4.0 REQUIREMENTS FOR SOIL EROSION AND SEDIMENT CONTROL

4.0.1 ARTICLE SUMMARY

Land disturbances resulting from construction activities remove the protective vegetative cover from soil and increase the risk of **erosion** and subsequent **sedimentation**. These activities include, but are not limited to clearing, grubbing, grading, excavating, filling, and trenching. Controlling **erosion** and preventing **sedimentation** within receiving systems are critical in preventing negative impacts to conveyance capacity and water quality. The goal of soil **erosion** and **sediment** control is to minimize the potential of these adverse impacts.

To achieve this goal, the **WMO** requires **erosion** and **sediment control practices** to be designed and incorporated into all phases of the **project**. **Erosion control practices** are preventative strategies designed to minimize the occurrence of **erosion** and to stabilize exposed soil. **Sediment control practices** are strategies that incorporate structural measures to contain **sediment** in the event that **erosion** occurs. While functionally different, these practices should be selected and implemented in a complimentary manner to minimize potential adverse impacts.

The **WMO** establishes the following standards for soil **erosion** and **sediment** control:

- General Soil **Erosion** and **Sediment** Control Requirements (§400)
- Temporary Soil **Erosion** and **Sediment** Control Requirements (§401)
- Permanent Soil **Erosion** Requirements (§402)

This section of the **TGM** provides guidance on **erosion** and **sediment control practices** during and after construction activities to comply with the **WMO** requirements.

NOTE: All bold words are defined in Appendix A of the WMO and the TGM.

4.1 GENERAL SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS

§400.1 of the **WMO** requires **erosion** and **sediment control practices** for all **projects**, regardless of the area of land disturbance or whether it is located within a **combined sewer area** or **separate sewer area**. A soil **erosion** and **sediment** control plan and Schedule P are required to be submitted for every **project** regulated under Article 2 of the **WMO**; however, Schedule P is not required when the **project** is limited utility trenching located outside the **flood protection area** without soil stockpiles.

§400.5 through §400.7 of the **WMO** requires **erosion** and **sediment control practices** comply with the design criteria and specifications of the **Illinois Urban Manual** (**IUM**). **Erosion** and **sediment control practices** that are equally effective as those in the **IUM** may be used with approval from the **District**. When design criteria and specifications are not provided in the **IUM**, practices must comply with the requirements of this **TGM**. The **IUM** is available online and can be viewed at the following link: illinoisurbanmanual.org.

§400.4 of the **WMO** requires all **projects** that are subject to the **Illinois Environmental Protection Agency** (**IEPA**) General **National Pollutant Discharge Elimination System** (**NPDES**) Permit ILR10 to comply with the submittal and approval requirements of IRL10. Note that the approved **Watershed Management Permit** does not preclude an **applicant** from submitting a Notice of Intent (NOI) with a Storm Water Pollution Prevention Plan (SWPPP) to the **IEPA** and complying the ILR10 requirements. The **IEPA** and **USEPA** provide the following resources:

- ILR10 (General Storm Water Permit for Construction Site Activities) is available online and can be viewed at the following link: www2.illinois.gov/epa/topics/forms/water-permits/storm-water/Pages/general-permits.aspx

- NOI information is available online at the following link: www2.illinois.gov/epa/topics/forms/water-permits/storm-water/Pages/noi.aspx

- SWPPP development guidance is available online and can be viewed at the following link: epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swppp

§400.3 of the **WMO** requires all **erosion** and **sediment control practices** for **projects** that discharge directly into **Jurisdictional Waters of the U.S.** to be designed for the 25-year **storm event** with a 24-hour duration. Additional soil **erosion** and **sediment** control requirements of the **United States Army Corps of Engineers** (**Corps**) are available online through the **Corps** website at the following link: lrc.usace.army.mil/Missions/Regulatory/SESC.aspx

§400.8 of the **WMO** requires all **erosion** and **sediment control practices** to be functional before disturbances are made. Installing these practices prior to starting construction reduces the need for additional or more substantial practices during later stages of construction.

4.2 TEMPORARY SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS

4.2.1 GENERAL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS

Temporary **erosion** and **sediment control practices** are preventive techniques, measures, or structural controls used prior to permanent stabilization to manage the rate, quantity, and quality of **stormwater runoff**. **Erosion control practices** stabilize soil by covering and/or binding soil particles to prevent **erosion**. **Sediment control practices** capture and contain **sediment** after **erosion** has occurred.

