USDA

United States Department of Agriculture

CARIBBEAN AREA

Natural Resources Conservation Service

EQIP Emergency - TS Isaías 2020

OCTOBER-2020 ENGINEERING PRACTICES

DAY-1 -- CPS #326

Natural Resources Conservation Service

nrcs.usda.gov/

Workshop Objectives

1- Understanding the Conservation Practice Standards (CPS) 326 & 500 in Response of Tropical Storm Isaías - EQIP Emergency;

2- Being ready for working in:
- ~ Planning Process,
- ~ Inventory & Evaluation,
- ~ Design,
- ~ Construction Inspection,
- ~ and Certification for both Practices.

(EJAA: I&E, Design, Construction)

Methodology Day-1: October 28, 2020

PART-1: *CPS-326 – Clearing and Snagging*

- ***Planning***
  - ***Resource Concern Identification***
  - ***Conservation Practice Physical Effects***
  - ***Negative Effects Mitigation & Alternatives***
- ***Consultation***
  - ***Section 106 – SHPO***
  - ***Section 7 – USF&WL***
- ***Design***
  - ***Documents Available in the FOTG***
  - ***Removal and Disposal Methods***
  - ***Payment Schedule – Scenarios & Costs***
  - ***Completing the CB-ENG-PLNG-1***
  - ***Volume Computation***
  - ***Real Case Example***
- ***Certification***
  - ***Certification of Completion – IR and Certification Form***

United States Department of Agriculture

CPS - 326 Clearing and Snagging (Planning)

Natural Resources Conservation Service

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Resource Concern Identification

How do you know there is a concern?

- Clear bank (clearing) snags,
- drifts, or
- other obstructions (snagging)

Resource Concern Identification

Bank erosion from streams, shorelines or water conveyance channels

- Sediment from banks, shorelines or conveyance channels threatens to degrade water quality and limit use for intended purposes

Resource Concern Identification

What can be done about it?

- **Determining the cause** of accelerated streambank erosion is the first step in solving the problem.
- Development in the watershed are **often intrusive.**
  - Many of the traditional methods of dealing with streambank erosion, such as rock revetments, are expensive to install and maintain.
- Greener and more natural treatment alternatives are being more widely adopted.
  - Soil bioengineering practices, native material revetments, combinations of rock and vegetation, and in-stream structures help to stabilize eroding banks.

Conservation Practice Physical Effects (CPPE)

Negative Effects of implementing Clearing and Snagging and Obstruction Removal

- Sediment transported to surface water
- Elevated water temperature

Negative Effects Mitigation

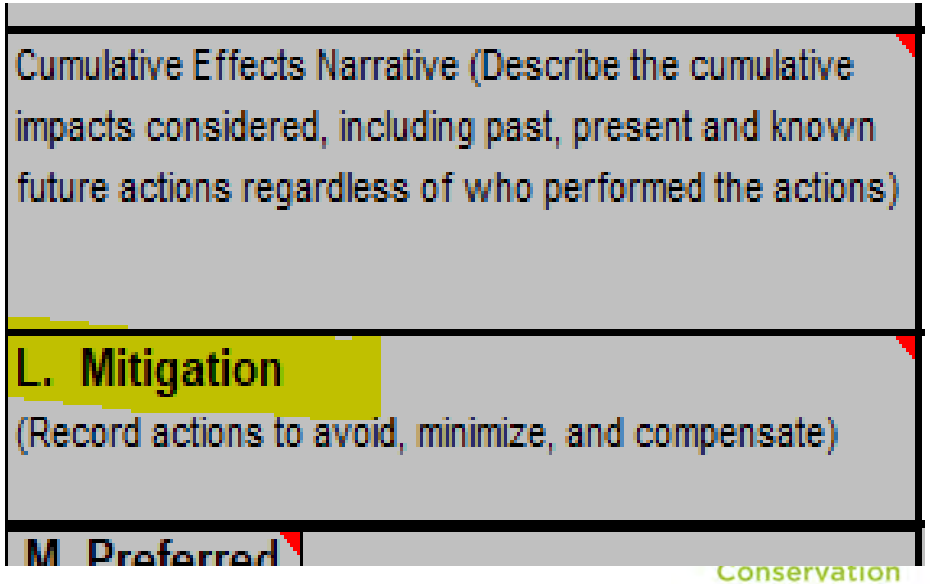
- Bank armor and protection
- Soil bioengineering practices
- In-stream structures
- Native material revetments
- Riparian areas with native or locally adapted vegetation
- Control livestock access to the water bodies

Mitigation Documentation (CPA-52)

Section L, Mitigation, Are actions to avoid, minimize, and compensate for implementation of the alternatives recorded?

Include here any mitigation measures that are NOT already incorporated in the alternatives that will offset any adverse impacts. This may include conditions included in required permits.

- Briefly describe or reference all mitigation measures to be applied for each alternative.
- **Mitigation actions for the preferred (selected) alternative must be included in the conservation plan, designs, and specifications**.



Mitigation Documentation

Mitigation includes:

- Avoiding the impacts altogether by **not taking a certain action** or parts of an action.
- Minimizing impacts by limiting the degree of magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating impact over time by preservation/maintenance operations during action life.
- Compensating for the impact by replacing or providing substitute resources or environments.

Alternatives

- **Critical Area Planting**
- **Stream Habitat Improvement and Management**
- **Wildlife Planting**
- **Mulching**
- **Fencing (Access Control)**
- Riparian Forest Buffer
- Riparian Herbaceous Cover
- Tree/Shrub Establishment

Alternatives

- Erosion rates decline as a percentage of vegetative roots in a streambank increases. Selection of **appropriate riparian vegetation** will increase the streambank's ability to resist future erosion
- The establishment of vegetation on cleared and snagged areas will be in accordance with the criteria contained within Conservation Practice Standard (CPS**) Critical Area Planting** (**Code 342).**
- **Incorporate enhancements for fish and wildlife** values as needed and practical. Special attention should be given to landscape aesthetics and to protecting and maintaining key shade, food, and den trees. **Use CPS Stream Habitat Improvement and Management (Code 395).**

Alternatives

- WILDLIFE HABITAT PLANTING - This practice is used to Improve degraded wildlife habitat for **the target wildlife species** or guild.
- If the Clearing and Snagging is being planned in an area **identified with a specific species** of concern, this practice may be used to restore habitat.
- **CPS Wildlife Habitat Planting (Code 420) may be determined to be needed to fully address the habitat-limiting factors**

Alternatives

- MULCHING - Consider **potential beneficial or detrimental effects** of mulching materials.
- These effects are specific to site including toxic (allelopathic) activity against the crop, weeds, or other beneficial or pest organisms.

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CPS - 326 Clearing and Snagging (Consultations)

Natural Resources Conservation Service

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Consultation Process

Remember:

- ✓ **Clearing and Snagging (326) and Obstruction Removal (500) are conservation practices not completely covered by the Prototype Programmatic Agreements (PPAs).**
  - ✓ **For example: Obstruction Removal is categorized as Not Likely to Adversely Affect endangered species or their critical habitats but have the potential to affect the *Epicrates inornatus* (Puerto Rican boa) and is not covered under the SHPO PPA Appendix B.**

Section 106

Cultural Resources Evaluation Process

Field office staff completes CPA-52
(FO)

Is the proposed practice (or system practices) identified on Appendix B from Prototype Programmatic Agreement (PPA)?
(FO)

NO

Document this determination in the NRCS-CPA-52 and NRCS CR-CPC-10.

Complete the SHPO Consulatation Review Checklist located in the Share Point site

Link:
https://usdagcc.sharepoint.com/:f:/s/nrcs_caribbean/ecological_science/EniaQifyLEBHjDoJMnys3_kB7YBHJqBC3DeFu1cjXLP4QA?e=yuc8y4

YES

Are all conditions met?
(FO)

NO

YES

STOP! No further consultation with SHPO is required.
Document this determination on NRCS-CPA-52 and NRCS CR-CPC-10

Upload the Consultation Packet to the the applicable Field Office (FO) folder located in the Share Point site under the "Cultural Resources Folder" and enter the required information in the SHPO Consultation Review log.
(FO)

Archeologist will review and submit packets to SHPO for review. SHPO will have 30 calendar days to review and provide comments. Keep copies of all correspondence in the case file.

Jayson Mas will be the POC for Cultural Resources Consultation Reviews.

Section 106

USDA

Cultural Resources Review Request Form

CR-CPC-13
01/2020

1. Project/Producer Name:	2. Municipality:	3. Date:
4. NRCS Planner:	5. Field Office:	6. Program:
7. F#: T#:	8. Coordinates: N W	9. Implementation Date:
10. List all the practice(s) code(s). ☐ All practices exempted ☐ Practice(s) not exempted:		11. Application Number:

PROJECT SITE INSPECTION

12. After conducting a field inspection of the APE, select if there is evidence of any of the following:

- ☐ Structural Features:
- ☐ Communications Infrastructure:
- ☐ Hydraulic and Irrigation Features:
- ☐ Boundaries Markers:
- ☐ Prehistoric Features:
- ☐ Artifacts:

Describe findings / Additional details:

13. Send this form along with a portion of a 7.5 minute quad map at 1:20,000 scale with the APE marked. Attach shape file polygons for practices. Email to: jayson.mas@usda.gov

TO BE COMPLETED BY CULTURAL RESOURCES LIASON

14. Electronic database review by NRCS _____

15. Is there an historic property within the APE? ☐ YES ☐ NO

Describe findings:

CRL Signature: _____ **Date:** _____

TO BE COMPLETED BY CULTURAL RESOURCES SPECIALIST

- ☐ All proposed practices are exempted from Section 106 review according to Stipulation V.a. of the PPA. Proceed with practice.
- ☐ Cultural Resources will not be affected. Proceed with practice implementation.
- ☐ Cultural Resources can be affected. Do not proceed with practice implementation. Initiate Section 106 consultation.

