Columbia Wastewater and Stormwater IMP

Attachment C

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Our Columbia Waters
Integrated Management Plan
Wastewater & Stormwater

Columbia Wastewater and Stormwater Integrated Management Plan

Project Framework and Approach

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City of Columbia, MO

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Introduction

Over the past decade, population growth, aging infrastructure, increasingly complex water quality issues, and challenging economic conditions have strained municipal utility management across the country. This situation has been further complicated by federal and state regulatory structures that focus on enforcing individual Clean Water Act (CWA) requirements on fixed schedules, without full consideration of all obligations that a utility may be facing or whether compliance efforts will result in meaningful improvements in environmental and public health. These siloed regulatory processes limit a community's ability to efficiently manage their utilities because they must continually address new regulatory requirements on a "first come, first served" basis, rather than prioritizing affordable and protective solutions to resolve the most critical environmental and public health issues. These processes also lead communities to become more reactive than proactive.

In 2011, the US Environmental Protection Agency (EPA) recognized that when afforded the flexibility to balance wastewater and stormwater improvements, municipalities can cost-effectively make important environmental improvements aligned with community priorities[1]. To support communities in these efforts, EPA released the *Integrated Municipal Stormwater and Wastewater Planning Approach Framework* in 2012[2]. Integrated planning will assist municipalities in achieving human health and water quality objectives by providing the opportunity to use CWA flexibilities to identify efficiencies in implementing wastewater and stormwater programs. It is important to recognize that integrated planning does not remove or lower obligations to comply with the CWA. It also does not lower or remove existing regulatory or permitting standards. However, integrated planning does recognize that there are flexibilities in the CWA that allow municipalities to appropriately prioritize and schedule work within a community's financial capability.

Integrated Planning Allows the City to Proactively and Affordably Balance and Prioritize Regulatory Issues and Infrastructure Needs

The City of Columbia, Missouri (City) faces a number of past, present, and future regulatory drivers (**Attachment A**) along

[1] Stoner, N. and C. Giles. 2011. Achieving Water Quality through Integrated Municipal Stormwater and Wastewater Plans. October 27, 2011. Washington DC.
[2] Stoner, N. and C. Giles. 2012. Integrated Municipal Stormwater and Wastewater Planning Approach Framework. June 5, 2012. Washington DC.

with service demands that will impact infrastructure decisions and investments for several decades. The City recognizes that the current "trickle down" regulatory process is inefficient and understands that developing an integrated management plan (IMP) to address CWA issues will help the City meet evolving regulatory obligations while continuing to address challenges in operating and maintaining existing infrastructure investments.

In Spring 2016, the City retained HDR Engineering, Inc. (HDR), and their team, which includes Geosyntec Consultants, Inc. (Geosyntec), Shockey Consulting Services, LLC (Shockey), Black and Veatch, Inc. (B&V), and TREKK Design Group, LLC (TREKK), to assist in developing the IMP. The IMP will be based on the EPA guidance referenced above. The goal of the IMP is to develop an adaptable and affordable capital improvement plan that addresses the City's wastewater and stormwater management needs and meets CWA obligations in a prioritized manner.

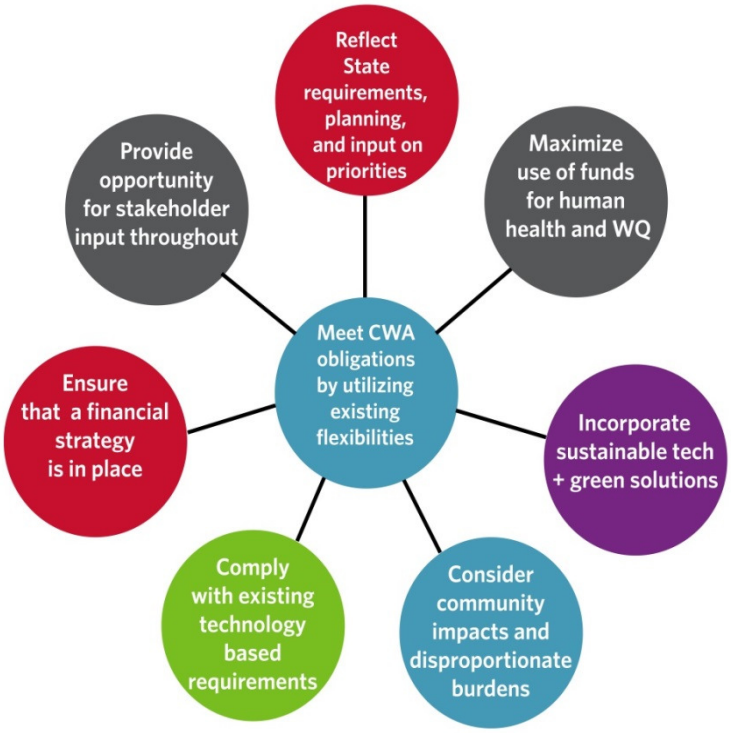
The purpose of this Framework document is to outline the City's anticipated approach for developing the IMP. This Framework will guide IMP project activities and will serve as the foundation for the planning process going forward.

