

A Municipal Guide to Authorizing Instream Emergency Protective Measures In Accordance with Vermont Law



Vermont Agency of Natural Resources

Rivers Program

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Introduction

Flood events give rise to emergency situations in which flood-related erosion and deposition threaten life or property. Addressing these threats often requires rapid implementation of emergency protective measures which cannot afford to be slowed by standard permitting procedures. Vermont law (10 V.S.A. § 1021) gives members of a municipal governing board (i.e., selectboard) the authority to approve stream alteration measures necessary to preserve life or to prevent severe imminent damage to public or private property without pre-approval from the State. While this delegation of authority is essential, many emergency protective measures approved locally and undertaken during disaster recovery have not benefitted from the necessary technical assistance to ensure that:

- Flood and erosion-related vulnerabilities related to river instability have been minimized;
- Protective measures will qualify for federal and state disaster relief funding with sufficient documentation and by adhering to adopted codes and standards;
- The public and abutting landowners have been provided sufficient notice and assurance; and
- Fish and wildlife habitats are protected to the greatest extent possible given the emergency nature of the work.

In 2012, Act 138 was passed into law with the intent of minimizing the State's vulnerability to flood and erosion hazards. Among other things, Act 138 requires that emergency protective measures meet specific conditions as established in the Agency of Natural Resources' Stream Alterations Rules. The Agency of Natural Resources (the Agency) subsequently established an emergency protective measure approval process that facilitates the rapid response required in emergencies yet adheres to the requirements of Act 138. The approval process established by the Agency creates a pathway for the implementation of Emergency Protective Measures which are prior-approved by a qualified person at the local level and receive final authorization from the Agency when found to meet the conditions listed in the Stream Alterations Rule.

This guidance document is intended to help municipal officials understand and uphold their responsibilities in authorizing, implementing and reporting emergency protective measures. The content provided in this guidance is taken from the Stream Alterations Rule. In order to maximize usability of this document, much of the content taken from the rule has been abbreviated. For more complete information on Stream Alterations Regulations, including regulation of emergency protective measures, see the Vermont Stream Alterations Rule at:

http://www.watershedmanagement.vt.gov/rivers/docs/rv_SARule_12_24_13.pdf.

Definitions

Habitable structure: Any enclosed, roofed structure; residential, commercial, or industrial; public or private, that is fit for people to enter and utilize.

Imminent Threat of Severe Damage to Property: Recent or ongoing flooding which has or is threatening to cause damage which, left unaddressed, would become severe.

Improved property: A habitable structure, the property immediately surrounding a habitable structure, public utility or transportation infrastructure, and private bridges or culverts and associated infrastructure providing primary access to a habitable structure.

Qualified Person: A state or municipal governmental representative or entity that has legal authority to make a public health or safety determination. This authority may be delegated by the municipal governing board.

Overview of the Authorization Process

The Emergency Protective Measure authorization process has been designed to facilitate the rapid response required to address flood-related imminent threats to life or imminent threats of severe damage to property, while at the same time meeting the reporting requirements and implementation standards established in Act 138. As shown in Figure 1, the process consists of three stages, each of which contain a number of intermediary steps, possible pathways and outcomes. The three stages include:

