

## 1. Introduction

### 1.1 Background

The Nature Conservancy (TNC) and the Chicago Metropolitan Planning Council (MPC), in coordination with the Metropolitan Water Reclamation District (MWRD) of Greater Chicago, have completed significant analyses to assess the feasibility and policy considerations associated with establishing a stormwater credit trading market in Cook County (the Market). Under the program, new development and redevelopment sites subject to MWRD's stormwater management requirements would be able to meet a portion of their requirements by purchasing volume-based stormwater credits from property owners or third parties who construct stormwater management controls (SMCs) offsite. As envisioned, the program will be divided into six trading areas based on the six watersheds that fall within MWRD's service area.

TNC and its partners have established that there is sufficient supply and demand within each of the six watershed areas to support a functioning market; they have also evaluated and made recommendations related to key program design elements. As a next step in the development of the Market, TNC and MPC retained Corona Environmental Consulting, American Rivers, and AMP Insights (project team) to evaluate key aspects of market administration. The objectives of this analysis are to understand the processes and systems that need to be in place to effectively administer the market, evaluate fiscal and legal aspects of alternative administration scenarios, and develop alternatives and make recommendations related to Market administration structure and responsibilities. A heavy emphasis of our analysis was to assess the complexity and trade-offs of a third-party providing some or all of the market administration functions on behalf of and/or in coordination with MWRD. We have been especially mindful of Market administration roles or activities that align closely with MWRD's existing functions and capabilities, with the intention of leveraging synergies and identifying efficient, cost-effective administration solutions.

### 1.2 Methods

To conduct this analysis, the project team reviewed literature and information on existing environmental markets and conducted interviews with individuals knowledgeable on the administrative functions associated with those markets. We leveraged the experience and knowledge of TNC and MPC team members, along with our experience in stormwater credit trading market design, to develop market administration options and recommendations. We also spoke with MWRD staff to better understand the agency's current processes related to watershed management permits (WMPs) for new and redevelopment sites, as well as their perspective on, and capacity to undertake, market administration activities. Finally, we were advised by lawyers at Latham and Watkins about various legal implications associated with potential administration models.

### 1.3 Report organization

As shown in Figure 1, we have organized our analysis and recommendations around three key aspects of market administration, as follows:

- Administrative functions related to the ***demand side*** of the market, including tasks associated with facilitating participation in the market by buyers of stormwater credits (outlined in yellow in Figure 1);
- Administrative functions related to the ***supply side*** of the market, including tasks associated with facilitating credit generation, certification, and sales (outlined in red in Figure 1);

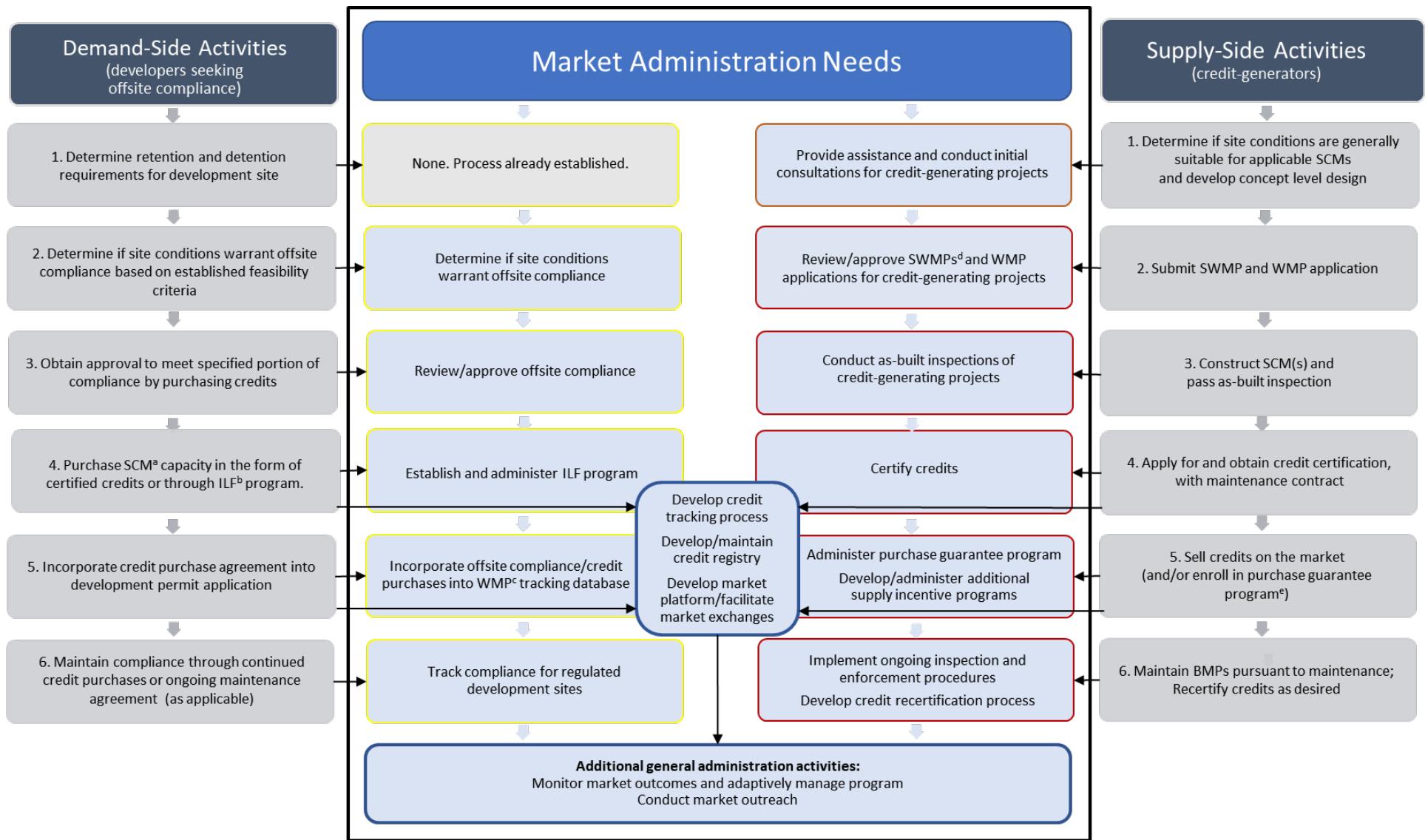


Figure 1. Overview of administrative processes for Market

a). SCM – Stormwater control measure, commonly referred to as stormwater best management practice (BMP); b). ILF - in-lieu fee, developers have may have option to pay ILF in lieu of purchasing credits, see section 2.2; c). WMP – watershed management permit – all SMCs (including onsite and offsite require a WMP from MWRD; d). SWMP – stormwater management plan, developer and credit-generators need to submit a SWMP with their WMP application. SWMP details the design and construction of SCMs; e). Purchase guarantee program is a form of market incentive intended to provide certainty to potential credit generators. See section 3.5 for more information.

- ***Additional market administration functions and considerations***, including administrative activities that cross over the supply and demand sides of the market and other activities and considerations associated with overall administration (outlined in blue in Figure1).

The following sections present options and recommendations for each administrative activity identified in Figure 1, including alternatives for how the administrative activity may be performed or structured, as well as for the party or parties that may be responsible for performing them. For each activity, the project team considered alternatives that reflect varying levels of complexity (where applicable) and different administrative roles for MWRD and Authorized Municipalities, a third-party Market administrator, and/or MWRD's member municipalities. Our recommendations as to which alternatives may be best suited for the Cook County Market are based on our understanding of existing MWRD processes and systems, level of expected Market activity, best industry practices, legal and financial considerations, and other applicable factors.

## 2. Demand-Side Market Administration Alternatives and Recommendations

This section describes options for administrative processes associated with the demand side of the market, as well as our recommendations for how these processes may be best structured and performed. Specific administrative activities addressed in this section include:

- Determine if site conditions warrant offsite compliance
- Review and approve offsite compliance
- Establish and administer an in-lieu fee (ILF) program
- Incorporate offsite compliance/credit purchase into WMP tracking database
- Track compliance for regulated development sites

### 2.1 Determine if site conditions warrant offsite compliance; review and approve offsite compliance

Early in the development process developers will need to understand their options regarding offsite compliance. From a market administration perspective, a process will need to be put in place to approve offsite compliance, as well as the amount of stormwater control that can be met through credit purchases. At the same time, a developer will need to ensure that credits are available (or will be available) within the watershed where their development is located. This need is addressed in a subsequent section.

Currently, MWRD's Watershed Management Ordinance (WMO) allows for offsite compliance if all means of providing required detention or volume control onsite are "technically infeasible and documented." The WMO also states that offsite practices may be utilized if an applicant demonstrates that a site constraint prevents it from utilizing onsite controls. The WMO does not specifically define "technically infeasible" or what constitutes a qualifying "site constraint." It also does not elaborate on how these conditions should be documented. Recognizing that overly restrictive limitations on the ability to comply offsite can reduce the viability of a credit trading market by significantly reducing demand, TNC and MPC have identified this as a topic for further research and consideration. This includes evaluating the implications of allowing developers to meet a portion of their requirements offsite "by-right," such as occurs in the Washington D.C. Stormwater Retention Credit (SRC) Market. In this case, a process would

still need to be established for approving additional offsite compliance in the event that a developer cannot meet the required portion of their requirements onsite due to site constraints.

The project team understands that forthcoming revisions to the WMO will address infeasibility criteria and site constraints, as well as requirements related to the documentation of these conditions. The new language may have implications for how this process is administered, as well as for the level of resources required. Regardless, the following administrative steps/processes are needed to support this initial demand-side step:

1. Guidance or assistance to help developers demonstrate/document infeasibility or site constraints;
2. Application and review/approval process for developers to obtain approval for purchasing credits.

There are several ways that a market administrator or other party could assist developers in assessing whether they can comply offsite. Potential involvement may range from simply developing guidance based on infeasibility criteria and requirements for documenting existing site constraints to conducting site visits and working with developers to apply for offsite compliance. The level of assistance and guidance necessary will in part be determined by how these requirements are addressed in the WMO. For example, if documenting infeasibility or qualified site constraints is relatively straightforward, little assistance may be required.

As described by MWRD, developers currently work with staff from the municipalities in which their development site is located to develop WMP applications, which they then submit to MWRD for review and approval (note that the 14 Authorized Municipalities within MWRD's service area approve the WMPs and do not need to submit applications to MWRD). The municipalities and developer submit the WMP application to MWRD as co-permittees. Given this existing process, municipalities are well-suited to take on the role of working with developers to assess and provide recommendations related to offsite compliance. A third-party administrator could play a similar role, including working with developers, conducting site evaluations, helping them to navigate the approval process for offsite compliance, and/or providing additional support. However, we recommend that existing processes within municipalities be leveraged as much as possible.

MWRD will likely need to be involved in developing consistent guidance and criteria related to offsite compliance (per the WMO) and ensuring that recommendations are applied consistently across municipalities. However, it is likely not necessary for MWRD to provide a high-level of assistance to individual developers, beyond any assistance they currently provide as part of the WMP process, as other entities are well-placed to do so.

While municipalities and/or a third-party can provide guidance and recommendations regarding offsite compliance, input from Latham & Watkins indicates that MWRD and Authorized Municipalities cannot delegate authority to officially approve offsite compliance. Further, Section 5.3.3.2 of the Technical Guidance Memorandum (TGM) that accompanies the WMO implies that the District will be responsible for determining whether a development has qualifying site constraints. MWRD already approves WMPs; however, offsite compliance would need to be approved prior to submission of the WMP application, which comes later in the development process. Thus, a new step will need to be added to the WMP process (so that a plan for offsite compliance can be included in the WMP application). MWRD staff indicated that they are typically involved with developers prior to submission (e.g., through pre-

consultations) such that by the time the WMP application is submitted, it is likely it will be approved. Approval of offsite compliance could likely be integrated into this existing process relatively easily.