Integrated Planning Principles

In their 2012 *Integrated Municipal Stormwater and Wastewater Planning Approach Framework*, EPA recommended a number of guiding principles that municipalities should consider when developing integrated plans. According to EPA, integrated plans should:

1. Reflect State requirements and planning efforts and incorporate State input on priority setting and other key implementation issues.

2. Provide for meeting water quality standards and other CWA obligations by utilizing existing flexibilities in the CWA and its implementing regulations, policies, and guidance.



EPA's Guiding Principles of Integrated Planning

3. Maximize the effectiveness of funds through analysis of alternatives and the selection and sequencing of actions needed to address human health and water quality-related challenges and non-compliance.

4. Evaluate and incorporate, where appropriate, effective sustainable technologies, approaches and practices, particularly including green infrastructure measures, in integrated plans where they would provide more sustainable solutions for municipal wet-weather control.

5. Evaluate and address community impacts and consider disproportionate burdens resulting from current approaches as well as proposed options.

6. Ensure that existing requirements to comply with technology-based and core requirements are not delayed.

7. Ensure that a financial strategy is in place, including appropriate fee structures.

8. Provide appropriate opportunity for meaningful stakeholder input throughout the development of the plan.

EPA recognizes that municipalities will need to develop integrated plans that are appropriately tailored to the size of the municipality and the scope and complexity of the issues they face. However, the EPA suggests that all integrated plans should generally address the following six elements:

Element 1: A description of the water quality, human health and regulatory issues to be addressed.

Element 2: A description of existing wastewater and stormwater systems under consideration and summary information describing the systems' current performance.

Element 3: A process which opens and maintains channels of communication with relevant community stakeholders in order to give full consideration of the views of others in the planning process and during implementation of the plan.

Element 4: A process for identifying, evaluating, and selecting alternatives and proposing implementation schedules.

Element 5: A process for evaluating the performance of projects identified in a plan.

Element 6: An adaptive management process for making improvements to the plan.

Columbia IMP Project Approach

The City and the IMP Team reviewed EPA integrated planning guidelines and developed a tailored approach that will allow the City to affordably meet CWA requirements while planning for future infrastructure investments. The IMP Project Approach includes six steps toward building an adaptive IMP for CWA compliance and short- and long-term wastewater and stormwater infrastructure plans. Implementation of this logical, stepwise process will satisfy EPA's integrated planning guidance. At the same time, the IMP should support the City's vision to have vital and resilient communities throughout the City.

The City envisions building the IMP in a phased manner to address the most critical existing infrastructure and regulatory drivers first, while allowing adequate time to gather the information needed for thoughtful infrastructure planning. The City believes that this tailored approach will lead to the development of an adaptable IMP that addresses current regulatory drivers, provides investment certainty over the next 5-10 years, accounts for necessary non-regulatory investments prior to taking on investments to deal with future drivers, and defines affordability for the City's ratepayers and financial capability for the wastewater and stormwater utilities.