1. Municipal Approval,
2. Preliminary ANR Authorization, and
3. Final ANR Authorization.

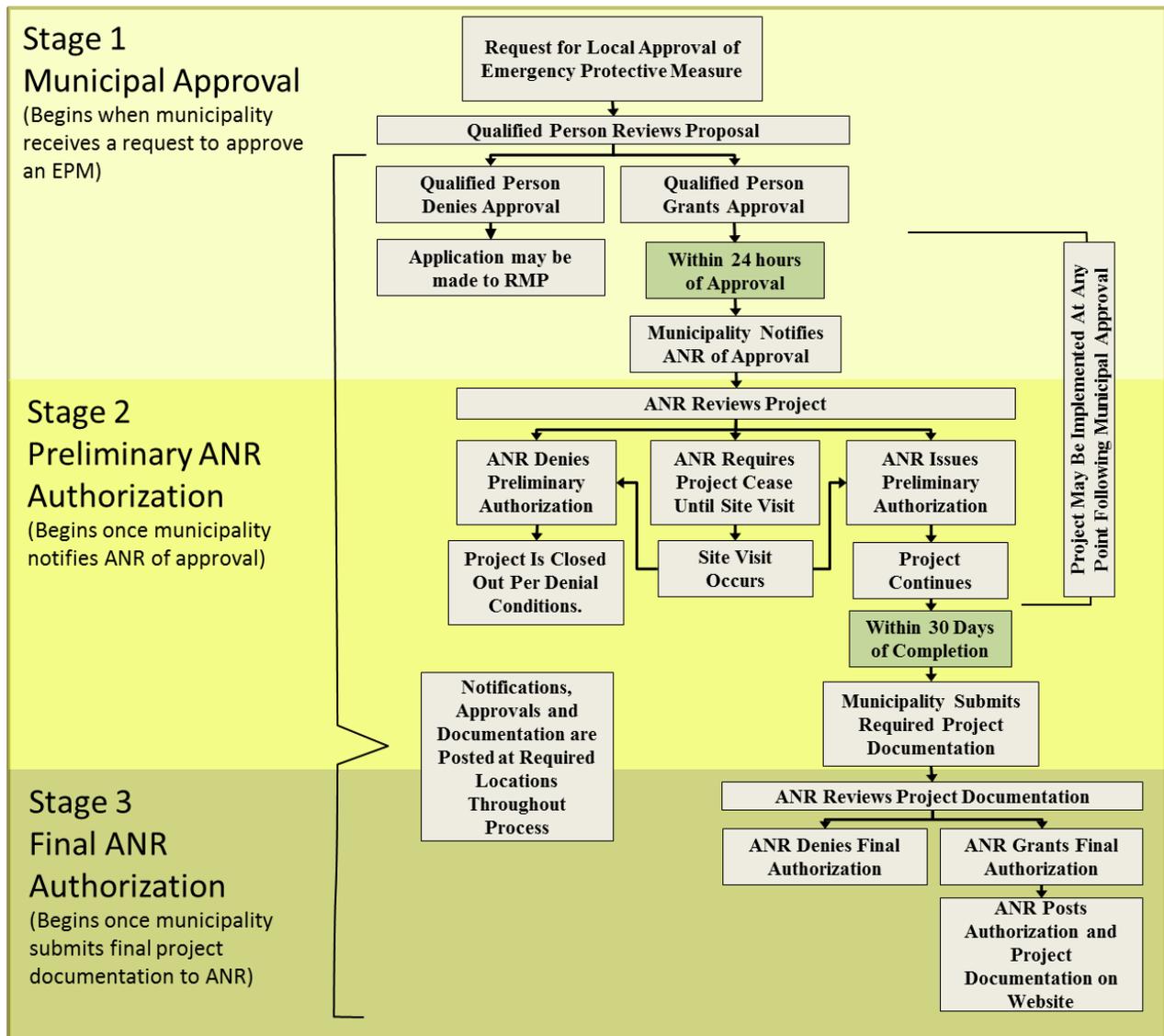


Figure 1. The 3 Stage Emergency Protective Measure Authorization Process

Stage 1: Municipal Approval

As shown in Figure 2, the municipal approval stage begins when a municipality either receives a request for approval of an Emergency Protective Measure from a private citizen or identifies the need to implement an Emergency Protective Measure to protect life, public property or infrastructure. It is completed when the municipality either denies the request because there is no imminent threat or approves it and notifies the Agency. Under Vermont law, a qualified person may approve a proposed Emergency Protective Measure if it's determined to meet the following conditions:

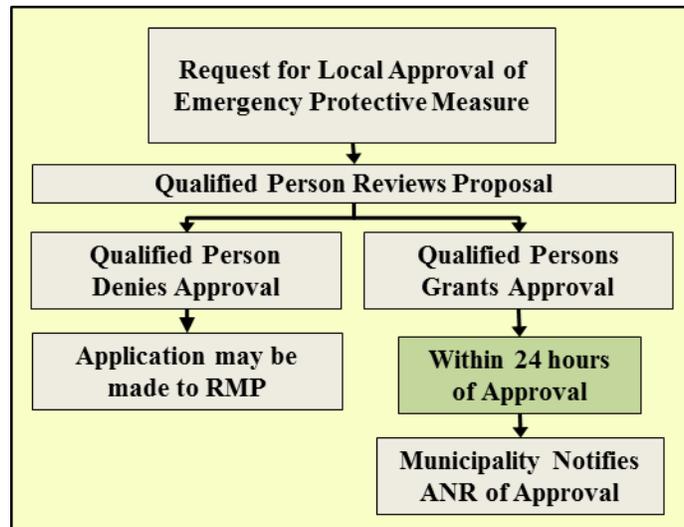


Figure 2. Stage 1: Municipal Approval

- ◆ Is necessary to preserve life or to prevent severe imminent damage to public or private property, when such property has experienced damage or is under threat of imminent failure within the next 72 hours;
- ◆ Is limited to the minimum amount necessary to remove imminent threats to life or property. To meet this criteria, the emergency measures must be proportional to the threat and shall cease when the threat to life or threat of severe damage to a property has ended;
- ◆ Where the measure is intended to prevent severe imminent damage to an unimproved property, if threats to public safety do not exist, it shall meet the stream alteration standards (see subpart 27-402 of the Stream Alterations Rule.);
- ◆ Where the measure is intended to prevent severe imminent damage to an improved property it shall meet the Implementation Standards provided below; and
- ◆ Will not adversely affect the public safety by increasing flood or fluvial erosion hazards.

If an imminent threat is not identified and the request to approve an activity as an emergency measure is denied, the project proponent may seek authorization for the project directly from ANR under either the Stream Alterations General or Individual Permits

Imminent Threat
A threat of severe imminent damage to property entails a scenario where recent or ongoing flooding has, or is threatening to cause damage which, left unaddressed, would become severe.

If the proposed measure is approved by the municipality it may proceed and the municipality must contact the Agency **within 24 hours** by phone and electronically (see the options below) with the following information:

- ◆ The location (i.e., nearest street address) of the emergency measures,
- ◆ A description of the imminent threat to life or property,

- ◆ A description of the emergency protective measure designed to address the threat (see pages 8 to 9 for these measures).

Phone notification must be made to either the regional River Management Engineer (see Figure 3 below) or the Rivers Program central office at 802-828-1535. River Management Engineer contact information can be found at http://www.watershedmanagement.vt.gov/rivers/docs/rv_contact.pdf.

Electronic notification must be made either via email to the Rivers Program’s Montpelier office at ANR.WSMDRivers@state.vt.us, or the Rivers Program’s Emergency Protective Measure Notification Form at <http://www.watershedmanagement.vt.gov/ContactRivers.htm>. The online Emergency Protective Measure Notification Form has been designed to be the simplest and most efficient means for making an electronic notification and is the recommend means of doing so.

Stage 2: Preliminary ANR Authorization

Figure 4 shows the second stage of the process. Upon notification from a municipal official that an Emergency Protective Measure has been approved, the Agency shall either:

1. Deny authorization based on the grounds that there is no imminent threat to life or severe imminent damage to property within 72 hours.
2. Preliminarily approve (verbally and electronically) the Emergency Protective Measure, either as planned or with conditions deemed necessary to address an imminent threat to life or property and to comply with the Implementation Standards listed in Subchapter 7 of the Stream Alterations Rules.
3. Require that instream activities or berming cease immediately until a site visit can be made by the Agency. The Agency may then deny or issue preliminary authorization of an emergency protective measure, with explicit written conditions, consistent with the emergency provisions of a stream alteration general permit.

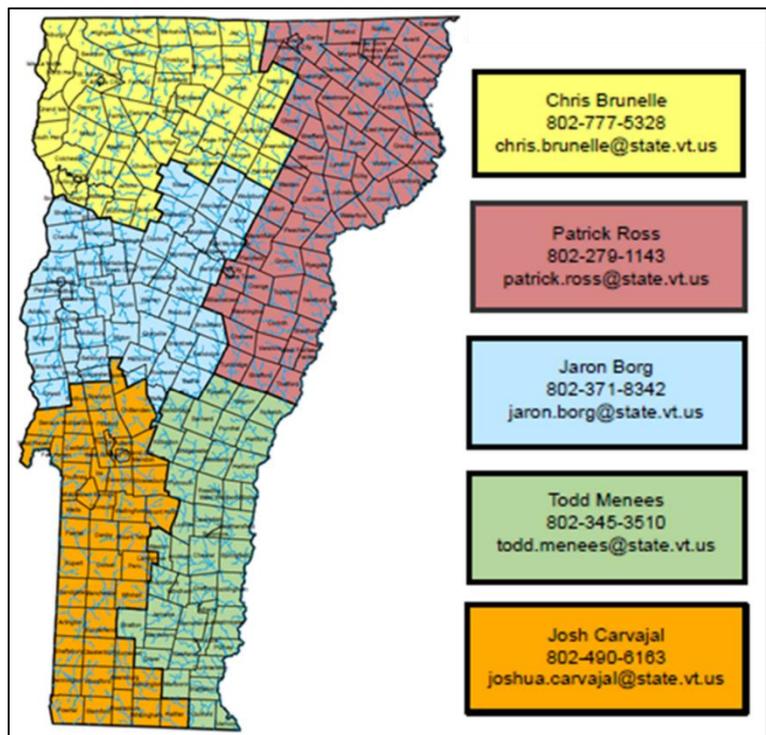


Figure 3. River Management Engineer Contact Information

If the Agency denies the preliminary authorization *before* the project has begun, the project proponent may apply directly to the Agency for authorization under either the general or individual permits. If the preliminary authorization is denied *after* the project has begun, it will be shut down with conditions and the project proponent may apply directly to the Agency for authorization under either the general or individual permit process. If the project has been completed in a manner inconsistent with the Stream Alteration Rules, the Agency may take enforcement action or work with the municipality and the project proponent to bring the project into compliance with regulatory requirements.

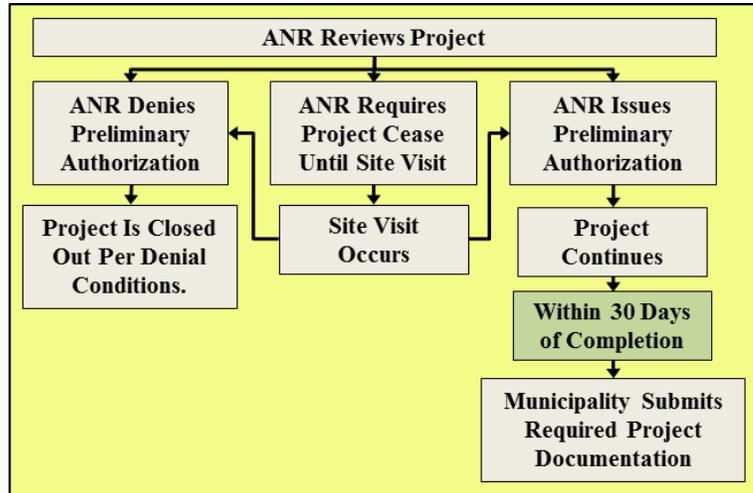


Figure 4. Stage 2: ANR Preliminary Authorization Process

Where a project receives preliminary authorization, it is the responsibility of the municipality to submit the following project documentation to the Agency **within 30 days of project completion**:

- ◆ Copies of all written notifications provided by the municipality to the Agency;
 - Email confirmation of contact via the web-form or copy of initial contact email
 - Any supporting emails
 - Any hand written notification information

- ◆ Copies of any preliminary authorizations issued by the Agency;

- ◆ Written verification and photo documentation that the emergency protective measures were carried out to meet the Implementation Standards established in Subchapter 7 of the Stream Alteration Rules;
 - Photos showing, as best possible, the pre and post-project conditions
 - Project sketch showing pre and post-project conditions

- ◆ Map documentation of the location where the emergency protective measure was completed, depicting the approximate beginning and ending point of the stream segment in which the measure was taken. Narrative information should accompany the map explaining the approximate length of the stream segment where the work was completed; and

- ◆ Documentation of the types and quantities of instream material removed and/or the protective fills required. Narrative information describing the methods used to determine quantities should accompany the quantity calculations.

Upon request of the municipality, the Agency may grant additional time for the submission of the required documentation for a period not to exceed 30 additional calendar days.

Stage 3: Final ANR Authorization

All emergency protective measures must receive final authorization from the Agency either in an individual or general permit. Stage three, the final authorization stage, is shown in Figure 5 and begins once the Agency has received all project documentation from the municipality.

An Emergency Protective Measure shall receive final authorization from the Agency where it;

- ◆ Is approved by a qualified person, and
- ◆ Is consistent with the standards for implementation contained in Subchapter 7 of the Stream Alterations Rules and listed in this document.

