National Flood Insurance Program
Community Rating System

CRS Credit for Drainage System Maintenance

2019

FEMA

Note on this edition: This document was revised to reflect the following changes in the 2017 *CRS Coordinator's Manual*:

- A requirement that a community's drainage maintenance program must be consistent with federal and state environmental protection laws and regulations and certified by the community.
- A clarification of the credits for channel debris removal programs—CDR.
- The requirement for a map and inventory of the system has been clarified.
- The scoring has been modified from miles of the system to include the option of the percentage of inventoried segments.
- CDR credit is no longer available for underground systems, only the natural stream system.
- CDR credit is no longer required for problem site maintenance—PSM, or for capital improvement program—CIP.
- Credit for storage basin maintenance—SBM was added to this Activity in 2013. Although this document focuses on CDR, the same procedures are used to document and verify SBM.

A community interested in more information on obtaining flood insurance premium credits through the Community Rating System (CRS) should have the *CRS Coordinators Manual*. This and other publications on the CRS can be viewed and downloaded from the CRS Resources website

Contents

The following communities provided materials to serve as examples in this publication. Their cooperation is appreciated.

Orland Hills, Illinois
Fort Collins, Colorado
Scottsdale, Arizona
Margate, Florida
South Holland, Illinois.

Introduction

Objective

When human-made or natural debris is allowed to accumulate, it can create a dam in a channel or fill needed storage areas. Although a properly maintained channel can carry runoff from most small storms, a blocked or dammed stream can cause more frequent overbank flooding, unexpected erosion, and sedimentation.

Similarly, a lack of maintenance can result in detention or retention basins' being filled with sediment or debris. If these basins are already full of sediment or debris, they cannot store or infiltrate water and flooding can result because the drainage system cannot do its job.

One of the objectives of the Community Rating System (CRS) is to encourage and recognize programs that prevent flooding caused by blockages or reduction in storage capacity resulting from accumulations of debris. The objective of this publication is to explain the CRS credit criteria and provide examples.

The CRS

The CRS is a part of the National Flood Insurance Program (NFIP). When communities go beyond the minimum standards for floodplain management, the CRS can provide discounts on flood insurance premiums of up to 45%.

Communities are given credit points that reflect the impact of their activities on reducing flood losses, insurance rating, protecting natural and beneficial functions, and promoting the awareness of flood insurance. The Insurance Services Office's ISO/CRS Specialist reviews the community's program and verifies the CRS credit. This includes a review of the written procedures and records of an activity and, in some cases, a visit to sites in the field.

CRS credit criteria, scoring, and documentation requirements are explained in the *CRS Coordinator's Manual*. Copies of this and other publications are available on the CRS Resources website.

The CRS credit for inspecting the community's drainage system and clearing it of debris is provided in Activity 540 (Drainage System Maintenance) in the *Coordinator's Manual*.

Credited Elements

This activity recognizes five elements of a community's drainage system maintenance program:

- Channel debris removal—CDR. The credit criteria are explained in Section 542.a of the *Coordinator's Manual.*
- Problem site maintenance—PSM. The credit criteria are explained in Section 542.b of the *Coordinator's Manual.*

- Capital improvement program—CIP. The credit criteria are explained in Section 542.c of the *Coordinator's Manual.*
- Stream dumping regulations—SDR. The credit criteria are explained in Section 542.d of the *Coordinator's Manual.*
- Storage basin maintenance—SBM. The credit criteria are explained in Section 542.e of the *Coordinator's Manual*.

This publication reviews four elements: CDR, PSM, CIP, and SDR. It explains the criteria for recognition by the CRS. The criteria for SBM are very similar to those for CDR.

A comprehensive maintenance program should address debris, sediment, and their sources.

Maintaining channels and storage basins can be enhanced by a program to limit the amount of runoff from new developments and one that controls erosion and sediment leaving construction sites. CRS Activity 450 (Stormwater Management) explains the credit points for regulating construction and other land alteration activities to minimize runoff and sediment-laden stormwater (element ESC).

It is strongly recommended that the procedures for CDR and SBM be in the same document, especially because the two maintenance programs are most likely conducted by the same personnel and are almost identical.

NOTE: *Communities must be aware of all environmental laws and regulations that affect their ability to conduct maintenance operations, including the Endangered Species Act of 1973. Credit will not be approved for any procedures that are not consistent with those requirements. Each entity responsible for maintenance of any portion of the community's drainage system must submit an Environmental and Historic Preservation certification for its program.*

Credit Criteria

The basic credit criteria from 541.b are these:

(1) Drainage system inspections—Credit is dependent upon annual inspection of the natural conveyance system (for CDR credit) and/or storage basins (for SBM credit). The community (or other non-federal agency) must have a program to inspect its drainage facilities annually, upon receiving a complaint, and after each major storm. If all components of the drainage system cannot be inspected annually (for example, because there is no legal access to those parts of the system that lie on private property or for budgetary reasons), then credit will be adjusted by the impact adjustment.

(2) Operations and maintenance—The operations and maintenance of the drainage system can be provided by the community, another non-federal agency, or private property owners. Whether the operations and maintenance are performed by the community; a county, regional or state agency; or a private property owner, the CRS community is responsible for providing all the documentation needed to verify credit.

(3) No credit is provided for projects that rely on unsecured outside funding.

(4) Environmental compliance—The community's programs for channel debris removal and storage basin maintenance must be compliant with applicable federal environmental and historic preservation laws and executive orders (see Section 507). The community must complete a CC-540EHP, Certification of Compliance with Environmental and Historic Preservation Requirements for Drainage System Maintenance. Credit is not provided if local drainage system maintenance procedures are not compliant with applicable federal laws and executive orders.

Channel Debris Removal—CDR

This element is known by its acronym, CDR. Many communities already have programs and procedures for inspecting and clearing streams, ditches, and other channels; cleaning storm drains; stabilizing stream banks; and reconstructing channels. Only the inspection and appropriate maintenance of natural channels is credited under this activity.

Procedures

A community requesting CDR credit for its program must submit documentation describing its drainage system maintenance procedures. Five items must be included in this documentation:

(a) A copy of the procedures, instructions, or other documents that explain the community's routine inspection and debris removal program and who is responsible for each aspect of the program.

(b) The map of the community's drainage maintenance area with the streams delineated and labeled.

(c) A complete inventory of the community's natural drainage system.

(d) Copies of the records that show that inspections were conducted and maintenance was performed when inspections revealed problems. These will be randomly selected by the ISO/CRS specialist.

(e) A completed Certification of Compliance with Environmental and Historic Preservation Requirements for Drainage System Maintenance (CC-540EHP), which can be found on the CRS Resources website.

These written procedures are essential to CRS credit. Each community will have a different approach to natural watercourses, constructed facilities, or drainageways on public vs. private property, etc. In order for the ISO/CRS Specialist to verify whether the drainage system is being properly maintained, there must be locally prepared procedures. Verification is really a job of seeing that the local procedures are being followed.

1. Written Maintenance Procedures. A regular maintenance program in conjunction with inspections can prevent big problems. Typical problems found in streams include trash, shopping carts, tires, plastic containers, branches, and, in some locations, logjams. When found early, they can often be removed with minimal equipment and expense.

A public works crew or contractor, usually without heavy equipment, normally carries out the maintenance work for the basic CRS credit. The objective is to remove debris that has accumulated, such as shopping carts and large amounts of trash. For this CRS credit, the community's program must clearly describe what can and cannot be removed. Simply stating that "all debris will be removed" may not be correct for all areas. Classifying streams is one way to define what can and cannot be done for different types of drainageways.

Bank erosion. The CRS does not credit activities dealing with bank erosion unless they are part of an annual capital improvement program. Although houses or bridges may be threatened by the erosion, the erosion usually does not cause a serious obstruction to flood flows.

State permits. If the community has the right to enter all affected properties to perform maintenance, there should be no legal problems. In some cases, a state or federal permit may be required. Usually a permit is needed only for major projects, such as channel widening or bank stabilization or for projects in naturally sensitive areas, such as endangered species habitat. If a permit is needed for routine maintenance and debris removal, a general permit can often be obtained for a period of years and that specifies what work can be done. The community's program needs to identify the instances in which a permit is needed.

CRS CREDIT IS NOT PROVIDED IF LOCAL DRAINAGE MAINTENANCE PROCEDURES VIOLATE FEDERAL OR STATE LAWS. Such laws and regulations usually do not preclude all maintenance work, but they may place restrictions on activities that disturb natural or protected areas or habitat for endangered species. These restrictions must be included in the community's procedures.

Who is responsible. The documentation submitted must identify what person or office is responsible for inspections, maintenance, and record keeping. In most cases, the drainage system is inspected and maintained by the community's public works department or a similar agency.

What counts for the CRS is not who does the work but whether it is being done. Although the CRS community must provide the needed documentation, some or all of the actual work could be implemented by other responsible parties, such as

- Flood control or drainage districts;
- County, state, or federal agencies;
- Private companies or engineering firms; or
- A property owners association.

In many communities in Florida, for example, the multi-county water management district maintains large canals; the city is responsible for the remaining smaller ditches and streams; and homeowners associations are responsible for annual inspection and maintenance of all storage facilities.

In many cases, property owners' associations, shopping centers, and other owners of large tracts of private property are responsible for maintenance of their own retention or detention basins. The CRS can provide SBM credit for this arrangement only if

- The community has an inspection program AND the authority to require the owner to perform needed maintenance, OR
- The association or other owner is required to submit periodic inspection reports signed by a registered design professional.