Columbia IMP Project Approach

Step 1 - Build the Vision

Every successful planning process begins with a well thought out, unified vision. To build a cohesive vision for the IMP, the City hosted a two-day Visioning Workshop in May 2016 to discuss existing and future challenges facing the City, goals and objectives of the IMP, and potential IMP strategies to meet those goals. Workshop participants included representatives from a number of City Departments, including: City Management, Utilities Department, Columbia/Boone County Public Health and Human Services, Finance Department, Sustainability Office, Legal Department, and Community Relations. Representatives from the University of Missouri, Boone County, and the Boone County Regional Sewer District also participated. The City Mayor and Council were also individually interviewed to capture the critical issues and outcomes for the IMP process.

Over the course of the two-day Workshop, the group discussed issues that will impact IMP development, including anticipated state and federal regulatory drivers, affordability concerns, and strategies for accurately characterizing cost impacts on ratepayers, current conditions and future expectations for the City's wastewater and stormwater systems, and potential community outreach approaches and key stakeholder groups that should be included in the process.

Through these discussions, the group broadly characterized the goals, priorities, and challenges that should inform the IMP. These ideas were captured in a vision statement:

Columbia IMP Vision Statement

The stormwater and wastewater Integrated Management Plan is a community-driven, affordable infrastructure plan that enhances human health and safety, water quality, economic vitality, and environmental resources by leveraging existing assets and implementing innovative solutions.

The intent of the vision statement is to clearly and effectively communicate the intent and desired outcomes of the IMP to community stakeholders. To achieve this vision and guide the successful development and implementation of the City's IMP, several key considerations identified during the Workshop must be addressed during the planning process.

- Regulatory uncertainty is one of the largest challenges facing the City. The plan should provide five years of regulatory certainty so that the City can conduct important system condition assessments, develop asset management tools, and undertake other improvements that are necessary to develp an effective, long-term asset management and capital improvement program.
- Financial impacts on all City ratepayers, and specifically disadvantaged communities, must be carefully considered as IMP alternatives are developed or implemented. The project team will prepare a financial capability assessment consistent with EPA's policy[3].
- Integrated planning is a community-driven process. Therefore, stakeholder and community involvement will be critical to developing an effective IMP. As part of the engagement efforts, it will be important that the City obtain input from a wide variety of community stakeholders. Information needs to be developed so that the community can easily understand the known problems and how the proposed projects will address these problems and provide additional benefits.
- The IMP recommendations should focus on identifying projects that have multiple benefits and are technically-feasible, prioritized, funded, and supported by the community. Specifically, the plan will be successful if it provides a means to implement currently planned, critical infrastructure projects over the next five years and sets the City up to successfully plan for and meet long-term environmental and infrastructure goals. In the near term, the IMP should focus on the most critical wastewater and stormwater priorities, which include:
    - Developing and implementing an asset management system to support system renewal efforts, identify performance baselines, measure progress, and assist in communicating infrastructure needs to ratepayers;

[3] Kopocis, K. and C. Giles. 2014. Financial Capability Assessment Framework for Municipal Clean Water Act Requirements. November 24, 2014. Washington DC.

- Addressing wet-weather issues, particularly basement backups, sanitary sewer overflows (SSOs), and areas with persistent inflow and infiltration (I&I) challenges;
- Reducing capacity issues in the existing wastewater treatment and collection systems; and
- Improving stormwater planning, education, outreach, and inter-departmental coordination in an effort to formalize projects needed to address known drivers and justify future funding needs.

The vision, goals, and key considerations identified in the Workshop will serve to initially focus project activities as the IMP moves forward, but may be modified based on the results of technical evaluations or community engagement efforts over the course of the project.

Step 2 – Evaluate Existing System Performance

The second step of the City's IMP process is to evaluate the performance and needs of its existing wastewater and stormwater collection and treatment systems. This step directly addresses Element 2 of EPA's IMP framework and forms the basis for developing an asset management program (Element 4) to help facilitate refinement of future IMP phases. As part of this effort, the City and their project team will:

- ***Compile Existing Wastewater and Stormwater Performance Data*** to develop a comprehensive understanding of existing condition, including the location and frequency of SSOs, basement backups, and flooding. Treatment process data will also be gathered to evaluate performance from recent wastewater treatment plant upgrades.
- ***Assess Current Surface Water Quality Conditions*** to identify current and potential future surface water quality priorities in the City. These data will be summarized to facilitate development of water quality improvement strategies.
- ***Characterize Wastewater and Stormwater Utility Performance, Conditions, and Programs*** to understand the effectiveness of existing processes and develop performance baselines that can be used to measure future improvments.