**Recommendations for determining if site conditions warrant offsite compliance and approving the use of credits for meeting stormwater management requirements**

**Initial activities:** Develop guidance and application materials to help developers demonstrate/document infeasibility or site constraints, pursuant to WMO requirements. Establish procedure/step for approving offsite compliance within existing WMP process.

**Ongoing administration:** Work with developers to assess site constraints and options for offsite compliance, as well as to document infeasibility. Review and provide official approval for offsite compliance, including the portion or volume of stormwater management requirements that can be met offsite.

**Responsible party:** MWRD to develop criteria and guidance/application for offsite compliance. This will provide consistency in the market across municipalities and is a necessary component of program design/implementation. Municipalities to make recommendations and help developers document site constraints/apply for offsite compliance. MWRD (or relevant Authorized Municipality) will need to provide final approval for offsite compliance. This will need to occur relatively early in the development process, prior to WMP issuance.

**Alternatives:** A third-party could provide technical assistance to developers and make recommendations regarding offsite compliance. The need for additional assistance will depend on infeasibility conditions and documentation requirements outlined in the WMO, as well as the capacity and resources available to municipalities to take on this task.

## 2.2 Establish and administer an in-lieu fee program

An in-lieu fee (ILF) program allows payment of a fee as an alternative to meeting stormwater detention or retention requirements onsite. The structure of ILF programs vary, but in most cases, the fee amount reflects the cost of publicly installing and maintaining SCMs to manage a volume of stormwater equivalent to the volume a developer would have been required to manage onsite. ILF revenues are used to construct and operate stormwater controls.

An ILF program serves two important functions within a stormwater credit trading program. First, it can serve as a valuable back-up to a market if there is a shortage of supply sites or uncertainty about the future supply of credits. Second, the ILF price also establishes a ceiling for credit prices. This is because it is typically more expensive for public agencies to implement SCMs than it would be for a private/third-party credit generator. In a functioning market, the ILF option would therefore rarely be utilized. However, if it is utilized, the administering organization can use ILF revenues to build stormwater projects in areas with priority needs or that leverage multiple benefits. **Based on the project team's experience, an ILF program is a critically important component of a credit trading market. We recommend that MWRD adopt and implement an appropriate ILF structure.**

An ILF program requires establishing an appropriate ILF price and collecting and managing ILF payments from development site owners/managers (payments will potentially be made annually or in multi-year blocks). It also requires identifying appropriate project sites, the ability to design, build, and/or contract the construction of comparable offsetting SCMs (often within a specified time period of receiving ILF payments), and maintain ILF-funded projects over time. The ILF program would likely have a relatively low administrative burden; if the market functions correctly, very few developers would opt to use the ILF option. However, the structure of the ILF program needs to be in place.

TNC (2017) reports that there currently is not an entity that has been identified to manage an ILF program. Potential options include member municipalities, a third-party Market administrator, and MWRD. We do not believe that the municipalities are ideally equipped or placed to assume this role. For starters, the Market will likely be administered on a watershed-scale; in some cases, ILF-funded projects may not be best located in the same municipality as the project paying the fee but rather, somewhere else in the watershed. The ILF administrator needs to be able to work at a watershed scale, without hindrance by municipal boundaries. Second, ILF-funded projects may benefit from the ability to pool revenues from multiple permittees to build larger-scale projects that may result in better environmental outcomes. This would be made more difficult if revenues were dispersed across municipalities. Finally, municipalities likely have different costs associated with implementing stormwater projects, making it difficult to set a consistent price for the ILF. If a consistent price is not set, the ceiling price for the Market would vary by municipality, which would likely concentrate projects in municipalities where the ceiling price is highest. If one consistent price is set across municipalities (e.g., based on average price or highest costs experienced), some municipalities would potentially bring in more revenue than necessary to construct equivalent stormwater management capacity. While it would be difficult for municipalities to individually manage ILF programs, they could play an important role in identifying high-priority project locations, which would be an important step in establishing the ILF program.

A third-party could potentially manage an ILF program; however, this would require staff (or hiring consultants) with relevant expertise in SCM project design, management, and/or contracting. Developing this capacity in-house for a third-party could increase program costs for a program that will not be heavily utilized if participation in the ILF program is low, as would be expected. However, depending on the timing of when ILF revenue needs to be spent, program capacity could build over time. In absence of any legal obstacles associated with having a third-party administer public funds, a third-party could also collect fees and award the funds to NGOs, communities, or other outside entities third-parties to implement stormwater projects. These projects would be subject to WMP requirements and approvals. Relative to municipalities and a third-party administrator, MWRD is well-suited to perform this task, given its existing expertise and capabilities in managing revenues and developing/contracting stormwater management projects. MWRD's existing Stormwater Management Fund could provide a fiscal vehicle through which MWRD could manage ILF revenues and retain a contractor to develop ILF projects as needed. The District could also build up a "bank" of ILF offset projects to reduce ongoing administrative burden, although it would be difficult to predict the amount of stormwater capacity needed. We recommend that MWRD establish and manage the ILF program to ensure consistent application across its service area and align the program with the District's existing compliance responsibilities and fiscal structures. Having MWRD administer the program could also potentially increase public trust that the ILF program is maintaining compliance with WMO requirements.

**Recommendations for ILF program**

**Initial activities:** Establish ILF program structure, price, and revenue management process. Identify high-priority project locations for ILF-funded projects.

**Ongoing administration:** Manage revenues, design/construct ILF projects as needed, maintain ILF-funded projects (design, construction and maintenance may be outsourced to a contractor with relevant expertise).

**Responsible party:** MWRD to establish and manage ILF program, as well as design and construction of ILF-funded projects. MWRD to work with municipalities to identify high-priority options for ILF projects.

**Alternatives:** A third-party could manage the ILF program, barring any legal challenges associated with managing public funds. However, developing capacity to manage/construct stormwater projects may unnecessarily increase overall program costs given this expertise likely exists within MWRD.

### 2.3 Incorporate offsite compliance/credit purchase into WMP tracking database

MWRD and Authorized Municipalities will need to develop or adapt their existing compliance/permit tracking systems to be able to indicate when a developer has complied with stormwater management requirements by purchasing credits. The WMO states that if a developer utilizes an offsite compliance option, they must submit the following to MWRD: WMP number for the offsite SCM; letter from the owner of the offsite SCM approving the use of the practice by the development and the quantity of traded volume; and a copy of the agreement for the perpetual maintenance of the offsite SCM between all parties.

This does not necessarily mean that MWRD needs to be responsible for maintaining a credit registry or for tracking credits and compliance over time (see Section 4.2 below). Rather, this task could be as simple as adding additional columns to MWRD's existing WMP database to indicate volume or percentage of compliance requirements met through credit purchases, as documented and approved through the WMP approval process, and to incorporate proof of purchase, maintenance agreements, and other relevant information.

If a third-party is responsible for credit registration and tracking (as recommended in Section 4 below), this information could be provided to MWRD and/or Authorized Municipalities by the third-party, rather than the developer. We recommend this be done through an automated notification process (e.g., once a credit purchase is verified in the Market registry system) or by providing MWRD access to the credit registry. If MWRD elects to conduct market administration activities associated with registering and tracking credits and compliance (i.e., maintain the credit registry), then the indication of offsite compliance and credit purchase would be integrated into MWRD's overall database and system for Market administration and WMP compliance tracking.

**Recommendations for incorporating offsite compliance/credit purchase into WMP tracking database**

**Initial activities:** Modify existing compliance/permit database to accommodate indication of offsite compliance and proof of credit purchase. MWRD currently has plans to develop a new database/software system for WMP tracking. This could be easily integrated into that process.

**Ongoing administration:** Establish a process for providing MWRD and Authorized Municipalities proof of credit purchase and other relevant compliance information. This process should be automated through credit registry/exchange platform.

**Responsible party:** MWRD and Authorized Municipalities to make necessary changes to WMP databases to accommodate offsite compliance. Third-party administrator to work with MWRD/Authorized Municipalities to provide proof of credit purchase.

**Alternatives:** As described below, MWRD could take on activities associated with credit registration and tracking. If this were to be the case, WMP compliance tracking would be integrated into MWRD's overall database/system for Market administration and WMP compliance tracking.

## 2.4 Track compliance for regulated development sites

Aside from initial proof of credit purchase and maintenance contracts, there is a need to ensure that the development site maintains compliance over time by continuing to purchase credits upon expiration of current credit purchase agreements. Note that this function will only be necessary if the Market is setup such that credits (or maintenance agreements) are purchased annually or in multi-year blocks (e.g., as in DC's SRC trading program) rather than through a one-time transaction.

This task can be performed automatically through the credit registry. For example, in D.C., the Department of Energy and Environment (DOEE) database system for its SRC trading program automatically identifies development sites that have credit purchase agreements set to expire within a certain time period. The database/tracking system automatically sends a notification to the credit purchaser reminding them that their credits will be expiring and that they will need to renew their credit purchase agreements or purchase new credits. We recommend that ultimately, the Market administrator adopt this model; however, this feature can be added over time, as initial manual tracking (e.g., running queries to identify credit agreements set to expire) will not be difficult with likely a relatively small number of trades occurring in initial years.

As noted above, in Section 4 the project team recommends that administrative tasks and processes associated with registering and tracking credits could efficiently be performed by a third-party administrator. Under this scenario, the third-party would also be able to track compliance of regulated development sites over time through the credit registry and associated serialization of credits, which would indicate when credits were set to expire. Alternatively, if MWRD were to maintain the credit registry and perform associated administrative tasks, they would easily be able to identify non-compliant development sites through the credit tracking process.



If credit purchasers do not maintain compliance, enforcement actions will need to be initiated. Based on input from Latham & Watkins, MWRD cannot delegate WMP enforcement authority to a third-party. However, assuming a third-party administrator is responsible for credit registration and tracking, we recommend that they send an initial letter to the non-compliant development site owner/manager to let them know that they are no longer in compliance and offering them a chance to remedy the situation. If the site owner/manager still fails to comply (by purchasing credits), the third-party would then notify MWRD (or the relevant Authorized Municipality), which would take appropriate enforcement actions.

***Recommendations for tracking compliance for regulated development sites:***

***Initial activities:*** Establish a process for tracking compliance of credit purchasers through identification and notification of expiring credit purchase agreement, as well as for taking enforcement actions, as necessary.

***Ongoing administration:*** Track and notify development site owners/managers of credit purchase agreement expiration. This can ultimately be done automatically through credit/registry and tracking system. Take enforcement actions, as necessary.

***Responsible party:*** Third-party to notify developer when credits are set to expire and to notify MWRD, Relevant Authorized Municipality, and credit purchaser if development site falls out of compliance. MWRD/Authorized Municipalities to retain ultimate enforcement authority.

***Alternatives:*** If MWRD takes on activities associated with credit registration and tracking, the identification of non-compliant sites could be integrated into MWRD’s overall WMP/Market database/system.

2.5 Summary of demand-side administration options and recommendations

Table 1 summarizes the project team’s recommendations associated with demand-side market administration activities. For each activity, the table presents options that the project team considered in developing alternative market administration scenarios, with recommended options highlighted in blue. The table also presents potential roles for MWRD, a third-party administrator, and member municipalities, with the recommended responsible party highlighted in green for each task. Cells highlighted in darker green indicate the primary lead for each task, with lighter green cells indicating a supporting role. While the figure indicates a leading role for a third-party administrator for several tasks, it is important to note that these tasks could be administered in-house by MWRD, with dedicated staff, expertise, and funding.