§401.1 of the **WMO** requires all waste generated as a result of a **project** to be legally disposed of and to be prevented from being transported offsite by either wind or water. Construction site management controls must be implemented throughout the duration of the **project**. These controls incorporate **erosion** and **sediment control practices** as well as procedural controls to prevent construction activities from polluting **stormwater runoff**. Construction site management controls include the following:

- Material Handling and Waste Management: proper delivery, storage, and removal of construction materials and wastes
- Spill Prevention and Control Plan: spill prevention, containment, and clean up
- Equipment and Vehicle Use: designated fueling, cleaning, and **maintenance** areas
- Street Sweeping and Vacuuming: timely removal of **sediment** tracked onto roadways
- Allowable Non-**Stormwater** Discharge Management: implementation of appropriate pollution prevention measures prior to discharge
- Stockpile Management: proper location of stockpiles and appropriate **erosion** and **sediment control practices**
- Signage: identify vehicle wash and **maintenance** stations; designate solid, liquid, and hazardous waste storage locations; and convey any other important information

4.2.1.1 PRACTICE DESIGN CONSIDERATIONS

Appropriate **erosion** and **sediment control practices** must be selected to address specific site and adjacent property conditions to ensure effective operation throughout the construction phase of the **project**. Primary emphasis should be placed on **erosion control practices** and a secondary emphasis should be placed on **sediment control practices** to contain **sediment**. Refer to 4.2.4 for typical **erosion** and **sediment control practices**.

The **IUM** provides a detailed planning procedure to develop a soil **erosion** and **sediment** control plan. The following items must be considered and incorporated into the soil **erosion** and **sediment** control plan:

- Soil type and susceptibility to **erosion**
- Minimize soil exposure, compaction, and disturbance of steep slopes
- Control **stormwater** to minimize soil **erosion** and **sediment** discharged from the site
- Control **stormwater** discharges to minimize **erosion** at discharge locations and minimize downstream channel and stream bank **erosion**
- Provide and maintain natural buffers around surface waters
- Direct **stormwater** to vegetated areas to increase **sediment** removal and maximize **stormwater** infiltration

§401.5.B and §401.6.A of the **WMO** requires the following items to be considered when determining the appropriate type and location of soil **erosion** and **sediment control practices**:

- Seasonal and topographic conditions (e.g., seeding windows, steep slopes)
- **Tributary area** of the practice
- Proximity to **flood protection areas**
- **Maintenance** requirements of the practice

A geotechnical report should be used to evaluate the potential **erosion** susceptibility of unprotected soils. Site-specific soil information is available online through the **NRCS** website at websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

4.2.1.2 CONSTRUCTION REQUIREMENTS

§401.5.D and §401.6.B of the **WMO** requires temporary **erosion** and **sedimentation control practices** to be continuously maintained throughout construction and during any periods of construction shutdown until permanent soil stabilization is achieved.

§401.5.E of the **WMO** requires permanent stabilization practices to be installed within 7 days where construction activities have temporarily or permanently ceased, except:

- Where construction activities resume within 14 days from when activities ceased; or
- Where precluded by snow cover, **erosion control practices** must be installed as soon as practicable.

Temporary **erosion control practices** must be removed as soon as practicable, but no longer than 7 days after construction activities have temporarily or permanently ceased. This requirement may be waived in areas where construction activities are scheduled to resume within 14 days from when activities ceased. Where snow cover precludes the completion of the stabilization practices, the **erosion control practices** must be installed as soon as practicable.

All open areas that are to remain idle throughout the winter must be stabilized with temporary or permanent vegetation prior to the end of the fall growing season. Seeding should be performed during the growing season to promote rapid establishment of vegetation. In the event that temporary or permanent vegetation cannot be established prior to winter shutdown, the soil **erosion** and **sediment** control plan must implement **erosion control practices** that do not rely on vegetation (e.g., mulch, **erosion** control blankets). **Sediment control practices** (e.g., silt fence, inlet control devices) must also be installed and maintained throughout the winter shutdown period.