Guided by the IMP Vision Statement developed in Step 1, the project team will use the information collected in Step 2 to prioritize asset needs, identify critical issues or high priority areas, and outline important data needs that should be collected to address these issues.

Step 3 – Develop a Community Outreach Program

As the City noted during the Visioning Workshop, effective community outreach will be a critical component of the IMP process. Element 3 of EPA's 2012 Integrated Municipal Stormwater and Wastewater Planning Approach Framework suggests: *A process which opens and maintains channels of communication with relevant community stakeholders in order to give full consideration of the views of others in the planning process and during implementation of the plan.*

During the Visioning Workshop, attendees discussed potential alternatives for outreach activities such as conducting focus groups with informed stakeholders, holding outreach events for the general public, meeting with individual community leaders, and using websites and social media. The group also discussed the importance of coordinating community engagement efforts with other existing committees, such as the Columbia Water and Light Integrated Water Resource Plan (IWRP) committee. Workshop attendees identified a number of environmental, social, and business-oriented groups that could be included in the IMP process.

Potential Community Groups to Include in IMP Process

- Missouri Department of Conservation
- Audubon Society
- Missouri River Relief
- Sierra Club
- Hinkson Collaborative Adaptive Management Stakeholders
- PedNet
- Downtown Columbia Leadership Council
- Columbia Chamber of Commerce
- Lawn Care Companies
- Local Developers and Construction Companies
- Local Industry
- Central Missouri Community Action Center
- Churches
- Central Missouri Opportunity Council
- University of Missouri
- League of Women Voters of Columbia-Boone County
- Neighborhood Associations and Home Owners

The project team will develop a Community Outreach Plan to better define the process to involve the community in IMP decision-making. The approach will focus on bringing people from the community together, educating them about the various issues, and gathering input in a structured, inclusive, and transparent process.

Feedback and information gathered from the engagement activities will be used to refine the goals, priorities, and vision developed during Step 1. Once the draft IMP is developed, it will be presented to stakeholders and community leaders to gain feedback. Input received from the community will be incorporated into the final IMP, as appropriate, before being presented to the City Council.

Step 4 – Evaluate Alternative Solutions

Based on the IMP Vision and existing system performance assessment, the project team will identify and assess solutions for system and water quality improvements. This is by far the most complex step in the planning process, as the preference is to identify alternatives that could be implemented affordably and provide a net environmental benefit. As part of this effort, the City and their project team will:

- ***Establish wastewater and stormwater level of service (LOS) goals*** that are measurable, affordable, and consistent with local priorities.

- ***Identify programmatic and capital wastewater collection and stormwater management system alternatives*** that will approach the desired LOS goals for conveyance and water quality improvement. When necessary, data gaps needed to inform asset management decisions will be identified. Immediate opportunities to optimize existing assets or prioritize existing management activities will be also be evaluated.

- ***Identify wastewater treatment alternatives*** that can be used to improve plant operations, address regulatory drivers, and provide sustainable treatment practices.

- ***Develop a financial capabilitiy analysis (FCA) tool*** to evaluate the financial impacts of identified alternatives on the City's ratepayers, particularly those in disadvantaged communities. The City should be able to integrate results into the rate model and rate increases for IMP projects should be applied in the most affordable way possible.

- ***Prioritize program improvements and projects*** that provide the most environmental and public health benefits for the lowest cost to ratepayers.

Step 5 – Develop Recommendations and Schedule

Once alternatives are developed and their associated financial impacts are understood, the City and project team will work to identify the right set of alternatives analysis tools to assist in making confident and well-informed investment decisions in a transparent environment. One of the challenges of any decision-making process is appropriately comparing alternatives that have quantitative and qualitative benefits. A number of tools are available for doing these analyses and their applicability depends on the project context in which they are used.