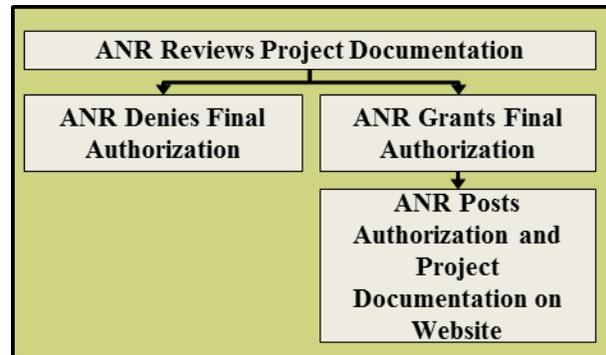


Figure 5. Stage 3: ANR Final Authorization Process

Final authorization of emergency measures to establish or stabilize temporary infrastructure shall include requirements for permanent repair or replacement, including a date when any permanent repair or replacement work must be completed. A stream crossing structure is considered repairable when damages do not exceed 50 percent of the cost of replacing the crossing as it existed prior to the emergency, and it is feasible to repair the crossing so that it can perform the function for which it was being used. All stream crossings deemed by the Agency not to be repairable shall be removed in a manner, as allowed by federal and state law, or shall be replaced with a permanent structure that meets the standards set forth in subpart 27-402 of the Stream Alterations Rule.

Public Notice Requirements

A public notice process will help to prevent confusion, frustration and discontent among abutting landowners and concerned citizens. Notifications, authorizations, and documentation, as they are issued, shall be placed:

- ◆ On-site where and when the emergency protective measures are being undertaken,
- ◆ On file at the municipal clerk's office of the town in which the measures are being undertaken during the emergency and until a final authorization is provided, and
- ◆ On file with the Agency where they shall be posted on an Agency webpage for a period of no less than 90 days after the final authorization is issued.

Qualifying Activities and Implementation Standards

The Stream Alterations Rule describes the specific activities and associated standards that a project must meet to qualify as an Emergency Protective Measure. See subpart 27-402 of the Stream Alterations Rule for more detailed information. Technical terms that are used below have been defined in subpart 27-01 of the Rule.

Emergency protective measures shall be limited to the following activities and authorized where they conform to the following standards, and when the Secretary has determined that the measure will not pose an imminent threat to life, public health, or safety.

Removal of Flood-Related Deposits

Removal of flood-related deposits (i.e., dredging sediment and debris) that would otherwise divert stream flows normally contained in the channel, and result in an imminent threat to life or severe damage to an improved property within 72 hours.

- Sediment and debris (including woody debris) excavation must not result in a cross section (i.e., channel width and depth) larger than the pre-flood cross-section.
- Extending sediment and debris removal, horizontally or vertically, beyond that necessary to preserve life or to prevent severe damage to improved property is not an emergency protective measure and must have prior authorization from the Secretary.
- Windrowing sediment and debris to the margins of the channel may be authorized as a temporary measure where immediate access and mobilization for off-site transport of excavated materials is not possible. The project proponent shall be responsible for the removal of any windrowed material placed on the channel banks and within the river corridor or floodplain as directed by the Secretary.
- Excavation of instream material to relocate a stream channel will only be authorized as an emergency measure where it is necessary to address vertical or lateral stream channel movement that would otherwise represent an imminent threat to life or improved property.
- Excavating new channels that did not exist immediately prior to the flood event is not permitted without prior approval from the Secretary and a determination that doing so would be consistent with Stream Alterations Performance Standards.

Streambed and Streambank Fills

Placing fill material within the stream channel to align and/or armor the stream bed or streambank, or provide access to critical facilities or infrastructure to mitigate an imminent threat to life or severe damage to improved property within 72 hours.

- Fills placed to establish or re-establish streambank armor as an emergency protective measure shall not encroach into and narrow the bank full width of the stream channel, or create an acute horizontal streambank misalignment.

- Raising and stabilizing a stream bed shall only be conducted when overseen by a qualified river engineer or their designee. The work must have prior Agency approval and be conducted in a manner that:
 - Aligns the vertical stream bed profile with that of upstream and downstream segments;
 - Establishes a channel width-to-depth ratio consistent with equilibrium conditions;
 - Increases floodplain connectivity;
 - Restores or re-establishes resistance to bed scour; and
 - Maintains surface flow.