Table 1. Demand-Side Market Administration Options, Roles, and Recommendations

- Represents the recommended option for structuring/administering the administrative task
- Represent the recommended or required responsible party for administering each task
- Represent recommendations for responsible party supporting roles.

\* Activities that can be put in place after Market start up

Administrative Tasks	Administrative Task Options		Recommended/Required Responsible Parties and Roles		
	Lower Administrative Effort / Only Options	Medium/High Level of Administrative Effort	MWRD	Third-party	Municipalities
Determine if site conditions warrant offsite compliance and approve use of credits for meeting SWMP requirements	Develop guidance to help developers assess and document technical infeasibility/site constraints. Perform desk review of offsite compliance application.	Provide additional support through site visits or other consultations to help developers obtain approval for offsite compliance.  Level of assistance needed will depend on WMO requirements.	<b>Recommended:</b> Develop guidance to ensure consistency across municipalities.  <b>Required:</b> Approve offsite compliance.	Could help to support developers / provide recommendations on offsite compliance.	<b>Recommended:</b> Work with developers to assess offsite compliance and submit for approval.*
Establish and administer ILF program	No ILF program. Could result in non-functioning market.	Establish ILF program structure, price, and collect and manage ILF revenues. Design, construct, and maintain ILF projects, or contract out these activities Identify potential project sites.	<b>Recommended:</b> Establish and administer program.	Could potentially manage program; not as well-suited as MWRD.	<b>Recommended:</b> Help to identify high-priority project sites.  Not suited to administer program.
Incorporate offsite compliance / credit purchase into WMP tracking database	Proof of credit purchase and other relevant information provided to MWRD through automated notification system integrated into Market registry or by providing MWRD access to credit registry. MWRD would need to modify existing database to accommodate data.	MWRD could take on activities associated with credit registration and tracking. In this case, tracking of offsite compliance would be integrated into MWRD's overall database/system.	<b>Recommended:</b> Modify existing database to accommodate necessary data entry.	<b>Recommended:</b> Track offsite compliance through credit certification / registration process.  Provide necessary data to MWRD through automated data sharing process.	Not suited for this task.
Track compliance for regulated development sites	If ongoing credit purchase is required, non-compliant development sites must be identified. This process could be automated through credit registry such that prior to expiration of credits, the credit-purchaser is notified that they need to purchase new credits. If development site does not comply, MWRD automatically notified. MWRD retains enforcement authority.	MWRD could take on activities associated with credit registration and tracking. In this case, tracking non-compliance of credit purchasers over time would be integrated into MWRD's overall database/system.	<b>Required:</b> Legally, MWRD must retain enforcement authority and take necessary enforcement action.	<b>Recommended:</b> Track credit purchase compliance through credit registry. Notify credit purchasers of need to purchase credits. Notify MWRD of non-compliance.	Not suited for this task.

### 3. Supply-Side Market Administration Alternatives and Recommendations

This section describes the available options for administrative processes associated with supporting the supply side of the market, as well as our recommendations for how these processes may be best structured and performed. Specific administrative activities addressed in this section include:

- Provide assistance to and conduct initial consultations for credit-generating projects
- Review and approve Stormwater Management Plans (SWMPs) and WMP applications for credit-generating projects
- Conduct as-built inspections of credit-generating projects
- Certify credits
- Administer a purchase guarantee program
- Develop and administer additional supply incentive programs (including incentives for project aggregators)
- Implement ongoing inspection and enforcement procedures for credit-generating projects

#### 3.1 [Provide assistance to and conduct initial consultations for credit-generating projects](#)

The sophistication of credit-generators may vary widely. Many credit-generating SCMs will likely be developed by private sector or non-profit project aggregators with a business model based around identifying potential project sites, recruiting property owners to host projects on their property, and designing and constructing SCMs for eventual sale into the Market. Commercial or institutional property owners (potentially, including public sector property owners) who have the capability and resources to retain consultants to design and implement SCMs may also generate credits. If permitted, some credits will also likely be generated at regulated development sites by developers who choose to exceed their WMO requirements for the purpose of selling or banking excess stormwater volume capacity.

The types of credit generators mentioned above should not need significant technical assistance from MWRD, municipalities, or a third-party administrator to evaluate potential project sites and design appropriate SCMs (although as described in Section 3.6, they may require other forms of assistance/incentives to enter the market). However, MWRD and Authorized Municipalities may want to encourage other types of credit generators to enter the Market, such as individuals, non-profit organizations, schools, faith-based organizations and similar property owners. These individuals or entities will likely require some initial assistance in designing and developing credit-generating projects.

Regardless of the technical expertise of the credit generator, MWRD and Authorized Municipalities have an interest in ensuring that projects are designed in accordance with the District's technical standards, provide a measurable benefit to the District's stormwater and flood control systems, are capable of being properly installed and maintained, and can advance through the WMP review process without requiring extensive review. To meet these ends, MWRD or a third-party administrator should develop "easy to read" technical standards and other market-related information to distribute to potential credit-generators. This could include for example, sample conceptual designs, information on example projects, and/or checklists for pre-application materials.

In addition to these basic resources, some degree of pre-project consultation between credit-generating project developers and technical staff associated with the trading program may be beneficial. These consultations could provide input into project design and development of a required stormwater management plan (SWMP) that details the design, construction, and maintenance of the project. While these initial consultations are not an absolute prerequisite to the administration of the Market, they would aid in the implementation of high-quality credit-generating projects and encourage less technically-savvy potential project developers to construct SCMs and generate credits. Some level of initial consultation is commonly required by utilities that offer green infrastructure incentive programs. For example, both Philadelphia Water Department and Northeast Ohio Regional Sewer District require potential applicants to meet with program staff prior to submitting applications to their stormwater management grant programs. This helps reduce time associated with multiple application revisions and review time by project staff, and results in better overall project outcomes.

There are a range of options for providing additional support to project developers to help with initial project design. For example, pre-project consultations could be required for all proposed projects or could be offered only to those project developers who request a consultation, such as occurs in D.C. Support could also be offered in the form of site visits and design/project consultations to groups of individuals or entities who are interested and well-placed to create sellable credits but who may need targeted assistance to participate in the Market. This last approach may have some value in providing equitable access to the Market for non-profit or community-based project developers, particularly from economically disadvantaged sectors of the community. For example, DC DOEE's SRC Site Evaluation program provides an assessment of green infrastructure opportunities "for property owners who are interested in the Stormwater Retention Credit (SRC) Trading Program, but need assistance evaluating green infrastructure feasibility." The program is funded by DOEE but administered by the Center for Watershed Protection, a local non-profit organization. Funds and resources available through the program are prioritized to reach non-profit organizations, such as churches, cemeteries, schools, and similar institutions.<sup>1</sup> Targeting specific groups or types of property owners would also reduce the burden and costs for the administering organization by reducing the pool of available program candidates.

Requiring preliminary consultations and/or site visits of all proposed credit-generating projects would have the advantage of consistent early engagement with every project, with expected design and administration benefits. However, such an extensive program would come with commensurate costs and procedural burdens and may be viewed as unwarranted by relatively sophisticated project developers. Optional consultations would likely attract developers who see value in early feedback from the Market administrator and/or MWRD and may not be as costly for the program.

We recommend that the Market follow DC's model, providing optional assistance, in the form of site evaluations and pre-project consultations related to SWMPs, to project developers who request it. We also recommend that this assistance prioritize specific types of property owners/potential credit-generators, if Market activities and goals warrant this type of targeted assistance. At a minimum, easy-to-read technical standards should be developed to assist project developers.

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<sup>1</sup> See <https://doee.dc.gov/node/1283101>

Many municipalities may be well-suited to take on this task, given their current role in working with developers and serving as co-permittees on WMP applications. Pre-project consultations and site visits may fit in to this existing process; however, the project team understands that member municipalities may have different levels of resources that could be put towards this task. Without a consistent funding source, this could create inequities in the level of resources/assistance available to credit generators across municipalities and/or unmanageable administrative burden for some municipalities.

MWRD may be able to undertake this task either by re-purposing existing outreach and technical staff, or more likely, developing an in-house Market team, as this task would increase overall workload. Alternatively, MWRD could retain overall authority for the program but contract it out to an independent service provider, much as DOEE opted to do with its Site Evaluation Program. This could help MWRD avoid any legal complications associated with using public funds to support activities that result in private benefit. In addition, MWRD should be involved in developing basic technical guidance for potential project developers in order to provide consistency across municipalities and watersheds.

This role could also be performed by a third-party administrator that has qualified staff with relevant experience. There may be advantages to having an outside entity undertake this task. For example, a suitable provider could potentially provide the requisite services at a lower cost than MWRD, particularly if this capacity does not exist with MWRD.

We recommend that this task should be part of a portfolio of services offered by a third-party administrator. If, however, MWRD takes on the overall Market administration function (i.e., including tasks associated with credit tracking and registration), we recommend that it also take on this task or contract it out in the model of DOEE's relationship with Center for Watershed Protection. A centralized approach to providing this assistance (i.e., through MWRD or a third-party administrator) would help to ensure consistency and equity across municipalities and within the Market watersheds. However, MWRD or a third-party Market administrator could coordinate with and support any outreach/assistance programs that municipalities may undertake. Partnerships between the administrator and willing municipalities or watershed groups may provide additional efficiencies, particularly where these entities have existing staff, expertise, and outreach program capabilities.

Regardless of whether MWRD or a third-party administrator takes on this role, there may be concerns about program staff engaging in activities that provide, or appear to provide, a benefit to only some property owners. The assistance we describe here is primarily focused on ensuring the efficient development and permitting of successful credit-generating projects. Providing optional consultations, in particular, is solely responsive to landowner/project developer interest and is not a direct solicitation of projects by the Market administration team. Options for further incentivizing/accelerating the supply of credit-generating projects are discussed in Section 3.6.

**Recommendations for providing assistance to and conducting initial consultations for credit-generating projects**

**Initial activities:** Develop and promote “easy to read” technical standards, develop protocols for initial project consultations.

**Ongoing administration:** Schedule and undertake optional (and targeted/prioritized) site visits and initial consultations.

**Responsible party:** MWRD would need to be involved in development of technical guidance materials, even if contracted to third party or contractor. Third party administrator to provide outreach, optional pre-project consultations and site visits, working in coordination with willing municipalities.

**Alternative:** If MWRD takes over significant aspects of Market administration, MWRD could conduct

### 3.2 Review and approve Stormwater Management Plans and Watershed Management Permit applications for credit-generating projects

One of the first steps in the credit-generating sequence is for the potential credit seller to develop a SWMP detailing the design, construction, and maintenance of its proposed stormwater management project and to submit a WMP application. Pursuant to WMO §§503 and 504, all SCMs used for offsite compliance must obtain a WMP. This provides assurance that the project meets the District’s specifications and can provide the expected level of detention or retention and other proposed benefits. Approval of the SWMP (and other elements of the WMP application) will result in issuance of a WMP for the project and offer a preliminary confirmation of the number of credits that the project will provide.

MWRD and Authorized Municipalities currently review SWMPs and WMP applications for proposed development projects; reviewing them for credit-generating projects would involve identical expertise, processes, and requirements. It is possible that MWRD and one or more of the Authorized Municipalities would need to retain additional staff to be able to perform this task as participation in the trading program increases, however, initial workload could likely be met with existing staff.