Decision Analysis Approaches like the Triple Bottom Line Evaluation will Aid in Selecting Final IMP Alternatives

Relatively simple tools, such as a multi-criteria decision analysis or the industry-standard Triple Bottom Line (TBL) evaluation, could be used for the initial IMP phase. The TBL process uses a quantification process to evaluate the environmental, social, and economic impacts or benefits of alternatives. These approaches hinge on the assignment of priorities and ranks through a collaborative exercise. Given the importance of community outreach and collaboration in the integrated planning process, these tools will likely be well suited for use in the IMP.

Once selected, wastewater and stormwater alternatives will be compiled with findings from the previous steps into a summary document which will comprise the draft IMP. As described in Step 3, the project team will solicit input on the draft document from stakeholders and community leaders. Regulators will also be engaged throughout the IMP development process to keep them apprised of our approach and progress and get feedback while developing the plan. Input received from the community and regulators will be incorporated into the final IMP, as appropriate, before the plan is finalized and presented to the City Council.

Step 6 – Implement and Measure Success

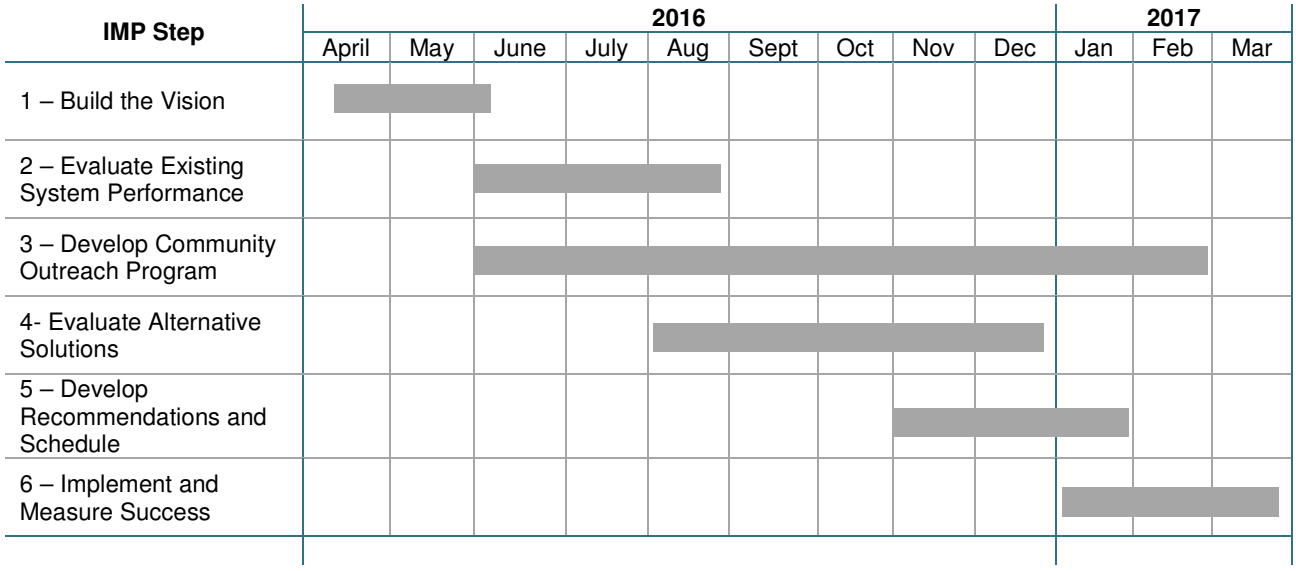
EPA recognizes that an adaptive management approach is key to successful integrated planning. This means monitoring and evaluating projects and practices as work proceeds, and adapting or revising plans and designs as appropriate based on lessons learned. Evaluating projects and practices as work proceeds can often be a more effective approach than adopting a monitoring program confined to the post-construction phase. The Columbia IMP will incorporate an adaptive management approach toward recommendations that align with the City's goals.

The development of an implementation schedule is another critical component of the overall plan because it is tied to funding and affordability. Through the alternatives analysis process, proposed improvements will be prioritized in order of importance using criteria developed by the City and stakeholders. The implementation schedule for specific projects will be sequenced based on the key project drivers.