Temporary Stabilization / Restoration of Infrastructure

In-stream construction activities to temporarily stabilize or restore flood damaged critical infrastructure, including bridges, culverts, roadways, wastewater, or water systems, and electric and telecommunications facilities, in order to address an imminent threat to life or property, or maintain emergency services access.

- Any measures necessary to temporarily establish or stabilize infrastructure shall meet the implementation requirements for dredge, fill, or berming activities listed in this document.
- Any fills used to stabilize and restore infrastructure that narrow the bankfull width of the stream channel, creates an acute horizontal streambank misalignment, and/or is comprised of undersized or otherwise unsuitable materials shall be considered temporary and shall be removed once the infrastructure has been permanently stabilized or replaced.

Temporary Construction of Berms

Berms may only be established, constructed or maintained in a flood hazard area or river corridor where they are necessary to preserve life by preventing stream flows from impinging directly on an improved property. Berms constructed for this purpose shall be considered temporary and shall be removed coincident with the removal of threats to public safety unless subsequently authorized under a Stream Alterations Individual permit.

Worksheets

Municipal Responsibilities At-a-Glance
Determining Project Eligibility for Authorization as an EPM
Documenting Consistency with Implementation Standards

The Municipality's Responsibilities At-a-Glance

This series of steps is intended to provide a concise look at the responsibilities the municipality must uphold in the Emergency Protective Measure process.

Stage 1: Municipal Approval (see page 4 for further information)

1. The municipality receives request for approval or identifies a need to conduct an Emergency Protective Measure.
2. A qualified person(s) documents the proposed measure and determines if it qualifies for local approval using the question and answer sheet on the following page.
3. If the request for approval is denied by the municipality the project proponent may apply for a Stream Alterations permit with the Rivers Program.
4. If the request for approval is granted, the project proceeds and the municipality is required to notify the Agency of the local approval by phone and electronically within 24 hours of approving it.

Stage 2: Preliminary ANR Authorization (see page 5 for further information)

5. The municipality receives confirmation that the notification was received.
6. The municipality keeps the local approval and the Agency contact confirmation on file at the town office and on the job site.
7. The municipality receives a contact from the Regional River Management Engineer with either a denial, order to halt all work until a site visit is made, or preliminary approval to continue with the project.
8. The municipality files the River Management Engineer contact on file at the town office and the project site.

Stage 3: Final ANR Authorization (see page 7 for more information)

9. The municipality provides the final project documentation to the Agency within 30 days of project completion.
10. The municipality keeps final project documentation on file for use in the FEMA disaster assistance application process.

Determining Proposed Project Eligibility for Approval as an Emergency Protective Measure Step-By-Step

Upon a request to approve, or identification of a need to conduct an Emergency Protective Measure, a qualified person(s) determines if the proposed project qualifies for approval by answering the following questions.

- 1) Will flooding or flood erosion or deposition create significant damage to life and/or property within 72 hours if no action is taken? **Yes / No**
- 2) Is the threatened property improved or unimproved? **Improved / Unimproved**
- 3) Is the proposed protective measure(s) necessary to preserve life or to prevent severe imminent damage to public or private property? **Yes / No**
- 4) Is the proposed protective measure limited to the minimum amount necessary to remove the threat(s) (i.e., the emergency measures are proportional to the threat and shall cease when the threat has ended). **Yes / No**
- 5) What category of activity(s) is the proposed mitigation measure (check all that apply)?
 - Channel dredging to increase channel conveyance
 - Channel armoring to limit further vertical or lateral channel movement
 - Repairing flood-damaged infrastructure
 - Constructing temporary berms
- 6) Is the proposed protective measure consistent with the applicable Implementation Standards described in the Stream Alteration Rule (See: Documenting Emergency Protective Measures and Determining Consistency with Implementation Standards)? **Yes / No**
- 7) Will the proposed protective measure adversely affect public safety by increasing flood or fluvial erosion hazards? **Yes / No**
- 8) Does the proposed protective measure minimize the damage to other riparian landowners, damage to fish life or wildlife, and avoid adverse effects to the protected values of an Outstanding Resource Water? **Yes / No**

Documenting an Emergency Protective Measure and Determining Consistency with Implementation Standards

Step 1: Photograph the site before and following the project.

- Capture the emergency site, the stream, and surrounding land-area immediately upstream and downstream. Be sure to capture the threatened property.