Based on input from Latham & Watkins, it would be difficult, if not impossible, for a third-party administrator or member municipalities to assume this task. The Illinois statute governing MWRD does not allow it to delegate its permit review, issuance and enforcement authority to a third party, apart from the Authorized Municipalities. However, as described in the previous section, member municipalities currently serve as co-permittees on WMP applications, providing consultations, preliminary review, and other support (depending on the municipality). We expect that municipalities would continue in this role for credit-generating projects, providing valuable support to credit-generators and increasing the quality of SWMP and WMP submissions.

As part of the WMP approval process, MWRD may want to consider offering credit generators a ‘green permit’ track if they implement vegetated or otherwise preferred practices. Such a program would offer expedited permit review time or a pre-authorization of some type that might reduce risks perceived by suppliers. This type of program would only be beneficial if existing processes are time consuming or perceived as overly complex.

A third-party administrator could provide resources, support, and shepherding services to assist credit-generators with the WMP application and review process, in addition to the pre-project consultation services described in the previous section. However, we recommend that existing processes within municipalities be leveraged as much as possible. If a third-party administrator ends up playing a significant role in Market administration, it could provide additional resources or support to help developers navigate the WMP process, as needed.

**Recommendations for reviewing and approving WMP applications for credit-generating projects**

**Initial activities:** None required; existing processes in place. Consider opportunities for green permit track.

**Ongoing administration:** Intake and review initial designs, provide feedback, and issue WMPs for credit-generating projects.

**Responsible party:** MWRD and Authorized Municipalities to perform application review and issue WMPs; municipalities to serve as a resource/co-permittee for credit-generators/applicants.

**Alternative:** A third-party administrator could supplement, as needed, activities undertaken by municipalities to help support and shepherd credit-generators through the WMP process.

### 3.3 Conduct as-built inspections of credit-generating projects

Once a credit generating project has been implemented, MWRD will need some verification that it was built to design specifications, is completed, and is likely to function as intended. A post-construction inspection is necessary to confirm that the project complies with WMO requirements. Depending on the complexity of the project, inspections during the construction phase may also be necessary.

MWRD and Authorized Municipalities already undertake as-built and construction-phase inspections of SCMs at new and redevelopment sites (i.e., onsite controls); it stands to reason that they could relatively easily incorporate inspections of offsite, credit-generating SCMs into their existing program (and are currently legally obligated to do so under Article 10 of the WMO as part of the WMP process). If market activity is robust, these entities may need to expand their current programs to accommodate additional inspections; this may require hiring additional staff, with associated costs. These staff could also be tasked with WMP application review, creating a practice group within existing technical teams that focuses on meeting the broad needs of landowners and other entities constructing credit-generating projects. Inspections could be streamlined through the development of a simplified check-list that can be applied easily and consistently by less-expert staff. In addition, MWRD and Authorized Municipalities could partner to create the additional needed capacity (e.g., through a cost-share agreement).

A third-party administrator could potentially assume this role, with appropriate guidance and support from MWRD to ensure that the District's technical standards are met to its satisfaction. Currently, the WMO reserves final inspection authority to MWRD and Authorized municipalities. Thus, delegation of this role to an administrator likely would require an amendment to the WMO and an agreement between MWRD and the third-party administrator that outlines the scope and limits of this delegation. In addition, having a third-party administer this task for offsite, credit-generating projects may create inefficiencies by

duplicating a process that already exists within MWRD/Authorized Municipalities. One option for having a third-party involved in this step may be to have them conduct inspections using digital tools to allow MWRD to virtually inspect the site. This method is used in other industries to minimize cost of field inspections, while still providing access to experienced, technical staff.

Another option, which could apply regardless of which entity assumes responsibility for this role, would be to introduce a self-reporting element in which the property owner/project developer is required to obtain an inspection from a qualified independent reviewer and to submit the results to MWRD (or the administrator). Several market-based trading or mitigation programs feature self-reporting in some fashion, which has the effect of reducing costs and staff burdens on the market administrator. However, this savings comes at the expense of the credit generator who must incur the costs of obtaining an independent inspection. These costs may create an economic disincentive to participating in the market. There may also be additional legal and compliance risks associated with this option (and it would likely also require a modification to the WMO); it may be better suited for recertification processes or as a way to demonstrate continued maintenance/compliance.

Our recommendation is that MWRD and the Authorized Municipalities take on this role as a complement to the inspections they currently undertake of completed on-site SMCs. Devolving this function to a third-party, even one providing overall Market administration, may be legally challenging and is likely to result in inefficient duplication of capacity.

**Recommendations for conducting construction-phase and final as-built inspections of credit-generating projects**

**Initial activities:** Develop and institute procedures and related guidance materials for inspectors (if they do not exist).

**Ongoing administration:** Conduct inspections of credit-generating projects during and post-construction; record, track and manage inspection results through the WMO permit approval and credit certification process.

**Responsible party:** MWRD/Authorized Municipalities to conduct inspections, as they already do for all projects that require a WMP.

**Alternative:** No viable alternative.

### 3.4 Certify credits

All of the preceding steps are necessary prerequisites for a property owner or project developer to obtain certified stormwater credits that can be sold to developers seeking off-site compliance with the WMO. The credit certification step is purely administrative. Once a credit-generator (landowner or project developer) has passed final as-built inspection, he or she applies for credit certification. The application should include a project maintenance plan and associated maintenance agreement as condition of certification. MWRD and/or a third-party administrator will confirm the number of credits created by the credit-generating project and enter this information into a registry that tracks the creation and use of all credits. If relevant, the Market administrator will also update any web-accessible form of the registry



(although this would ideally happen automatically). Our detailed recommendations about this registry are more fully discussed in Section 4.2.

The nature of the certification task, and the amount of work it requires, depends on the manner in which the overall program design defines the duration of credits and the frequency in which they must be purchased. An “annual” purchase model that follows DOEE’s approach in Washington D.C. will require a greater volume and greater frequency of credit certification; a “one time” approach similar to that designed for Grand Rapids will demand fewer certification cycles. The market administrator should also be prepared to recertify credits to the extent that recertification is a feature of the overall market design.

Consideration must also be given to the task of certifying credits to the extent it falls within the activities that MWRD alone can undertake given its WMP permit compliance responsibilities. Because each credit-generating project is required to obtain a WMP, credits can only be certified once MWRD has conducted a final inspection and approved the project as built. Additionally, credits will eventually be used by real estate project developers to obtain WMP compliance. Thus, MWRD will need to approve the maintenance plan included in the credit certification application and enter into a maintenance agreement with the credit-generator. These linkages to MWRD’s permit issuance, compliance and enforcement roles favors assigning credit certification to the District. In addition, the credit certification application could be incorporated into the as-built inspection process to leverage administrative efficiencies.

However, this does not necessarily mean that MWRD will need to be responsible for entering certified credits into the credit registry or maintaining the credit registry. As discussed in Section 4 below, these tasks could be efficiently performed by a third-party administrator. If this is the case (as is recommended below), MWRD and the administrator will need to develop a data sharing process in which the third-party administrator is notified, and provided project-relevant data, when credits are certified.

**Recommendations related to certifying credits**

**Initial activities:** Establish credit certification application materials and procedures for certifying (and, as necessary, re-certifying) credits. Develop data sharing or other process to ensure that certified credits are entered into credit registry.

**Ongoing administration:** Periodic certification of credits and updating credit registry

**Responsible party:** MWRD/Authorized Municipalities to formally certify credits; work with third-party to develop data-sharing process related to certified credits.

**Alternative:** No viable alternative.

### 3.5 Administer purchase guarantee program

Inherent within a credit trading program is the risk assumed by a property owner who seeks to develop retention capacity to create credits that may not find a buyer. One approach to reducing this risk is to implement a purchase guarantee, or price lock, program in which the Market administrator offers to be the “buyer of last resort” for otherwise unsold credits. By reducing initial risk, the program can encourage the creation of a supply of credits, particularly during the early years of the program when adequate

supplies may not yet be available. The objective would not be to ensure a large profit for the credit-generator but to serve as a “floor” price for credits and to provide certainty in entering the market. Accordingly, the price paid by the administrator would be lower than the expected market value of a credit. In addition to providing a floor price, a purchase guarantee program can provide credit generators the security they need to secure financing to construct credit-generating SCMs. This can be important in attracting project aggregators and other credit-generators to the Market who are not able to self-finance up front design and construction costs. Figure 2 describes DC DOEE’s purchase guarantee program.

*Figure 2. DC DOEE SRC Price Lock Program*

The DC SRC trading program features a “price lock program” that program staff have stressed has been particularly valuable in attracting the participation of project aggregators who are willing to finance, design, and build stormwater management projects for local landowners with the expectation of repayment on sale of the credits created. DOEE’s commitment to buy the credits is good for one year after the credits are certified, giving the credit generator time to find a private buyer willing to pay a higher price. The program is structured to provide greater reimbursement to credit-generators during their first six years of participation in the program with a greatly reduced payment for the next six years. This structure has the effect of allowing the credit-generator to recover initial installation costs in the first period while covering only a portion of expected maintenance costs during the second period. Most of the credits enrolled in the program have been sold on the Market; DOEE reports that several credit generators have used completed purchase guarantee agreements as the security they need to obtain project financing. DOEE has purchased some credits, retiring them and securing the resultant community benefits at a significantly reduced cost compared to purchasing credits on the open market for this purpose or publicly constructing stormwater management projects.<sup>1</sup> DC’s program is managed by a third-party non-profit organization.

DOEE initially set aside \$11.5 million for the SRC Price Lock Program. In the first year of the program (FY 2018), the projects that enrolled originally accounted for \$1.59 million of funding for the purchase 1,352,928 SRCs over 12 years of credit certification. Of the 338,232 SRCs generated as part of the first 3-year SRC certification cycles for those projects, participants sold a total of 47,306 SRCs on the market. If not sold on the market, these SRCs would have used \$92,247 of DOEE’s SRC Price Lock Program funds, which can now be used for other SRC Price Lock Program projects in the future. DOEE purchased SRCs from one SRC Price Lock Program project in FY18, spending a total of \$55,142 to purchase 28,278 SRCs that the project generated from its first 3-year SRC certification cycle (DC DOEE, 2019).

Administering a purchase guarantee program requires the capability to source and dedicate sufficient funding to administer the program and purchase enrolled credits. Within the Market area, MWRD, a potential third-party administrator, and potentially, several municipalities may have these capabilities. Having a centralized program (i.e., managed by MWRD or a third-party) has several advantages, including ease of managing credits entered into the program, consistent pricing across geographies, and cost-effective outreach and program administration. However, in the event that a central administrator is not an option, municipalities within the Market area may wish to consider establishing their own purchase guarantee programs. This approach could have the benefit of incentivizing supply, particularly in locations where capacity is particularly desired to meet local needs. However, there could also be drawbacks given the likelihood that some but not all municipalities would adopt this approach, leading to irregular availability of the backstop and concerns about equity for lower income communities.

Latham & Watkins has indicated that MWRD has the authority to manage a purchase guarantee program in-house but that it is unclear if MWRD would be allowed to provide funds directly to private entities without additional consultation. In addition, the capacity to manage this program does not currently exist within MWRD.

Our recommendation is MWRD fund this program, as it will be key to securing an adequate supply of credit-generating projects. However, a third-party administrator may be best suited to manage the program and would reduce administrative burden for MWRD; MWRD can include the management of the program role in the contract with a third-party administrator. While there may be potential legal issues associated with who “owns” the credits purchased through the program, this could likely be surmounted with the correct contract terms and does not seem to be an issue with the DC program. In addition, Latham & Watkins has indicated that there are no explicit restrictions on third-party administrators managing the purchase guarantee program.

