



Pasco County, Florida Cooperating Technical Partners Mapping Activity Statement

Statement #2 – Digital Flood Insurance Rate Map (DFIRM) Production

In accordance with the Cooperating Technical Partners (CTP) Memorandum of Agreement dated September 14, 2001, between the Southwest Florida Water Management District (SWFWMD) and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement#2 is as follows:

- Statement Objective and Scope:** The objective of this Mapping Activity for Pasco County, FLORIDA is to develop a new or updated Digital Flood Insurance Rate Map(s) (DFIRM) and Flood Insurance Study (FIS) report(s) for portions of the incorporated cities of Port Richey, New Port Richey, Zephyrhills, Dade City, San Antonio, and the Town of St. Leo and unincorporated Pasco County. The FIS and DFIRM will be produced in countywide DFIRM format. The DFIRM product will be referenced to the North American Vertical Datum of 1988 (NAVD 88).

Additionally, this project will include developing new and/or updated flood hazard data, as summarized in the following table and illustrated on Attachment 1:

Flooding Source (watershed)	Area (sq. miles)	Detailed Riverine (Level 2)		Detailed Coastal				Redelineati on of SFHAs Using Effective Profiles	Refine/ Establish Zone A (Level 1)
		Hydrology	Hydraulics	Stillwater	Wave Height	Wave Runup	Erosion		
1. Hammock Creek	54.78	X	X						
2. Bear Creek	37.55	X	X						
3. Pithlachascotte River	61.82	X	X						
4. Upper Pithlachascottee	49.19	X	X						
5. Double Hammock	16.35	X	X						
6. Lower Coast Basin	13.89	X	X						
7. Pinellas Anclote	91.88	X	X						
8. Squirrel Prairie	5.97	X	X						
9. Cypress Creek	76.26	X	X						
10. South Lakes	9.16	X	X						
11. North Lakes	14.32	X	X						
12. Blanton Lake	14.23	X	X						
13. Upper East Cypress Creek	55.66	X	X						
14. Duck Lake	36.49	X	X						

15. East Zephyrhills	27.70	X	X						
16. Lake Zephyr	8.70	X	X						
17. Upper Withlacoochee River	107.98	X	X						
18. Upper Hillsborough River	45.17	X	X						
19. New River	19.29	X	X						
20. Trout Creek	18.61	X	X						
Totals	765.00								

The Mapping Partners listed below will complete this project: SWFWMD and FEMA.

The activities, and who will complete them, are summarized in the table below. The flooding sources listed in Activity 1 may be revised as part of the detailed scoping process. The watershed sizes in the table above include the entire watershed lying within the study area. Precise estimates of watershed areas and linear miles of streams to be studied will be determined based on detailed scoping activities as outlined in Activity 1A.

The following sections describe the specific mapping activities associated with this mapping project. Each activity description identifies the responsible Mapping Partners, the Standards that must be met, and resultant map component.

Activity	SWFWMD*	FEMA*
Activity 1A – Scoping	✓	
Activity 1B – Outreach	✓	
Activity 1C – Review of Existing Information, Field Surveys and Reconnaissance	✓	
Activity 2 – Topographic Data Development	✓	
Activity 3 – Independent QA/QC of Topographic Information	✓	✓
Activity 4 – Hydrology	✓	
Activity 5 – Independent QA/QC of Hydrology	✓	✓
Activity 6 – Hydraulics	✓	
Activity 7 – Independent QA/QC of Hydraulics	✓	✓
Activity 8 – Floodplain Mapping (Detailed Riverine Analysis)	✓	
Activity 8A – Floodplain Mapping (Redelineation Using Effective Profiles)	✓	
Activity 8B – Floodplain Mapping (Refine/Establish Zone A)	✓	
Activity 9 – Independent QA/QC of Floodplain Mapping	✓	✓
Activity 10 – Base Map Acquisition and Preparation	✓	
Activity 11 – DFIRM Production (Non-Revised Areas)	✓	
Activity 12 – Merge Non-Revised and Revised Information	✓	
Activity 12A – Apply DFIRM Graphic Specifications	✓	
Activity 13 – Issue Preliminary FIS and FIRM		✓
Activity 14 – Post-Preliminary Processing		✓

*Activities listed under SWFWMD of FEMA may be performed by their contractors.

Activity 1A – Scoping

The scoping of each watershed will provide a refined scope of work based on: the statement objective, scoping process, the District's regulatory authority for surface waters, FEMA's delegated authority for floodplain management to the local community and the local community's floodplain ordinance, and schedule. This refined scope of work will further define the statement objective with the written approval of the SWFWMD Director of Resource Management and FEMA's Regional Project Officer. The Scoping of this project will be completed in accordance with the Scoping Guidelines outline in FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners Appendix I.

Activity 1B – Outreach

Outreach will be conducted through affected communities, SWFWMD and FEMA in order to properly inform the citizens and provide the due process requirements. All communication and coordination with local governments will be done in accordance with Title 44 Code of Federal Regulations Part 66.