4.2.1.3 PROTECTION OF VOLUME CONTROL PRACTICES

Volume control practices are susceptible to failure during construction, therefore; it is important that staging, construction means/methods, and **erosion** and **sediment control practices** all be considered during installation. To protect the long-term functionality of **volume control practices**, the following measures must be considered and incorporated into the construction sequencing and the soil **erosion** and **sediment** control plan:

- **Volume control practices** should be installed toward the end of the construction schedule.
- The **tributary area** must be stabilized prior to the installation of the **volume control practice**.
- Soil compaction must be minimized to the maximum extent possible. Appropriate measures (e.g., fencing) should be used to prevent heavy construction equipment traffic from accessing the area.
- **Volume control facilities** must be protected by a double-row silt fence, coir logs, or equivalent measure during construction.
- In general, **volume control facilities** should not be used as temporary **sediment** traps during construction. Where this is not practicable, that **applicant** must provide additional construction notes and/or details on the plans demonstrating measures to protect the functionality of the facility.

4.2.1.4 SOIL STOCKPILES

Soil stockpiles are susceptible to **erosion** and must be protected with soil stabilization practices (e.g., seeding, **erosion** control blankets). Soil stockpiles should not be located on **impervious areas** or where concentrated flows may occur.

§401.6.F of the **WMO** requires that all soil stockpiles incorporate perimeter **sediment control practices** (e.g., silt fence).

§401.5.F of the **WMO** requires soil stockpiles to be either temporarily or permanently stabilized of depending on the time the stockpile will be dormant:

- Stockpiles dormant between 30 days and 12 months must be temporarily stabilized within 7 days of the formation of the stockpile; or
- Stockpiles dormant more than 12 months must be permanently stabilized within 7 days of the formation of the stockpile.

4.2.1.5 INSPECTION REQUIREMENTS

Erosion and **sediment control practices** must be inspected:

- When installation is completed and prior to any disturbance;
- At least once every 7 calendar days; and
- Within 24 hours or by the end of the following business/workday when a **storm event** or equivalent snowfall/snowmelt is greater than or equal to 0.5 inches.

If construction activities have ceased due to frozen conditions, inspections may be reduced to once per month.

Inspection reports should document whether **erosion** and **sediment control practices** are installed and performing properly, as described by the practice standards contained within the **IUM**. All remedial actions taken to repair or replace **erosion** and **sediment control practices** should be completed within 7 days of discovery, unless the practice is allowing a pollutant discharge, in which the remedial action must occur immediately.

For additional guidance on inspections, refer to Article 10 of this **TGM**.

4.2.1.6 FLOOD PROTECTION AREAS

Flood protection areas (**FPAs**) include floodplains, floodways, riparian environments, wetlands, and wetland buffers. These areas provide several water quality and **flood** protection benefits; therefore, they require additional **erosion** and **sediment control practices** and considerations to preserve their functions.

§401.2 of the **WMO** requires that **FPAs** be protected by a double-row silt fence or equivalent practice. Additional soil **erosion** and **sediment control practices** should be implemented as necessary to protect **FPAs** from negative impacts associated with construction activities.

§401.3 of the **WMO** prohibits stockpiles to be placed within **FPAs** in order to prevent **sediment**-loading, impairment of ecological functions, and reduction of storage and conveyance capacity during **storm events**.

The implementation of preventative measures prior to construction, such as the preservation of vegetated buffers, use of fencing and signage, and avoiding disturbances to **FPAs**, are some of the most effective means of protection. Additionally, construction schedules and planning should include all practicable measures to avoid disturbances to **FPAs**.

Note that if **development** is located within an **FPA** the provisions of Article 6 of the **WMO** apply.

4.2.1.7 TEMPORARY STREAM CROSSINGS

Temporary stream crossings (e.g., culvert, ford, bridge) are **structures** designed for short-term use (one year or less) to allow construction vehicles and equipment to cross a stream. These **structures** protect the ecosystem while preventing damage to stream morphology and downstream **sedimentation**. All necessary permits (**Corps**, **FEMA**, **IEPA**, Section 401 and Section 404 permits, etc.) must be obtained prior to installation of the temporary stream crossing.

§401.4 of the **WMO** requires temporary stream crossings be designed to convey the 2-year **storm event** with a 24-hour duration without overtopping unless the **District** approves a more frequent design event. In addition, the following must be considered and incorporated into the design of the temporary stream crossing:

- Temporary stream crossings must not reduce the carrying capacity of the channel.
- The entire crossing must be designed to withstand hydrodynamic, hydrostatic, and erosive forces up and including the **base flood** event (100-year **flood**) without washing out.
- Upon completion of construction, temporary stream crossings must be entirely removed, and the stream bed and banks restored to a stable non-erosive condition that incorporates native vegetation where appropriate.
- **Erosion** and **sediment control practices** must be implemented and maintained during the installation, **maintenance**, and removal of temporary stream crossings.