Step 2: Sketch the project site showing pre-project conditions:

- Planform (as seen from the air): Show the segment of river that includes the project site and one channel-width upstream and one channel-width downstream (e.g., if the channel is 20 feet wide extend the sketch 20 feet upstream and downstream of the project site). Include the following:
 - Approximate north arrow
 - Channel width,
 - Location of significant erosion and/or deposition,
 - Direction of flow,
 - Proximity of the threatened property,
 - Any points at which flow is or may overtop the banks and the most likely location it will return to the channel, if within the project sketch, and
 - Location of proposed measures.
- Cross Sections: Sketch the cross-section of the emergency site showing the channel and adjacent land-area. Include the following:
 - Channel width and depth,
 - Location of significant erosion and/or deposition,
 - Proximity of the threatened property, and
 - Proposed measures (i.e., cuts or fills).

Step 3: Quantify the volume of cuts and fills to include with final project documentation. Sketches showing linear feet and depth of cuts and fills along with project invoices or expense reports are acceptable documentation of cut / fill volumes.

Step 4: Use your observations, photographs and sketches to determine whether the proposed measures will meet the applicable implementation standards for a particular activity as listed below.

Removal of Instream Materials

- The channel has filled in to the extent that flows normally contained in the channel would be diverted from the channel at the emergency site and cause threats to life or severe damages to public or private property within 72 hours.
- Excavation of instream deposits (including woody debris) is required to create critical stream channel conveyance and keep flows in the channel in order to prevent severe damage to an **improved** property.
- Excavation will not extend horizontally or vertically beyond what is necessary to establish the pre-flood cross section or restore geomorphic stability.
- Any excavated material that is temporarily stored on the top of the streambanks or within the river corridor will be removed by the project proponent as directed by the Agency.
- Flood deposits are causing lateral and/or vertical channel movement that do represent an imminent threat.
- The project will not entail excavation of a new channel that did not exist prior to the flood event.

Stream Bed or Streambank Protection

- The project will protect a property from further damage or resist flow velocities acting on the stream bed or banks that would otherwise cause fluvial erosion hazards and threats to life or severe damages to public or private property within 72 hours.
- Fills placed to establish or re-establish streambank armor will not encroach into and narrow the bankfull width of the stream channel, or create an acute horizontal streambank misalignment.
- Where the project aims to raise and stabilize a stream bed, there is oversight of a qualified river engineer or their designee to ensure that:
 - The vertical stream bed profile is aligned with that of upstream and downstream segments;
 - The final channel width-to-depth ratio is consistent with equilibrium conditions;
 - Floodplain connectivity is increased; and
 - Resistance to bed scour is restored or re-established.

Temporary Stabilization / Restoration of Infrastructure

- In-stream construction activities are necessary to address an imminent threat to life or property by restoring or creating temporary critical infrastructure (i.e., bridges, culverts, roadways, wastewater, or water systems, and electric and telecommunications facilities).
- Any removal of in-stream material, stream bed and streambank protection, and temporary berming that may be necessary to temporarily establish or stabilize infrastructure, shall meet the applicable implementation standards.
- Permanent repair or replacement of infrastructure shall comply with the final authorization of emergency measures which shall include requirements including a date when any permanent repair or replacement work must be completed.
- Any fills placed to stabilize or restore infrastructure are located within the footprint of the infrastructure as it existed prior to the emergency and do not encroach into and narrow the bankfull width of the stream channel or create an acute horizontal streambank misalignment.
- Any fills placed to stabilize or restore infrastructure are appropriately sized and otherwise suitable for streambank and/or roadway embankment stabilization; except as temporary construction-related fills as necessary for infrastructure restoration.

Construction of Temporary Berms

- Establishment, construction, or maintenance of a berm in a flood hazard area or river corridor is necessary to preserve life by preventing stream flows (i.e., including those below flood stage) from impinging directly on an improved property.
- Berms constructed for this purpose shall be considered temporary and shall be removed coincident with the removal of threats to public safety.
- Berms may be constructed, or, in the case of an emergency protective measure, be allowed to remain in place, only upon the issuance of an individual stream alteration permit.

Example Project Documentation

Project Site Photographs

Project Sketches

Map Documentation

Cut/Fill Determinations

Example Project Photo-Documentation

Photo-documentation should provide a complete picture of the project from the streambed to the roadway or structure. Photo-documentation typically doesn't require more than two or three well taken photos both before and following the project.