In both cases, the community (or other public agency) must be willing to assume the ultimate responsibility for maintenance. If the private property owner does not perform the needed maintenance, the community must show that the job will get done according to its inspection and maintenance schedule.

No credit is provided for projects that depend on unsecured outside funding, such as a special appropriation from the state legislature or approval of a Corps of Engineers' clearing and snagging project. Secured outside funding, such as projects financed by an annual state distribution of gasoline tax receipts, is acceptable.

2. Area Covered by the Program. The community must define its "drainage system," on a map or its GIS. For the purposes of this activity, the drainage system consists of "all natural watercourses or human-made watercourses that replaced a natural watercourse that must be maintained in order to prevent flood damage to buildings from smaller, more frequent storms." In determining whether a waterway or facility is part of the drainage system for CRS purposes, ask "will buildings be damaged if it is not kept clear?"

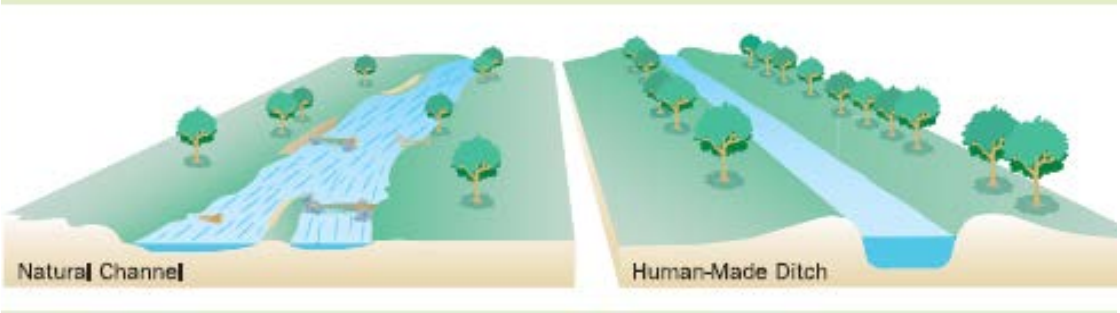
A roadside ditch is included in the "drainage system" for CRS purposes if it replaced a stream and buildings will be flooded if it is not maintained.

Channels covered. The determination of a community's drainage system is based on what natural channels or their replacements need to be maintained in order to prevent damage to buildings. In some communities, it will be open channels and ditches. In some areas of a community, roadside ditches are important conveyors of surface water and must be kept cleaned.

The drainage system must include all watercourses identified on the community's Flood Insurance Rate Map (FIRM) as well as important watercourses not in the Special Flood Hazard Areas (B, C, or X Zones). In fact, the CRS is particularly concerned with flood insurance claims paid on properties that are NOT in the floodplain. Most of these claims are due to inadequately sized or maintained drainage facilities.

Stream Classification

A community's drainage system maintenance procedures must identify what is considered a problem and what happens when a problem is found. This may require classifying streams as natural or modified and treating them differently.



A drainage maintenance program should not treat natural channels and human-made ditches that replaced a stream the same. The **natural channel** has a wider area in which to flow. Trees and small log or debris jams can be accommodated by minor diversions of flow without causing any problems. In fact, vegetation and minor obstructions that cause riffles and pools are desired in many natural streams because they improve habitat and water quality. However, large collections of debris that accumulate at a bridge can cause a major obstruction and should be removed.

A **human-made drainage ditch** or canal that replaces a natural stream is designed to use less area to carry more water. These channels need more attention because there is no room to carry overflows caused by blockages. They are not intended to have trees or other vegetation growing in them. In human-made ditches, too much vegetation is considered "debris." Therefore, if an inspection finds trees and brush growing in the channel, they have to be removed. Regular mowing and grubbing ensures that these channels do their job.

Another problem in some natural streams might be vegetation. Too much vegetation, especially weedy (often non-native) plants, can choke a stream while too little vegetation can lead to serious erosion. Maintenance procedures need to be tailored to each stream. They may include plant removal, replanting, tree trimming, or mowing.

In short, channel maintenance programs need to take into account the habitat, recreational uses, and flood control facets of the stream. The community with a multi-objective approach to its stream corridors will best be able to handle the competing interests and get the best results from its stream maintenance efforts.

The community should consider the sites of flood insurance claims and disaster assistance when defining the facilities covered. In communities with repetitive losses, the drainage system MUST cover those areas having repetitive loss properties where the cause of the losses was due to local drainage problems or smaller, more frequent storms.

This channel replaced a stream and is on a public right of way, which facilitates inspections and maintenance.

Channels not covered. Certain areas do not need to be included in the drainage system maintenance program. Although the following parts of a drainage system should be maintained, they are not necessary for CRS credit.

- Channels in undeveloped areas. For CRS credit, a community only needs to maintain those facilities where debris blockages would result in flooded buildings. Therefore, agricultural areas, parks, and areas with less than one building per acre do not need to be covered by the drainage maintenance program.
- Channels that will not inundate buildings during a flood, such as deeply incised ravines.
- Irrigation canals. These do not need to be included unless they replaced a stream or they intercept drainageways during high flows, either intentionally or accidentally.

Private property. In many areas of the country, property lines run to the middle of a stream. Often owners are legally responsible for maintenance of a channel on their property. This condition does not exempt the watercourse from the community's "drainage system" if obstructions and debris would cause flood damage to buildings.

A community must have the legal authority to inspect the channels (for CDR credit) and basins (for SBM credit) that are a part of its drainage system. A community without the authority to enter properties to inspect all channels and basins may demonstrate that it has adequate visibility from public property to see them all. On the other hand, a program that only inspects bridges and culverts will receive minimal credit.

Growth and headwall erosion show a lack of maintenance in this private retention basin.

A community must also have the authority to remove debris. This means that it is authorized either to enter the properties to perform maintenance or to order the owner to perform the maintenance. If there are areas where the community does not have these authorities, then the CRS credit points are adjusted to reflect how

much of the drainage system it inspects and maintains. This is discussed in the later section on impact adjustments (page 12).

It is important to note that this activity is verified through inspection records that the community keeps and that sites may be visited in the field. An ISO/CRS Specialist will check a sample of the records and then may visit stream segments in the areas maintained by the community. If the field check shows that maintenance is not being performed according to the written procedures, the credit points will be adjusted. Citations issued to private property owners are not considered maintenance unless they are enforced and bring results.

Single lots. The community's "drainage system" does not have to include channels that only drain a few lots. In order to draw the line between public and private maintenance responsibility, the community may exempt small drainageways from its program. The general guideline is that the system should include all streams that drain more than 40 acres.

3. Inspection Procedures. Periodic inspections of channels (for element CDR) and basins (for element SBM) in developed areas are needed in every community to prevent the accumulation of debris deposited by storms, dumping, or natural processes.

For CDR or SBM credit, inspections must be conducted

- At least once each year (see Section 541.a.1(a) of the *Coordinator's Manual*),
- After each storm that could adversely affect the drainage system (see Section 541.a.1(b)), and
- In response to citizen's complaints (see Section 541.a.1(c)).
- In addition, action must be taken after an inspection identifies the need for maintenance or cleaning (see Section 541.a.1(d)).

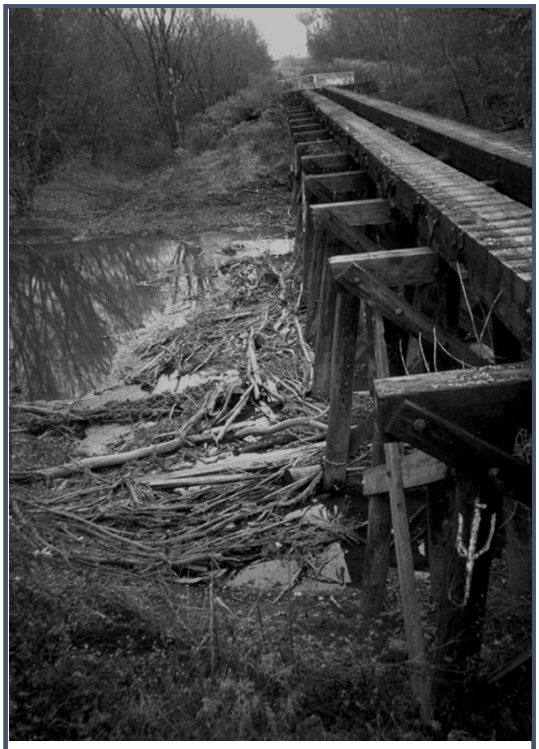
These should be considered minimums. Local conditions may well warrant more frequent regular inspections.

The CRS will not provide credit for a program that only makes inspections when a complaint is filed or only after a storm. Although the program also must respond to complaints, regular inspections are vital. Often complaints are filed after the problem causes a flood. The objective of drainage system maintenance is to prevent such problems.

It should be noted that CRS Activity 330 (Outreach Projects) encourages communities to advise their residents on how to submit complaints, especially if they see illegal dumping (see the discussion on page 32).

Added credit for problem sites—PSM. Additional credit is provided if the community's program identifies specific "choke points" or other obstructions to flows, or sites with erosion or sedimentation problems, that are inspected and maintained differently and more frequently than other parts of the drainage system.

Problem sites can be channel constrictions; culverts that catch more debris than others; undersized culverts; or facilities near schools, shopping centers, or other source of vandalism; etc. The written procedures must list these sites, show them on a map, and describe how they are treated differently, usually through more frequent inspections. Such inspections are in addition to those credited under the annual inspection program described on the previous pages.



Bridges, constrictions, and other known problem sites deserve more frequent inspections.

5. Records. A maintenance program needs records. Typically, these include

- Complaint or inquiry forms for recording reports of problems;
- Inspection forms that show what was inspected, when it was inspected and the results of the inspection;
- Work orders that task an office to clear debris or correct a problem; and
- Maintenance records that show the work that was done.

In some cases, one or two forms can cover all needs. In the box on the next page is an example "drainage problem report" form. It shows both the maintenance action needed and what was done. Forms such as these must be included with the procedures that are submitted for CRS credit for both CDR and SBM.

CRS Credit

It is important to note that the CRS credit points are not based on the cost of the program, the source of funding, the amount of debris removed, or similar administrative issues. What counts is that the community inspects and maintains its channels on a regular basis a when needed.

DRAINAGE PROBLEM REPORT

Date: _____ Inspector: _____

Type of inspection: ❑ Post-storm ❑ Complaint ❑ Routine

Location: (Identify stream or basin name, downstream and upstream streets or reference points, and location of problem. Provide sketch as needed.)

Type of problem: ❑ Trash ❑ Minor ❑ Obstruction ❑ Structural

Recommended maintenance: _____

_____

_____

Is equipment needed? ____ If so, list equipment needed: _____

_____

Date: _____ Right of entry needed? _____

Work order description: _____

_____

_____

State permit needed? _____ Work order number: _____

Date: _____ Crew chief: _____

Maintenance performed: _____

_____

_____

_____

Inspected by: _____

Use other side for additional recommendations for this site.

There are two creditable elements: channel debris removal—CDR and problem site maintenance—PSM.

- Up to 200 points are provided for having and implementing procedures that cover the five items discussed on pages 4–10.
- An additional credit of 50 points for PSM is provided if the community's program identifies specific problem sites that are inspected and maintained differently or more frequently than other parts of the drainage system, as discussed on page 10.

Impact Adjustment

Most communities provide the same channel maintenance service to all residents and therefore their programs cover the entire community. However, there may be cases in which a community can only inspect and maintain part of its drainage system (e.g., only those watercourses on public property). The impact adjustment modifies the credit points to reflect how much of the community's developed areas are covered by its channel maintenance program. See also the discussion on pages 13–14 on preparing an impact adjustment map.

Full coverage. Full CRS credit is provided if the community inspects and maintains all natural channels in developed areas. There is no set definition of "developed areas." At a minimum it includes subdivisions with lots of 1 acre or smaller. It does not need to include farms, forests, parks, or preserves unless obstructions in those areas will result in flooding of built-up areas.

The community only needs to demonstrate that there are no buildings threatened in areas not covered. For example, full credit is provided to a county that maintains the drainage system in built-up areas, even though it does not look after every ditch in its rural areas or in parks or preserves.

Tribal lands, areas owned by the state or another community, and federal land, such as national parks and military reservations, are generally beyond a community's jurisdiction. These may be excluded from the channel maintenance program. More guidance on excluding these types of properties can be found in Section 403 of the *Coordinator's Manual*.

Partial coverage. There are cases where channel maintenance programs do not cover all developed areas. For example, a community may not have the legal authority to send inspectors or maintenance crews onto some properties. Some communities are just starting formal maintenance programs and are phasing in streams for regular inspections after major obstructions have been removed or after rights-of-way have been obtained.

If the community cannot provide inspections and maintenance in all developed areas, the CRS credit points will be adjusted to reflect the impact of the program. This is the "impact adjustment," which is done by multiplying the credit points for CDR by the percentage of the community covered.

After the ISO/CRS Specialist conducts the verification visit, he or she will determine the appropriate impact adjustment and calculate the appropriate credit.

Impact Adjustment Map and inventory. The Impact Adjustment Map and the inventory are tools to help the ISO/CRS Specialist calculate what percentage of the drainage system is covered by the program. It should be prepared before the ISO/CRS Specialist's verification visit. The map must show

- All streams in the developed portion of the community,
- All streams that are covered by the channel debris removal program, and
- An inventory of the entire system showing ownership.

The ISO/CRS Specialist will use the map and inventory to calculate the impact adjustment ratio (the area covered by the program as a percentage of the miles of stream in the developed portion of the community or the percentage of inventoried items). A procedure for preparing an Impact Adjustment Map is provided in the box on the next two pages.

Preparing an Impact Adjustment Map

Here are step-by-step instructions on how to prepare an impact adjustment map for channel maintenance credit.

Step 1. Prepare Map #1, a map of the developed areas of your community. Start with a map of the community and mark or exclude the following areas:

- Parks, farms, forests, and other undeveloped areas;
- Federal lands;
- Lakes, bays, and other bodies of water larger than 10 acres;
- Areas zoned and developed for low density, i.e., lots of five acres or more with a maximum of 10% lot coverage; and
- Other areas where insurable buildings will not be affected due to a lack of maintenance. For example, debris will not cause flooding of buildings subject to coastal flood hazards, on very large rivers, or in steep ravines.

Step 2. The remaining area on Map #1 is considered the area where channels need to be inspected and maintained to protect insurable buildings. This map must include those areas that have repetitive loss properties where the cause of the losses was due to local drainage problems or smaller, more frequent storms (see Section 501 of the *CRS Coordinator's Manual*). Note that this activity encourages maintenance of ALL undeveloped areas that should be maintained for any reason (e.g., to keep a road from flooding), but CRS credit is based on the impact of the program on buildings.

[continued on next page . . .]

Preparing an Impact Adjustment Map (cont.)

Step 3. Prepare an overlay to Map #1 (or a GIS layer). Show the entire surface drainage system in the developed areas on Map #1. Include the following drainage features, regardless whether they are publicly or privately maintained:

- All streams, channels, and other surface drainageways that drain more than 40 acres; and
- All modified streams.

This activity focuses on surface channels that are more prone to obstructions from debris. Do not include underground pipes or storm drains on Map #1 unless they have replaced a natural stream.

Step 4. Measure the lengths of the channels shown on this layer after step 3. This total (feet or miles) is the length of your drainage system in the developed portions of the community.

Step 5. Prepare a second overlay (or GIS layer) to Map #1: Show those channels that are covered by the inspection and maintenance program. Here are some possible reasons why some areas or drainage features are not covered:

- You do not inspect or maintain channels on private property.
- Budget limitations prevent your crews from covering all developed areas.
- You only inspect bridges and culverts on public roads, not the rest of the channels.

Step 6. Measure the lengths of the channels and perimeters of the basins in the areas that are covered. This total (feet or miles) is the length by your program.

Step 7. Divide the result from step 6 by the result from step 4. The result is the "impact adjustment ratio" that reflects the percentage of the channels in your community's developed areas that are covered by your channel maintenance program. It is shown as "rCDR" in the credit calculation formulas. The little "r" stands for "ratio." The ratio is multiplied by 200 to derive your score.

Example: Your community has measured 8.0 miles of channels for the drainage system. Two miles are in undeveloped areas or along a very large river. Therefore, your map shows 6 miles of channels and basins that need to be maintained to prevent debris from obstructing flows that will flood buildings. Because of budget constraints, your public works department only inspects and maintains 3 miles of these features.

The impact adjustment ratio, rCDR, = 3 ÷ 6 = 0.5. Your score will be 200 x 0.5 = 100 points. You would receive half the maximum credit because your program covers half of the area that needs to be covered.

Credit Calculation

The end result of this work is an initial score for the community's channel and basin debris removal program (element CDR). It is the product of the credit points multiplied by the impact adjustment ratio. In the *Coordinator's Manual,* it is shown as the following formula:

cCDR = CDR x rCDR, where

cCDR is the total credit for CDR;
CDR is the points for CDR, 200 points; and
rCDR is the impact adjustment ratio, which ranges from 0.1 to 1.0.

cCDR can range from 20 to 200.

Documentation

To receive CDR credit for its channel debris removal program, the community must provide specific documentation to the ISO/CRS Specialist.

- The drainage inspection and maintenance procedures are submitted for the credit. Each of the five points on pages 4–10 must be marked. Examples are shown below. Most communities should already have written procedures that include all of the five topics. In cases where the community doesn't, it should prepare qualifying procedures and write a memo explaining how and when they will be implemented.
- At the ISO/CRS Specialist's verification visit, the community will need to provide the records that show that the inspections and subsequent maintenance were performed. Examples of these are on page 11 and pages 24–25.

This debris accumulated where an open channel flows into a small pipe (hidden under the debris). Such sites deserve frequent inspections and maintenance (problem site maintenance) and/or correction through inclusion in a capital improvement program (see page 28).

Verification Visit

During the verification visit, the ISO/CRS Specialist will ask to see the map and the inventory and will collect a sample of the records that demonstrate that the inspections and maintenance were performed. Because the community's credit is based on verification of annual inspections, there must be documentation that shows that the inspections were conducted on schedule and that needed maintenance was performed. Records are discussed on page 10.

A random sample of the inspection records for up to 30 sites will be examined. If the records are missing or do not show annual inspections in accordance with the community's explanation of its program, the ISO/CRS Specialist will prorate the credit. The ISO/CRS Specialist may conduct a field survey to verify that the channels have been properly maintained.

For example, if the community cannot provide the inspection records for five of 30 sites requested, then the value for CDR will be reduced by 5/30 or 16%.

Annual Recertification

Each year, a CRS community must submit an annual recertification to FEMA and the ISO/CRS Specialist. For continued credit for CDR and SBM, the recertification must include copies of typical inspection and maintenance records for that year. The ISO/CRS Specialist provides the forms with specific instructions.

Orland Hills' Drainage System Maintenance Procedures

The Village of Orland Hills, Illinois, is a Chicago suburb that has been particularly concerned with drainage problems. Before the early 1990s it had widespread flooding and drainage problems that affected buildings, yards, and streets throughout town. Heavy rains caused water problems several times each year.

In 1995, the Village prepared a formalized drainage system maintenance program for conveyance and storage facilities.

In 2000, the procedures were updated to receive full credit under the 1999 *Coordinator's Manual*. The updated procedures are shown on pages 17–27. They are marked to show the five items that need to be documented in a CRS submittal.

Responding to drainage problems is only one facet of the Village's efforts. It has a proactive public information program and enforces strict construction regulations. It has a public information program strategy that also qualifies for CRS credit. In 1999, it focused on the slogan "Don't forget your drainage" and used a variety of means to convey that message to property owners.

* * * * * *

DRAINAGE SYSTEM MAINTENANCE SOP

1. Objective: This Standard Operating Procedure (SOP) specifies responsibilities and procedures for inspecting and cleaning the streams, ditches, storm sewers, and storage basins in the Village of Orland Hills.

2. Responsibilities:

1. Who is responsible

   a. The Director of the Public Works Department is responsible for the administration of this SOP. He shall inspect the streams, ditches, storm sewers, and storage basins and ensure that they are cleaned in accordance with this SOP.

   b. The Director of the Recreation and Parks Department is responsible for maintenance of all drainage facilities in Village parks.

   c. The Chief of Police and/or the Building Commissioner are responsible for enforcing Section 51.01 of the Village's municipal code and related regulations on dumping or depositing material in the drainage system. The Chief of Police and/or the Building Commissioner are also responsible for serving maintenance notices to private property owners.

   d. All work on county property shall be coordinated with the appropriate county offices.

   e. Private property owners are responsible for maintaining the streams, ditches, storm sewer inlets, and retention basins on their properties.

3. Jurisdiction: This SOP covers the following public and private surface drainage facilities delineated in the drainage system map in Attachment 1.

2. Area covered

a. Tinley Creek from 169th Place (retention area Map #12) to its outlet from the Village at 88th Avenue. *CDR*

b. Lake Lorin. *SBM*

c. Ashbourne Lake and its drain to Lake Lorin (Map #18). *SBM and CDR*

d. Highview Ditch from the retention basin at Map #1 to its confluence with Tinley Creek. *CDR*

e. The drainage facilities to be constructed in the Pepperwood subdivision, north of Lake Lorin (Map #18 and 19). SBM and CDR

f. The Village owned retention areas shown as Map #1–9, 11, 12, and 15 as detailed in the Municipal Owned Property list (Attachment 2). *SBM*

g. Marley Creek, west of 96th Street. *CDR*

h. The privately owned retention areas, shown as Map #A–L. *SBM*

i. All future drainage ways dedicated to the Village in accordance with the Village's subdivision ordinance. *CDR*

4. Identification of Problems

3. Inspection procedures

a. The Director of Public Works or his designee shall inspect all the watercourses, drains and basins listed in Section 3 twice a year. One inspection will be run before the Spring rainy season. The other will be conducted during the middle of the summer storm season.

b. Inspections shall consist of walking the length of Tinley Creek and Highview Ditch and a visual check through all culverts. Inspections of detention basins shall include a check of each inlet and outlet.

c. On the first Monday of each month and within 24 hours after each major storm, the Director of Public Works or his designee shall inspect the following "choke points" where debris has been known to accumulate:

3. Inspection procedures

1) The culverts over Tinley Creek on

- 169th Place
- Hobart Ave
- 93rd Ave
- Haven Ave
- 92nd Ave
- 167th Street
- 88th Ave

2) The dam at Lake Lorin.

More frequent inspection of problem sites

d. The Director of Public Works or his designee shall complete the Drainage Inspection Report (Attachment 3) after each inspection. A copy of the report shall be kept in an appropriate file.

5. Records

e. The Director of Public Works or his designee shall inspect all complaints submitted by residents, Trustees, or other offices. Such complaints and the subsequent action taken by the Village shall be recorded on a Complaint/Inquiry Form (Attachment 4). The Director of Public Works shall ensure that an inspection is conducted and the findings provided to the person submitting the complaint within one week.

f. If a problem is found, a Complaint/Inquiry Form (Attachment 4) shall be completed and forwarded to the appropriate person. The Complaint/Inquiry Forms shall be recorded and maintained in accordance with the Village's Complaint Procedures. If the problem is on private property, a letter shall also be sent to the owner, using the format in Attachment 5.

5. Maintenance:

4. Maintenance procedures

a. There are four types of maintenance problems:

1) Trash: human-made objects, such as garbage, shopping carts, tires, lumber, furniture, and appliances. Animal carcasses are also included as trash.

2) Minor problem: vegetation growth, tree limbs, and other "naturally" occurring debris. Sedimentation in a retention basin is also included.

3) Obstruction: fallen tree, culvert damage, large appliance, etc., that, by itself, obstructs the flow of the ditch, inlet or outlet.

4) Structural project: bridge or culvert replacement, bank stabilization, dredging, or other major project.

b. Maintenance duties:

1) On public property: The Director of Public Works or the Director of Recreation and Parks shall ensure that trash and minor problems are removed at the next convenient time. Obstructions shall be removed within two working days of being reported.

2) Kelly Park and Lake Lorin: These areas of Tinley Creek shall be kept in a condition approximating their natural state. Trash and obstructions shall be removed, but natural growth shall not be cut.

3) On County property: Trash, minor problems, and obstructions shall be reported to the appropriate office by the Director of Public Works. If the County does not remove the problem within seven days, it shall be treated as a problem on private property in accordance with c., below.

4) Structural projects require budget approval by the Village Board of Trustees and, sometimes, a separate permit from the Department of Natural Resources, Office of Water Resources. If necessary, a drainage maintenance easement shall be obtained from all affected property owners. Structural projects shall be advertised for bid and scheduled in the same manner as other contracted public works projects.

5) Upon completion of a maintenance project, the responsible person shall complete the Complaint/Inquiry Form and provide it to the Building Department Permit Clerk for filing.

c. Maintenance on private property:

1) Property owners are responsible for maintaining the streams, ditches, swales, storm sewer inlets, and retention basins on their properties.

2) The Village shall publicize the need for maintenance of drainage facilities and encourage residents to correct or report problems before the next storm causes damage.

3) The Director of Public Works shall inspect all drainage facilities listed in Section 3 from streets or other public property or via access on dedicated easements in accordance with the inspection schedule in Section 4. The Director shall inspect all other drainage problems on private property only in response to complaints.

4) Trash, minor problems, and obstructions shall be reported to the owner by the Chief of Police in the format included as Attachment 5.

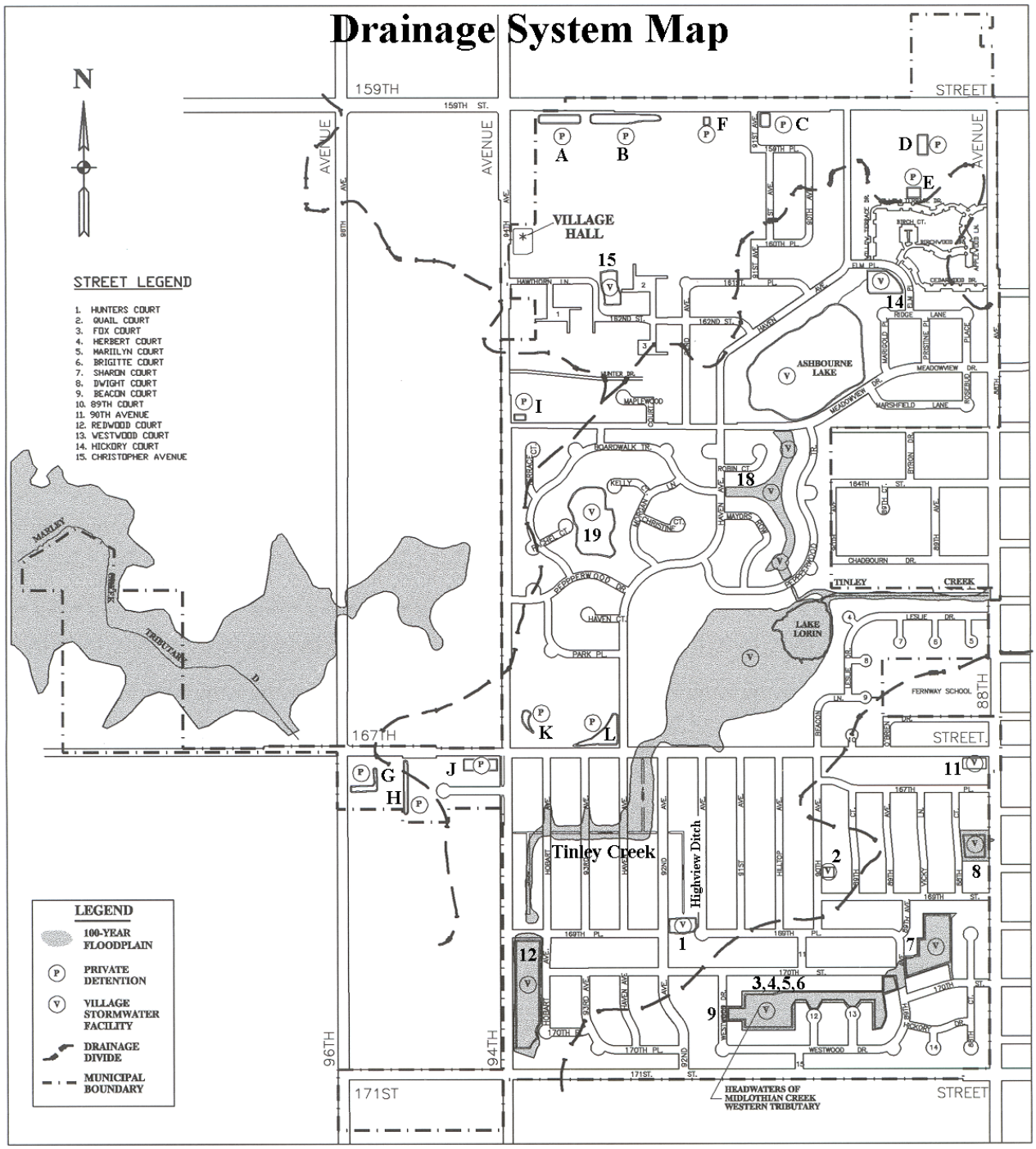
5) If the owner does not remove the problem within ten days, the Village shall assume responsibility for the problem. If the problem is large enough to cause flooding of another property, the Director shall enter the property and remove the problem in accordance with Illinois Compiled Statutes, Chapter 65, Section 11-111.1-1.

6) If the problem does not cause an immediate hazard, the Village Attorney may take action to have the owner remove the problem or pay for the maintenance work performed by the Village.

Attachments:

1. Drainage system map for CDR and partial SBM credit
2. Municipal owned property
3. Drainage Inspection Report forms
4. Complaint/Inquiry Form
5. Private property notice format

Attachment 1.



Attachment 2.

Municipal Owned Property

November 30, 1998

(\O98\TXPROP-R)

P.I.N.	Map Loc.	Acres	Use	Approx. location
27-22-101-019	16	1.15	New Village Complex	16033 S. 94th Ave.
27-22-104-062	15a	1.50	Park/detention	Hawthorne @ 16151
27-22-104-071	15b	0.10	Park/Tot-Lot	Hawthorne @ 9302 W.
27-22-202-003	30	18.12	Ashbourne/wetlnd/detention/path	8980 w. Meadowview
27-22-207-069	14	0.90	Storm Detention/Tot lot	Elm Pl. @ 8901
27-22-301-002p	19	4.55	Future Storm Detention (outlot A)	Pepperwood Outlot A
27-22-302-010	21	4.90	Kelly Park	Haven @ 16675
27-22-302-012	22	2.01	Kelly Park w/Tot Lot	167th @ 9200 w.
27-22-302-015	20	6.93	Kelly Park - Phase II (outlot C)	Haven @ 16595
27-22-302-017	17	0.86	Public Works/PSVS Facility	16533 S. 94th Ave.
27-22-400-004p	18	3.30	Future Storm Detention (outlot B)	Pepperwood Outlot B
27-22-402-010	24	0.23	open access to Lake Lorin	16636 S Beacon Ln.
27-22-402-045	23a	23.00	Kelly Park - Lake Lorin	167th @ 9150 w.
27-22-402-047	23b	4.34	Kelly Park	167th @ 9250-9000 w.
27-22-403-007	25	1.42	Storm Detention outfall	88th Ave @ 16520
27-22-403-008	26	1.58	Storm Detention outfall	88th Ave @ 16520
27-22-413-014	23c	0.05	Kelly Pk-Lake Lorin (25 x 80)	167th @ 9104 w.
27-27-103-053	27	0.15	Old Village Hall (51x125)	16795 S. 94th Ave.
27-27-103-054	28	0.22	Old Police Station (77x125)	16801 S. 94th Ave.
27-27-103-062	13	0.66	Storm Detention	94th Ave @ 16941
27-27-114-005	12	4.13	Storm Detention	94th Ave @ 17001
27-27-201-027	11	0.71	Storm Detention	88th Ave @ 16700
27-27-205-051	29	0.12	Buildable Open Lot (40x125)	91st Ave @ 16720
27-27-208-014	02a	0.11	Storm Detention	90th Ave @16811
27-27-208-015	02b	0.11	Storm Detention	90th Ave @16811
27-27-208-046	02c	0.03	Storm Detention-rear	90th Ave @16811
27-27-208-047	02d	0.03	Storm Detention-rear	90th Ave @16811
27-27-210-024	10a	0.16	Park - Tot lot	167th Pl. @ 8926
27-27-210-025	10b	0.01	Park - Tot lot (sliver)	167th Pl. @ 8926
27-27-214-010	08a	1.35	Storm Detention	88th Ave @ 16840
27-27-214-024	08b	0.66	Dedicated Right-of-way	88th Ave. (west 50')
27-27-214-025	08c	0.34	Dedicated Right-of-way	88th Ave. (west 50')
27-27-215-035	07a	3.25	Storm Detention	89th Ave @ 17001
27-27-215-036	07b	0.34	Storm Detention	89th Ave @ 17001
27-27-219-001	06b	0.35	Storm Detention	SW<8900 w.170th St.
27-27-221-015	06a	2.90	Storm Detention	Westwood - 89th Ave
27-27-222-031	01	0.96	Storm Detention	92nd Ave @ 16901
27-27-223-038	09	1.21	Storm Detention	Westwood @ 17007
27-27-224-006	04	1.24	Storm Detention	Westwood - 89th Ave
27-27-224-012	05	0.83	Storm Detention	Westwood - 89th Ave
27-27-224-013	03	1.24	Storm Detention	Westwood - 89th Ave
		96.05	Total Acreage	

Attachment 3.

Village of Orland Hills, Illinois

Drainage Inspection Report – Public Channels & Storage Basins

Date: _____ Inspector: _____

Type of inspection: ❑Semi-annual ❑ Monthly Choke Point Check ❑ Post-storm

I have inspected the following surface drainage facilities and found them as noted. The numbers and letters refer to locations on the Village's drainage system map. A Complaint/ Inquiry Form has been completed for all problems found on Village property. A notification letter has been sent to the owners of private property where problems were found.

Retention basin, 17001 94th Ave (#12)	❑No problem	❑Problem found
Tinley Creek from 169th Place to 167th Street	❑No problem	❑Problem found
Retention basin, 16901 92nd Ave (#I)	❑No problem	❑Problem found
Highview Ditch	❑No problem	❑Problem found
Tinley Creek from 167th Street to Lake Lorin	❑No problem	❑Problem found
Lake Lorin and dam	❑No problem	❑Problem found
Retention area, 8901 Elm Place (#14)	❑No problem	❑Problem found
Ashbourne Lake and drain to Tinley Creek	❑No problem	❑Problem found
Tinley Creek from Lake Lorin to 88th Avenue	❑No problem	❑Problem found
Retention area, 17007 Westwood (#9)	❑No problem	❑Problem found
Retention areas, Westwood and 89th Ave (#3,4,5,6)	❑No problem	❑Problem found
Retention area, 17001 89th Ave (#7)	❑No problem	❑Problem found
Retention area, 16840 88th Ave (#8a)	❑No problem	❑Problem found
Retention area, 16811 90th Ave (#2)	❑No problem	❑Problem found
Retention area, 16700 88th Ave (#11)	❑No problem	❑Problem found
Retention area, 16151 Hawthorne (#15b)	❑No problem	❑Problem found
Pepperwood Outlot A (19)	❑No problem	❑Problem found
Pepperwood Outlot B (18)	❑No problem	❑Problem found
Marley Creek	❑No problem	❑Problem found
_____	❑No problem	❑Problem found
_____	❑No problem	❑Problem found

Attachment 3. (cont.)

Village of Orland Hills, Illinois

Drainage Inspection Report - Private Storage Basins

Date: _____ Inspector: _____

Type of inspection: ❑ Semi-annual ❑ Monthly Choke Point Check ❑ Post-storm

I have inspected the following surface drainage facilities and found them as noted. The numbers and letters refer to locations on the Village's drainage system map. A Complaint/ Inquiry Form has been completed for all problems found on Village property. A notification letter has been sent to the owners of private property where problems were found.

Private retention area A	❑ No problem	❑ Problem found
Private retention area B	❑ No problem	❑ Problem found
Private retention area C	❑ No problem	❑ Problem found
Private retention area D	❑ No problem	❑ Problem found
Private retention area E	❑ No problem	❑ Problem found
Private retention area F	❑ No problem	❑ Problem found
Private retention area G	❑ No problem	❑ Problem found
Private retention area H	❑ No problem	❑ Problem found
Private retention area I	❑ No problem	❑ Problem found
Private retention area J	❑ No problem	❑ Problem found
Private retention area K	❑ No problem	❑ Problem found
Private retention area L	❑ No problem	❑ Problem found
_____	❑ No problem	❑ Problem found
_____	❑ No problem	❑ Problem found
_____	❑ No problem	❑ Problem found

Attachment 4.

Village of Orland Hills

Complaint/Inquiry Form

Taken by: _____ Complaint #: _____

Routed to: _____ Date: _____

Copy to: _____ Time: ___:___AM/PM

==========

Complaint Address: _____

Complaint: _____

_____

_____

Complainant: _____

Address: _____ Complainant wants a report: _____

Home Number: _____ Call: Y or N Send copy: Y or N

==========

Action taken: _____

_____

_____

Date: _____Investigator: _____

Talked to: _____

==========

Date closed: _____ Handed notice to: _____ Date:_____

Date follow up _____ Date posted notice: _____

Referred to: _____ Date sent notice: _____

==========

Date COMPLAINANT notified of action taken:_____

Called: Y or N Sent copy: Y or N

==========

Misc:

Attachment 5.

Village of Orland Hills

Private property notice format

Date

Name

Address

Certified Mail Receipt No.

Dear Name:

This letter is official notification that property owned by you is in violation of the Municipal Code of the Village of Orland Hills, Illinois. The [stormwater detention facility/stream channel] has not been kept clear of debris as required by Section 95.05 of the Municipal Code. Specifically, the following problems have been found:

_____

_____

_____

To rectify this violation, please remove the debris within ten days of the date of this letter. Failure to meet this deadline can be cause for a fine as well as the cost of abating the violation.

If you have any questions on this notice, please call [name] _____, Building Commissioner, at 349-4887.

Sincerely,

[Name]
Building Commissioner

cc: [Name] Chief of Police

* * * * * *

Capital Improvement Program—CIP

For the basic CIP credit, one-time-only projects like channel alterations are not credited. However, additional credit is provided if the community has an ongoing program, such as a capital improvement plan and budget, to eliminate or correct problem sites or to construct new drainage facilities.

Capital Projects

Possible capital improvement projects could include

- Enlarging bridge openings or culverts,
- Modifying a channel,
- Enlarging a pipe system,
- Installing permanent soft bank erosion control measures,
- Reconstructing inlets and outlets,
- Installing grates to catch debris,
- Constructing new storage basins to reduce flows into existing channels, or
- Improving pumps.

A channel modification is an example of a capital project, not annual maintenance.

The community's program must have the following three components to receive CRS credit:

1. A master list of the community's drainage maintenance problem sites or frequently flooded areas.
   - The project sites must be part of the community's drainage system defined for CDR credit and reduce the risk of flooding of buildings within the community.
   - The list can be prepared from a master plan, engineering analysis, complaints, or reports from maintenance crews. Projects do not have to be prioritized or listed in any order. For example, the community may determine which projects will be funded at the beginning of each fiscal year. More credit is provided for a list prepared after an engineering analysis of the community's system.
   - The list must be updated at least annually.
2. Recommended correction measures for each problem site. The recommended measures do not need be the result of detailed plans or studies. They may be simple statements such as "enlarge culvert" or "stabilize stream bank."
3. Documentation that funds are spent annually on a project or projects. This may be a multiple-year capital improvement budget or a line item in several years' budgets.

Note that infrequent capital expenditures are not credited. However, if the community has a master plan that shows that few or no capital improvement are needed, then a program that funds a project only every few years can be recognized.

Once a capital improvement project is completed, it may qualify for CRS credit under Activity 530 (Flood Protection). Projects that protect repetitive loss properties receive higher credits under Activity 530.

CRS Credit

The basic capital improvement program is worth 30 points. If it is the result of a comprehensive engineering analysis of the watershed that identifies existing and future flooding problems, up to 40 more points may be credited.

Documentation

The documentation must be sufficient to show that there is a capital improvement program. This requires two things:

- A long-term plan, like a drainage system improvement plan that describes the problems, recommends projects, and estimates annual funding needs for the next several years.
- An excerpt from the community's annual budget or capital improvement budget provided it identifies multi-year expenditures. There must be one or more line items that clearly show that the funds are budgeted for drainage system improvements rather than routine maintenance. See the excerpts on the next two pages. Note that these include an explanation of what will be done and why the project deserves funding. This is very helpful in showing the ISO/CRS Specialist how the project is related to drainage maintenance.

These documents can be very large books, but all that would be needed would be a copy of the title page and one or two pages from the plan or budget related to drainage maintenance.

Verification Visit

This credit is verified by reviewing the documentation, so no special activities are conducted during the verification visit.

Annual Recertification

Each year's recertification must include a copy of one or more pages from that year's capital improvement budget. The pages need to show expenditures planned for drainage improvement work, NOT ROUTINE MAINTENANCE.

Excerpt from the Five-year Capital Improvement Program
Fort Collins, Colorado, 2017–2022

Stormwater 5-Year CIP Estimate
(2018-2022)

Projec		2017-18 BFO	2018 (available	2019	2020	2021	2022
		$ 8,481,710	$ 5,416,550	$ 6,480,100	$ 8,510,000	$ 12,300,000	
Storm Drainage							
Small Capital Repairs & Replacements			$1,500,000	$1,400,000	$1,500,000	$1,600,000	$1,700,000
Master Planning		0	$0	$450,000	$450,000	$450,000	$450,000
Stream Rehabilitation Program							
	Spring Creek at College	$370,000	$360,729				
	Spring Crk @Edora	$1,000,000	$796,056	$801,000			
	Mail Creek	$1,400,000	$1,216,847		$1,408,900	$650,000	$650,000
NECCO Phase 3: Lemay to Redwood		$3,100,000	$827,673				
Boxelder Basin Regional Stormwater Authority		$700,000	$350,000	$375,000	$375,000	$400,000	$400,000
Poudre River @ Oxbow Levee		$850,000	$729,194	$412,000			
Poudre River @ Timberline Levee				$103,000		$530,000	
Poudre River @ DWRF Levee				$103,000		$380,000	
Boxelder Dams B-2 and B-3						$1,500,000	
Developer Repay		0		$400,000	$100,000	$200,000	$100,000
Remington Outfall		$900,000	$794,427	$705,550	$2,546,200		
Flood Warning System				$100,000	$100,000		
Castlerock Storm Sewer				$300,000			
North College Drainage Improvement District				$267,000		$1,300,000	
Mulberry/Riverside		$2,362,156	$716,903				
Magnolia Street Outfall - Phase 1							
	Data Collection, Magnolia & Myrtle Projects						
	Alternative Analysis, Magnolia & Myrtle	$1,500,000	$1,189,881				
	Preliminary Design, Magnolia & Myrtle						
	Permitting, Magnolia & Myrtle						
	Magnolia Phase 1 - Final Design					$1,500,000	
	Magnolia Phase 1 - Construction						$8,000,000
Myrtle Street Storm Sewer		Requires Magnolia Phase 1 to be complete					
	Myrtle - Final Design						$1,000,000
	Myrtle - Construction						
Project		Notes	2018	2019	2020	2021	2022
			$ 8,481,710	$ 5,416,550	$ 6,480,100	$ 8,510,000	$ 12,300,000

Excerpt from the Five-year Capital Improvement Program
Fort Collins, Colorado, 2014–2018

CIP

STORMWATER FUND - 504
COMPARATIVE BUDGET STATEMENT

	ACTUAL 2014	ACTUAL 2015	BUDGET 2016	BUDGET 2017	BUDGET 2018
Beginning Fund Balance	**$102,377,431**	**$110,471,322**	**$118,115,156**	**$128,953,145**	**$141,350,793**
Revenues					
Non-Bus Licenses & Permits	14,525	18,664	0	0	0
Operating Grants/Contributions	18,436	740	0	0	0
Capital Grants/Contributions	1,012,500	250,000	44,615	0	0
Fees-Stormwater	14,759,556	15,035,237	14,625,000	16,210,000	16,210,000
Interest Revenue	318,311	294,724	245,453	350,414	415,305
Contributions & Donations	1,567,284	1,276,385	800,000	900,000	800,000
Sale of Property	(4,249)	258	0	0	0
Non Operating	0	0	19,556	0	0
Other Miscellaneous	67,077	27,979	20,000	0	0
Total Revenues	**$17,753,440**	**$16,903,987**	**$15,754,624**	**$17,460,414**	**$17,425,305**
Other Financing Sources					
Other Financing Sources	31,178	0	0	0	0
Transfers from Funds	32,000	0	0	0	0
Total Other Financing Sources	**$63,178**	**$0**	**$0**	**$0**	**$0**
Total Revenues & Other Financing	**$17,816,618**	**$16,903,987**	**$15,754,624**	**$17,460,414**	**$17,425,305**
Expenditures					
Stormwater Minor Capital	250,700	278,352	315,026	230,000	155,000
Stormwater Operations	2,811,555	2,927,651	3,357,378	3,418,968	3,503,112
SW Payments and Transfers	5,006,296	5,276,522	3,422,749	3,558,010	3,688,212
SW Capital Projects	5,384,172	4,232,913	5,364,583	7,017,120	7,499,959
Utility Customer & Admin Svcs	0	0	0	77,774	87,228
Total Expenditures	**$13,452,723**	**$12,715,437**	**$12,459,736**	**$14,301,872**	**$14,933,511**
Other Financing Uses					
Debt & Other Uses	4,093,925	4,109,997	4,164,179	4,095,914	3,199,871
Transfers Out	249,342	247,159	247,317	318,980	321,451
Total Other Financing Uses	**$4,343,267**	**$4,357,156**	**$4,411,496**	**$4,414,894**	**$3,521,322**
Total Expenditures & Other Financing	**$17,795,991**	**$17,072,593**	**$16,871,232**	**$18,716,766**	**$18,454,833**
Adjustments to GAAP					
Depreciation			(2,800,000)	(2,800,000)	(2,800,000)
Capital Expenditures	(5,312,644)	(4,477,441)	(5,689,597)	(7,259,000)	(7,667,499)
Bond Principal Expenditures	(3,202,500)	(3,335,000)	(3,465,000)	(3,595,000)	(2,830,000)
Pension Related GAAP Adjustment	441,881				
Net Adjustments to GAAP	**($8,073,263)**	**($7,812,441)**	**($11,954,597)**	**($13,654,000)**	**($13,297,499)**
Net Change in Fund Balance	**$8,093,891**	**$7,643,834**	**$10,837,989**	**$12,397,648**	**$12,267,971**
Ending Fund Balance	**$110,471,322**	**$118,115,156**	**$128,953,145**	**$141,350,793**	**$153,618,764**
Working Capital Minimum (25% of operating expenses)	1,448,009	1,408,656	1,692,535	1,760,718	1,816,503

Stream Dumping Regulations—SDR

Another element of a community's drainage system maintenance program that CRS credits is regulations prohibiting the dumping of trash and debris in streams and storage basins. This element is known by its acronym, SDR.

Regulatory Language

To receive this credit, the community must have an ordinance or other regulations that meet three criteria.

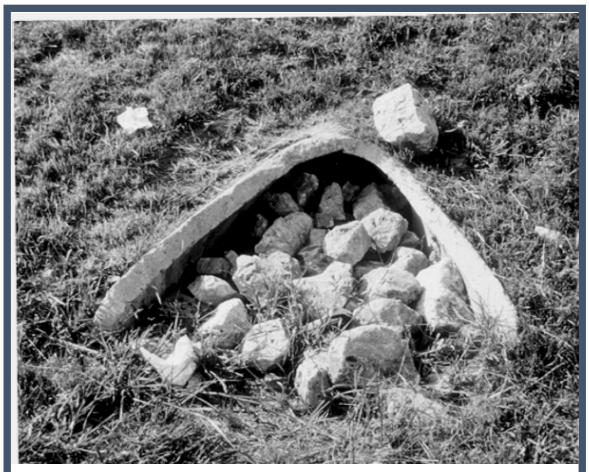
1. **Prohibit dumping.** The regulations must clearly prohibit dumping any material in a channel or basin that could cause an obstruction to flows.

An ordinance that prohibits littering in public places or similar general nuisances is not credited. These types of ordinances focus on noxious materials, like garbage. Many non-noxious materials, such as logs, tree limbs, and grass clippings, can obstruct flows. Therefore, the ordinance must specifically address the problem of keeping channels clear of all materials, including brush, fill, and landscape waste, which are normally not covered in a littering ordinance.

2. Identify who is responsible. The regulations need to identify an officer or office responsible for monitoring compliance and conducting enforcement actions. It must be clear that if a violation is found, the community or other enforcement agency will pursue it. It is not sufficient to rely on an ordinance that depends on a citizen to initiate a civil suit against a neighbor or other violator.

Usually the enforcing agency is the police department, environmental control officer, or the building or housing code department. In some states, a state law has qualified for SDR credit. However, those states have field enforcement officers who patrol the streams and have the authority to issue citations.

3. **Address penalties.** Provisions for penalties and abatement of violations are needed. It must be clear that there is a penalty for violating the dumping regulations and that someone has the authority to order the obstruction removed. These provisions do not have to be in the same ordinance – many communities have code books with penalty clauses in different sections.



Regulations, coupled with public information activities, can help prevent pranks, such as filling in this retention basin inlet.

Examples of ordinance or law language are included on pages 36–38. ***NOTE:*** *The example ordinance language provided in this publication comes from actual ordinances used by CRS communities. All ordinance language should be reviewed by local legal counsel before adoption.*

Double credit for an outreach project. The credit points for SDR are doubled if the community publicizes the regulatory requirements. This can be done by one of four kinds of outreach projects:

1. An outreach project to the community credited under in Activity 330 (Outreach Projects);

2. An outreach project pursuant to the program for public information credited for element PPI under Activity 330, provided that the public information strategy document discusses publicizing drainage system maintenance;

3. An outreach project that advises all residents and businesses in the community about the regulations, but is not credited under Activity 330; OR

4. Posting "no dumping in the stream" signs at key locations in the drainage system, such as frequent problem spots, schools, and public parks.

If alternatives 1, 2 or 3 are used, the annual outreach project must cover the topic of drainage system maintenance. It must inform residents about the regulations and how to report violations. Examples of two such projects are shown on this page.

Excerpt from Fort Collins, Colorado's newsletter

Drainage System Maintenance

Do not dump or throw anything into the ditches or streams. Obstruction and pollution of our waterways and ditches is in violation of City Code. A plugged channel cannot carry water and when it rains, the water has to go somewhere. Every piece of trash contributes to flooding. Even grass clippings and branches can accumulate and plug channels.

If your property is next to a ditch or stream, please do your part and keep the banks clear of trash and debris. The Utilities has a drainage system maintenance program that inspects the channels regularly and can help you remove major blockages such as downed trees. Please report any debris or dumping in ditches or streams to the Fort Collins Utilities. The debris may increase flooding on your property.

CRS Credit

If the community's regulations meet the three credit criteria specified under "regulatory language" on page 54, and the community gets credit for CDR, then it qualifies for 15 points under SDR. Credit for SDR is separate from credit for CDR.

If the regulations meet the three criteria and the community publicizes the requirements, 25 points are provided, and if publicized as per the program for public information, 30 points are provided.

Documentation

The community's submittal must include a copy of the appropriate pages of the regulatory language. The acronym "SDR" needs to be marked in the margin and the places at which the three required items of regulatory language appear (see page 32) must be shown. Marked examples of stream dumping ordinances are included on pages 36–38.

It is not necessary to submit a certified copy of each ordinance. The Chief Executive Officer's certification of the community's entire submittal is considered to be a certification that the ordinance or statute has been enacted into law and is being enforced.

If the community applies for the full 30 points for SDR, the submittal must include a copy of the annual outreach project that explains that there are regulations against dumping and how to report violations, and a copy of the program for public information credited for PPI under Activity 330. This can be

- A notation that one of the outreach projects submitted with the documentation for Activity 330 (Outreach Projects) includes the drainage maintenance topic,
- A copy of a notice that is distributed to all residents of the community each year,
- A photo of a "no dumping" sign, or
- A copy of the credited program for publication information.

Verification Visit

The ISO/CRS Specialist will ask questions on how the regulations are enforced. Examples of tickets or other enforcement actions would be useful. If the community is seeking credit based on posting "no dumping" signs, the ISO/CRS Specialist will want to visit some of those sites.

Annual Recertification

In each year's recertification, the CRS Coordinator must initial a statement that the community is still enforcing its regulations. The ISO/CRS Specialist provides the form with the language.

If the community is applying for the full 30 points, a copy of the outreach project needs to be included.

Example Stream Dumping Ordinances

This section includes three ordinances that were submitted by communities for CRS credit for stream dumping regulations (element SDR). Each has been given credit of 15 points because they include the three items noted below:

1. A prohibition of dumping ANY material in a channel or basin that could cause an obstruction to flows.

2. The identification of an officer or office responsible for enforcement and monitoring compliance.

3. Provisions for penalties and abatement of violations.

In many cases, items 2 and 3 appear elsewhere in an ordinance or municipal code book. For example, Margate's ordinance on stream dumping does not have an office or officer identified. In this situation, the community must provide an explanation on its enforcement procedures.

NOTE: *The examples of ordinance language provided in this publication come from actual ordinances used by CRS communities. All ordinance language should be carefully reviewed by local legal counsel before adoption.*

The City of Scottsdale's ordinance provides for the removal of obstructions at the owner's expense.

The following examples also show how the submittal could be marked. It is important for the community to identify where the three required items appear. If the ISO/CRS Specialist cannot find them, there will be no documentation to support the CRS credit.

Publicity

An ordinance is much more effective if people know about it. For 25 credit points, the community must conduct an outreach project that notes that there are regulations against dumping and how to report violations. In addition, if the publicity is part of the community's program for public information credited as PPI under Activity 330, a total credit of 30 points may be verified.

The South Holland ordinance on page 38 was distributed to all participants at a floodproofing open house the Village held for floodplain residents. By itself, this does not meet the publicity requirement for CRS credit. To receive credit for its stream dumping regulations, South Holland would have to distribute the flyer to all residents or addresses in the community. In fact, South Holland discusses the ordinance in its Village newsletter each year and posts the signs as shown on page 33. The more publicity, the better.

Margate, Florida

Sec. 10-12. Littering.

No Dumping

(a) *Depositing of litter prohibited.* It shall be unlawful for any person, firm or corporation, in person or by his agent, employee or servant, to cast, throw, sweep, sift or deposit in any manner in or upon any public way or street or other public place in the city or any river, canal, public water, drain, sewer or receiving basin within the jurisdiction of the city, any kind of dirt, rubbish, waste article, thing or substance whatsoever, whether liquid or solid. Nor shall any person, firm or corporation, cast, throw, sweep, sift or deposit any of the aforementioned items anywhere within the jurisdiction of the city in such manner that it may be carried or deposited in whole or in part, by the action of the sun, wind or rain into any of the aforementioned places.

Provided that this section shall not apply to the deposit of material under a permit authorized by any ordinance of the city; or to goods, wares or merchandise deposited upon any public way or other public place temporarily in the necessary course of trade; and removed therefrom within ten (10) hours after being so deposited; or to articles or things deposited in or conducted into the city sewer system through lawful drains in accordance with the ordinances of the city relating thereto.

Provided, further, that this section shall not apply to the deposit of material or other trash placed for normal residential trash pickup and removal within seventy-two (72) hours after being so deposited.

(b) *Vehicles to be covered.* It shall be unlawful for any person, firm or corporation, in person or by his or its agent, employee or servant, to use any vehicle to haul any kind of dirt, rubbish, waste articles or things or substance, whether liquid or solid, unless such vehicle is covered to prevent any part of its load from spilling or dropping at all times while such vehicle is in motion on any street or alley in the municipality; except that while such vehicle is on State Road 441, it shall be covered at all times except while actually being loaded or unloaded. Provided, however, that the requirements herein for covering such vehicles shall not apply to vehicles carrying brush cuttings, tree trimmings, branches, logs and similar waste material, or fill or sand if such matter is securely lashed or loaded on such vehicle to prevent spilling or dropping as aforesaid.

Penalty

(c) *Penalty.* Any person, firm or corporation violating any of the provisions of this section shall be punished as provided by Section 1-8 of this Code; and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues. (Ord. No. 80-26, § 1, 4-9-80)

Section 10-1 states that enforcement is the responsibility of the Building Inspector

Scottsdale, Arizona

Sec. 37-44. Obstruction of waterway – Prohibited.

No person in the city shall either obstruct or reduce the capacity of a watercourse by any use or by filling, dumping, or constructing or by any other means, except as provided in this article. (Code 1972, § 5-618(A))

1. No dumping

Sec. 37-45. Same – Removal of obstructions.

(a) Any person who owns, occupies, or leases real property within the city and who obstructs or reduces the capacity of a watercourse other than as provided for in this article, shall be deemed to have created a public nuisance. Such persons shall be notified in writing, either personally delivered or by certified or registered mail, return receipt requested, by the floodplain administrator or his authorized representative, to remove the obstructions or the materials creating the reduction of the capacity of a watercourse within ten (10) days after receipt of said written notice. If the owner does not reside on such property, a duplicate shall also be sent to him at his last known address.

(b) If the owner, lessee, or occupant of such real property, after having been given notice as required above, does not comply and abate such conditions which constitute a public nuisance, the floodplain administrator shall be authorized to abate such condition at the expense of such owner, lessee or occupant.

2. Officer

(c) The floodplain administrator, or his authorized representative, shall prepare a verified statement and account of actual cost of such abatement, including inspection and other incidental costs in connection with such abatement. Said verified statement and account is hereby declared as a debt of such owner, lessee, or occupant. A copy of said statement and account shall be personally delivered or delivered by certified mail, return receipt requested, to the party served with the original notice. The city attorney may institute an action to collect the debts so created in the superior court of the county at any time after delivery of the statement and account.

3. Penalty

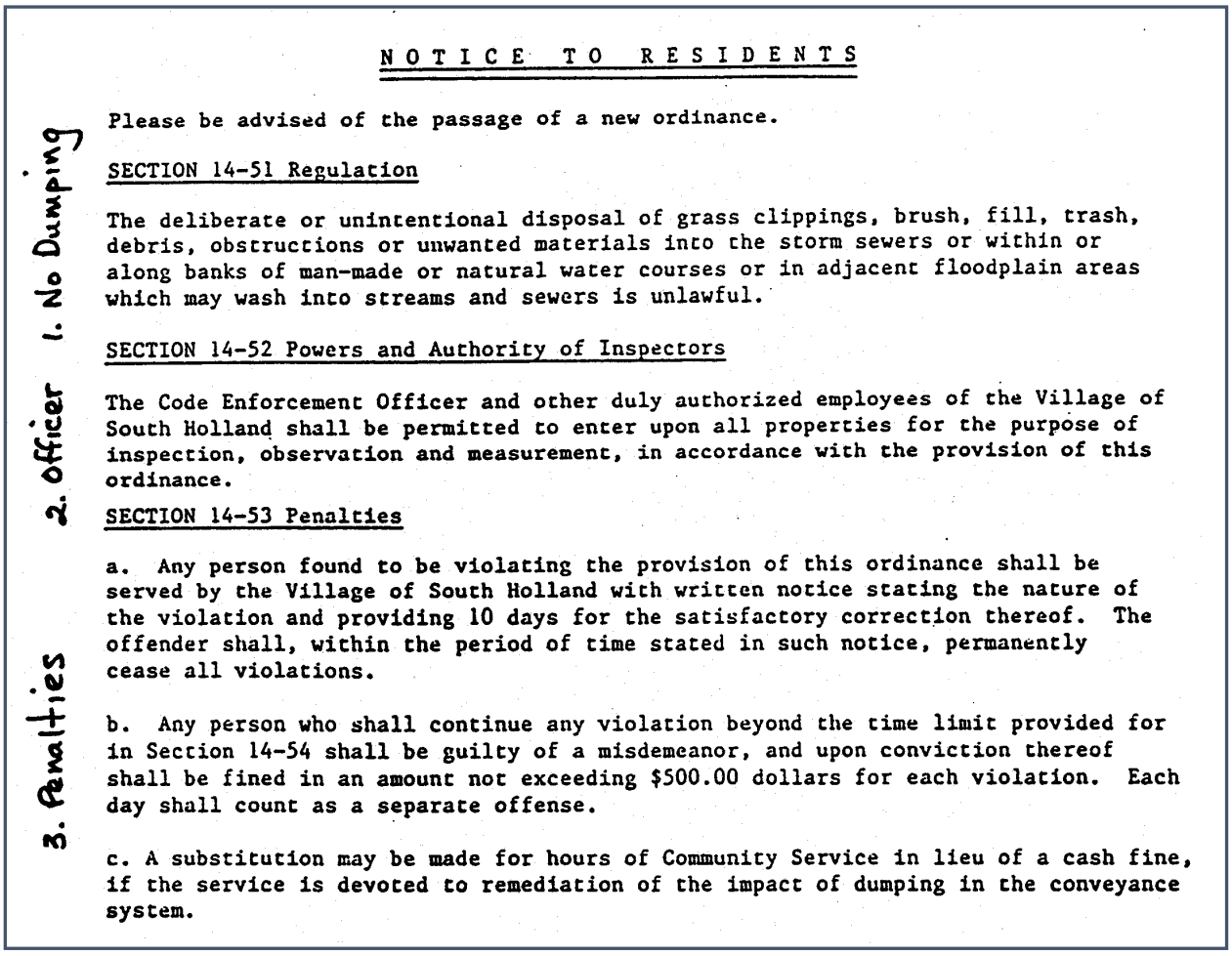
(d) Within ten (10) days after receipt of the notice described in subsection (a), any person may appeal the city's request by serving written notice of appeal upon the city clerk and shall be entitled to a hearing before the floodplain board on the appeal. In the event such an appeal is filed, all proceedings shall be stayed pending disposition of the appeal. Any person may also appeal to the floodplain board within ten (10) days after the receipt of the statement and account prepared and served pursuant to subsection (c) the amount of said debt by serving written notice of appeal upon the city clerk which also shall stay all further proceedings pending disposition of the appeal.

(e) When, in the opinion of the floodplain administrator, there is immediate danger to life or property, constituting an emergency, as the result of any obstruction or reduction of the capacity of a watercourse not authorized under this article, he may order the immediate abatement of said condition notwithstanding the notice provisions provided in subsection (a) of this section. The cost of said abatement shall be collected in the same manner as other debts, as provided for in subsection (c) of this section.

3 Penalty

(Code 1972, § 5-618S(B); Ord. No. 1993, 2-29-88)

South Holland, Illinois



1. No Dumping
2. Officer
3. Penalties

NOTICE TO RESIDENTS

Please be advised of the passage of a new ordinance.

SECTION 14-51 Regulation

The deliberate or unintentional disposal of grass clippings, brush, fill, trash, debris, obstructions or unwanted materials into the storm sewers or within or along banks of man-made or natural water courses or in adjacent floodplain areas which may wash into streams and sewers is unlawful.

SECTION 14-52 Powers and Authority of Inspectors

The Code Enforcement Officer and other duly authorized employees of the Village of South Holland shall be permitted to enter upon all properties for the purpose of inspection, observation and measurement, in accordance with the provision of this ordinance.

SECTION 14-53 Penalties

a. Any person found to be violating the provision of this ordinance shall be served by the Village of South Holland with written notice stating the nature of the violation and providing 10 days for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

b. Any person who shall continue any violation beyond the time limit provided for in Section 14-54 shall be guilty of a misdemeanor, and upon conviction thereof shall be fined in an amount not exceeding $500.00 dollars for each violation. Each day shall count as a separate offense.

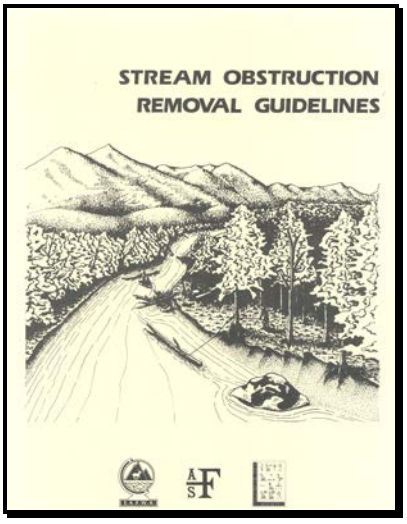
c. A substitution may be made for hours of Community Service in lieu of a cash fine, if the service is devoted to remediation of the impact of dumping in the conveyance system.

For More Information

Some state departments of natural resources, water resources, or environmental protection have regulatory authority over work in channels. Their drainage maintenance expertise can also help.

Communities can request help on this activity from the U.S. Department of Agriculture's Natural Resources Conservation Service. Requests should be submitted to the local soil and water conservation district, which is usually located in the county seat.

Urban communities may be within an urban drainage or sewer district that has drainage maintenance staff.



Stream Obstruction Removal Guidelines, by C. McConnell, published in 1983 by The Wildlife Society and American Fisheries Society, provides simple and easy to understand guidelines for a channel maintenance program that has a minimal impact on habitat. It can be downloaded from the U.S. Fish & Wildlife Service website.

Outreach Projects for Credit under the Community Rating System can help with public information activities to advise property owners about drainage maintenance. It can be downloaded from the CRS Resources website.

Additional information, reference materials, and examples can be found at the CRS Resources website.