SHPO consultation initiated on: _____

CRS Signature: _____ **Date:** _____

Date consultation completed: _____

FINAL APPROVAL BY CULTURAL RESOURCES SPECIALIST

- ☐ Proceed with practice implementation.
- ☐ Do not proceed with practice implementation.

CRS Signature: _____ **Date:** _____

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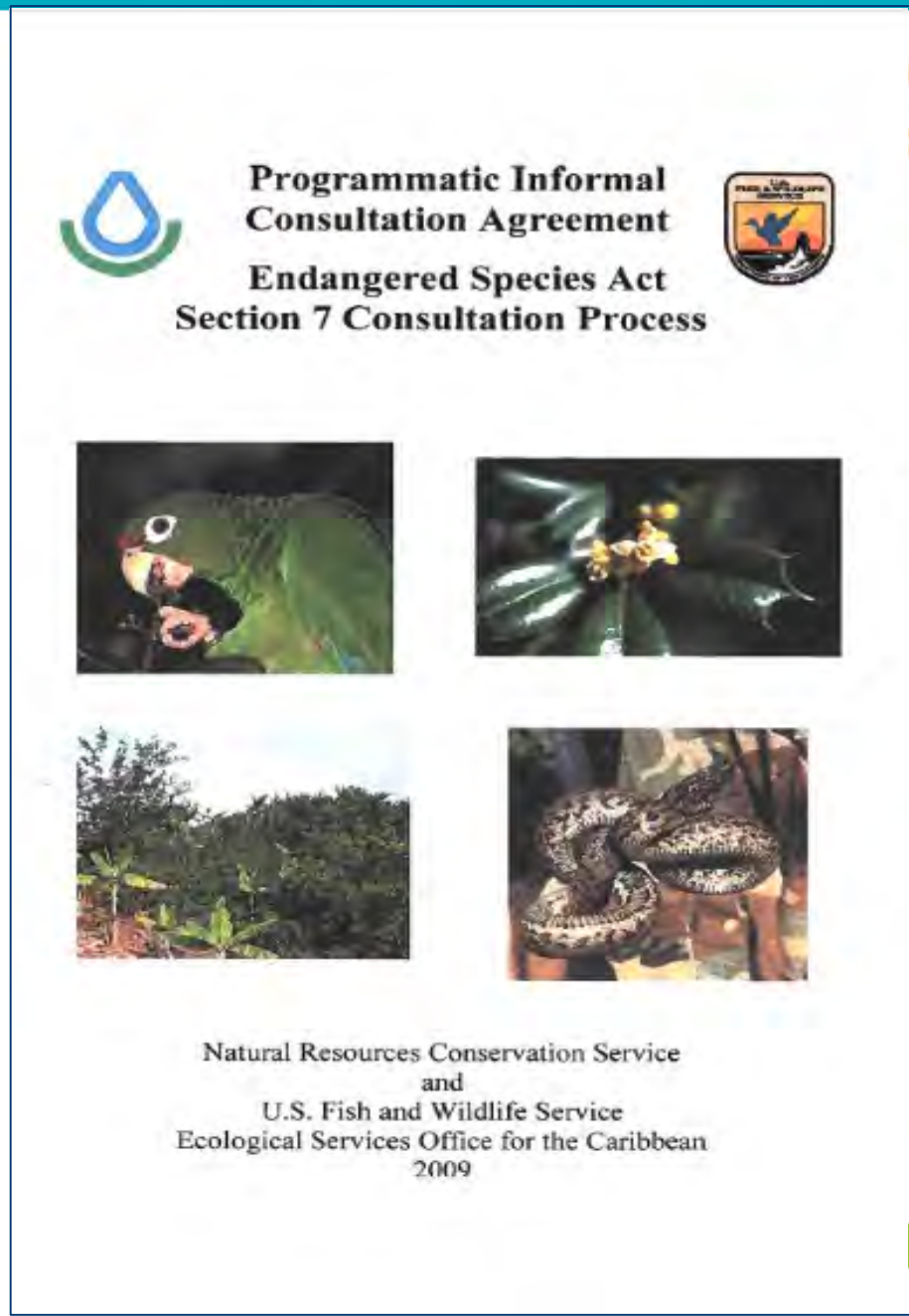
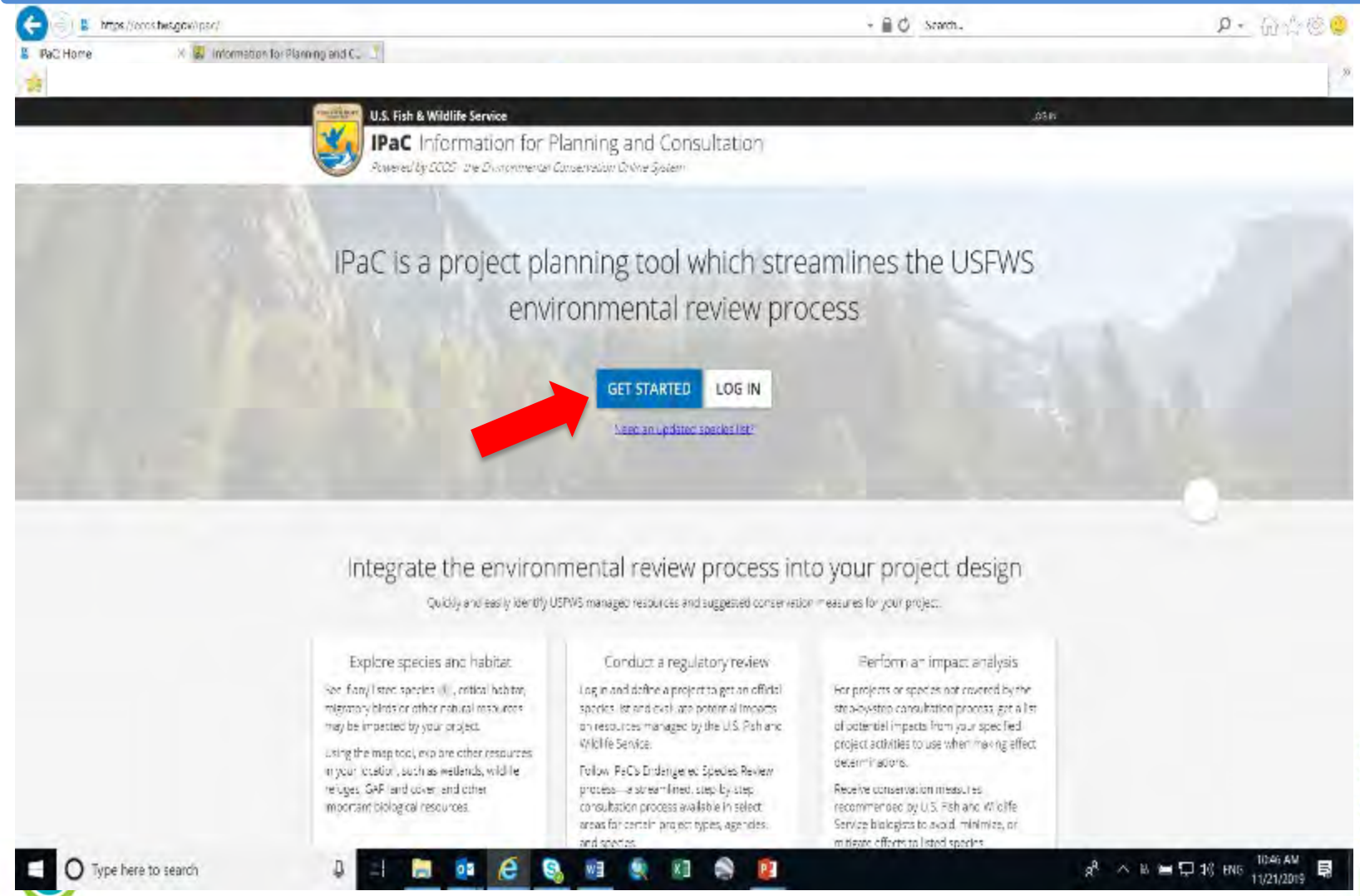
Section 7

1. NRCS Programmatic Informal Section 7 Consultation Agreement (PPA)

- ✓ **Clearing and Snagging (326):** May Affect (Xa) E&T and their habitats
- ✓ **Obstruction Removal (500):** Not Likely to Adversely Affect but have the potential to affect the *Epicrates inornatus.*



2. IPaC webpage https://ecos.fws.gov/ipac/



Required Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Caribbean Ecological Services Field Office
Post Office Box 491
Boqueron, PR 00622-0491
Phone: (787) 851-7297 Fax: (787) 851-7440
http://www.fws.gov/caribbean/es

In Reply Refer To:
Consultation Code: 04EC1000-2020-SLI-0202
Event Code: 04EC1000-2020-E-00305
Project Name: Test for a training on Hacienda La Esperanza

November 22, 2019

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

THE FOLLOWING SPECIES LIST IS NOT A SECTION 7 CONSULTATION. PLEASE CONTACT OUR OFFICE TO COMPLETE THE CONSULTATION PROCESS

The purpose of the Endangered Species Act (Act) is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect those species and/or their designated critical habitat.

Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action". The enclosed species list provides information to assist with the consultation process with the U.S. Fish and Wildlife Service (Service) under section 7 of the Act. However, the enclosed species list **does not complete the required consultation process**. The species list identifies threatened, endangered, proposed and candidate species, as well as proposed and designated critical habitats, that may occur within the boundary of your proposed project and/or may be affected by your proposed project.

A discussion between the Federal agency and the Service should include what types of listed species may occur in the proposed action area, and what effect the proposed action may have on those species. This process initiates informal consultation.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Caribbean Ecological Services Field Office
PO Box 491
Boquerón, PR 00622

In Reply Refer to:
FWS/R4/CESFO/72MM-136

Mr. Luis A. Cruz Arroyo
Director
USDA-NRCS Caribbean Area
Natural Resources Conservation Service
654 Muñoz Rivera Ave. Suite 604
San Juan, PR 00918-4123

Re: NRCS Regular EQIP Projects Batch # 01

Dear Mr. Cruz:

Thank you for your letter dated April 29, 2020, and received in May 01, 2020, requesting Section 7 concurrence for the Regular EQIP Projects. Our comments are provided under the Endangered Species Act (Act) (87 Stat. 884, as amended; 16 United States Code 1531 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The proposed projects (about 20 projects in batch #01) contain the listed-below actions within ten municipalities (Arecibo, Barranquitas, Camuy, Culebra, Isabela, Lares, Las Piedras, Salinas, San Sebastián and Vega Baja). The proposed actions for this batch consist of:

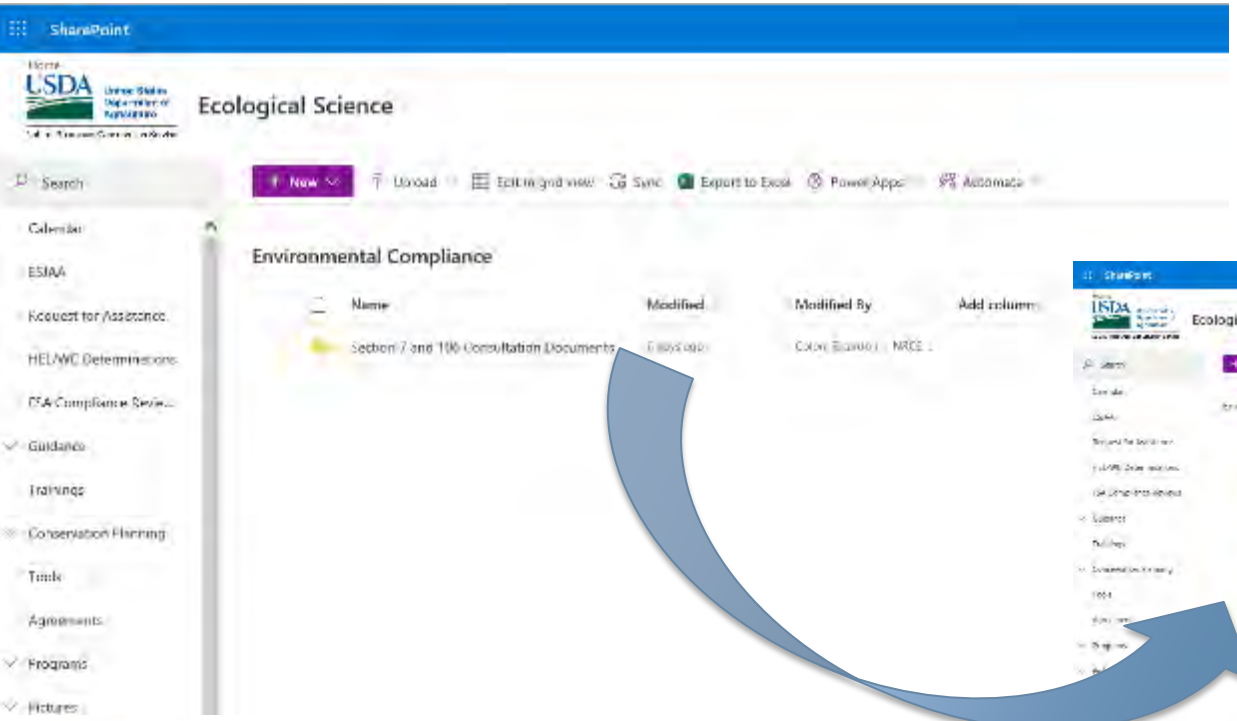
1. Integrated Pest Management
2. Irrigation Structure for Water Control
3. Irrigation Reservoir
4. Herbaceous Weed Treatment
5. Watering Facility
6. High Tunnel System
7. Obstruction Removal
8. Roofs and Covers
9. Livestock Shelter Structure

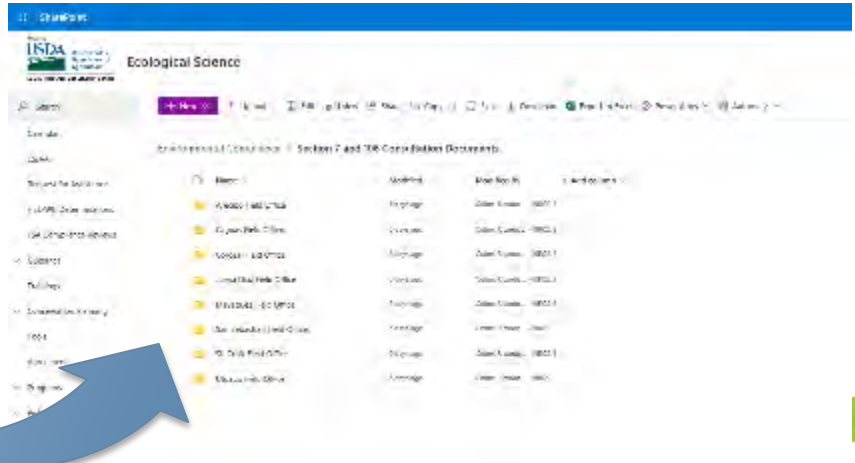
The USDA Natural Resource Conservation Service (NRCS) has determined that the proposed actions in batch #01 have no effect on the West Indian manatee (*Trichechus manatus*), hawksbill sea turtle (*Eretmochelys imbricate*), leatherback sea turtle (*Dermochelys coriacea*), Puerto Rican plain pigeon (*Columba inornata wetmorei*) and the guajón (*Eleutherodactylus cooki*). Nevertheless, NRCS has determined that the proposed actions may affect, but are not likely to

Merged Process

For 2021, process to submit projects for Section 7 and Section 106 consultations will be merged.

- ✓ Planners will just upload the project documentation just one time in the FO folder in the SharePoint and will fill out just one table.





Refresher training on November 2020

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CPS - 326 Clearing and Snagging (Design)

Natural Resources Conservation Service

nrcs.usda.gov/

Documents Available in the FOTG

Clearing and Snagging (326)

Documents (5)

Document Title	Type	Pub Date	Subject	Keywords	Abstract	Size (kB)	Actions
326 CB CPS Clearing and Snagging 2020		2020-10-27	--	--	--	103	
326 CB SOW Clearing and Snagging 2020		2020-3-2	--	--	--	111	
326_CB_IR_Clearing and Snagging_2020		2020-10-26	--	--	--	216	
326 CB OM Clearing and Snagging 2020		2020-3-2	--	--	--	117	
326_CB_OM_Clearing_and_Snagging_2020_SPA		2020-10-19	--	O&M; SPA	--	301	

Nomenclature:

CPS: Conservation Practice Standard

SOW: Statement of Work

IR: Implementation Requirement and Certification

OM: Operation and Management - SPA

USDA United States Department of Agriculture

Conservation Practice Standard

USDA United States Department of Agriculture

326-CPS-1

Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

CLEARING AND SNAGGING

CODE 326

(ft)

DEFINITION

Removal of vegetation along the bank (clearing) and selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams.

PURPOSE

This practice is used to accomplish one or more of the following purposes:

- Restore flow capacity and direction
- Prevent excessive bank erosion by eddies or redirection of flow
- Reduce the undesirable formation of bars
- Minimize blockages by debris

CONDITIONS WHERE PRACTICE APPLIES

Any natural or improved channel where the removal of vegetation, trees, brush, and other obstructions is needed to accomplish one or more of the listed purposes.

CRITERIA

General Criteria Applicable to All Purposes

Notify landowner and/or contractor of responsibility to locate all buried utilities in the project area, including drainage tile and other structural measures. The landowner is also required to obtain all necessary permits for project installation prior to construction.

The design must address all modified flow conditions caused by clearing and snagging.

Capacity

Determine the capacity of the channel, both before and after modification, using National Engineering Handbook (NEH) Part 654, Stream Restoration Design, Chapter 6, Stream Hydraulics. Select a value of Manning's "n" roughness coefficient to determine channel capacity after modification that reflects the degree of natural changes and maintenance expected to occur in future years.

Location

Include the perimeter and flow area of the channel in the area to be cleared and snagged. Trees on the bank that are leaning over or other objects that may fall into the channel may be included.

Clearing and snagging may also be used for other areas, such as temporary disposal areas or travelways, required for implementation of this practice.

Statement of Work

STATEMENT OF WORK
Clearing and Snagging (326)
Caribbean Area

These deliverables apply to this individual practice. For deliverables for other planned practices, refer to those specific Statements of Work.

DESIGN

Deliverables

1. Design documentation that demonstrates that the criteria in the NRCS conservation practice standard have been met and are compatible with other planned and applied practices. Include:
   a. Identification of client needs, documentation of discussion with client, and a recommended method of resolution.
   b. Practice purpose(s) as identified in the conservation plan.
   c. Location of planned practice installation shown on a farm or ranch plan map.
   d. List of required permits to be obtained by the client.
   e. Compliance with NRCS national and state utility safety policy (NEM Part 503-Safety, Subpart A - Engineering Activities Affecting Utilities 503.00 through 503.06).
   f. List of facilitating practices
   g. Practice standard criteria related computations and analyses to develop plans and specifications including but not limited to:
      i. Geology and Soil Mechanics (NEM Subpart 531a)
      ii. Hydrology/Hydraulics
      iii. Channel capacity before and after improvement.
      iv. Channel stability
      v. Structural
      vi. Extent of clearing and snagging
      vii. Environmental Considerations
      viii. Vegetation
      ix. Quantity computations
      x. Safety Considerations (NEM Part 503-Safety, Subpart A, 503.10 through 503.12)
2. Written plans and specifications including sketches and drawings shall be provided to the client that adequately describes the requirements to install the practice and obtain necessary permits.
3. Design Report and Inspection Plan as appropriate (NEM Part 511, Subpart B Documentation, 511.11 and Part 512, Subpart D Quality Assurance Activities, 512.30 through 512.32).
4. Operation and Maintenance Plan signed by the client/farmer.
5. Certification that the design meets NRCS standards and specifications and is in compliance with applicable laws and regulations (NEM Part 505 - Non-NRCS Engineering Services, Subpart A - Introduction, 505.0 and 505.3).
6. Design modifications during installation a required.
7. Engineering job classification is shown and proper engineering approval is obtained.

INSTALLATION

Deliverables

1. Pre Installation conference with client and contractor.
2. Verification that client has obtained required permits.
3. Staking and layout according to plans and specifications including applicable layout notes.

Operation and Maintenance (Spanish)

USDA United States Department of Agriculture

Natural Resources Conservation Service

Operation & Maintenance Plan
Clearing and Snagging (Code 326)
SPA

Expected Lifespan

The minimum expected lifespan of this practice is at least 5 years.

Es requerido realizar inspecciones y mantenimiento para lograr el propósito, los beneficios y la vida útil de esta práctica. El Propietario/Operador es responsable de establecer e implementar un Plan para la Operación y Mantenimiento (Plan O&M). Los usos originales previstos para esta práctica no se pueden variar. Al firmar este documento, reconozco haber leído y entendido los términos de este Plan O&M.

Firma:

Propietario/Operador: _____ Fecha: _____

Operación se refiere a operar esta práctica en cumplimiento con todas las leyes, reglamentos, ordenanzas y servidumbres; de manera tal que resulte en el menor impacto adverso al ambiente permitiendo que esta práctica sirva al propósito para el cual fue establecida. Mantenimiento incluye los trabajos para prevenir que la práctica se deteriore, reparar los daños o reemplazar los componentes que fallen.

Entre las tareas o áreas que deberá inspeccionar y dar mantenimiento durante los **5-años de vida útil** de esta práctica se incluyen, pero no se limitan a lo siguiente:

- Evaluar el área luego de que ocurra un evento de lluvia mayor para identificar posibles árboles/ramas caídas, o la acumulación de sedimentos. Tan pronto como sea posible, remover, relocalizar y/o anclar los árboles debilitados y los sedimentos acumulados que puedan causar problemas de erosión en los taludes o topes del cauce.
- Inspeccionar periódicamente el área para identificar signos de inestabilidad o socavación de los taludes. Remover cualquier escombro que se acumule en el cauce que pueda contribuir a crear inestabilidad en el mismo; monitoreare el área muy de cerca.
- Remover toda la vegetación y/o escombros que estén bloqueando o que pudieran bloquear las estructuras o salidas de los drenajes y canales.

CB-ENG-PLNG-1 (Section H)

H – CLEARING AND SNAGGING (Practice Code 326) – PLANNING DATA

Client: _____ Date: _____

1. TYPE OF OBSTRUCTION: This practice is used for the removal of vegetation, logs, or other material that impedes the proper functioning of a stream channel or water course to restore flow capacity; prevent bank erosion by eddies; reduce the formation of sediment bars; and/or minimize blockages by debris. Based on the Payment Schedule, these are the scenarios and payments units:
   - Scenario # 1: Light – Up to 200 lineal feet of stream channel or water course
   - Scenario # 2: Medium – From 200 to 400 ln. ft. of stream channel or water course
   - Scenario # 3: Heavy – Over 400 lineal feet of stream channel or water course

   All scenarios include the labor (manual and/or using heavy equipment); heavy equipment and operators; dump trucks and drivers; mobilization and demobilization; general labors and supervisor/manager.

DESCRIPTION OF OBSTRUCTION (Trees, brush, or other type of debris)	LENGTH OF THE SEGMENT (Where the CPS-326 will be established)	LOCATION (Identify the Farm and Plot ID where it will be established)

2. Place for final disposal of removed materials:
   a. On-Site:
      - Reuse (Incorporate in the farm)

Type of Material (Vegetative or Sediments)	Amount (Cu.Yds.)

   b. Outside:
      - To be dispose out of the farm

Type of Material (Vegetative or Non-Vegetative)	Amount (Cu.Yds.)	Final Disposal Area (Name of Landfill, or Other Place)

** See examples on the next page for calculating VOLUME of MATERIAL to be removed from the stream.

INCLUDE THE CONSERVATION PLAN MAP SHOWING THE ACTUAL LOCATION OF THE STREAM OR WATER BODY WHERE CPS-326 WILL BE ESTABLISHED. TAKE PHOTOS OF THE OBSTRUCTION OR DEBRIS ON SITE AND AFTER PHOTOS SHOWNG COMPLETED WORK.

Implementation Requirement and CERTIFICATION

USDA UNITED STATES DEPARTMENT OF AGRICULTURE

CLEARING AND SNAGGING
CODE 326

Conservation Practice Implementation Requirements and Certification

Cooperator Name	County	Planner	Date

Farm / Tract/ Field (s)	Program/ Contract No. (if applicable)	Amount Planned
		Feet

Purpose (check all that apply)

☐ Safe clearing and snagging and/or disposal of unwanted material (e.g. vegetative debris, no vegetative debris, sediments, etc.). Material Composition:
☐ Vegetative ☐ Trash ☐ Sediments ☐ Metals ☐ Other_____

☐ Mitigation measures to contract (select at least one):
☐ Critial Area Planting ☐ Seeding & Mulching ☐ Wildlife Planting ☐ Riparian Herbaceous Cover
☐ Stream Habitat Improv. and Management ☐ Riparian Forest Buffer ☐ Tree/Shrub Establishment

Site Conditions and Brief Description of Work

OPERATION AND MAINTENANCE

Prepare an Operation and Maintenance Plan (O&M Plan) for the operator. O&M for this practice may be addressed in the O&M Plans for the practice it supports. Refer to Caribbean Area O&M documentation for this practice located in the FOTG: **326_CR_OM_Clearing and Snagging 2020** (Spanish versions are also available_**SPA**).

CERTIFICATION

Supporting Documentation (for file)

☐ Map showing practice location ☐ Pictures taken GPS Coordinates: ☐ Lat./Long.: _____

Clearing and Snagging (CPS)

DEFINITION

Removal of vegetation along the bank (clearing) and selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams.

Clearing and Snagging (CPS)

PURPOSE

~ Restore flow capacity and direction;

~ Prevent excessive bank erosion by eddies or redirection of flow;

~ Reduce the undesirable formation of bars;

~ Minimize blockage by debris.

** *This practice is commonly used in EWP Projects.*

CRITERIA

- Landowner and/or Contractor are responsible for identifying all buried utilities (Call 811);
- Landowner is responsible for obtaining all necessary permits;
- The design must address all modified flow conditions:

  Determine capacity before and after modification by using the NEH Part 654 – Stream Restoration Design Chapter 6 – Stream Hydraulics.

Removal Methods

Manually

Sawing

Heavy Equipment

(Digger, Bulldozer, Excavator, etc.)

Excavation

Others

Heavy Equipment Commonly Used in Construction Projects

Bulldozer

Digger

Material Handler (Araña)

Vibrating Roller

Traxcavator

Excavator (Backhoe)

Sheep Foot Roller

Loader

Bobcats

Dump Truck

Disposal Methods

Identify a temporary place that will not significantly affect the flow capacity of the floodplain, then:

- ~ Reusing or Recycling
- ~ Burial at an approved site
- ~ Approved Landfill
- ~ Recycling Center

** *Burning in the CB is highly restricted.*

CPS-326 –Payment Schedule Scenarios

- ✓ **#1 - LIGHT:** Up to 200 Ln. Ft. – Approx. 1/3 of the channel flow capacity is obstructed, impeding the proper function of a stream channel or water course.

Unit Cost: $17.02/ft

- ✓ **#2 – MEDIUM:** From 200-400 Ln. Ft. – The channel flow capacity is obstructed, restricting or diverting water against the streambanks causing erosion.

Unit Cost: $22.16/ft

- ✓ **#3 - HEAVY:** More than 400 Ln. Ft. – The channel flow capacity is obstructed, restricting or diverting water against the streambanks causing erosion.

Unit Cost: $22.92/ft

PR-VIE-002

Scenario #1: Light

Up to 200 Ln. Ft. – Approx. 1/3 of the channel flow capacity is obstructed.

PR-RIO-003

Scenario #2: Medium

From 200 @ 400 Ln. Ft. of the channel flow capacity is obstructed.

PR-LUQ-001

Scenario #3: High

More than 400 Ln. Ft. of the channel flow capacity is obstructed.

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Completing the CB-ENG-PLNG-1 Section H

Fill One Line per Farm/Plot (Contract Item)

*** **ESTIMATE the LENGTH**

Using Measuring Tape, CART, Google Maps, or by Steps ….

Describe the Type & Amount of Material to REUSE in the farm

Describe the Type & Amount of Material to DISPOSE, and WHERE it will be Disposed

Remember to Add a MAP (Record the COORDs) and PICTURES (Before & After)

CB-ENG-PLNG-1
9/2020

H – CLEARING AND SNAGGING (Practice Code 326) – PLANNING DATA

Client: CLIENT NAME Date: VISIT DATE

1. TYPE OF OBSTRUCTION: This practice is used for the removal of vegetation, logs, or other material that impedes the proper functioning of a stream channel or water course to restore flow capacity; prevent bank erosion by eddies; reduce the formation of sediment bars; and/or minimize blockages by debris. Based on the Payment Schedule, these are the scenarios and payments units:
   - Scenario # 1: Light – Up to 200 lineal feet of stream channel or water course
   - Scenario # 2: Medium – From 200 to 400 ln. ft. of stream channel or water course
   - Scenario # 3: Heavy – Over 400 lineal feet of stream channel or water course

All scenarios include the labor (manual and/or using heavy equipment); heavy equipment and operators; dump trucks and drivers; mobilization and demobilization; general labors and supervisor/manager.

DESCRIPTION OF OBSTRUCTION (Trees, brush, or other type of debris)	LENGTH OF THE SEGMENT (Where the CPS-326 will be established)	LOCATION (Identify the Farm and Plot ID where it will be established)
		Farm/Plot ID

2. Place for final disposal of removed materials:
   a. On-Site:
      - Reuse (Incorporate in the farm)

Type of Material (Vegetative or Sediments)	Amount (Cu.Yds.)

   b. Outside:
      - To be dispose out of the farm

Type of Material (Vegetative or Non-Vegetative)	Amount (Cu.Yds.)	Final Disposal Area (Name of Landfill, or Other Place)

** See examples on the next page for calculating VOLUME of MATERIAL to be removed from the stream.

INCLUDE THE CONSERVATION PLAN MAP SHOWING THE ACTUAL LOCATION OF THE STREAM OR WATER BODY WHERE CPS-326 WILL BE ESTABLISHED. TAKE PHOTOS OF THE OBSTRUCTION OR DEBRIS ON SITE AND AFTER PHOTOS SHOWNG COMPLETED WORK.

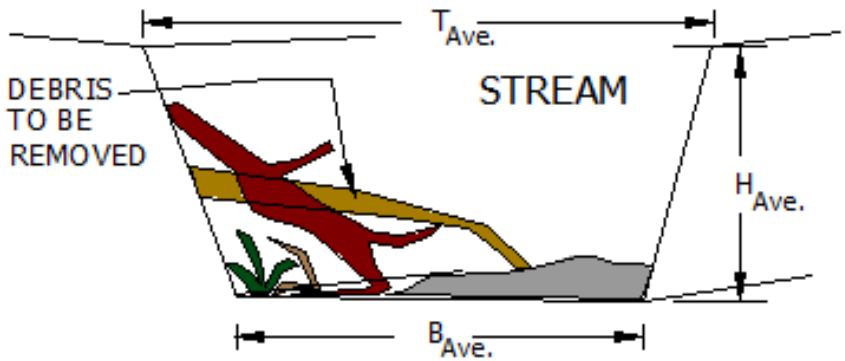
VOLUME COMPUTATION (Cubic Yards)

CPS -326 - Clearing and Snagging - This practice will be paid by FEET, but Planners should also estimate the volume of material to be removed in cubic yards.

VEGETATIVE AND/OR NON-VEGETATIVE DEBRIS

TYPICAL CROSS SECTION

NOT TO SCALE



$$\text{AREA} = \left(\frac{T_{(ft)} + B_{(ft)}}{2}\right) \times H_{(ft)} = \_\_\_\_\_ (sq.ft.)$$

$$\text{VOLUME TOTAL}_{(cu.ft.)} = \text{AREA}_{(sq.ft.)} \times \text{LENGTH}_{(ft.)} = \_\_\_\_\_ (cu.ft.)$$

$$\text{VOLUME TOTAL}_{(cu.yd.)} = \left(\text{VOLUME TOTAL}_{(cu.ft.)}\right) / 27$$

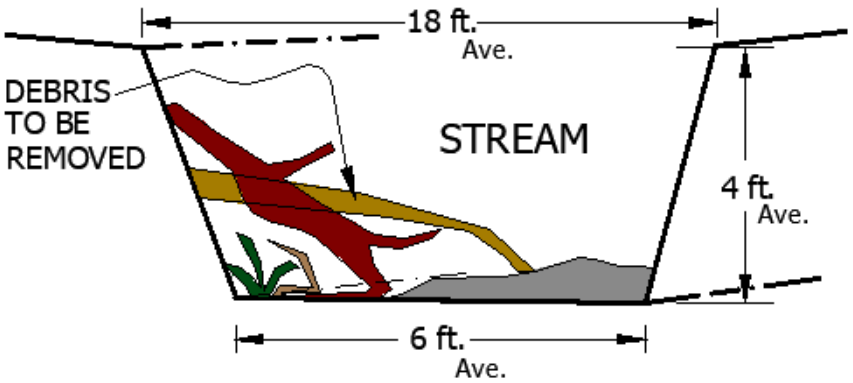
$$\text{DEBRIS to REMOVE}_{(cu.yd.)} = 0.2 \times (V_{Total})$$

NOTE-1: Use this method for calculating the amount of DEBRIS when the OBSTRUCTION has VOIDS (empty spaces).
Evaluate a typical Cross Section (X/S) and estimate the percentage of OBSTRUCTION it has.

NOTE-2: In this example we are assuming 20% (= 0.2) of the X/S is clogged along the whole segment (L) of the stream.

EXAMPLE Vegetative & Non-Vegetative

TYPICAL CROSS SECTION
NOT TO SCALE



LEGTH = 250 LF
OBSTRUCTION = 20 % of the stream

$$\text{AREA} = \left(\frac{18' + 6'}{2}\right) \times 4' = 48 \text{ sq. ft.}$$

$$\text{VOLUME TOTAL}_{(cu.ft.)} = 48_{(sq.ft.)} \times 250_{(ft.)} = 12{,}000_{(cu.ft.)}$$

$$\text{VOLUME TOTAL}_{(cu.yd.)} = \left(12{,}000_{(cu.ft.)}\right) / 27 = 444.44_{(cu.yd.)}$$

$$\text{DEBRIS to REMOVE}_{(cu.yd.)} = 0.20 \times (444.44_{(cu.yd.)}) = 88.88 \text{ cy}$$

$$\boxed{\text{DEBRIS to REMOVE} = 89.0 \text{ cy}}$$

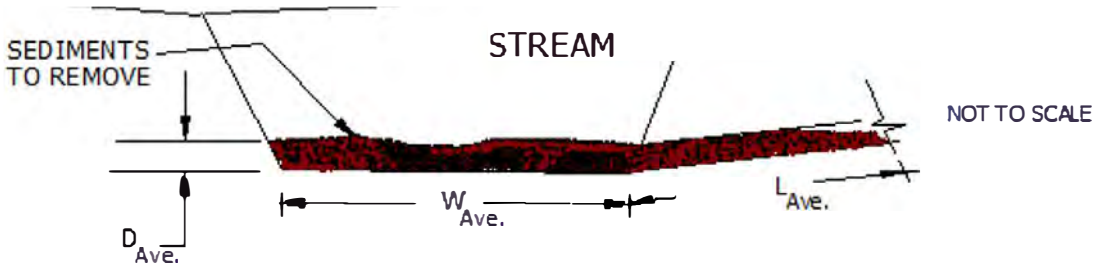
Remember:

- **Measure the LENGTH to be cleared**
- **Estimate the % of Obstruction**

NON-VEGETATIVE DEBRIS (SEDIMENTS)

