional GIS coordination initiative?

Would Regional level GIS information be beneficial to your agency?

Yes

Do you or your agency have any interest in working with WMSRDC on a pilot program for GIS?

Yes

Additional Comments

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- Streetlights -
- Renewable energy assets -

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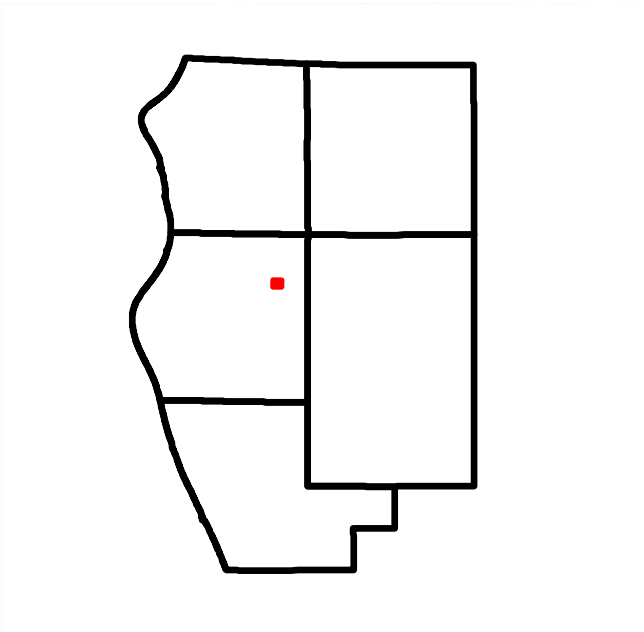
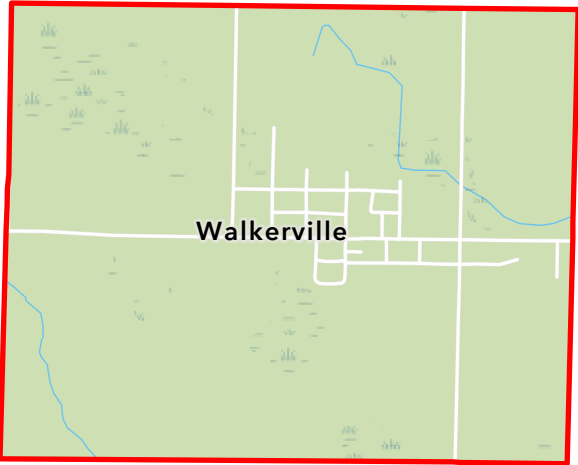
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- Parks and recreation facilities -
- Public safety facilities -
- Schools -



WMSRDC Notes:

GEOACE Notes: