FEMA

State of Oregon, Department of Geology and Mineral Industries
COOPERATING TECHNICAL PARTNERS
MAPPING ACTIVITY STATEMENT

Mapping Activity Statement No. 2

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated August 6, 2008, between the State of Oregon, Department of Geology and Mineral Industries (DOGAMI) and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement (MAS) No. 2 is as follows:

SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for Coos County, OR. All processes and deliverables shall be completed in accordance to the Federal Emergency Management Agency's (FEMA's) *Guidelines and Specifications for Flood Hazard Mapping Partners* (G&S) and effective Procedure Memoranda (PMs). These documents can be found on FEMA's website at http://www.fema.gov/plan/prevent/fhm/gs_main.shtm and http://www.fema.gov/plan/prevent/fhm/gs_memos.shtm.

A current effort is underway as of September, 2008 to convert Coos County, OR to a FEMA Countywide format in the North American Vertical Datum of 1988 (NAVD88); however, the scope of that project is strictly Digital Conversion and no new studies and/or updated floodplain boundaries are being incorporated. For this effort, DOGAMI will be using avaible LIDAR data to redelineate hazards within Coos County, produce revised DFIRMs and a revised FIS report, and produce other mapping products useable at the local, State, and Federal level for Mitigation Planning, Risk Analysis, and Disaster Response..

The Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in Table 1.1, Flooding Source(s) to be Studied.

Table 1.1 Flooding Source(s) to be Studied – To be completed by DOGAMI during the official scoping process

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Detailed Coastal					Limited Detail Study	Redelineation of SFHAs Using Effective Profiles and New Topography	Refine/ Establish Zone A
			Hydrology	Hydraulics	Stillwater	Setup	Wave Height	Wave Runup	Erosion			
{Insert name of flooding source}	{Insert upstream and downstream limits}	{Insert reach length in feet and/or miles}								X	X	X

This Flood Map Project will be completed by the following Mapping Partners:

- DOGAMI;
- FEMA; and
- the NSP.

The Mapping Partner shall notify FEMA and all applicable parties of all meetings with community officials at least two weeks prior to the meeting (with as much notice as possible). FEMA and/or its contractor may or may not attend the community meetings.

The Mapping Partner shall maintain an archive of all data submitted. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA.)

The activities for this Flood Map Project, including any required Quality Control Requirements as outlined in PM 42, and the Mapping Partners that will complete them are summarized in Table 1.2, Flood Mapping Project Activities. The sections of this MAS that follow the table below describe the specific mapping activities, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map deliverables.

Table 1.2 Flood Mapping Project Activities

				TASK ASSIGNMENTS																				
State	County	Partner Name	Partner Type	Outreach	Perform Field Survey	Develop Topographic Data	Perform Independent QA/QC of Topographic Data	Acquire Base Map	Perform Hydrologic Analyses	Perform Independent QA/QC of Hydrologic Analyses	Perform Hydraulic Analyses	Perform Independent QA/QC of Hydraulic Analyses	Perform Floodplain Mapping	Perform Independent QA/QC of Floodplain Mapping	Develop DFIRM Database	Quality Review (QR) 1 Auto Validation of Draft DFIRM Database	Produce Preliminary Map Products	Perform Independent QA/QC of Preliminary Map Product	QR2 Auto Validation of Preliminary Database	QR3 10% Visual Check	Distribute Preliminary Map Productds	Post Preliminary Processing	QR4 Validate BFE Notice and CEO Letters	QR5 Validate Final DFIRM Database and Map Panels	QR 6 Check LFD	QR 7 Valdiate MSC Deliverable Package
OR	Coos	DOGAMI	CTP	X		X		X					X		X		X				X					
OR	Coos	NSP Regional task Order		X			X							X				X				X				
OR	Coos	FEMA	FEMA	X																						
All Counties		NSP Core Task Order														X			X	X			X	X	X	X

The partner assigned the floodplain mapping task will include the Provisionally Accredited Levee (PAL) classification if known. Levee classification will be documented in Table 1.3, Levee PAL Classification. If the PAL Classification for a levee changes during the course of the project FEMA will contact DOGAMI to discuss the need to revise the statement of work.