Activity 1C – Review of Existing Information, Field Surveys and Reconnaissance

Responsible Mapping Partner: SWFWMD

Scope: A review of existing information, field reconnaissance and field survey of the specified flooding sources 1-20 listed in Section 1 will be conducted to determine conditions in the watersheds and associated floodplain(s), types of topographic information available, the types and numbers of hydraulic and/or flood-control structures, apparent maintenance status of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses. The existing topographic information will be evaluated for use in developing a digital elevation model (DEM) of the watersheds. Field surveys that are part of the existing information will be reviewed for use as channel and floodplain cross sections, to identify or establish temporary bench marks (ERMs), and obtain the physical dimensions of existing hydraulic and flood-control structures. Based upon the scope of work produced under Activity 1A of this Mapping Activity Statement, additional field surveys will be conducted to establish or update conditions along the floodplain(s), physical dimensions of hydraulic and/or flood-control structures, channel and floodplain cross sections, and other necessary parameters. If new topographic information has to be acquired using aerial or LIDAR methods, FEMA can contribute for LIDAR of the floodplain only, but also pay for the flying and gathering of the LIDAR for the whole community if cost savings over partial data collection are demonstrated and documented. SWFWMD will provide funding for the percentage of area not in the floodplain. Topographic information and field surveys will be submitted for an independent QA/QC review at the completion of this Activity. SWFWMD's consultant will be responsible for addressing all concerns or questions regarding this Activity raised during the QA/QC review outlined in Activity 3.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the Technical and Administrative Support Submittal (TSDN) format described in Section 2, SWFWMD shall make the following products available to FEMA:

- Maps and drawings that provide the detailed survey results; and
- Survey notebook containing cross sections and structural data.
- Digital work map with contours;

- Hardcopy topographic maps;
- Checkpoint analyses to assess the accuracy of data including Root Mean Square Error (RMSE) calculations to support vertical accuracy;
- Identification of remote-sensing data voids and methods used to supplement data voids;
- National Geodetic Survey (NGS) data sheets for Network Control Points (NCPs) used to control remote sensing and ground surveys; and
- Metadata compliant with Federal Geographic Data Committee standards.

Activity 2 - Topographic Data Development

Responsible Entity: SWFWMD

Scope: This Activity consists of developing a DEM for the subject watersheds using the data collected under Activity 1C when necessary as concluded in Activity 1A. The topographic information identified and acquired and the field surveys conducted under Activity 1C will be processed into digital data, which can include digitization of paper information. Topographic data will be developed for a countywide Digital Elevation Model (DEM) that will be used for hydrologic and hydraulic analyses and to delineate floodplain and floodway boundaries. The countywide DEM will be generated by SWFWMD's consultant for the watersheds using methodologies identified in FEMA's Specification and the "Southwest Florida Water Management District's Watershed Management Program Guidelines and Specifications" (G & S).

Unless directed to do otherwise by FEMA, the data must be developed and submitted in digital format. Upon completion of topographic data processing for the watersheds, the DEM will be submitted to SWFWMD for an independent Quality Assurance/Quality Control (QA/QC) review under Activity 3. Data for the remaining watersheds will be submitted for an independent QA/QC review at the completion of this Activity. SWFWMD's consultant will be responsible for addressing all concerns or questions regarding this Activity raised during the QA/QC review outlined in Activity 3.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- Countywide DEM;
- Completed Form No. 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2). Complete set of MT-2 forms are available from FEMA web site at http://www.fema.gov/fhm/dl_mt-2.shtm;
- Report summarizing methodology and results;
- Mass points and breaklines data on CD-ROM;
- Metadata compliant with Federal Geographic Data Committee standards.

Activity 3 - Independent QA/QC of Topographic Information

Responsible Entity: SWFWMD and FEMA

Scope: SWFWMD and FEMA shall review the topographic information obtained under Activity 1C and the DEM developed under Activity 2 of this Mapping Activity Statement to ensure that these data are consistent with FEMA standards, SWFWMD's G & S, as well as standard engineering practice and are sufficient to prepare or revise the FIRM. A list of what was reviewed by SWFWMD as QA/QC will be submitted to FEMA.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that arise as a result of the independent QA/QC review.

Activity 4 - Hydrology

Responsible Entity: SWFWMD

Scope: Hydrologic analyses have been completed or will be performed for approximately 765 square miles of watershed area for the flooding sources listed 1-20 in Section 1 of this Mapping Activity Statement. Existing hydrologic analyses will be updated by SWFWMD's consultant based on the data collected under Activity 2 of this Mapping Activity Statement and to ensure they are consistent with FEMA standards and SWFWMD's G & S. Peak flood discharges will be calculated for the 100- and 500-year storm events. These flood discharges are the basis for subsequent hydraulic analyses of the subject flooding sources. In addition, SWFWMD's consultant will be responsible for addressing all concerns or questions regarding this Activity raised during the QA/QC review outlined in Activity 5.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the hydrologic modeling for the remaining flooding sources and updating the hydrologic parameters for flooding sources 2-4, 7, and 16 SWFWMD's consultant will submit the results to SWFWMD for an independent QA/QC review as described in Activity 5.

SWFWMD or its consultant shall make the following products available to FEMA:

- Digital copies of all hydrologic modeling (input and output) files for 100 and 500-year storm events;
- "Summary of Discharges" table(s) presenting discharge data for each flooding source;
- Draft text for Section 3.1, Hydrologic Analyses, of FIS report;
- Appropriate certification form for hydrology;
- All backup data used in the analysis, including work maps; and
- For GIS-based modeling, products include all input and output data, intermediate data processing products, GIS data layers, and final products according to SWFWMD's GIS standards.

Activity 5 - Independent QA/QC Review of Hydrologic Analyses

Responsible Entity: SWFWMD and FEMA

Scope: SWFWMD and FEMA shall review the technical, scientific, and other information submitted by SWFWMD's consultant under Activity 4 of this Mapping Activity Statement to ensure that the data and modeling are consistent with FEMA standards, SWFWMD's G & S, and standard engineering practices and are sufficient to revise the FIRM. A list of what was reviewed by SWFWMD as QA/QC will be submitted to FEMA. This work will include, at a minimum, the following activities:

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models;
 - Use of appropriate methodology(ies);
 - Correctly applied methodology(ies)/model(s), including QC of input parameters;
 - Comparison with gage data and/or regression equations, if appropriate; and
 - Comparison with discharges for contiguous reaches or flooding sources;
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA; and
- Maintain an archive of all data submitted for hydrologic modeling review. All supporting data should be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD shall make the following products available to FEMA.

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Activity 6 – Hydraulic Analyses

Responsible Entity: SWFWMD

Scope: Hydraulic analyses have been completed or will be performed for approximately 765 square miles of watershed area for the flooding sources listed 1-20 in Section 1 of this Mapping Activity Statement. SWFWMD's consultant will update the existing hydraulic analyses with the additional cross-section and field data collected under Activity 1 and the DEMs from Activity 2. The modeling will include the 1% and 0.2% annual chance storm events based on peak discharges computed under Activity 4. The hydraulic analyses will be used to establish flood elevations for the subject flooding sources. In addition, SWFWMD's consultant will address all concerns or questions regarding this Activity raised during the independent QA/QC review under Activity 7.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the hydraulic modeling for remaining flooding sources and updating the hydraulic parameters for flooding sources 2-4, 7,16 and SWFWMD's consultant will submit the results to SWFWMD for an independent QA/QC review as described in Activity 7.

SWFWMD or its consultant shall make the following products available to FEMA:

- Digital copies of all hydraulic modeling (input and output) files;
- Table with range of Manning's "n" values;
- All requested backup data used in the analyses;
- Draft text for inclusion in Section 3.2, Hydraulic Analyses, of FIS report; and
- For GIS-based modeling, products include all input and output data, intermediate data processing products, GIS data layers, and final products according to SWFWMD's GIS standards.
- Floodway determination for watershed areas without current effective floodways will be evaluated during scoping as outlined in Activity 1A.

Activity 7 - Independent QA/QC Review of Hydraulic Analyses

Responsible Entity: SWFWMD and FEMA

Scope: SWFWMD and FEMA shall review the technical, scientific, and other information submitted by its consultant under Activity 6 of this Mapping Activity Statement to ensure that the data and modeling are consistent with FEMA standards, SWFWMD's G & S, and standard engineering practices and are sufficient to revise the FIRM. A list of what was reviewed by SWFWMD as QA/QC will be submitted to FEMA. This independent QA/QC review of the hydraulic analyses will include, at a minimum, the following activities:

- Review submittal for technical and regulatory adequacy, completeness of required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models;
 - Starting water-surface elevations;
 - Cross section geometry;
 - Manning's "n" values and expansion/contraction coefficients;
 - Bridge and culvert modeling;
 - Discharges;
 - Watershed hydraulic connectivity;
 - Floodplain stage/storage relationship values; and
 - Tie-in to existing upstream and downstream non-revised floodplain information;
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA; and
- Maintain an archive of all data submitted for hydraulic modeling review. All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review; and

- Recommendations to resolve any problems that arise as a result of the independent QA/QC review.

Activity 8 – Floodplain Mapping (Detailed Riverine Analysis)

Responsible Entity: SWFWMD

Scope: SWFWMD's consultant shall delineate digital floodplain boundaries for the flooding sources listed in Section 1 of this Mapping Activity Statement. The mapping will incorporate all new and revised hydraulic modeling conducted under Activity 6 and new topographic information acquired under Activities 1 and 2 of this Mapping Activity Statement. SWFWMD's consultant will delineate the floodplain boundaries for the 1% and 0.2% recurrence interval on a digital work map based on the DEMs developed under Activity 2 of this Mapping Activity Statement, which will be the basis of the revised FIRM. If existing topography is used for the floodplain boundary delineation, SWFWMD or its consultant will provide an explanation for its use. SWFWMD's consultant will incorporate the results of all effective Letters of Map Change as appropriate. In addition, SWFWMD's consultant will address all concerns or questions regarding this Activity raised during the independent QA/QC review outlined in Activity 9.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of the floodplain mapping for flooding sources 1-20 listed in Section 1 of this Mapping Activity Statement, SWFWMD's consultant will submit the results to SWFWMD for an independent QA/QC review under Activity 9.

SWFWMD or its consultant shall make the following products available to FEMA:

- Digital work maps with the 1% and 0.2% annual chance floodplain boundary delineations, floodway delineations where effective Firms identify floodways, and floodways identified through the scoping process outlined in Activity 1A, and all applicable base map features;
- Explanation for the selection of an existing topographic map, if applicable;
- DFIRM mapping files, in one of the GIS file and database formats specified in FEMA's DFIRM Specifications;
- Metadata files describing the DFIRM data, including the required information shown in the examples shown in FEMA's DFIRM Specifications;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the DFIRM; and
- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined in Activity 9.

Activity 8A – Floodplain Mapping (Redelineation Using Updated Topographic Data, Effective profiles, and floodways)

Responsible Entity: SWFWMD

Scope: SWFWMD's consultant will delineate the riverine floodplain boundaries for the 1% and 0.2% annual chance recurrence interval and effective floodways on a digital work map based on existing and new topographic data developed under Activities 1 and 2 of this Mapping Activity Statement as appropriate. If the new topography does not reflect the same hydraulic characteristics as in the effective study, SWFWMD's consultant will evaluate the topography to determine if changes are significant enough

to invalidate the floodplain boundary delineations. Also, SWFWMD or its consultant will contact Laura- Algeo, FEMA Regional Project Officer with a recommendation. In addition, the SWFWMD's consultant will address all concerns or question regarding this Activity raised during the independent QA/QC review outline in Activity 9.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products:

In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- Digital work maps, with 1% and 0.2% annual chance floodplain boundary delineation, BFEs, effective floodways, zone designation labels and all applicable base map features;
- Digital work maps, BFEs, effective floodways, zone designation labels, and all applicable base map features;
- DFIRM mapping files, in one of the GIS file and database formats specified in FEMA's DFIRM Specifications;
- Metadata files describing the DFIRM data, including the required information shown in the examples shown in FEMA's DFIRM Specifications;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the DFIRM; and
- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined in Activity 9.

Activity 8B – Floodplain Mapping (Refinement or Creation of Zone A)

Responsible Entity: SWFWMD

Scope: SWFWMD's consultant will perform approximate analyses and delineate digital floodplain boundaries for watersheds identified in Activity 1A of this Mapping Activity Statement. The mapping will refine and/or create approximate Zone A flood zones using National Wetland Inventory and newly acquired topographic information. SWFWMD's consultant will delineate the floodplain boundaries on a digital work map based on existing topography or topographic data developed under Activity 2 of this Mapping Activity Statement, which will be the basis of the revised FIRM. In addition, SWFWMD's consultant will address all concerns or questions regarding this Activity raise during the independent QA/QC review outline in Activity 9.

Standards: All work conducted under this Activity shall conform to the standard specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: Upon completion of floodplain mapping for the watersheds identified in Section 1, SWFWMD's consultant will submit the results to SWFWMD for an independent QA/QC review as outline in Activity 9. SWFWMD's consultant will submit the mapping for the remaining watersheds for an independent QA/QC review at the completion of this Activity.

In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- Digital work maps, with 1% annual chance floodplain boundary delineations, cross sections (where approximate flood elevations were computed), zone designation labels, and all applicable base map features;
- DFIRM mapping files, in one of the GIS file and database formats specified in FEMA's DFIRM Specifications;
- Metadata files describing the DFIRM data, including the required information shown in the examples shown in FEMA's DFIRM Specifications;
- Complete set of plots of DFIRM panels showing approximate flood hazard boundaries at a suitable scale;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the DFIRM; and
- Any backup or supplemental information used in the mapping required for the independent QA/QC review outline in Activity 9.

Activity 9 - Independent QA/QC Review of Floodplain Mapping

Responsible Entity: SWFWMD and FEMA

Scope: SWFWMD and FEMA shall review the floodplain work maps submitted by its consultant under Activities 8 and 8A of this Mapping Activity Statement to ensure that the results of the hydraulic analyses are accurately represented on the work maps. A list of what was reviewed by SWFWMD as QA/QC will be submitted to FEMA. This work will include, at a minimum, the following activities:

- Review the cross sections for proper location and orientation on the work map;
- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling;
- Review the floodplain boundaries and floodways for agreement with the contour lines and other topographic information shown on the work maps;
- Ensure zone designations are indicated properly;
- Ensure DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's DFIRM Specifications and conform to those specifications for content and attribution; and
- Ensure metadata files describing the DFIRM data include the required information and follow the examples shown in FEMA's DFIRM Specifications.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD shall make the following products available to FEMA:

- A Summary Report that describes the findings of the independent QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results; and

- An annotated work map with all questions and/or concerns indicated if necessary.

Activity 10 - Base Map Acquisition and Preparation

Responsible Entity: SWFWMD

Scope: This is a required activity when Activities 8, 8A, and 11 are performed. This activity consists of obtaining the digital base map for the project. SWFWMD or its consultant shall:

- Obtain digital files (raster or vector) of the base map;
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge;
- Certify that the digital data meet the minimum standards and specifications that FEMA requires for DFIRM production; and
- Populate the DFIRM database for base map features and applicable data.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- Written certification that the digital data meet the minimum FEMA standards and specifications; and
- Documentation that FEMA can use the digital base map, free of charge.