While we believe a purchase guarantee program is an important component of the Market (and has proven to be so in D.C.), it does not necessarily have to be established at the very outset of the trading market. It could be rolled out over the first year (or so) of the Market.

**Recommendations for purchase guarantee program**

**Initial activities:** Secure funding for implementation of the program over a designated period of availability; establish procedures for solicitation of credit purchase by the program and retirement of purchased credits.

**Ongoing administration:** Securing purchase guarantee agreements and occasionally purchasing credits; assurance that purchases comply with all relevant legal requirements and constraints, management of program funds.

**Responsible party:** Third party administrator with MWRD funding.

**Alternative:** MWRD could manage the purchase guarantee program in-house; however, this would add a new administrative function and would require additional resources. If MWRD takes over significant aspects of Market administration, including those related to credit registration and tracking, MWRD could also take on this task.

### 3.6 Develop and administer additional supply incentive programs

In addition to the purchase guarantee program, it may be helpful to implement additional incentive approaches designed to encourage the implementation of credit-generating projects, particularly in the early stages of the overall program. These incentives could include grants to non-profit organizations who are able to undertake outreach to potential program participants, as well as grants that cover upfront design/coordination costs for project aggregators to help them get started. A potential complication to grant-based awards may arise from MWRD purchasing rules. Based on legal analysis provided by Latham & Watkins, public or private entities receiving funding from MWRD may need to obtain competitive bids

and comply with other purchasing requirements. MWRD rules may need to be modified to reduce these complications, if they do materialize.

Another potential incentive includes the establishment of a low-interest revolving loan fund to help credit generators access upfront financing. This fund could be repaid through credit sales proceeds. These programs can be targeted to high-priority areas where retention capacity would be most beneficial, to under-represented neighborhoods to broaden equitable participation in the program, or to types or locations of projects where additional funding sources may be available (further reducing costs and risk exposure to credit generators). These programs can be a key component in helping to generate an adequate supply of credits and ensuring a functioning market. MWRD may be able to fund this program (and others) through current revenues or by incurring specifically directed debt through the issuance of bonds, although some revisions to the District's Stormwater Master Plan may be needed to clarify its authority in this regard.

If there is a need to further accelerate development of credit generating projects, MWRD or municipalities may wish to use an RFP process to identify and engage NGO or private business that are interested in becoming "project developers." These independent entities could undertake outreach to interested property owners capable of hosting credit generating projects and, potentially, provide funding, design and construction services to build qualifying GSI projects. The role of the market administrator would be to provide funding to the project developer(s) and technical assistance related to project review, design, and permitting. This arrangement would allow the administrator to maintain an impartiality about which projects happen and which landowners benefit.

Options for delivering these programs include: full funding and administration by MWRD, MWRD contract with an independent service provider, administration by a third-party market administrator with financial support from MWRD, administration by member municipalities (with or without MWRD financial support), and some combinations of these approaches. We note that in any of these arrangements, it may be possible to solicit grant-making philanthropies or other entities to secure additional funding for incentive programs. These sources of funding may be particularly suited to incentive programs as they may not need to be made available into perpetuity; thus, the often short-term nature of grant funding may cover program needs.

If a third-party assumes significant aspects of Market administration, we recommend that it take on this activity, with initial financial support from MWRD, and/or with a commitment to investigate alternative funding sources. A third-party administrator may have access to additional funding sources (e.g., that may not be available to MWRD) and would be well-placed to coordinate with municipalities who may develop their own incentive programs. However, leaving this solely to municipalities may result in inequities and concentrations of supply in areas where programs are available.

As with the purchase guarantee program, supply incentive programs do not necessarily need to be in place when the Market is officially established. These programs can be rolled out over time in response to market needs.

**Recommendations for additional supply incentive programs**

**Initial activities:** Develop incentive programs and outreach plans, including materials, processes, and community networks. Work with MWRD to research potential funding sources.

**Ongoing administration:** Administer incentive programs as needed to incentivize credit-generating projects in ways that are consistent with program goals. Continue to monitor/evaluate program effectiveness.

**Responsible party:** Third party administrator.

**Alternative:** If MWRD takes over significant aspects of market administration, it could also manage associated supply incentive programs; however, this capacity does not currently exist within MWRD and would add additional administrative burden and associated costs. MWRD could outsource only this aspect of administration.

### 3.7 Implement ongoing inspection and enforcement procedures for credit-generating projects

In exchange for the purchase price of the credits they provide, credit generators commit to providing an off-site compliance alternative for the purchaser's stormwater management obligations. For this arrangement to replicate the level of service that would have been provided by on-site stormwater management, the credit generating BMPs must be maintained for the length of the credit purchase agreement and/or the life of the development for which it is providing stormwater controls (depending on program design/credit sales agreements).<sup>2</sup> While maintenance agreements will be a condition of credit certification and purchases, the credit trading program should be designed and implemented with inspection and enforcement procedures to ensure that the intended level of service is met. Assurance of ongoing maintenance and performance of offsite controls will help to demonstrate the viability of the market-based, off-site compliance option, and is a prerequisite to confirming the program's effectiveness for regulators.

We recognize that neither MWRD nor municipalities within the District currently conduct consistent inspections of existing stormwater management facilities (i.e., on-site SCMs designed to meet post-construction stormwater standards). The development of a trading program could provide an opportunity to initiate an inspection program that first focuses on periodic and random inspections of off-site credit generating projects. Regular, periodic inspections would help to identify credit-generating practices that have reduced function or are no longer functional. However, this would introduce a new activity within MWRD, with associated staff needs and additional administrative burden. In addition, we recognize that focusing only on offsite controls may be deemed inequitable.

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<sup>2</sup> The WMO and TGM recognize the necessity of assuring long-term maintenance of credit generating BMPs through maintenance plans/agreements: WMO §503(B)(3)(e) currently requires an agreement for perpetual maintenance; Article 9 of the TGM clarifies that this agreement could "be in the form of a direct agreement between the development site and the owner/operator of the offsite volume control practice, or it could be a sales agreement for volume control credits."

An alternative to periodic inspections is a self-inspection process. One such arrangement adopted by the City of Chattanooga for its credit trading program tasks credit providers with retaining an independent contractor to provide annual inspections of their SCMs. Inspection results are then forwarded to the City. As long as the SCMs remain functional, credits remain valid. With this approach, a certified inspection by a qualified engineer would be required at prescribed intervals (e.g., every two years or every re-certification cycle). Results would be submitted to MWRD, municipalities, or the third-party market administrator, which would then take any appropriate follow up action. As with the similar approach discussed in the context of the as-built inspection, this approach would shift costs to the credit provider which may function as a disincentive to market participation. An even simpler approach may be to allow self-assessment and reporting based on a simplified checklist, supported by photo evidence (i.e., no independent contractor required). Reports and photos could be reviewed by program administration staff with authority to undertake on-site inspections as needed.

These optional approaches to ongoing inspections could be administered by MWRD, a third-party administrator, or municipalities within the District's service area. Municipalities currently inspect some onsite SCMs, mostly based on complaints from community members. A potential drawback to relying on municipal staff for consistent inspections or for managing a self-inspection process is the possibility of irregular administration and differing commitments to oversight and compliance.

As noted above, as-built inspections are needed for final WMP sign-off and may require an amendment to the WMO to allow a third-party to conduct them. Legal authority for a third-party to conduct or managed ongoing inspection processes may also need to be reviewed. Regardless of who conducts inspections related to continued performance, MWRD cannot delegate enforcement authority when corrective action is needed. When maintenance issues are discovered through an inspection process, the inspecting entity (if not MWRD) will need to notify MWRD. While MWRD would retain enforcement authority, a right of entry for a third party to undertake inspections could be incorporated into the credit certification documentation.

It is difficult to make a recommendation that holds offsite SCMs to higher standards than onsite controls, which are currently not inspected for continued performance on a consistent basis. However, to ensure compliance and prove the validity of the Market, we recommend that credit-generating projects at least be held to a self-inspection process that requires independent verification every two to three years (or be required for recertification, depending on program design). A third-party could manage intake and review of self-inspection reports, conduct follow up inspections as needed, and notify MWRD of non-compliance. Having a third-party administrator manage this process would reduce administrative burden for MWRD for a function that does not already exist in-house. The workload and expertise required to review self-inspections and conduct follow-up inspections could be reduced by developing simplified inspection checklists and forms. We note that some similar construction and post-construction inspection programs have relied on entry-level staff and interns. In addition, municipalities could continue to play a role in undertaking periodic inspections, primarily based on community complaints and/or as requested by the third-party administrator based on self-inspection reports.

**Recommendations for ongoing inspection and enforcement of credit-generating projects**

**Initial activities:** Develop protocols for self-inspection process and follow up inspections, including associated checklists, forms and related materials; define and memorialize enforcement / compliance assurance options and processes; establish agreement(s) as needed with third party administrator.

**Ongoing administration:** Intake and review of self-inspection reports, with follow up inspections as needed; referral of results to District for any further actions.

**Responsible party:** Third party administrator to manage self-inspection process and conduct follow-up inspections as needed; MWRD as enforcement authority. Municipalities continue current role in ongoing inspections.

**Alternative:** MWRD has the expertise to perform this task; however, it would likely require additional in-house capacity.

3.8 Summary of supply-side administration options and recommendations

Table 2 summarizes the project team’s recommendations associated with supply-side market administration activities. For each activity, the table presents options that the project team considered in developing alternative market administration scenarios, with recommended options highlighted in blue. The table also presents recommendations and considerations related to the role of MWRD, a third-party administrator, and member municipalities, with the recommended responsible party highlighted in green for each task. Cells highlighted in darker green indicate the primary lead for each task, with lighter green cells indicating a supporting role. While the figure indicates a leading role for a third-party for several tasks, it is important to note that these tasks could be administered in-house by MWRD, with dedicated staff, expertise, and funding.

4. Additional Market Administration Activities

This section describes additional administrative activities necessary to support a functioning market. This includes market administration activities related to developing and maintaining a credit registry, tracking credits over time, and facilitating market exchanges between buyers and sellers. It also includes activities related to effectively managing the program in response to feedback and market outcomes and conducted outreach to support market participation.

The activities described below related to credit tracking, registration, and exchange are interrelated; it is therefore useful to consider how they fit together before describing them individually. At a high level, the activities below make up a process that promotes transparent and accurate tracking, registration, and exchange of credits. The process includes steps to track the creation, use and expiration of credits, to move certified credits into a registry and platform where they can be offered for sale, and to facilitate the sale of credits to buyers. The process is critical, but equally important is the system (i.e. software, database, etc.) that underlies the process. The entire process could be integrated into a single system or spread across multiple systems so long as the different systems track one another. As a general

Table2. Supply-Side Market Administration Options, Roles, and Recommendations

- Represents the recommended option for structuring/administering the administrative task
  - Represent the recommended or required responsible party for administering each task
  - Represent recommendations for responsible party supporting roles.
- \* Administrative tasks that can be put in place after Market start up

Administrative Tasks	Options		Recommended/Required Responsible Parties and Roles		
	Lower Effort/Only Options	Medium/High Level of Administrative Effort	MWRD	Third-party	Municipalities
Provide technical assistance and conduct initial site consultations*	Develop easy to read technical standards and Market participation guidance.	Also provide pre-project site evaluations and design consultations for credit-generators, particularly those with institutional expertise or capacity needs.	MWRD could develop capacity to conduct in-house or contract to outside service provider to undertake this task.	<b>Recommended:</b> Provide optional assistance and consultations/site evaluations. Target disadvantaged project developers.	<b>Recommended:</b> Assist developers with projects in priority areas or as part of current services/WMP involvement, in partnership or coordination with third-party administrator.
Review and approve WMP applications	Modify WMO to not require full WMP from credit-generating projects.	MWRD and/or Authorized Municipalities must review and approve SWMPs for credit-generating projects and issue WMP.	<b>Required:</b> MWRD and Authorized Municipalities have sole authority to approve WMP applications	Could provide resources and support to help credit-generating projects navigate WMP process	<b>Recommended:</b> Continue pre-application coordination with project developers and coordination with MWRD
Conduct as-built inspections	Credit-generating projects submit independently verified self-inspection results to MWRD / Authorized Municipalities.	Conduct as-built inspections of credit-generating projects, as is currently done for WMP permitted-projects.	<b>Required:</b> MWRD and/or Authorized Municipalities develop additional capacity to conduct on-site inspections for credit-generating projects.	Could potentially manage program for MWRD, submitting deficiencies to MWRD for further action. May be legal obstacles.	
Certify credits	Develop certification protocol and application materials; develop process to integrate certification process into overall credit tracking system/registry.		<b>Recommended:</b> MWRD and/or Authorized Municipalities certify credits from completed credit-generating projects. Must enter into maintenance agreement with credit-generator.		