Table 1.3 – Levee PAL Classification – To be completed by DOGAMI and the NSP during the floodplain mapping process

County	Levee Name	Provisionally Accredited Levee Classification	Additional Mapping Required
		A, B or not eligible	

DOGAMI is responsible for the implementation of a Quality Control (QC) plan for all assigned activities. DOGAMI will submit a Summary Report that describes and provides the results of all automated or manual QC review steps. The report should include the process for all assigned activities.

Independent Quality Assurance (QA) review activities will be performed by FEMA's NSP at the discretion of FEMA. The NSP will need to submit its QA plan to the Regional Project Officer for approval. Please note FEMA will also be performing periodic audits and overall study/project management to ensure study quality. DOGAMI will be responsible for addressing any and all comments resulting from independent QC, including re-submittal of deliverables as needed to pass technical review.

Metadata is required for all activities. {Insert appropriate Data Capture Standards (DCS) language applicable to this Mapping Activity Statement. PLEASE NOTE: The DCS are being updated. FEMA Region X will update this document accordingly in coordination with DOGAMI and the NSP once the DCS update is complete.}

DFIRM-related tasks require a passing QA Report from FEMA's National DFIRM database auto-validation tool for Quality Review (QR) #1, #2, and #5 as described in PM 42. Training materials for this step are available on the MIP at MIP User Care>Training Materials.

FEMA will provide download/upload capability for data submittals through the Mapping Information Platform (MIP) located at https://hazards.fema.gov. As each activity is completed, the data must be

submitted to the MIP by use of the MIP workflow screens. For the Topographic Data Development task, data uploads will be restricted to a compliant metadata file in .xml format as well as a figure showing extents of the data collected.

DOGAMI will respond to any comments generated as a result of the mandatory quality assurance checks by the NSP as described in PM 42. The NSP QA process is nationally funded and required on each DFIRM and FIS. The NSP QA process includes the following activities:

- **Validate Content Submission.** Automatic metadata and visual RMC validation of submitted data for Perform Field Survey, Develop Topographic Data, Develop Hydrologic Data, Develop Hydraulic Data, Perform Coastal Analysis, Acquire Base Map Data, Perform Floodplain Mapping, Develop DFIRM Database, Produce Preliminary Map Products and Final Map Products tasks.
- **QR #1.** Performed after the Develop DFIRM Database task.
- **QR #s 2 and 3.** Performed after the Produce Preliminary Map Products task.
- **QR #4.** Performed after the Create Base Flood Elevation (BFE) Notices step in the MIP workflow during Post Preliminary Processing.
- **QR #5.** Performed after the Produce Final Map Products task during Post Preliminary Processing.
- **QR #6.** Performed after the Prepare LFD Docket step in the MIP workflow during Post Preliminary Processing.
- **QR #7.** Performed after the Submit MSC Deliverable step in the MIP workflow during Post Preliminary Processing.

In cooperation with the FEMA Project Officer, a Project Management Team (PMT) will be established by DOGAMI consisting of representatives from DOGAMI, a representative from FEMA Region X, the RMC, and other appropriate parties. The PMT will be responsible for coordinating the activities identified in this MAS. The FEMA Region will be provided with documentation identifying the established PMT.

The MIP shall be updated for status reporting of each of the data development activities within the Manage Data Development task, not less than every thirty days, when the activity is complete, and also include leverage data. Similarly the Manage Preliminary Map Production and Manage Post Preliminary Processing tasks shall be updated monthly when the producer is performing work on a task in those modules. The "Manage" tasks will be open and accepting updates for up to 90 days after the completion of the last producer task in each module. The MIP shall also be populated with appropriate leverage information regarding who paid for the data provided and the amount of data used by the Flood Map Project.

Scoping

Responsible Mapping Partner: DOGAMI, NSP, FEMA

Scope: The Project Scoping phase typically begins once some level of a community's mapping needs have been identified and FEMA and the community have decided to initiate a Flood Map Project to create or update the FIRM. The scoping process is divided into three main parts – Pre-Scoping Meeting Activities, the Scoping Meeting Activities, and the Post-Scoping Meeting Activities.