Temporary stream crossings should not cause **erosion** or damage to downstream or adjacent properties due to increased water surface elevations. Disturbances to or removal of vegetation should be limited to that which is necessary to complete construction. When possible, vegetation should be trimmed no lower than ground level to preserve the root structure and promote re-growth. Riparian vegetation should be covered by a sufficient layer of clean river run cobble or an equivalent measure to prevent damages to the underlying soil and root structure.

All temporary stream crossings should be inspected frequently and following a **storm event** for any blockages in the channel and for **sediment** or debris upstream or within the temporary stream crossing **structure**.

4.2.2 TEMPORARY EROSION CONTROL REQUIREMENTS

Temporary **erosion control practices** are measures that stabilize soil by covering and/or binding soil particles to prevent **erosion** due to rainfall, **stormwater runoff**, and wind. These measures prevent soil particles from being detached from the land surface and being transported and deposited from the **project** to receiving **stormwater facilities** and **waterways**.

Appropriate **erosion control practices** must be selected to address specific site and adjacent property conditions to ensure effective operation throughout the construction phase of the **project**. Refer to 4.2.4.1 for typical **erosion control practices**.

Additionally, the following items must be considered and incorporated into the **project** to comply with the **erosion** control requirements of the **WMO**:

- Velocity dissipation measures must be placed at **stormwater** discharge locations and along the length of any outfall channel as necessary (§401.5.G).

- Earthen embankment side slopes must not exceed 3:1 (H:V) and must be stabilized with an **erosion** control blanket (§401.5.H).

4.2.2.1 PROTECTION OF EXISTING AND ESTABLISHMENT OF NEW VEGETATION

§401.5.A of the **WMO** requires existing vegetation to be preserved, where practicable, to minimize the area of soil disturbance. Vegetative cover protects soil from **erosion** caused by rainfall, **stormwater runoff**, and wind. Vegetation attenuates stormwater runoff and can provide water quality enhancement through interception and filtration of **sediment** and other pollutants.

Preservation of existing vegetation is effective for maintaining stabilized soils in areas where no construction activity is planned or will occur at a later time. Preservation must always be considered as a primary method of soil stabilization to reduce the need of additional or more substantial **erosion** and **sediment control practices**.

In addition to preservation of existing vegetation, general guidelines to minimize **erosion** resulting from soil disturbing activities include:

- Limit the area of exposed soil.
- Limit soil disturbing activities during the rainy season.
- Protect utility trenches or other excavations at the end of each workday.

§401.5.C of the **WMO** requires **erosion control practices** to be incorporated in areas not under **development** where existing ground cover does not consist of appropriate stabilizing vegetation. This is to limit the area suspectable to soil **erosion** and **sedimentation** and protect against erosive discharges from the **development**.

4.2.3 TEMPORARY SEDIMENT CONTROL REQUIREMENTS

Temporary **sediment control practices** capture and contain **sediment** after **erosion** has occurred. These measures are designed to capture **sediment**-laden **stormwater runoff** prior to discharging into receiving **stormwater facilities** and **waterways**. Most **sediment control practices** function by either filtering sediment from **runoff** or by reducing flow velocity which allows **sediment** to settle out of **runoff**.

Appropriate **sediment control practices** must be selected to address specific site and adjacent property conditions to ensure effective operation throughout the construction phase of the **project**. Refer to 4.2.4.2 for typical **sediment control practices**.

§401.6.C of the **WMO** requires that **sediment control practices** intercept all **stormwater runoff** prior to discharging offsite. The following **sediment control practices** are required depending on the size of the disturbed area:

- When the disturbed area is less than 1-acre, the area must be protected by a silt fence or an equivalent practice approved by the **District**.
- When the disturbed area is greater than or equal to 1-acre, the area must be protected by a silt fence and a sediment basin or an equivalent practice approved by the **District**. The sediment basin must be sized to intercept the 2-year **storm event** with a 24-hour duration from the **tributary area** and be located at the lowest point of disturbance.

Additionally, the following items must be considered and incorporated into the **project** to comply with the temporary **sediment** control requirements of the **WMO**:

- All **stormwater facilities** draining the **project** area must be protected with an appropriate **sediment control practice** (§401.6.D).