Table 2 (cont'd). Supply-Side Market Administration Options, Roles, and Recommendations

Administrative Tasks	Options		Responsible Party/Roles and Alternatives		
	Lower Effort/Only Options	Medium/High Level of Administrative Effort	MWRD	Third-party	Municipalities
Inspect and enforce compliance for credit-generating projects	Credit-generating projects submit independently verified self-inspection results. Follow up inspections conducted as needed.	MWRD, Authorized Municipalities, or third-party administrator conduct periodic on-site inspections. Enforcement action taken as needed.	<b>Recommended:</b> MWRD retain enforcement authority.  Alternative: MWRD could develop needed capacity to conduct periodic on-site inspections.	<b>Recommended:</b> Third party administrator to manage self-inspection process and follow up inspections as needed; refer violations to MWRD.	<b>Recommended:</b> Municipalities continue current role in ongoing inspections.
Administer Purchase Guarantee Program*	No purchase guarantee program. This could result in insufficient supply in market.	Secure requisite funding and develop/administer Purchase Guarantee Program.	MWRD could develop staff and fiscal capacity to manage program in-house or contract out this aspect of market administration to NGO or private business.	<b>Recommended:</b> Third party administrator manage program with funding from MWRD and/or others.	
Develop and administer additional supply incentive programs*	No incentive programs. This could result in insufficient supply in market.	Develop and administer incentive programs and outreach plans, including materials, processes, and community networks. Work with MWRD to research potential funding sources.	MWRD could develop / administer incentive programs inhouse or outsource this program to independent NGO or private business.	<b>Recommended:</b> Third party administrator manage program with funding and support from MWRD and other sources.	Municipalities also may wish to develop incentive programs for locally developed project or to respond to local priorities.

recommendation however, fewer systems provide less chance for miscommunication or error as credits move through the process.

We recommend two interrelated systems be used to facilitate the tracking/registry/exchange process. The first system does two things: 1) recognizes when credits have been certified and assigns each credit a serialized (unique) identifier (e.g., based on how long the credit is valid, location, etc.); and 2) maintains an up-to-date registry of all credits and their status (for example, created and available for sale, sold and assigned to a buyer, or assigned to a buyer but expired). The second system is a closely connected platform where available credits are listed for sale; this part of the system is how buyers interact with the market. Ideally, both the registry and the listing of available credits can be made available on-line to sellers and buyers.

Each of the steps in this process, and related options for systems to facilitate it, are described in the sections below. Figure 3 provides a schematic of how these different processes fit together, along with additional aspects of the market. As shown in the figure, the Market administrator, whether it is MWRD or a third-party, would be responsible for serializing credits and maintaining the credit registry and exchange platform. If these tasks are conducted by a third-party, a data-sharing process will need to be developed with MWRD to transfer information on certified credits, as well as credit purchases.

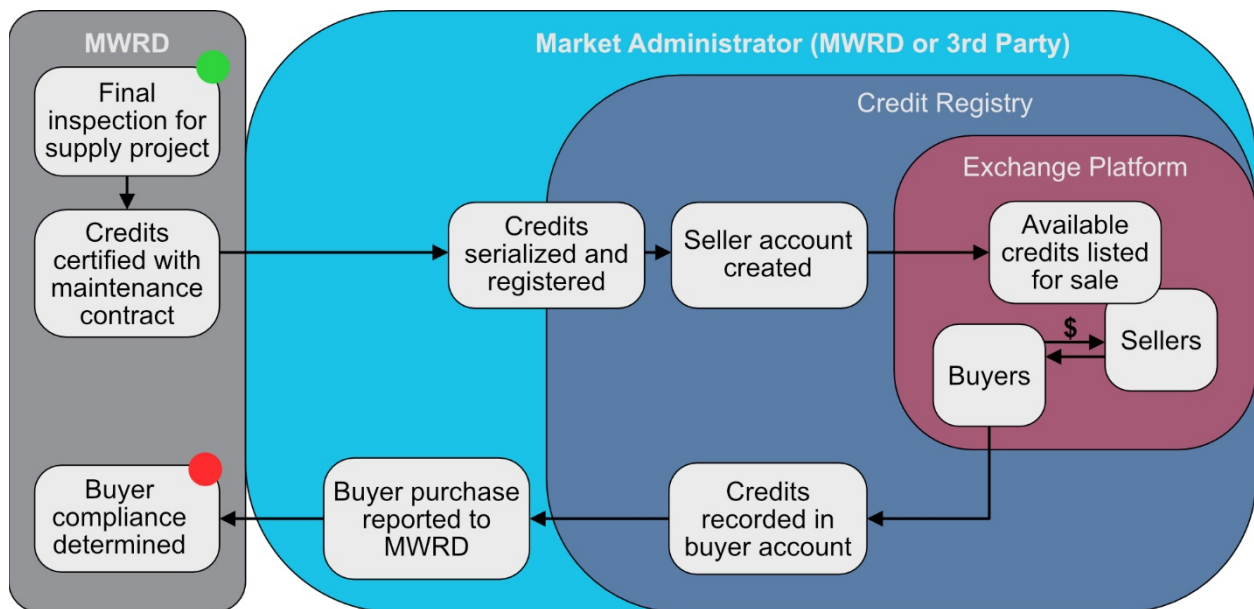


Figure 3. Market administration activities associated with registering, tracking, and exchanging credits

#### 4.1 Develop credit tracking process

This section describes the process for credit tracking while the following sections describe the systems needed to implement the process. In other words, this section focuses on the content and flow of information that needs to be tracked and not the system(s) (software, database or otherwise) to do so.

Credits in a stormwater market represent the Market’s inventory. Having a process in place to track the inventory of credits is important both from a practical standpoint and from the perspective of running a robust, credible marketplace. However, because credits are not physical units that can be stored on a

shelf, tracking them is not as straightforward as tracking physical inventory. The physical manifestation of credits is the performance of approved SMCs in terms of a volume of retention or detention capacity; buyers will purchase these credits in increments of stormwater volume (e.g., gallons or cubic feet). What buyers actually purchase, though, is a paper or digital record of credits. Credit tracking in a stormwater credit market therefore requires a process to record and associate project performance with a specific project site and project developer, identify the total number of credits generated and their associated lifespan/status, and attribute credits to specific buyers who purchase them.

There are two basic hallmarks of a robust, sophisticated credit tracking process. The first is that the credit tracking is done by a party other than the project developer (this could include MWRD and/or a third-party administrator). The second is that credits are individually identified in some way so that they can be tracked from cradle to grave (registration and tracking is described in more detail below). Serialization - assigning a unique identifier (like a serial number on a physical piece of inventory) to each credit - is recommended for assigning identifiers to credits. Giving each credit a unique basis for tracking makes it easier to transparently and accurately track credit generation, and later to register and track sale and purchase of credits and prevent negative outcomes like double selling credits from a project.

In an active stormwater credit market with multiple projects and credits traded in gallon or cubic foot increments, serialization could result in the creation of tens of thousands of serialized credits each year. This may seem like a daunting prospect, however, serialization simply requires development of an organized, repeatable process for ensuring that projects and credits are recorded in the database in an accurate and timely way.

Another option is to follow the Chattanooga, TN stormwater credit trading market, which established a much simpler approach for tracking and registering credits. Credits are not assigned individual serial numbers but are tied to the project from which they are generated. Credits are issued as coupons using paper certificates with counterfeit prevention elements; they are tracked on an internal spreadsheet only when they are generated and redeemed. Credit coupons are not replaced if they are lost or stolen, thus creating a physically valuable coupon. While this is a simpler approach, serialization is important in trading areas with more than one potential buyer and a large number of projects; as noted above, serialization prevents projects from being sold more than once and facilitates easier geographic and project tracking as credits are transferred from sellers to buyers.

This task initiates the process of translating certified credits to an entity responsible for registering and tracking credits and entering them into a platform for buyers and sellers. We recommend that this task include the serialization of credits, which is consistent with best practices in environmental markets that have a relatively large number of trades and/or that have multiple buyers and sellers. All projects should have a common set of data recorded (for example project life span, watershed location, type of BMP, etc.). Both a third-party administrator and MWRD could develop the capacity to perform this task. This is not something that MWRD currently has the capability to perform in house; we therefore recommend that credit tracking and associated activities (as described below) could be most efficiently taken on by a third-party administrator.

### Recommendations for credit tracking process

**Initial activities:** Determine the best process for the flow of information from certification of credits by MWRD to serialization to registration. It is important to note that the process is influenced by who is eventually made responsible for maintaining the credit registry and exchange platform (discussed further below) and therefore the process design and decisions about responsibility likely need to be made in concert.

**Ongoing administration:** Once the process is designed, ongoing administration simply requires following the process and adapting if necessary, as the market grows or evolves.

**Responsible party:** The party responsible for carrying out the tracking process should be the same party that is responsible for maintaining the credit registry and exchange platform. We recommend that these activities be taken on by a third-party administrator. However, it is important to note that there will need to be communication between registry and exchange activities and MWRD, namely reporting initial certification of credits, as well as the sale of credits so that MWRD can make the determination whether buyers have complied with their permit requirements.

**Alternative:** MWRD could develop the capacity to perform this task (and related tasks) in house.

## 4.2 Develop and maintain credit registry

The previous section detailed a recommendation for a process that serializes and guides the flow of information about certified credits. This section expands on this topic, describing in more detail the system required - a credit registry - to implement these processes. The primary decisions related to developing and maintaining a credit registry include: who/how to develop and maintain the registry, the accessibility of the registry, and the specific functionality of the registry.

Credit registries serve as market ledgers that summarize account credits, debits, and balances. Credit registries can also serve as important tools for market participants. Public access to the credit registry allows potential participants in the market to obtain clear, accurate, and timely information about credit availability, prices, sources, as well as credit ledgers for both buyers and sellers.

In its simplest form, a credit registry could be a spreadsheet that tracks project implementation and identifies credits on a project-specific basis. Such a system is relatively easy to develop and maintain and could be suitable in the Market's early stages when few transactions can be expected. In this case, the spreadsheet could also be made publicly available and serve as the market exchange platform, containing basic information on available credits and seller contact information.