TYPICAL CROSS SECTION

ASSUMING THE STREAM HAS A LAYER OF SEDIMENTS (SAND, GRAVELS, ROOTS) OBSTRUCTING THE FLOW:



$$\text{VOLUME TOTAL}_{(cu.ft.)} = (D)_{(ft.)} \times (W)_{(ft.)} \times (L)_{(ft.)} = \_\_\_\_\__{(cu.ft.)}$$

$$\text{VOLUME TOTAL}_{(cu.yd.)} = (\text{VOLUME TOTAL}_{(cu.ft.)}) / 27 = \_\_\_\_\__{(cu.yd.)}$$

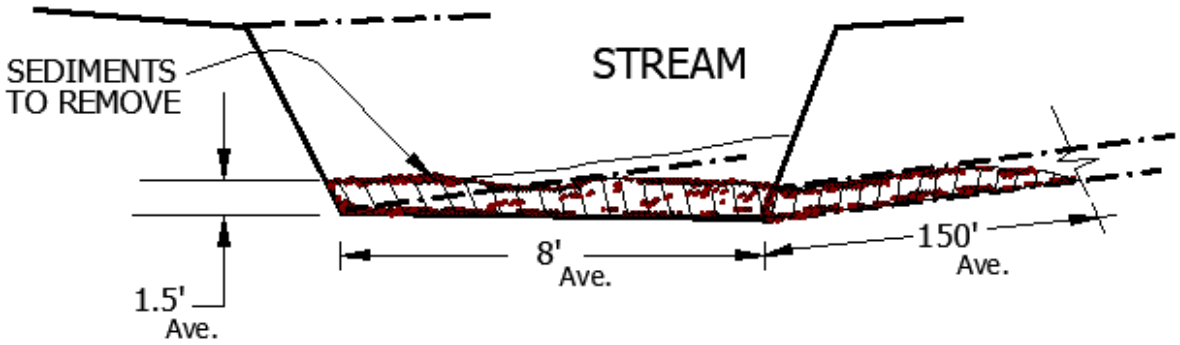
NOTE-1: Use this method for calculating the amount of DEBRIS (SEDIMENTS) when the OBSTRUCTION has a reduced AMOUNT OF VOIDS (could be calculated as a mass OBSTRUCTING part of the Cross Section).

NOTE-2: Estimate the amount of SEDIMENTS OBSTRUCTING the stream by multiplying the Depth (D) of the Layer, by the Width (W), by the Total Length (L) of the reach segment to be cleared.

EXAMPLE: Non-Vegetative (SEDIMENT)

TYPICAL CROSS SECTION
NOT TO SCALE

ASSUMING THE STREAM HAS A LAYER OF SEDIMENTS (SAND, GRAVELS, ROCKS) OBSTRUCTING THE FLOW:



VOLUME TOTAL (cu.ft.) = (1.5') x (8') x (150') = 1,800 (cu.ft.)

VOLUME TOTAL (cu.yd.) = (1,800 (cu.ft.)) / 27 = 66.66 (cu.yd.)

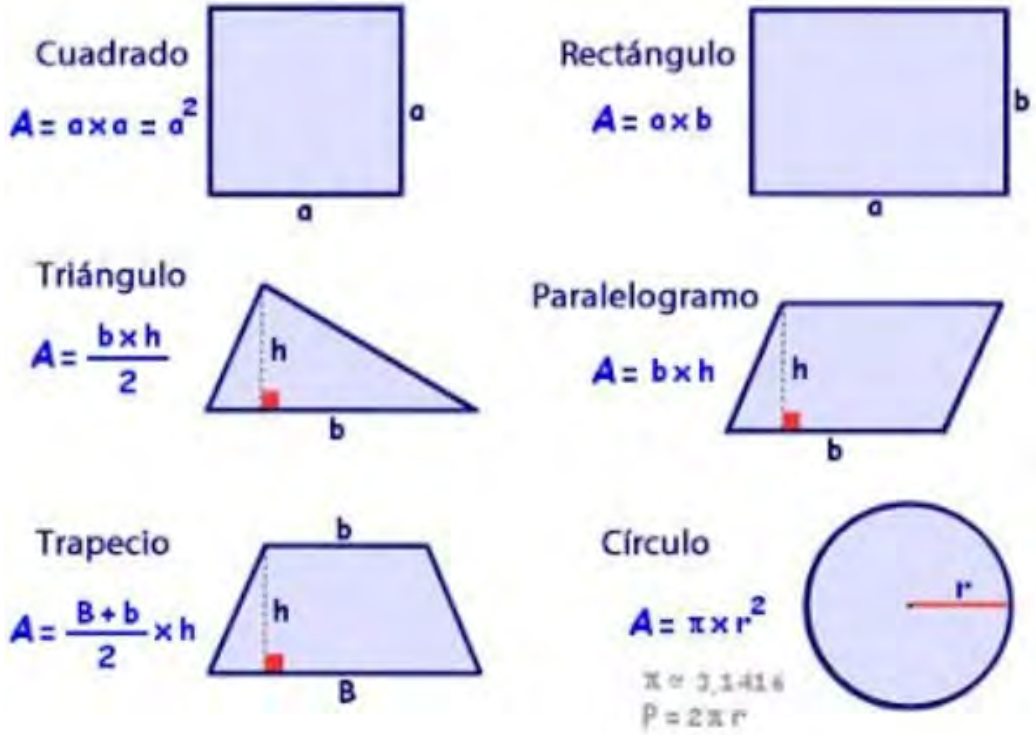
SEDIMENTS TO REMOVE = 67 cu.yd.

Remember:

- **Measure the LENGTH to be cleared**
- **Assume the layer of sediments is 100% SOLID**

COMMON AREAS
(Similar to Stream Cross-Sections)

Algunas de las formulas que se utilizan para sacar el área de figuras geométricas



Could be a RECTANGLE

Could be an inverted TRIANGLE

Could be an inverted TRAPEZOID

Could be HALF of a CIRCLE

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CPS - 326 Clearing and Snagging (Implementation Certification)

Natural Resources Conservation Service

nrcs.usda.gov/

EXAMPLE

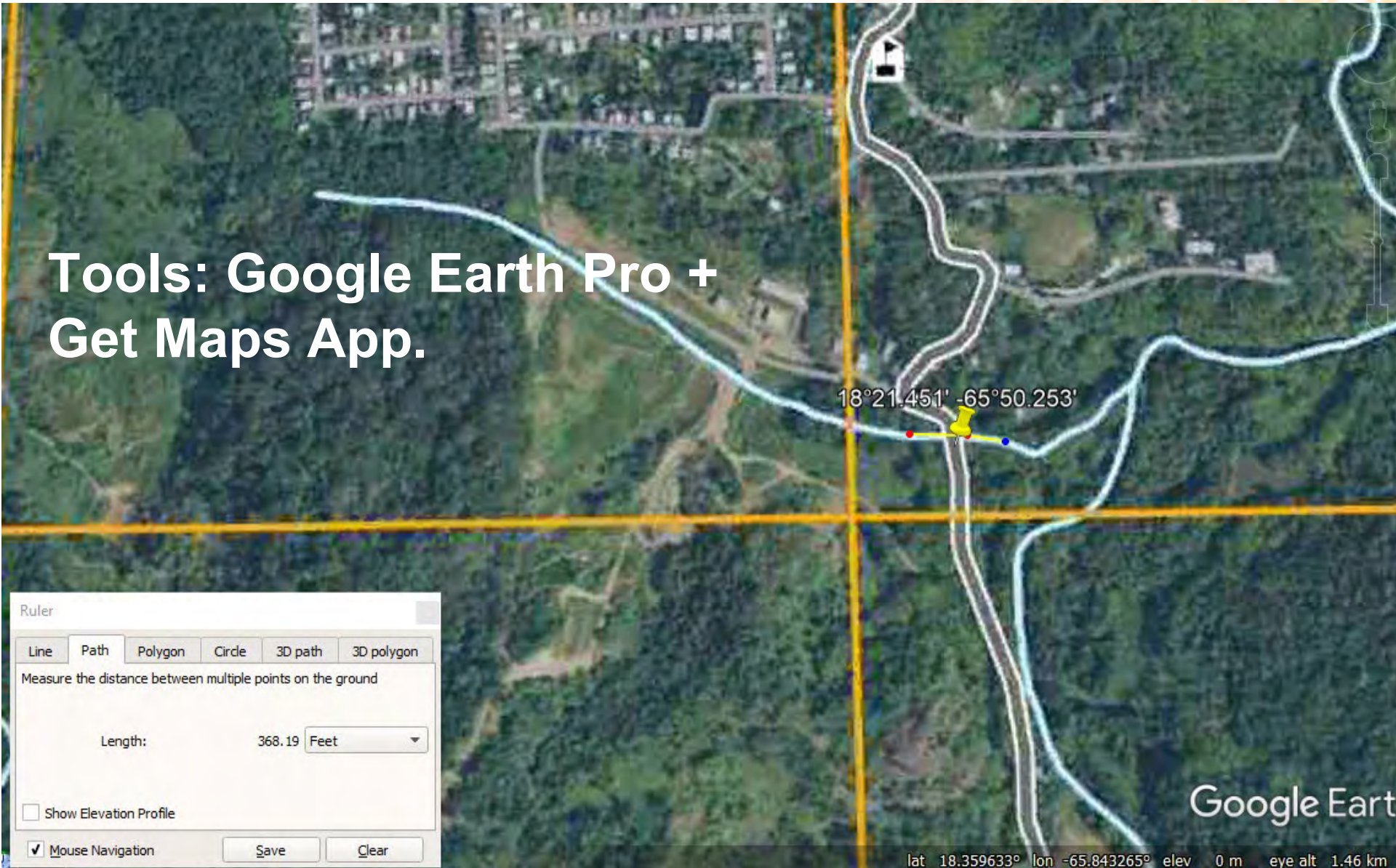
REAL CASE PR-RIO-003

Take Pictures of Affected Stream/Channel

Remember:

- **Measure the LENGTH to be cleared (Drop PINS)**
- **Estimate the % of Obstruction (Avg.)**

Estimate Stream Length



Make a Sketch Drawing of Proposed Work

Showing PLAN VIEW and Cross Section

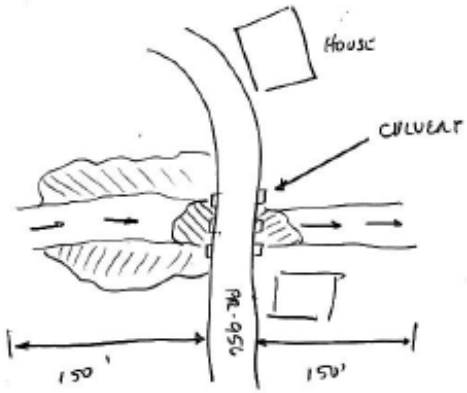
DSR Attachment B: SITE PLAN/SKETCHES DSR No. PR - R10 - 003

Project Name: Stream Hacienda Paola

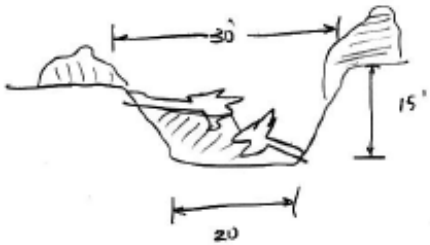
Location: Bo. Guzmán Abajo, Hacienda Paola, Rp. 952, km 3.1, Río Grande

WAYPOINT 456
N 18° 21.451'
W 65° 90.253

PLAN VIEW



X/SECTION



DEBRIS = 40% of X/S
L = 300' + CULVERT

Showing Computations

ENG. COST ESTIMATES: PR-R10-003
* ALL X/S ARE LOOKING U/S

X/S - $\left(\frac{30+20}{2}\right)(15)(300) = 112,500$ cf * 40% = 45,000

45,000 ÷ 27
1,667 cy

Take Pictures at the END of PROJECT

PR-RIO-003

DNER Permit

GOBIERNO DE PUERTO RICO
Departamento de Recursos Naturales y Ambientales

10 de septiembre de 2020

PERMISO DE LIMPIEZA DE CUERPOS DE AGUA

El Departamento de Recursos Naturales y Ambientales (DRNA) recibió la Solicitud que se describe a continuación para remover materiales de la Corteza Terrestre, bajo las disposiciones de la Ley Núm. 132 de 25 de junio de 1968, según enmendada, mejor conocida como *Ley de Arena, Grava y Piedra*, y su Reglamento Núm. 6916 de 15 de diciembre de 2004, según enmendado, mejor conocido como *Reglamento para Regir la Extracción, Excavación, Remoción y Dragado de los Componentes de la Corteza Terrestre*, para la limpieza de un cuerpo de agua.

DESCRIPCIÓN DE LA SOLICITUD

1. Solicitud Núm. : O-CT-PCA01-SJ-00187-19082020
2. Peticionario : KLEIN ENGINEERING, PSC
3. Dirección : PO BOX 12009
   SAN JUAN, PR 00922
4. Cuerpo de Agua y Localización:
   a. PR-VIE-001: 18°08.644'N, 65°26.462'W QUEBRADA LA 20, PR-997 KM 0.1 DE BO. ISABEL II DEL MUNICIPIO DE VIEQUES
   b. PR-VIE-003: 18°06.646'N, 65°28.835'W QUEBRADA KADAFY, PR-201 KM 5 DE BO. PUERTO REAL DEL MUNICIPIO DE VIEQUES.
   c. PR-VIE-004: 18°6.993'N, 65°28.391'W QUEBRADA LA MINA, PR-201 KM 3.6 DE BO. PUERTO REAL SECTOR LA MINA DEL MUNICIPIO DE VIEQUES.
   d. PR-VIE-005: 18°08.454'N, 65°27.074'W QUEBRADA PLAYA GRANDE, PR-200 KM 1.2 DE BO. TORTUGUERO DEL MUNICIPIO DE VIEQUES.
5. Descripción de la actividad:
   a. PR-VIE-001: Remoción de sedimentos y escombros vegetativos, 100 pies aguas arriba y 50 pies aguas abajo del puente. La limpieza debajo del puente esta incluida en los trabajos. Los sedimentos y escombros afectan la capacidad hidráulica del flujo de agua de la quebrada.
   b. PR-VIE-003: Remoción de sedimento y escombros vegetativos, 50 pies aguas arriba y 160 pies aguas abajo del puente. La limpieza debajo del puente está incluida en los trabajos. Los sedimentos y escombros afectan la capacidad hidráulica del flujo de agua de la quebrada y representan un peligro de inundación para 2 residencias adyacentes.
   c. PR-VIE-004: Remoción de sedimentos y escombros vegetativos, 50 pies aguas arriba y 80 pies aguas abajo del puente. La limpieza debajo del puente está incluida en los trabajos. Los sedimentos y escombros afectan la capacidad hidráulica del flujo de agua de la quebrada y representan un peligro de inundación ya que el puente es el acceso principal a las comunidades.
   d. PR-VIE-005: Remoción de sedimentos y escombros vegetativos, 45 pies aguas arriba y 30 pies aguas abajo del puente. La limpieza debajo del puente está incluida en los trabajos. Los sedimentos y escombros afectan la capacidad hidráulica del flujo de agua de la quebrada y representan un peligro de inundación para 2 residencias adyacentes.

El "Natural Resources Conservation Service" (NRCS) sometió informes de daños "Damage Survey Reports" (DSR) como parte del "Emergency Watershed Protection Program" (EWPP). El Cuerpo de Ingenieros del Ejército de los Estados Unidos (USACE), indica que no se requiere un permiso para estos proyectos.

Carr. 8838 Km 6.3 Sector El Cinco, Río Piedras, PR 00926
San José Industrial Park, 1375 Ave Ponce de León, San Juan, PR 00926
787.999.2200 787.999.2303 www.drna.pr.gov

DRNA

Natural Resources Conservation Service

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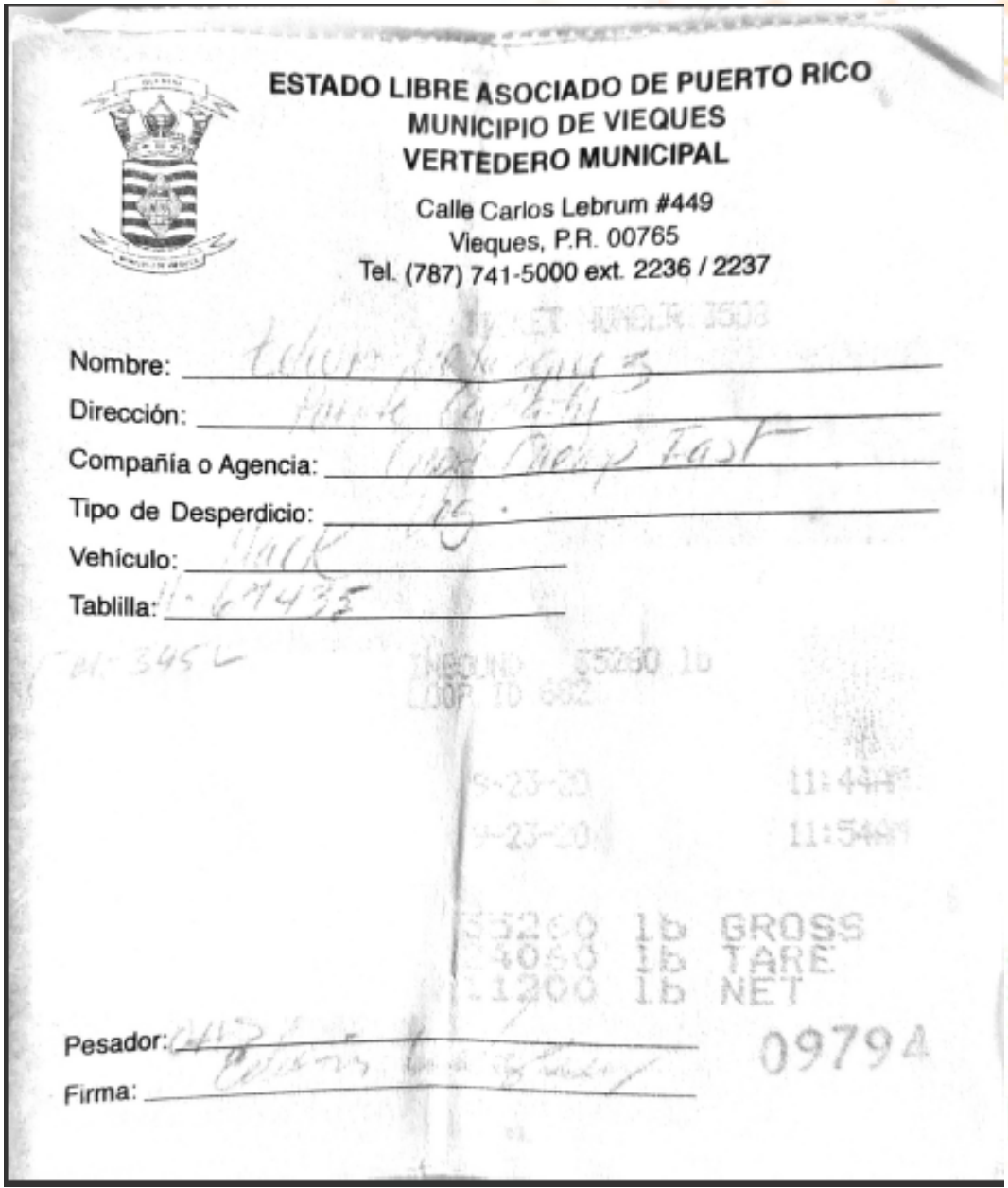
Landfill Manifest