- A stabilized construction entrance/exit must be provided and any soil reaching a public or private roadway must be removed immediately and be transported to a controlled **sediment** disposal area (§401.6.E).

- Construction dewatering operations must be designed and operated such that water discharged from a **project** will comply with the requirements set forth by the State of Illinois (§401.6.G).

4.2.4 TYPICAL EROSION AND SEDIMENT CONTROL PRACTICES

This section of the **TGM** includes commonly used soil **erosion** and **sediment control practices**. Additional details, design criteria, and specifications for **erosion** and **sediment control practices** are provided in the **IUM**.

4.2.4.1 TYPICAL EROSION CONTROL PRACTICES

Typical **erosion control practices** are summarized in Table 4.1.

TABLE 4.1 TYPICAL EROSION CONTROL PRACTICES

Erosion Control Strategy	Erosion Control Practice
Soil Stabilization	• *Vegetation, Seeding* Effective method of soil stabilization. Used to establish temporary or permanent vegetative cover, enhances soil permeability, and filters sediment and other pollutants. • *Manufactured Products* Erosion control blankets, mulches, soil binders, turf reinforcement mats are used to provide immediate stabilization of slopes and channels before, during, and after the establishment of vegetation. These products retain soil moisture, provide an insulating layer, prevent seed washout, control undesirable species (weeds), and protect seeds from wildlife consumption.
Wind and Dust	• *Street Sweeping, Irrigation, Stone* Used to prevent blowing and movement of dust, minimize health hazards, and improve traffic safety.
Stormwater Conveyance Channels	• *Channels, Drainage Swales* Used to redirect erosive flows or convey clean/sediment laden water along a stabilized path away from areas that have not been stabilized. This practice is not suitable as sediment control practice and should be stabilized prior to use.
Velocity Dissipation	• *Rock Apron, Concrete Rubble, Gabions* Used to slow erosive velocities of concentrated flows at the outlet of a drainage system. Appropriate for outlets carrying continuous or short intense flows, outlets to sediment basins, and locations where lined channels discharge to unlined channels or natural waterways.

4.2.4.2 TYPICAL SEDIMENT CONTROL PRACTICES

Typical **sediment control practices** are summarized in Table 4.2.

TABLE 4.2 TYPICAL SEDIMENT CONTROL PRACTICES

Sediment Control Strategy	Sediment Control Practice
Perimeter Control	• *Silt Fence, Rolled Barriers, Vegetated Buffer* Used to contain sediment within the project site or protect against upstream sources from discharging sediment to the site. These practices prevent the discharge of sediment by filtering and dissipating the energy of sediment-laden runoff.
Inlet Control	• *Inlet Filters, Above Grade Inlet Filters* Used to filter sediment-laden runoff prior to discharging into a storm sewer system. It is important to consider the type of storm structure, sediment loading, and flow velocity when selecting an appropriate practice. Appropriate when the tributary area is less than 1-acre.
Entrance/Exit Control	• *Stabilized Construction Entrance/Exit, Tire Wash Station* Used to prevent tracking sediment offsite from construction entrance and exit points.
Sedimentation Control	• *Sediment Trap, Sediment Basin* Used to temporarily detain sediment-laden runoff to allow sediment to settle out prior to discharge. These practices may incorporate flocculants to enhance sediment removal. It is important to consider sediment loading for proper sizing and detention time. These practices should be sized to accommodate both the active settling process (live storage) and the accumulated sediment (dead storage). Sediment loading can be estimated using the Revised Universal Soil Loss Equation (RUSLE). Sediment traps may be used when the tributary area is less than 5-acres. Sediment basins must be used when the tributary area is greater than or equal to 5-acres.
Instream Sediment Control	• *Silt Curtain, Cofferdam* Used to contain sediment when work occurs in or near waterways and prevent sediment loading of surface waters. All necessary permits (USACE, FEMA, IEPA, Section 401 and Section 404 permits, etc.) must be obtained prior to installation.
Dewatering Operation Control	• *Filtration Systems, Pipe Socks, Dewatering Tank, Horizontal Wells* Used to filter sediment-laden groundwater prior to discharge from an excavated area. These controls ensure safe working conditions and proper removal of contaminants.