Activity 11 - DFIRM Production (Non-Revised Areas)

Responsible Entity: SWFWMD

Scope: For all flooding sources except those specified in Section 1 of this Mapping Activity Statement (that will have updated flood data developed under Activities 1 through 9), SWFWMD's consultant will convert the effective FIRM/FBFM panels to digital format in conformance with FEMA's DFIRM specifications. SWFWMD's consultant will use the base map acquired under Activity 10 of this Mapping Activity Statement for the conversion. The scope of this Activity covers the digitization of all FIRM panels in County. SWFWMD's consultant also will incorporate LOMCs issued by FEMA since the current effective FIRM for each affected community. The digital floodplain boundaries for the flooding sources specified in Section 1 will not be digitized as part of this Activity; rather, SWFWMD's consultant will leave these as "holes" in the digital flood theme that will be filled in as part of Activity 12 using digital flood data from Activities 8, 8A, and 8B.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- DFIRM mapping files, in one of the GIS file and database formats specified in FEMA's DFIRM Specifications;

- Metadata files describing the DFIRM data, including the required information shown in the examples shown in FEMA's DFIRM Specifications;
- Complete set of plots of the DFIRM panels showing all unrevised flood hazard information taken from the effective FIRMs and FBFMs at a suitable scale; and
- A QA/QC report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRMs, including a check that the road and floodplain relationship is maintained for all unrevised areas.

Activity 12 – Merging of Revised and Non-Revised Information

Responsible Entity: SWFWMD

Scope: Upon completion of the Floodplain Mapping activity (Activities 8, 8A, and 8B) for the revised flooding sources and the Digital FIRM Production activity (Activity 11), the digital floodplain data will be merged into a single, updated Digital FIRM. This work will include tie-in of flood hazard information with contiguous communities that were not studied as part of this project. Also, the revised and non-revised Flood Profiles and floodplain boundaries will be tied-in. SWFWMD's consultant will coordinate with the Mapping Partners, as necessary, to resolve any potential tie-in issues.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- Digital work maps, with 1% and 0.2% annual chance floodplain boundary delineations, cross sections, BFEs, floodways, zone designation labels, and all applicable base map features shown;
- Digital work maps, with Coastal High Hazard Areas (V Zone) boundary delineation along the Gulf of Mexico shorelines, transect locations, BFE's, zone designation labels, and all applicable base map features;
- DFIRM mapping files, in one of the GIS file and database formats specified in FEMA's DFIRM Specifications, provided on CD-ROM;
- Metadata files describing the DFIRM data, including the required information shown in the examples shown in FEMA's DFIRM Specifications, provided on CD-ROM;
- Complete set of plots of DFIRM panels showing all flood hazard information at a suitable scale; and
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the DFIRM.

Activity 12A – Application of DFIRM Graphic Specifications

Responsible Entity: SWFWMD

Scope: Upon completion of merging of effective and revised floodplain mapping into a single, updated DFIRM (Activity 12), SWFWMD's consultant shall apply the final FEMA DFIRM graphic specifications to the DFIRM mapping files. This work will include adding all required annotation, line patterns, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user).

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, SWFWMD or its consultant shall make the following products available to FEMA:

- DFIRM mapping files in one of the GIS file and database formats specified in FEMA's DFIRM Specifications, provided on CD-ROM;
- DFIRM database files in one of the database formats specified in FEMA's DFIRM Specifications, provided on CD-ROM;
- Metadata files describing the DFIRM data including the required information based on the examples shown in FEMA's DFIRM Specifications;
- Complete set of plots of the DFIRM panels; and
- A QA/QC report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRM.

Activity 13 – Preparation and Issuance of Preliminary FIS and DFIRM

Responsible Entity: FEMA

Scope: This Activity consists of the final preparation, review, and distribution of the Preliminary copies of the FIRM and FIS report for community and public review and comment. The activities to be performed are summarized below.

- *FIS Report Preparation:* Unless instructed otherwise, FEMA's consultant will prepare the revised FIS report in the format of the existing FIS report, revising the report only to reflect current conditions and include updated data tables and flood profiles. At a minimum, the FIS report will include the following: text; cover; vicinity map; data tables; photographs (if available); flood profiles; and, when necessary, transect schematic and transect location map.
- *Quality Assurance/Quality Control:* Final QA/QC review of the FIS report, including all data tables, profiles, and other components of the FIS, as appropriate, and the news release will be conducted. The QA/QC procedures will be consistent with FEMA standards outlined below for this activity.
- *Discrepancy Resolution:* FEMA and its consultant will be responsible for working with SWFWMD who is responsible for performing the activities of this project to resolve discrepancies identified during QA/QC.
- *Distribution of Preliminary DFIRM and FIS Report:* FEMA or its consultant will distribute the preliminary copies of the FIS report and DFIRM to the affected communities, State agencies, and others as identified by FEMA.
- *News Release and Federal Register Notice Preparation:* FEMA's consultant will prepare the news release notifications of BFE changes. The news release will summarize newly proposed BFEs, modifications to existing BFEs, and any changes to the community's floodplain management ordinances to be NFIP compliant. Upon completion of a 30-day community comment period and/or final meeting with the community, and upon initiation of the 90-day appeal period, FEMA or its consultant will arrange for and verify that the news release is published in the prominent newspaper(s) with local circulation within each affected community identified by the community

and FEMA. FEMA will also arrange for and verify that a similar notice is published in the *Federal Register*.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA or its consultant shall make the following products available:

- Three (3) sets of printed preliminary DFIRMs and FIS reports, including all updated data tables and flood profiles for mailing to the CEO of each community, the State NFIP Coordinator, the FEMA Regional Office, and others as determined by FEMA;
- Preliminary transmittal letter(s);
- DFIRM mapping files in one of the database formats specified in FEMA's DFIRM Specifications;
- DFIRM database files in one of the database formats specified in FEMA's DFIRM Specifications;
- Metadata files describing the DFIRM data, including the required information as presented in the examples shown in FEMA's DFIRM Specifications;
- A QA/QC report that includes a description and the results of all automated or manual QA/QC steps taken during the preparation of the preliminary copies of the DFIRM and FIS report; and
- Documentation showing that the news release(s) was published correctly in accordance with FEMA requirements and that a similar notice was published correctly in the *Federal Register* in accordance with FEMA requirements.

Activity 14 - Post-Preliminary Processing

Responsible Entity: FEMA

Scope: This Activity consists of finalizing the DFIRM and FIS report after the preliminary FIS and DFIRMs have been issued for public review and comment. The activities to be performed include:

- *Participating in Public Meetings:* When FEMA holds public meetings to present and discuss the results of this Flood Map Project, representatives from the affected communities, SWFWMD's consultant, and SWFWMD will attend the meetings and assist FEMA in the presentation as required.
- *Resolving Appeals and Protests:* Appeals and protests received during the 90-day appeal period will be reviewed and resolved prior to finalizing the FIRM and FIS report. SWFWMD and its consultant will provide support to FEMA in resolving appeals and protests. Activities may include, but not limited to, attending community meetings and assisting FEMA in addressing any issues that may arise in resolving appeals and protests from affected communities. For a typical appeal and protest, the following activities will be conducted: initial processing of the appeal/protest, performing a technical review of the appeal/protest, preparing letters to request additional data, performing revised analyses, and preparing a proposed resolution for FEMA's review. FEMA or its consultant will mail all associated correspondence.
- *Special Correspondence:* Comments received within the 90-day appeal period (referred to as "special correspondence") will be reviewed, and FEMA's consultant will draft responses. FEMA's consultant will also mail the final correspondence.

- *Revise DFIRMs and FIS Report:* If necessary, FEMA's consultant will work with those parties responsible for preparing the DFIRM under Activities 8, 8A, 8B, 11, and 12 to prepare revised preliminary copies of the DFIRMs and FIS report, including all data tables and flood profiles. FEMA or its consultant will mail all revised preliminary copies of DFIRMs and associated correspondence upon authorization by FEMA.
- *Letter of Final Determination:* FEMA's consultant will work with FEMA to establish an effective date for the DFIRM and FIS report, prepare a Letter of Final Determination (LFD) for FEMA review and signature, prepare a final notice for publication in the *Federal Register*, mail the LFD with appropriate enclosures, and coordinate publication of the final notice in the *Federal Register*.
- *GPO Processing:* FEMA's consultant will prepare final copies of the DFIRM and FIS report and provide them to FEMA. This will include preparing camera-ready film negatives of the DFIRM and paper copies of the FIS report, including flood profiles; preparing appropriate paperwork to be included with DFIRM and FIS report materials, including the transmittal letter to the community CEO, the print processing worksheet, the Printing Requisition Form, and the Community Map Action Form; and delivering the final materials and paperwork to FEMA in the format prescribed by FEMA.
- *Archiving Data:* The FEMA's consultant will package the backup data and correspondence for this Flood Map Project and transmit it to the Engineering Study Data Package Facility.

Standards: All work conducted under this Activity shall conform to the standards specified for this Activity in Section 5 of this Mapping Activity Statement.

Products: In accordance with the TSDN format described in Section 2, FEMA's consultant shall make the following products available to FEMA as required:

- Draft LFD and associated backup data and information for FEMA review;
- Draft Special Correspondence and backup data and information for FEMA review;
- Appeal and Protest resolution letters, and all backup data and information for FEMA review;
- Thirty (30) sets of DFIRM negatives and paper FIS reports, including all updated data tables and flood profiles;
- Paperwork required for printing of DFIRM panels and FIS report;
- Complete DFIRM spatial database; and
- Completed and organized Engineering Study Data Packages.