Pre-Scoping Meeting Activities

- Initiate the Pre-Scoping activities by identifying the PMT, determining the community contacts, and collecting pertinent information about the community. Conduct background research to collect current mapping needs and begin available geospatial data search.
- Obtain spatial data to be used during the meeting preparation effort.
- Acquire the current effective data for the community, such as the flood hazard data shown in effective FIS reports and on effective FIRMs and Flood Boundary and Floodway Maps (FBFMs), and pertinent flood structure data.
- If pre-scoping steps are performed by a separate Contractor, submit a report summarizing the data collection efforts and deliverables.

Preliminary Research Activities can be separated into three categories—researching selected needs, effective information and researching available data for the Flood Map Project. The selected needs data identified during the Mapping Needs Assessment process can be obtained through the FEMA Region/RMC and plotted on the scoping map for discussion during the scoping meeting. The following tasks shall be completed to research effective information: inventory the FEMA's archives and/or information management systems for effective FIRM panels, FBFM panels, FIS reports, and other flood hazard data or existing study data; summarize the information in the effective streams file and effective coastal study; summarize contiguous community agreement checks; review Community Assistance Visit (CAV) and Community Assistance Contact files; and develop a "scoping map" and an overview of the results of the research. Other data collected during preliminary research activities will include obtaining community information and the best readily available base map materials (political areas, transportation, hydrology, shorelines orthoimagery, and topography data). Stream centerlines should be populated with the limits of the effective FEMA studies and selected needs attributes.

Scoping Meeting

- Coordinate, setup, and hold the Scoping Meeting to inform the community of the upcoming flood study and of their responsibilities related to it; this includes identifying a time, place, and participants. The purpose of this meeting is to present the information gathered during the preliminary research activities to the local officials (State, county, and municipal) and coordinate on prioritization and identification of study areas. DOGAMI shall be responsible for compiling the necessary information for the meeting.

- Review list of selected needs and capture additional community needs and/or wants in order to determine the level of effort and the extent of any new/updated studies. Review the selected needs list, effective and other data research findings, and make selections of proposed methods for obtaining/producing flood data.

- Compile the information prepared for and recorded during the Scoping Meeting

During the Scoping Meeting, the PMT shall review the needs list. Any additions or changes to the selected needs list shall be discussed with all members.

FEMA will be acting as the Consultation Coordination Officer (CCO) for this flood study as identified in 44 CFR Part 66. During the Scoping Meeting, FEMA and/or the NSP must inform the communities of their responsibilities as described under the above-referenced regulation. Following initial contact with the communities, DOGAMI will prepare and setup the Community Case File and Flood Elevation Determination Docket for the maintenance of all communication and coordination throughout the project as outlined in 44CFR Parts 66 and 67.

Post-Scoping Meeting Activities

- Select available and needed geospatial data to be used in the study and update FEMA's geospatial data tracking systems, National Digital Elevation Program (NDEP) and National Digital Orthophoto Program (NDOP) located at http://hazards.fema.gov/metadata/NDEP and http://hazards.fema.gov/metadata/NDOP.

- Evaluate selected needs and community requests and/or wants to determine the community's unmet needs and develop the final Scope of Project document for delivery to FEMA and the community

- Update FEMA's needs management tracking and other geospatial tracking systems (Mapping Needs Update Support System (MNUSS), NDEP, and NDOP).

Based on the discussion of flood data update and base map update requests, DOGAMI and the FEMA Project Officer will finalize the areas to be included in the final scope of project (based on recommendations provided by the PMT). Areas to be studied by detailed, limited detailed, redelineation, and approximate methods shall be identified. The following issues will be discussed and refined: Review and Refinement of Flood Hazard Identification Methodologies, Review of Proposed Paneling Scheme, Review and Refinement of Base and Topographic Map Source, and Finalization of Map Production and Database Options.

Identify all stream/coastal reaches where levees are shown as providing protection against the 1-percent-annual-chance flood. DOGAMI should work with the FEMA Regional Office to request the information specified in Title 44 Code of Federal Regulations (CFR) 65.10, mapping of areas protected by levee systems, from the community or other party seeking continued recognition of the levee and provide this information to the FEMA Regional Office and/or PMT.

Many of the activities at each phase can take place concurrently and are not contingent on the completion of previous tasks. The FEMA Project Officer, working in close coordination with the PMT, has the flexibility of tailoring the Scoping process to best fit the needs of the project. DOGAMI will evaluate the effective flood data, available base data and selected needs to determine the scope of project to be approved by FEMA.

Standards: All Scoping work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: DOGAMI shall make the following products available to FEMA by uploading the digital data to the MIP.

- Final Scope of Project documented in MAS or SOW will be delivered in accordance with the schedule outlined in Section 6 - Schedule to the Regional Project Officer for approval.
- QC Plan for the review of the mapping project outlined in this MAS. This will include the checklists developed for that review in accordance with the schedule included in Section 6 - Schedule.
- Updated list of CEO or local FPA contacts.
- Report documenting levee information transmitted to the FEMA Regional office and/or the PMT.
- Report from MNUSS and/or other FEMA needs management system, showing needs identified during the scoping process that will not be addressed in the final scope of project are entered.
- Report showing that, if obtained from non-Federal sources, information on available terrain and ortho-imagery data has been entered into the NDEP and NDOP project tracking Web sites, respectively.
- Other deliverables including reports, correspondence, agenda, meeting summaries, tabular data, and geospatial files to be submitted throughout the scoping process as specified in FEMA's G&S, Appendix I and Appendix M.

Outreach

The outreach activities for a Flood Map Project can best be understood as a process that begins during the Project Scoping phase and continues through the map production and post-preliminary phases.

The overarching goal for conducting outreach is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned outreach activities can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA and other members of the PMT in responding to congressional inquiries.

DOGAMI will work with the Regional Office and the NSP during the initiation of this activity to determine an Outreach Plan for implementation throughout the mapping project. Volume 1 of the G&S provides specific outreach goals that can be considered. DOGAMI is also encouraged to colaborate with

DLCD to develop a solid outreach strategy for affected communities to include, at a minimum, a display of the types of products to be produced using LIDAR data as well as a discussion about the different agencies and community officials that can use the data.

All communication with local governments will be done in accordance with 44 CFR Part 66.

Deliverables:

- Upon determination of an Outreach and Coordination Approach, DOGAMI shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 - Schedule:
    - A report detailing outreach and coordination activities, including a schedule for delivery; and
    - Backup or supplemental information used in writing this report

Topographic Data Development

Responsible Mapping Partner: DOGAMI

Scope: DOGAMI shall utilize existing LIDAR data for floodplain boundary redelineation and/or testing of floodplain boundary standard compliance. This existing data should be provided to FEMA and the NSP to ensure it meets the requirements for use in FEMA-contracted flood map updates. Normally this is 18.5 cm RMSE at the 2-foot contour interval.

For this activity, DOGAMI also shall use the data collected under this Topographic Data Development task to create a digital elevation model for the subject flooding sources. In addition, DOGAMI shall address all concerns or questions regarding the topographic data development and processing that are raised by the NSP during the independent QA review.

DOGAMI shall use topographic data for the areas described in the Table 1.4 Summary of Topographic Data table. The source of the topographic data should be indicated as well. Contour interval and/or accuracy for the topographic data shall be selected based on the current FEMA requirements as documented in the G&S.

Table 1.4 Summary of Topographic Data

County	Description	Source
Coos		Existing LIDAR data previously obtained by DOGAMI

Standards: All Topographic Data Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, DOGAMI shall make the following products available to FEMA by uploading the digital data to the MIP and submitting in Technical Support Data Notebook (TSDN) format so that the NSP can access it for an independent QA review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles

Specifications, must accompany the uploaded G&S compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

- Digital contour data;
- Report summarizing methodology and results;
- Mass points in LIDAR ASCII Standard (LAS) format;
- Gridded digital elevation model data (resolution to be 8 points/ square meter, interpolated to 3-foot grid cells. No breaklines will be required for submittal).
- Checkpoint analyses to assess the accuracy of data, including Root Mean Square Error calculations to support vertical accuracy;
- Identification of data voids and methods used to supplement data voids;
- National Geodetic Survey data sheets for Network Control Points used to control remote-sensing and ground surveys;
- Other supporting files consistent with the DCS in the G&S; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the topographic data as outlined in the approved QA/QC Plan.

Independent QA/QC Review of Topographic Data

Responsible Mapping Partner: NSP

Scope: The NSP shall review the mapping data generated by DOGAMI under Topographic Data Development to ensure that these data are consistent with FEMA standards and standard engineering practice, and are sufficient to prepare a DFIRM. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer.