For markets with many projects and related transactions, especially where multiple buyers might purchase credits from one project or one buyer might purchase credits from multiple projects, a more sophisticated registry may be preferred. The basis for this preference is that buyers and project developers/credit generators, regulatory agencies, as well as the public at large, need to have trust that the market is not double selling credits, allowing the use of credits that have been retired or that have

expired, or otherwise undermining the programmatic goals of the market. A robust, sophisticated registry is the best way to develop this trust in all parties. A more sophisticated registry can also incorporate real-time market information, allowing potential participants to make informed decisions about the Market.

Multiple options exist for creating a registry. The accounting software Quickbooks can be used for advanced inventory tracking (though this requires a “Pro” or “Enterprise” license). A number of inventory-specific software packages also exist that can either operate alone or in concert with Quickbooks. Finally, the company IHS Markit provides all inclusive, custom software solutions for natural resources credit markets. IHS Markit could both provide a credit tracking platform with serialization capacity and be the third party that is responsible for tracking credits. We have not spoken directly with a representative from IHS Markit; however, we have spoken with a market administrator who has used this service. Their feedback is that the platform is good but expensive, and not necessarily required for a market with relatively small number of trades.

A registry could be developed in house, by an external third party, or an existing registry service, such as IHS Markit, could be used. MWRD currently maintains a WMP tracking/stormwater database and is planning to upgrade its system relatively soon; the District could design the new system to incorporate the credit registry (such as occurs in D.C., which uses the Octo database platform). However, if the registry is integrated into MWRD’s systems, MWRD would then need to maintain the registry (and related processes) or to allow a third-party administrator access to the District’s database.

Alternatively, a third-party administrator could work with a contractor that specializes in developing platforms for natural resources markets or database/web development to develop the registry. While potentially more expensive than MWRD developing it in-house, it may be advantageous to have a separate stand-alone database that would allow the third-party to function as the market administrator and share information with MWRD as needed. As noted above, IHS Markit is one example of a provider able to offer a range of registry services. They have existing registries that MWRD or a third party could pay to utilize, or Markit can also be hired to develop and host a custom registry. The choice should come down to up-front and maintenance costs and functionality (described more below).

Accessibility options for a registry range from a publicly accessible platform to a platform where access is more controlled by the market administrator. Public access will increase transparency and credibility and would allow potential participants to learn more about the market. While not an absolute necessity, the ability for sellers and buyers to easily access the registry is preferable. Doing so reduces transaction costs as participants need not expend energy or money finding one another or conducting independent market research. We recommend that the market administrator therefore provide a detailed online registry, accessible at least to buyers and sellers if not also the public more broadly, where relevant information can be viewed (e.g., available credits for sale, location of available credits by watershed, offering price, contact information of buyers).

We also recommend that a third party be hired to develop the credit registry. This could be the same entity that will become the Market administrator or could be a specialized firm hired by the Market administrator. The registry should be made accessible via an on-line platform to potential market participants and should be publicly accessible.

**Recommendations for credit registry**

**Initial activities:** Investigate firms that could be hired to develop the registry with on-line functionality and determine potential costs of development and upkeep. This step should be done in concert with an investigation on developing the exchange platform (discussed in the next section) so that the registry and exchange platform can be closely integrated.

**Ongoing administration:** Once the registry is developed, ongoing administration needs should be relatively minimal, although accounts for certified credits/sellers will need to be created.

**Responsible party:** Responsibility for the registry once developed should fall to the market administrator.

### 4.3 Develop market platform / facilitate market exchanges

This section addresses how to facilitate market exchanges in concert with the credit registry and discusses the role different parties might play. Market administrators may assume a range of roles in arranging or facilitating transactions between credit generators and purchasers. This range spans from entirely passive to direct “matchmaking” with numerous iterations along the spectrum. Each option reflects trade-offs between expected benefits and required commitments of time and resources for market participants and the administrator. Costs for the market participants are referred to as transactions costs - lower transactions costs are generally associated with better functioning markets, while very high transactions costs can severely limit trading. The Market administrator can lower transactions costs by supplying more information and facilitation to the market. However, lowering transactions costs for participants can result in higher costs for the administrator.

At its most simple level, the Market administrator might maintain and make accessible a basic list of entities that have generated credits. The assumption is that potential credit purchasers and sellers would self-direct to arrange transactions. While requiring minimum involvement and expense by the market administrator, this passive approach can fail to encourage market development and participation and can run the risk of signaling a lack of commitment to the market strategy overall.

At the opposite end of the spectrum, a market administrator could fully integrate the credit registry with an online platform where buyers and sellers can transact. In theory this could include actually purchasing credits from an online platform though this would require sophisticated software and implicate significant additional expense. More realistically, the online platform would list available credits for sale along with details such as the quantity available, the location or region of available credits, and contact information for specific credits. The platform could also include pricing information such as recent transaction values, the cost of using the ILF program (i.e. the ceiling price).

DOEE takes intermediate steps to make more information available to participants but is not directly involved in transactions themselves. As with more passive markets, DOEE’s on-line market portal provides would-be credit purchasers with information on which credits are available and who to contact to purchase them. However, DOEE provides additional information to inform the market such as the prices

of recent market transactions and the quantities traded, a list of credit developers that might provide credits in the future and contact information for potential credit buyers. Recently, DOEE also started to publish a list of potential buyers in the market and provides that list to credit generators. Providing this additional information, especially information on the prices and quantities from recent market transactions, can significantly lower the transaction costs incurred by buyers trying to understand the market. The DOEE representative we spoke with stated that they are always looking for ways to reduce transaction costs for buyers and sellers; **a key challenge is communicating the benefits (and options) associated with the program to the right decision-makers at the right time in the development process.**

The project team recommends that the Cook County Market ultimately take an approach like DC's SRC trading program, by integrating the market exchange platform with the credit registry. Buyers and sellers can find each other through the platform but the platform does not need to support purchases (e.g., take payments online). While a robust market can support this, it does not need to be established at the onset of the program but can be built up over time. As with the credit registry, the administrator can post a static spreadsheet (updated as frequently as needed) in the interim with relevant information, while providing resources to help credit generators and purchasers make transactions. Responsibility for the market exchange platform is best suited to the entity that maintains the credit registry.

**Recommendations for facilitating market exchange**

**Initial activities:** Develop an online market exchange platform closely integrated with the credit registry. Initially, a static spreadsheet approach may be suitable. The exchange platform does not need to have on-line payment capabilities.

**Ongoing administration:** Once developed, the integrated registry/exchange platform should have minimal ongoing administration needs. However, the Market administrator should adapt the registry and platform as necessary to reduce transaction costs.

**Responsible party:** Third-party administrator to manage this process and maintain market platform. Also provide resources to help credit generators and purchasers make transactions.

#### 4.4 Monitor market outcomes and adaptively-manage program

The final general administration activity involves broad oversight and management of the market for optimal outcomes and maintaining accountability. While each specific individual administrative element is critical, so too is maintaining a holistic view of how the market is functioning and whether it is meeting program goals broadly. The Market, as envisioned, will be segmented by watershed and also have multiple different actors on the regulatory, permitting, administrator, project development and buyer levels.

To ensure efficiency and effectiveness, the Market should include processes to collect and incorporate new information and high-level metrics that allow market administrators to adapt and improve the program over time. For the Market, key metrics might be related to whether there is sufficient supply and demand in each watershed, transaction costs for credit buyers and sellers, compliance - related issues, equity, and cost of program administration. Regardless of the metrics selected to inform program

evaluation, the National Network on Water Quality Trading (NNWQT) identifies several key considerations for improving programs over time that are relevant in this context:

- Identifying the information or data needed to evaluate key program components and how it will be collected. Review the data collected on an on-going basis;
- Establishing a process for changing standards and protocols, including frequency of evaluations and audits;
- Understanding how decisions are made who has decision-making authority (this is particularly relevant when the market is administered by a third party);
- Articulating when and how changes will be incorporated into the program, including whether existing projects or trades will be affected.

In many markets, changes are made by the administrator as the need arises, while others such as DOEE's SRC market, undertake revisions through the locally relevant regulatory process (as required) and based on feedback from market participants. Still other markets require a more formal process, potentially involving statutory changes. We recommend that the third-party administrator work with MWRD to develop a system for managing program improvements over time and establishing a schedule and process for program audits, including environmental and economic effectiveness. The plan should identify high-level metrics, decision making systems, frequency and extent of program review, and tracking methods. While it is good to have a plan in place, it is also important to be flexible as new information might demand more immediate changes (NNWQT 2015).

#### 4.5 Conduct outreach and community engagement to support market

Successful deployment and implementation of the Market will depend heavily on the degree to which it is well-received and valued by the Cook County community. In particular, the real estate development sector will require early and consistent engagement if they are to view the Market as a beneficial resource. The willingness of project developers to opt for the Market's off-site compliance alternative is fundamental to the creation of demand for the Market. Similarly, outreach to potential project aggregators and commercial/institutional property owners will be instrumental to creating a solid credit supply base. MWRD and/or a third-party administrator should provide targeted engagement to develop interest in participating in the Market. We recommend that a third-party administrator lead these efforts, working with municipalities to leverage existing relationships. Potential outreach and engagement activities include:

*Outreach to real estate development community:* Education and engagement of the local real estate developers is critically important. The Market administrator should undertake this effort with partners from the community. In advance of doing so, it should develop relevant presentation and outreach materials, clear procedures for developers to follow, and other important information about participating in the market. One of the challenges program staff from DC DOEE has identified is getting to the right decision-makers at the right time in the development process to make them aware of their options for offsite compliance.



*Outreach to affordable housing developers:* Affordable housing developers, like the broader real estate sector, can be both providers and consumers of credits. Given their particular needs and restrictions, the Market administrator should consider tailored outreach to this community.

*Outreach to institutional landowners, community organizations and other potential credit generators:* Building adequate supplies of credits will likely require some degree of engagement of landowners and green infrastructure specialists who are capable of installing significant amounts of green infrastructure. The Market administrator, MWRD member municipalities and local partners should plan continuing efforts to reach this community.

*Coordination with Planning and Development, Economic Development, Parks and other municipal departments:* MWRD and its partners should ensure that the credit trading program is introduced to and coordinated with all Cook County and member municipal departments involved in funding/financing, planning, review and approval of real estate projects, affordable housing projects, and economic development initiatives.


*Collaboration on Workforce Development:* Collaborate with community colleges, technical training programs, and workforce development efforts to ensure an equitable workforce certified to implement and maintain SCM projects throughout the city. The workforce can provide some assurance to buyers of credits that the projects will be maintained by certified professionals and therefore continue to meet regulatory requirements.

*Other Considerations:* One benefit of the Market is its potential to disperse SCM retrofits equitably across MWRD communities. The Market administrator should remain alert to opportunities to encourage credit-generation projects in historically underserved communities in order to provide greater community benefits than SCMs implemented in established high-development areas. However, the trading program may also spur undesirable gentrification and displacement of long-term, economically underprivileged residents. The Market administrator should coordinate with other County and municipal departments and community organizations to anticipate these impacts and respond with a package of measures to ameliorate these impacts.


#### 4.6 [Summary of general Market administration options and recommendations](#)

Table 3 summarizes the project team’s recommendations associated with the Market administration activities described above. For each activity, the table presents options that the project team considered in developing alternative market administration scenarios, with recommended options highlighted in blue. The table also presents recommendations and considerations related to the role of MWRD, a third-party administrator, and member municipalities, with the recommended responsible party highlighted in green for each task. Cells highlighted in darker green indicate the primary lead for each task, with lighter green cells indicating a supporting role. While the figure indicates a leading role for a third-party for several tasks, it is important to note that these tasks could be administered in-house by MWRD, with dedicated staff, expertise, and funding.