2. Technical and Administrative Support Data Submittal: The Project Team members for this project that have responsibilities for activities included in this Mapping Activity Statement shall comply with the following data submittal requirements:

- All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in accordance with Appendix M, Section M.2.1 of the *Guidelines and Specifications for Flood Hazard Mapping Partners*, dated April 2003, available at FEMA's website at www.fema.gov/fhm/gs_main.shtml. The following table indicates the sections of the TSDN that apply to each activity.

TSDN—Applicable Sections

Section of TSDN	Activities													
	1	2	3	4	5	6	7	8 8A 8B	9	10	11	12 12A	13	14
General Documentation														
Special Problem Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Telephone Conversation Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Meeting Minutes/Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General Correspondence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Engineering Analyses														
Hydrologic and Hydraulic Analyses	✓	✓	✓	✓	✓	✓	✓							
Key to Cross-section Labeling and Key to Transect Labeling	✓	✓				✓	✓	✓	✓					
Draft FIS Report				✓		✓							✓	✓
Mapping Information		✓						✓	✓	✓	✓	✓	✓	✓
Miscellaneous Reference Materials	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- If any issues arise that could affect the completion of an activity within the proposed scope or budget, the party responsible for that activity must complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR should describe the issue and propose possible resolutions.

Additionally, FEMA's consultant will be responsible for collecting and maintaining a set of products for all Activities and shall compile a comprehensive TSDN for the entire project.

- 3. Period of Performance:** The mapping activities outlined in this MAS will begin immediately following a notice to proceed and will be completed no later than three (3) years from the notice to proceed. The Mapping Activities may be terminated at the option of FEMA or SWFWMD in accordance with the provisions of the September 14, 2001 CTP Partnership Agreement.

The period of performance will be in accordance with Cooperative Agreement Article II.

- 4. Funding/Leverage:**

5. **Standards:** Table 5-1 indicates the standards and documentation relevant to this Mapping Activity Statement. Table 5-2 shows the applicable sections of FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners* for each activity.

Table 4-1 Funding Table

Table 5-1 Applicable Standards per Activity

Applicable Standards	Activities													
	1	2	3	4	5	6	7	8 8A 8B	9	10	11	12 12A	13	14
SWFWMD's Watershed Management Program Guidelines and Specifications, August 2002	✓	✓	✓	✓	✓	✓	✓	✓	✓					
Guidelines and Specifications for Flood Hazard Mapping Partners, February 2002	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
American Congress on Surveying and Mapping (ACSM) procedures	✓	✓	✓											
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-58), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	✓	✓	✓											
EM 1000-1-1000, "Photogrammetric Mapping," March 31, 1993	✓	✓	✓											
EM 1110-2-1013, "Hydrographic Surveys," October 31, 1994	✓		✓											
Numerical Models Accepted by FEMA for NFIP Usage, January 11, 2002				✓	✓	✓	✓							
Content Standards for Digital Geospatial Metadata (Federal Geographic Data Committee, 1998)		✓	✓					✓	✓	✓	✓	✓	✓	✓
Document Control Procedures Manual dated October 1993.													✓	✓

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners

Activity Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
1	Review of Existing Information, Field Surveys and Reconnaissance	Volume 1, Sections 1.2, 1.3, 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.5, A.6, A.7, and A.8 Appendices B, C, and M
2	Topographic Data Development	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.2 and A.3 Appendix M
3	Independent QA/QC of Topographic Information	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.1) Appendix A, Sections A.2, A.3, A.7 (specifically Subsection A.7.5), and A.8 (specifically Subsection A.8.6) Appendix M
4	Hydrology	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix C, Sections C.1 and C.7 Appendices E, F, G, H, and M
5	Independent QA/QC Review of Hydrology	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix C, Section C.2 Appendices E, F, G, H, and M
6	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Sections C.3 and C.7 Appendices B, E, F, G, H, and M
7	Independent QA/QC Review of Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, E, F, G, H, and M
8	Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M

Table 5-2 Mapping Activities and Applicable Sections of Guidelines and Specifications for Flood Hazard Mapping Partners (Cont.)

Task Number	Task Description	Applicable Volume, Section/Subsection, and Appendix of Guidelines and Specifications
8A	Floodplain Mapping (Redelineation Using Updated Topographic Data, Effective Profiles and Floodways)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.3) Appendices K, L, and M
8B	Floodplain Mapping (Refinement or Creation of Zone A)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M
9	Independent QA/QC Review of Floodplain Mapping	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices D, K, L, and M
10	Base Map Acquisition and Preparation	Volume 1, Sections 1.3 (specifically Subsection 1.3.1.8) and 1.4 (specifically Subsection 1.4.3) Appendices A and B
11	DFIRM Production (Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.2) Appendices K, L, and M
12	Merging of Revised and Non-Revised Information	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) Appendices K and L
12A	Application of DFIRM Graphic Specifications	Volume 1, Section 1.4 (specifically Subsection 1.4.3) Appendices K and L
13	Preparation and Issuance of Preliminary FIS and DFIRM	Volume 1, Sections 1.4 (specifically Subsections 1.4.2 and 1.4.3) and 1.5 (specifically Subsection 1.5.1) Appendices J, K, L, and M
14	Post-Preliminary Processing	Volume 1, Section 1.5 Appendices J, K, L, and M

6. Schedule and Milestones:

A final performance schedule will be negotiated for each of the flooding sources listed in Section 1 based on the following anticipated schedule and the refined scope of work prepared under Activity 1A of this Mapping Activity Statement. The submittals from each activity that are due on the dates indicated are the products listed in the individual Activity details.