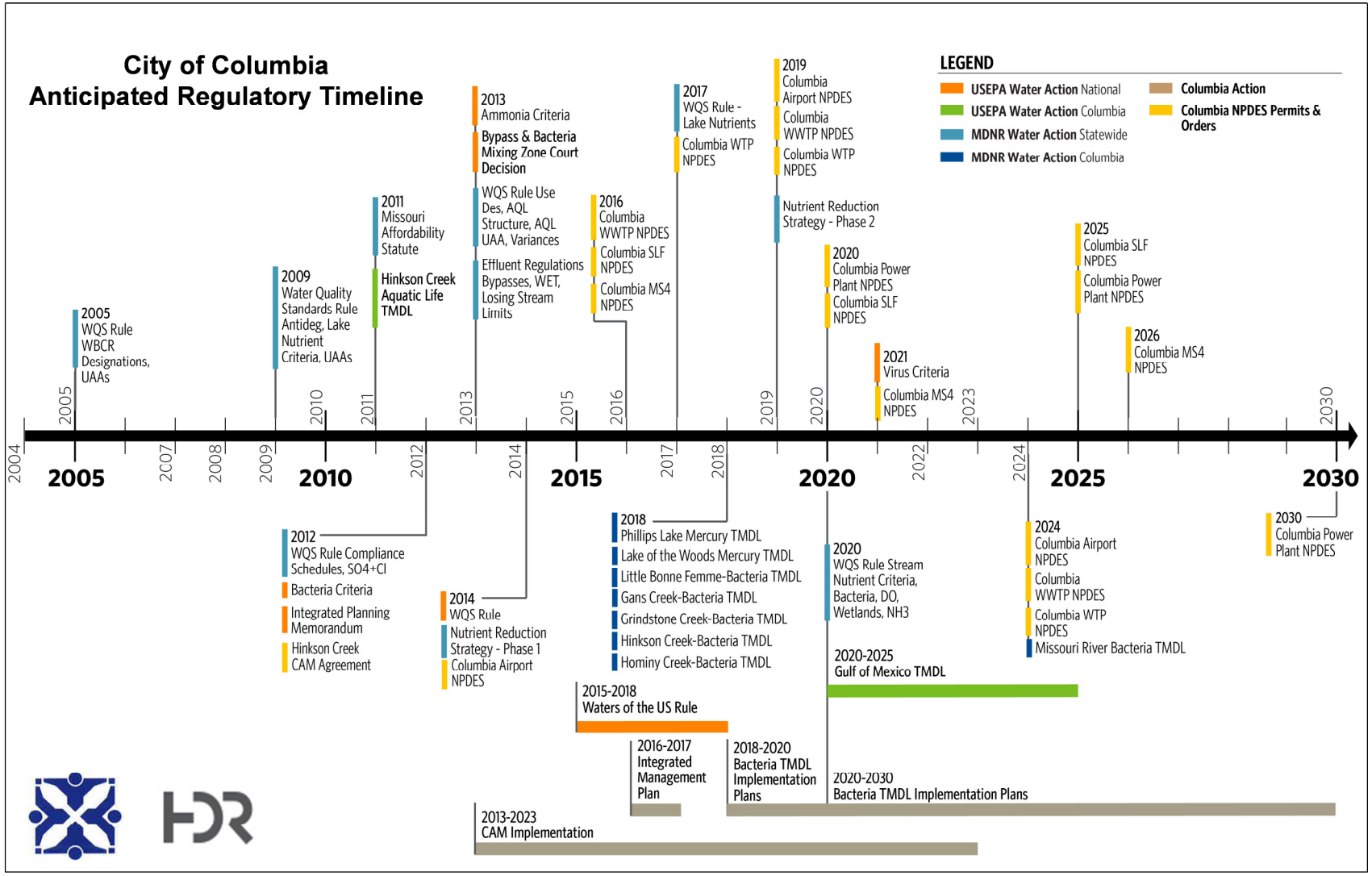
Anticipated Schedule

Information contained in this Framework will guide IMP project activities and the planning process going forward. The project is currently scheduled for a targeted completion date of March 2017, but is flexible to account for changes as the project evolves. In the coming months, the project team will work with City staff to develop a Community Outreach Plan and begin compiling, analyzing, and describing existing data to better understand performance characteristics of the City's current systems.

Anticipated Columbia IMP Project Schedule



Attachment A
City of Columbia's Anticipated Regulatory Timeline



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