Table 3. Market Administration Options, Roles, and Recommendations: General Market Administration

 Represents the recommended option for structuring/administering the administrative task

 Represent the recommended or required responsible party for administering each task

 Represent recommendations for responsible party supporting roles.

\* Administrative tasks that can be put in place/initiated after Market start up

Administrative Tasks	Options		Responsible Party/Roles		
	Lower Administrative Effort / Only Options	Medium/High Level of Administrative Effort	MWRD	Third-party	Municipalities
Develop credit tracking process	Credits not assigned individual serial numbers but are tied to the project from which they are generated. Could be issued as paper certificates with counterfeit elements or through electronic system; credits tracked when they are generated and redeemed.	Each credit is assigned a unique ID or serial number; can reflect important information such as project location, expiration date, and other information. Helps to ensure that credits aren't resold; advantageous in markets with numerous transactions.	<b>Recommended:</b> Work with third-party administrator to develop necessary data-sharing processes.	<b>Recommended:</b> Develop credit serialization process, ideally supported by database/system that supports credit registry/online market platform	Not suited for this task
Develop/maintain credit registry	Registry kept by administrator using a simple spreadsheet; this would require continued updating by program staff. Would not allow for real-time information to be available to market participants.	Online registry accessible to buyers and sellers, where they can log in to update their account and analyze market.	<b>Recommended:</b> Work with third-party administrator to develop necessary data-sharing processes.	<b>Recommended:</b> Develop and maintain credit registry. Likely work with contractor or service to develop registry.	Not suited for this task
Develop market platform/facilitate market exchanges	Simple spreadsheet (available online) that shows available credits for sale by watershed with seller contact information, and potentially additional information (e.g., asking price). Buyers can contact sellers outside of platform.	Online platform tied to registry that allows sellers to list and change asking price, publishes average credit price, and other relevant information to reduce transaction costs. Should also provide notification to developers/property owners when their credits are close to expiring.	<b>Recommended:</b> Work with third-party administrator to develop necessary data-sharing processes.	<b>Recommended:</b> Develop and maintain credit registry. Likely work with contractor or service to develop registry.  Provide necessary data to MWRD.	Not suited for this task.
Monitor market outcomes and adaptively manage program	Maintain static program indefinitely; would likely have negative implications for Market participation.	Continuously monitor functionality of the market, with ability to implement new incentives, develop new resources, adapt program design, and meet emerging conditions based on feedback and program review. Establish program metrics and publish annual reports.	<b>Recommended:</b> Work with third-party to monitor and adapt program over time. Provide regular feedback/input on market function and processes to third-party administrator.	<b>Recommended:</b> Develop system for managing program improvements over time and establishing a schedule/process for program audits.	<b>Recommended:</b> Provide regular feedback/input on market function and processes to third-party administrator.
Conduct market outreach*	No formal outreach program; would likely have negative implications for Market participation.	Conduct coordinated outreach efforts to developers and potential credit generators, monitor program to assess outreach needs.	<b>Recommended:</b> Review, provide input, and/or support outreach efforts	<b>Recommended:</b> Lead market outreach efforts.	<b>Recommended:</b> Assist with market outreach.

## 5. Program Funding / Required Resources

The project team has investigated possible models for funding the administration of the Market. Our preliminary evaluation is based upon our experience designing a similar trading program for the City of Grand Rapids, Michigan and the research we conducted as part of that design effort. We have not yet been able to determine a detailed estimate of the financial resource needs that either MWRD or a third-party administrator (or a combination of the two) would require to undertake the tasks outlined above. Nor have we been able to review the District's existing revenue streams and budget to offer suggestions about how these funds could be reallocated to cover administration-related costs. However, we can relate that DOEE has dedicated 1 full time equivalent (FTE) employee to administering the District's stormwater market and makes another 1-2 FTE positions available for implementing other aspects of the program. In 2018, a DOEE representative estimated that the SRC program accounts for the equivalent of approximately 1.5 full-time employees (Matthew Espie, DOEE, 5/4/2018, personal communication).

In addition, as described previously, DOEE contracts with outside service providers, including Center for Watershed Protection (CWP), to run outreach and incentive programs. This includes the SRC Aggregator Startup Grant, the SRC Site Evaluation Program, and the SRC Price Lock Program. DOEE approved its first five SRC Aggregator Startup Grants in FY18, accounting for a total of \$374,425. Each SRC aggregator is focused on designing green infrastructure in the District's MS4 for participation in the SRC Price Lock Program. DOEE reports that it provided one SRC Site Evaluation in FY18. DOEE has committed \$11.5 million to its' purchase guarantee program but has spent less than \$60,000 as of the end of FY2018. The costs reported here do not include administrative costs for CWP.

DOEE reports that one of its most significant expenses has been the development of its stormwater database, which integrates all aspects of its stormwater program, including the market registry. The database serves as the back end to the program's online market registry and market exchange platform. In total, DOEE reports that it has invested approximately \$1.25 million in the database. Staff relays that it took one year of investment to create the database but stress that much of the work to develop the database was related to the broader permitting and inspection process for post-construction stormwater regulations. MWRD has indicated that it plans to update its existing stormwater/WMP tracking database in the relatively near future; this provides a potential opportunity to cost-effectively implement changes necessary to accommodate market activity.

Some costs associated with administering the Market will be relatively constant and predictable while others may fluctuate depending on the number of participants in the market, the number of trades, and the need for outreach and incentive programs. Relatively constant expenses most likely will include costs for sufficient staff to undertake project design review and SWMP approval for both credit purchasers and credit providers; staff time to update and administer the credit certification tracking system and registry; investments in credit tracking, registry and online marketplace technology; staff time and resources to undertake as-built and ongoing inspections; and general administrative tasks such as reporting, file and data management, etc. Readily anticipated but fluctuating costs would arise from outreach efforts to encourage market participation, pre-application consultations and design reviews, purchase guarantee and other supply incentive programs, and related communications and community relations activities.

Covering both categories of expenses will require consistent, dedicated funding which can be provided regularly over the lifespan of the program. It is difficult to envision a suitably stable funding source other than MWRD. Our understanding is that MWRD's dedicated Stormwater Management Fund has been funded at \$91 million this year; some of this budget could potentially be allocated to cover market administration costs. Revenues to support market administration could be drawn from rate collection, permit fees, and other appropriate sources within the MWRD budget. We have considered whether assessing a fee on each transaction would be a viable revenue stream and concluded that it is unlikely to either be sufficient or predictable enough to fully support the program. Such a fee could be assessed to provide supplementary funding, perhaps to support community outreach and project development activities, however some of these activities will be most needed at a stage in the program when there are fewer transactions to assess. Additionally, MWRD or a third-party administrator may be able to secure philanthropic or government grants to fund specific market administration projects, such as outreach to disadvantaged community property and business owners, development of educational and outreach materials, and/or supply incentive programs. There may be some advantage in this regard for a non-profit market administrator, however the District may qualify for grants only available to stormwater agencies.

Depending on the level of activity in the Market, if our recommendations are adopted, two to three third-party FTEs would likely be needed to administer the program. This should be sufficient to conduct activities necessary to establish the program and to keep up with ongoing administration of the activities we recommended a third-party to take on. In addition, MWRD will likely need to dedicate one FTE to coordinating and conducting the activities that we recommend MWRD take on (Authorized Municipalities will also need to dedicate a small level of staff resources).

## 6. Conclusion

The project team's analysis of Market administration needs and options reveals that the essential functions could be accomplished by MWRD through the establishment of an "in-house" program. This option would require the District to devote sufficient and focused funding, staff, and programmatic leadership to develop new capacities and expand existing ones. Alternatively, many Market administration functions could be undertaken efficiently by a third-party under contract to the District. However, some administrative tasks must remain with MWRD because they cannot legally be delegated to a third-party. Some tasks are likely more efficiently carried out by its staff as an extension of current activities.

We understand that MWRD may want to limit the addition of new activities and responsibilities related to Market administration for MWRD staff. We believe that effective administration of the Market can be achieved best by a collaboration between MWRD and an independent third-party administrator suited to undertake activities and roles that do not currently exist within the District. This collaboration should take the form of a partnership between MWRD and a third-party administrator, established through a formal contract process, that provides a foundation for accountability and harmonization of respective organizational responsibilities and functions. This approach is highly preferred to a less coordinated effort in which, for example, the entirety of Market administration is delegated to a third-party, multiple third-parties, or member municipalities. A formal collaboration should also foster a highly engaged effort by both parties to effectively communicate the benefits of a trading program while ensuring that the program itself is consistently implemented.

As noted above, there are roles and responsibilities related to the administration of the Market which MWRD may not delegate, and so must maintain, and perhaps expand existing capacity to accommodate Market activity. On the demand side of the Market, these include:

- Establish infeasibility criteria and defining site constraints that trigger the allowance of offsite compliance for development sites;
- Determine if site conditions warrant offsite compliance and officially review/approve offsite compliance for meeting stormwater management requirements (the project team recommends that individual municipalities play a supporting/initial role in this determination, with final MWRD sign-off);
- Incorporate offsite compliance/credit purchase into WMP tracking database;
- Enforce and mandate corrective action for non-compliant development sites.

On the supply side, activities MWRD must perform include:

- Review and approve WMP applications for credit-generating projects;
- Conduct as-built inspections of credit-generating projects;
- Enforce and mandate corrective action for credit-generating projects that do not comply with maintenance plans.

There are also administrative functions that fall within MWRD's core competency, or are closely related to current District functions, and which it may be most sensible for the District/Authorized Municipalities to retain. These include:

- Administering the ILF program;
- Officially certifying credits.

A third category of administrative functions are those that fall outside the current expertise and existing capacity of MWRD. MWRD could feasibly take on these activities with a commitment of staff, budget, and leadership. However, these tasks could also practicably and efficiently be undertaken by a third-party administrator. These activities include:

- Provide optional pre-application technical assistance site consultations with potential credit-generators, as necessary;
- Track on-going compliance of credit-purchasing development projects;
- Manage self-reported inspection process, conduct follow up inspections, and notify MWRD of non-compliance issues;
- Administer a purchase-guaranteed program and other supply-side incentives;
- Develop and maintain a credit tracking database and registry;
- Monitor market outcomes and adaptively manage program;
- Conduct Market outreach activities related to fostering Market supply and demands.

As described throughout this memo, many Market administration activities are well-suited to be supported by member municipalities, based on their existing relationships with developers and related administrative functions. We expect that municipalities will continue to fulfill these roles. However, there is relatively little advantage to relying on municipal governments of MWRD's member communities to

play a large market administration role. Some municipalities within the District may face financial, staff, and cultural constraints if tasked with additional administration roles. More importantly, the interests of managing a consistent market across the MWRD area suggest that division of Market administration across multiple municipalities would give rise to avoidable complications and problems. However, all municipalities within the District have Market roles to play, from continuing ongoing responsive inspections to developing outreach and incentive programs. The eventual administrator of the Market will do well to recognize municipalities as capable partners in the overall Market effort.

Although not deeply discussed in the preceding pages, our opinion is that administration of the Market would not be well served by engaging multiple third-party administrators. We had considered, and rejected, the option of recommending a Market administrator for each of the watersheds within MWRD's service area. Some advantages of this arrangement would be: highly focused expertise and attention to the needs and conditions within each watershed, the development of tailored outreach and supply incentive programs, division of labor and commensurate reduction in workload for administrator staff, and evolution of market conditions that are responsive to watershed-scale economic and demographic factors. In the end, we concluded that these potential benefits were outweighed by the interest in consistent administration of the Market across the MWRD service area, the likely efficiencies that can be realized by avoiding unnecessary redundancies in staff and services, and overall programmatic accountability and transparency.