This vertical slope is vulnerable to catastrophic failure and represents an imminent threat.

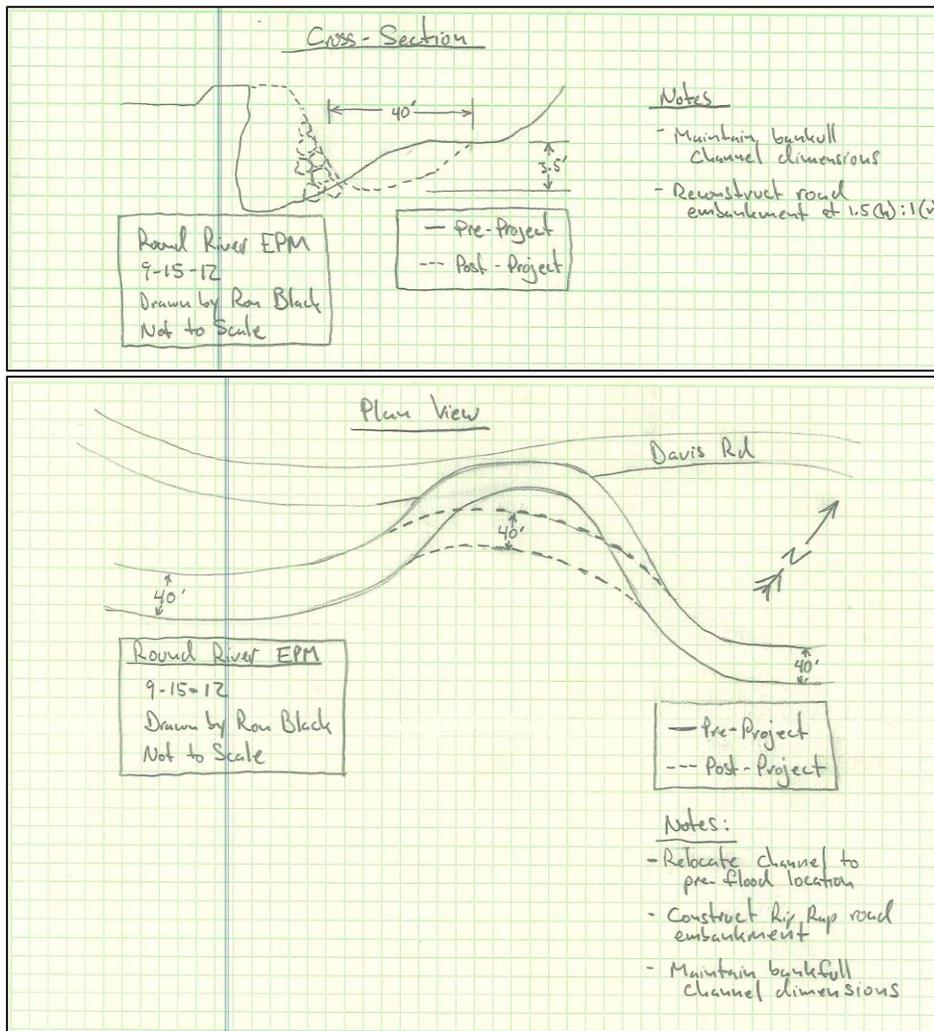


This photo shows the site after implementation of the Emergency Protective Measure.

Example Project Sketches

Project documentation sketches should ideally include cross section and plan views showing pre and post project conditions. Sketches should contain project name, the name of the person that drew the sketches and a date. Sketches do not need to be to scale. Simple dimensions are critical. Notes that indicate simple project purpose such as “rebuild road embankment” and goals such as “maintain bankfull channel dimensions” are helpful.

The drawings below provide an example of well-drawn sketches.



Example Map Documentation

Map documentation can be a hand drawn sketch, an annotated copy of an aerial photograph taken from the internet or an annotated copy of a paper map such as an atlas or town tax map. The map should be at a scale that shows enough detail for somebody unfamiliar with the site to locate it on the ground. The map should contain the following:

- Project Name,
- Town,
- Project Purpose,
- Name of the person who created the map,
- Date drawn,
- Landmarks including;
 - stream name if it is named,
 - nearby road names, and
 - structures with E911 addresses.
- Indication of that start and endpoints of the project(s), and
- Length of stream that is directly affected by the project.