4.2.4.3 TYPICAL EROSION CONTROL PRACTICES BY PROJECT FEATURE

Applicable soil **erosion** and **sediment control practices** will vary depending on the type and location of the **project**; however, certain types of practices are frequently used for various **projects**.

Typical **erosion** and **sediment control practices** by project feature are summarized in Table 4.3.

TABLE 4.3 TYPICAL EROSION CONTROL PRACTICES BY PROJECT FEATURE

Feature	Erosion and Sediment Control Practices
General Project	• Stabilized Construction Entrance/Exit • Silt Fence • Erosion Control Blanket • Inlet Basket • Temporary Sediment Trap • Concrete Washout • Soil Stockpile Perimeter Control • Dewatering Operation
Stormwater Management Facility	• Double-Row Silt Fence • Velocity Dissipation Measure • Sedimentation Basin
Flood Protection Areas	• Double-Row Silt Fence • Velocity Dissipation Measure • Soil Stockpile must be located outside FPA with Perimeter Control • Cofferdam / Silt Curtain

4.3 PERMANENT EROSION CONTROL REQUIREMENTS

Permanent **erosion** control refers to permanent stabilization where soil is not susceptible to **erosion** due to rainfall, **stormwater runoff**, and wind. This occurs when soil disturbing activities are completed and permanent vegetation is established.

The following items must be incorporated into the **project** to comply with the permanent **erosion** control requirements of the **WMO**:

- Permanent **stabilization** must be initiated within seven (7) days following the completion of soil disturbing activities (§402.1).
- All temporary soil **erosion** and **sediment control practices** must be maintained until permanent stabilization practices are achieved by either (§402.2):
    - A perennial vegetative cover that is uniformly established (e.g., evenly distributed, without large bare areas) with a density of 70% on all unpaved areas and areas not covered by permanent **structures**; or
    - Installation of riprap, gabions, or other non-vegetative practices.
- All temporary **erosion** and **sediment control practices** must be maintained until permanent **stabilization** is achieved and then removed within 30 days (§402.3).

In general, permanent **stabilization** using seeding often takes weeks (or months) to become established, especially during times of low rainfall or during colder months of the year. Therefore, it is important to schedule an appropriate timeline for permanent stabilization in order to prevent extended inspections and **maintenance** of temporary **erosion** and **sediment control practices**. Where the project is permanently stabilized, temporary **erosion** and **sediment control practices** may be removed and routine inspections are no longer required.

4.4 EROSION AND SEDIMENT CONTROL EXAMPLE

EXAMPLE 1

Determine the minimum required volume of a **sediment** basin for a 10-acre **tributary area** with a CN of 91. The **sediment** basin must be sized to intercept the 2-year **storm event** with a 24-hour duration.

Step 1. Calculate the potential maximum retention after **runoff** begins using Equation 5.4:

$$S = \frac{1000}{CN} - 10$$

$$= \frac{1000}{91} - 10$$

$$= 0.99\ inch$$

Step 2. Calculate the **runoff** volume from the **tributary area** that must be stored within the **sediment** basin using Equation 5.3. The rainfall depth of the 2-year **storm event** with a 24-hour duration is 3.34 inches (refer to Table 5.17):

$$V_R = \frac{(P-0.2S)^2}{(P+0.8S)}\ (A)\left(\frac{1}{12\frac{in}{ft}}\right)$$

$$= \frac{\left(3.34\ inch - 0.2(0.99\ inch)\right)^2}{\left(3.34\ inch + 0.8(0.99\ inch)\right)}\ (10\ ac)\left(\frac{1}{12\frac{in}{ft}}\right)$$

$$= 1.99\ ac\text{-}ft$$

Answer: The **sediment** basin must provide a minimum volume of 1.99 ac-ft. Note that additional volume may be required when the sediment loading and detention time is considered.

ARTICLE 4 REFERENCES

Association of Illinois Soil and Water Conservation Districts. *Illinois Urban Manual.* illinoisurbanmanual.org

Chicago District, U.S. Army Corps of Engineers. *Soil Erosion and Sediment Control (SESC)*. lrc.usace.army.mil/Missions/Regulatory/SESC.aspx

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USDA Natural Resources Conservation Service. *Web Soil Survey*. websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

ARTICLE 4 REVISION TABLE

No.	Revision Description	Date
0	Original TGM	5/1/2014
1	Update examples, forms, and Schedule R information	8/1/2015
2	Rewrite, revision table	5/26/2020