ACTIVITY	RESPONSIBLE ENTITY	DAYS FROM NOTICE TO PROCEED
Activity 1A – Scoping	SWFWMD	90 days
Activity 1B – Outreach	SWFWMD	730 days
Activity 1C – Review of Existing Information, Field Surveys and Reconnaissance	SWFWMD	90 days
Activity 2 – Topographic Data Development	SWFWMD	180 days
Activity 3 – Independent QA/QC of Topographic Information	SWFWMD	210 days
Activity 4 – Hydrology	SWFWMD	240 days
Activity 5 – Independent QA/QC of Hydrology	SWFWMD	270 days
Activity 6 – Hydraulics	SWFWMD	300 days
Activity 7 – Independent QA/QC of Hydraulics	SWFWMD	330 days
Activity 8 – Floodplain Mapping (Detailed Riverine)	SWFWMD	365 days
Activity 8A – Floodplain Mapping (Redelineation Using Effective Profiles, Floodways, and Updated Topographic Data)	SWFWMD	365 days
Activity 8B – Floodplain Mapping (Refine/Establish Zone A, Level 1)	SWFWMD	365 days
Activity 9 – Independent QA/QC of Floodplain Mapping	SWFWMD	390 days
Activity 10 – Base Map Acquisition- and Preparation	SWFWMD	420 days
Activity 11 – DFIRM Production (Non-Revised Areas)	SWFWMD	480 days
Activity 12 – Merge Non-Revised and Revised Information	SWFWMD	540 days
Activity 12A – Apply DFIRM Graphic Specifications	SWFWMD	600 days
Activity 13 – Issue Preliminary FIS and FIRM	FEMA	660 days
Activity 14 – Post-Preliminary Processing	FEMA	730 days

7. **Certification:** The following certifications apply to this Mapping Activity Statement (as appropriate):

Activity 1C (Review of Existing Information, Field Surveys and Reconnaissance) and Activity 2 (Topographic Data Development)

- Registered Professional Engineer or Licensed Land Surveyor will certify topographic information, in accordance with 44 CFR 65.5(c).
- Certification of topographic information by the American Society for Photogrammetry and Remote Sensing is also acceptable.

Activity 4 (Hydrology), Activity 6 (Hydraulics), and Activities 8, 8A, and 8B (Floodplain Mapping)

- Hydrologic and/or hydraulic analyses and data will be certified by a Registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.6(f).
- Topographic information will be certified by a Registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.5(c).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e).

Activities 8, 8A, and 8B (Floodplain Mapping) and Activity 11 (DFIRM Production – Non-Revised Areas)

- The DFIRM metadata files will include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

Activity 10 (Base Map Acquisition and Preparation)

- Community official or responsible party will provide written certification that the digital data meet FEMA's minimum standards and specifications.
- Responsible Mapping Partner will provide documentation that the digital base map can be used by FEMA free of charge.

8. Technical Assistance and Resources: SWFWMD may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from FEMA. FEMA may be contacted at 1-877 FEMA MAP (1-877-336-2627). General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms, can be downloaded from FEMA's Flood Hazard Mapping website (www.fema.gov./fhm). Specific technical and programmatic support may be provided through FEMA; such assistance should be requested through the FEMA Regional Project Officer specified in Section 11 of this Mapping Activity Statement.

SWFWMD may also consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or sub-contractors, and GIS-based engineering and modeling training.

9. Contractors: SWFWMD will ensure that procurement of subcontractors as part of this Mapping Activity Statement complies with the requirements of 44 CFR 13.36.

10. Reporting:

Financial Reporting: Financial reporting requirements will be in accordance with Cooperative Agreement Articles V & VI.

Status Reporting: Status reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. At a minimum these reports will include a summary of the work that was completed during the quarter and a comparison for the percent work completed to the percent of funds expended. The Project Officer, as needed, may request additional information on status.

11. Points of Contact: The FEMA Regional Project Officer is Laura Algeo, P.E., FEMA Region IV, the CTP Project Manager is Lisann C. Morris, P.E. or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, FEMA's assistance should be requested through the FEMA Regional Project Officer.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representative.

Laura Algeo
Laura Algeo, P.E., FEMA Regional Project Officer
Federal Emergency Management Agency

9-30-03
Date

David L. Moore for
David L. Moore, Executive Director
Southwest Florida Water Management District

9-25-03
Date

DISTRICT APPROVAL	INITIALS	DATE
LEGAL	<u>SAL</u>	<u>9/22/03</u>
RISK MGMT	<u>N/A</u>	
CONTRACTS	<u>AM</u>	<u>9/23/03</u>
RM DEPT DIR	<u>/116 7/</u>	<u>9/23/03</u>
DEPUTY EXEC DIR	<u>DM</u>	<u>9/23/03</u>
GOVERNING BOARD		<u>N/A AM</u>