ESTADO LIBRE ASOCIADO DE PUERTO RICO
MUNICIPIO DE VIEQUES
VERTEDERO MUNICIPAL

Calle Carlos Lebrum #449
Vieques, P.R. 00765
Tel. (787) 741-5000 ext. 2236 / 2237

Nombre:
Dirección:
Compañía o Agencia:
Tipo de Desperdicio:
Vehículo: Mack
Tablilla:

GROSS
TARE
NET

Pesador:
Firma:

09794

NRCS CB ENGINEERING JOB APPROVAL AUTHORITY

Name: _____ Date: _____

Practice Code	Practice Name	Controlling Factor	Units	Job Class I	Job Class II	Job Class III	Job Class IV	Job Class V	Maximum Approval Limits I & E	Maximum Approval Limits Design	Maximum Approval Limits Constr	Designs completed in the last 10 years	Need Training
STREAM CHANNEL													
326	Clearing & Snagging	Drainage Area	Acres	5	100	10,000	64,000	All					
		Length of Reach	Feet	500	1,000	5,000	15,000	All					
584	Channel Bed Stabilization	Length of Reach	Feet	500	1,000	5,000	15,000	All					
356	Dike	Water Height	Feet	None	3	6	10	12					
		Hazard	Class	None	III	III	III	III					
460	Land Clearing	Area	Acres	5	10	50	160	All					
555	Rock Barrier	Length	Feet	50	250	500	1,000	All					
582	Open Channel	Capacity	Cfs	50	150	300	500	1000					
		Design Velocity	Fps	2	3	4	5	10					
580	Stream Bank and Shoreline Protection	Stream Banks											
		Drainage Area	Acres	5	10	100	10,000	64,000					
		Bankfull Capacity	Cfs	50	200	500	1,500	2,000					
		Flow Velocity	Fps	1	2	5	10	>10					
		Channel Depth at Low Bank	Feet	2	4	6	8	10					
572	Spoil Spreading	Length of Channel	Feet	1,000	2,500	5,000	10,000	All					
		Effective Height	Feet	15	20	25	30	35					
578	Stream Crossing	Drainage Area	Acres	10	100	1,000	2,500	All					
		Height of Bank	Feet	4	6	8	10	All					
		Culvert Pipe, ID	Inches	18	24	48	60	72					
LAND RECLAMATION													
466	Land Smoothing	Area	Acres	5	10	50	200	All					
		Average Slope	Percent	5	10	20	50	All					
500	Obstruction Removal	Area Cleared	Acres	5	10	50	200	All					
	Precision Land												

CERTIFICATION OF COMPLETION CPS-326

Describe the Type of DEBRIS to be removed.

Describe the mitigation method used by the farmer.

Provide a brief description of the work.
i.e. *"A segment approx. to 250 feet of the stream/channel adjacent to the vegetables plot was clogged with vegetative debris due to the Tropical Storm Isaias, flooding the plot and damaging the crops. "*

Print the O&M Plan we prepared, also keep a signed copy for NRCS' file.

Remember to DOCUMENT everything in the file.

USDA UNITED STATES DEPARTMENT OF AGRICULTURE

CLEARING AND SNAGGING
CODE 326

Conservation Practice Implementation Requirements and Certification

Cooperator Name	County	Planner	Date
CLIENT's NAME	TOWN	PLANNER	DATE

Farm / Tract/ Field (s)	Program/ Contract No. (if applicable)	Amount Planned
FIELD/TRACT ID.	EQIP	LENGTH Feet

Purpose (check all that apply)

☐ Safe clearing and snagging and/or disposal of unwanted material (e.g. vegetative debris, no vegetative debris, sediments, etc.). Material Composition:
☐ Vegetative ☐ Trash ☐ Sediments ☐ Metals ☐ Other_____

☐ Mitigation measures to contract (select at least one):
☐ Critial Area Planting ☐ Seeding & Mulching ☐ Wildlife Planting ☐ Riparian Herbaceous Cover
☐ Stream Habitat Improv. and Management ☐ Riparian Forest Buffer ☐ Tree/Shrub Establishment

Site Conditions and Brief Description of Work

OPERATION AND MAINTENANCE

Prepare an Operation and Maintenance Plan (O&M Plan) for the operator. O&M for this practice may be addressed in the O&M Plans for the practice it supports. Refer to Caribbean Area O&M documentation for this practice located in the FOTG: **326_CR_OM_Clearing and Snagging 2020** (Spanish versions are also available_**SPA**).

CERTIFICATION

Supporting Documentation (for file)

☐ Map showing practice location ☐ Pictures taken GPS Coordinates: ☐ Lat./Long.: _____

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United States Department of Agriculture

Map Sketch (if needed):

Drawings can be made on the Conservation Plan Map identifying streams or channels cleared location.

Prepare a Sketch Drawing.

Practice inspection certify:

- ☐ Removal of debris manually, by dozing, excavation or other means required.
- ☐ Dispose of all debris so that it does not impede subsequent work or cause onsite or offsite damage.
  - ☐ Removal to an approved landfill;
  - ☐ Wood chipping and land distribution;
  - ☐ Transported to recycling center;
  - ☐ Burial at an approved location;
  - ☐ Recycling or Reusing.
- ☐ Implemented proposed mitigation measure – identify which _____

Identify the type of work done and the disposal method used.

Indicate the Mitigation Measure IMPLEMENTED by the farmer.

* Burning of debris is NOT permitted for used.
** Removal and disposition of debris in order to apply conservation practices or facilitate the planned land use.
*** Debris removal will address the resource concerns of the prevention or hindrance to the installation of conservation practice or present a hazard to their use and enjoyment.

Check your own EJAA to verify if you have enough authority for CERTIFICATION of COMPLETION

ENGINEERING JOB APPROVAL AUTHORITY											
Practice Code	Practice Name	Controlling Factor	Units	Job Class					Maximum Approval Limits		
				I	II	III	IV	V	I & E	Design	Construction
326	Clearing and Snagging	Drainage Area	Acres	5	100	10,000	64,000	All			
		Length of Reach	Feet	500	1,000	5,000	15,000	All			

Complete accordingly: Planner and Inspector.

Planned by: _____
This practice was planned according to NRCS standards and specifications.
Planner Designation: _____
Signature by Planner with appropriate EJAA _____ Date

Site Inspected by: _____
This practice was applied according to NRCS standards and specifications.
Amount: _____ Date: _____
Inspector Signature _____ Date

Be sure that it is CERTIFIED by someone with appropriate EJAA

Certified by: _____
This practice was applied according to NRCS standards and specifications.
Amount: _____ Date: _____
Signature by individual with appropriate EJAA _____ Date

Reporting Checklist (NRCS Only):
- ☐ CPA-06 Notes
- ☐ File copy of completed IR Sheet
- ☐ Report in CART
- ☐ Other reporting tools (optional)

Check everything is well documented in NRCS' FILES.

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Questions ?

Natural Resources Conservation Service

nrcs.usda.gov/

Igualdad de Oportunidades

El Departamento de Agricultura de los Estados Unidos, USDA por sus siglas en Inglés, prohíbe el discrimen en todos sus programas y actividades por razones de raza, color, origen nacional, edad, incapacidad, y donde aplique, por razones de sexo, estado civil, estado familiar, estado parental, religión, orientación sexual, información genética, creencias políticas, represalias, o debido a que parte o la totalidad del ingreso individual se derive de cualquier programa público de asistencia. (No todas las razones prohibidas aplican a todos los programas). Personas con impedimentos las cuales requieran métodos alternos para la comunicación de programas (Braille, impresos con letras de mayor tamaño, audio cintas, etc.) deberán contactar el Centro Target del USDA al (202) 720-2600 (voz y TDD)

Para radicar una querella por discrimen escriba al USDA, Director Oficina de Derechos Civiles, 1400 Independence Avenue, S.W. Washington, D.C. 20250-9410 o llame libre de cargos al (800) 795-3272 (voz) o al (202) 720-6382 (TDD)

USDA es un proveedor, empleador y prestamista que ofrece igualdad de oportunidades

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THE END !

Natural Resources Conservation Service

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