Standards: All Topographic Data Development work shall be reviewed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, the NSP shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Base Map Acquisition and Preparation

Responsible Mapping Partner: DOGAMI

Scope: Base Map Acquisition consists of obtaining the digital base map. FEMA Region X preference for DFIRMs is for Vector base map data, if available. If compliant Vector data is unavailable, DOGAMI may use available aerial imagery for the base map, or other sources if approved by FEMA. The selection of base map data should be closely coordinated with FEMA, the NSP, and the communities involved with the map update.

- Obtain digital files (raster or vector) of the base map. In coordination with the partner who performed scoping, ensure that the FEMA Geospatial Data Coordination Policy and Implementation Guide is followed.
- 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.
- Review and supplement the content of the acquired base map to comply with the requirements of the G&S.
- For the base map components that have a mandatory data structure, convert the base map data to the format required in the G&S.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.

In addition, DOGAMI shall address all concerns or questions regarding the base map that are raised during the Independent QA review performed by the NSP, or during the NSP's Validate Content Submission Process. Optional Table 1.5 Summary of Base Map is useful if multiple counties are involved with this map update. DOGAMI shall summarize the base map that will be used for Coos County, OR in optional Table 1.5 below.

Table 1.5 Summary of Base Map – To be completed by DOGAMI prior to signature

County	Description	Source
Coos		

Standards: All Base Map Acquisition work shall be performed in accordance with the standards specified in Section 5 - Standards. The DCS must be met for this deliverable to be acceptable.

Deliverables: In accordance with the G&S, DOGAMI shall make the following products available to FEMA by uploading the digital data to the MIP so that the NSP can access it for an independent QA review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with

the NFIP Metadata Profiles Specifications, must accompany the uploaded digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Digital base map files that comply with the G&S requirements
- Written certification that the digital data meet the minimum standards and specifications;
- Digital versions of draft text for inclusion in the FIS report;
- Documentation that FEMA can use the digital base map; and
- Documentation of the Datum, if appropriate.

Independent QA/QC Review of Base Map

Responsible Mapping Partner: NSP

Scope: The NSP shall review the base map acquired by DOGAMI to ensure it includes data consistent with FEMA standards and sufficient to include on the DFIRM. Any needed edits should be made to the product by DOGAMI to comply with FEMA standards.

Should DOGAMI use non-standard sources for the DFIRM basemap, the NSP review will focus on the ability for those sources to be G&S-compliant. Any non-compliant data will be noted and discussed with FEMA and DOGAMI before proceeding with the production of the DFIRM.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, The NSP shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- If the data is changed during review, then updated deliverables from previous tasks will be submitted at this time.

Limited-detailed Coastal Flood Hazard Analyses

Responsible Mapping Partner: DOGAMI

Scope: DOGAMI shall perform limited coastal flood hazard analyses for an undetermined number of transects along the Coos County shoreline of the Pacific Ocean. These analyses are to include a limited wave runup or wave height analysis to help determine the extent of coastal flooding. In appropriate areas, the landward limit of the Primary Frontal Dune (PFD) will be identified and a V Zone will be delineated to this point to comply with current V Zone mapping guidance. In addition, DOGAMI shall address all concerns or questions regarding the limited-detailed Coastal Flood Hazard Analyses and the location selection for any PFD delineations that are raised by the NSP during the independent QA review.

If a coastal flood protection structure such as a coastal levee, seawall, revetment, etc, is identified in the project area, DOGAMI will coordinate with FEMA and the NSP to determine the best method of treatment and mapping for the structure.

Standards: All limited-detailed Coastal Flood Hazard Analyses work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, DOGAMI shall make available to FEMA the following products by uploading the digital data to the MIP so that the NSP can access it for an independent QA review in accordance with the schedule outlined in Section 6 - Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the uploaded compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- Draft digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundaries, BFEs, transects, flood insurance risk zones, and the location of the PFD, if appropriate;
- Digital wave envelope profiles for each transect representing the 1-percent-annual-chance stillwater elevation including setup wave crest or runup elevations, location of the heel of the PFD, and ground profile conditions including eroded dune profile;
- Digital versions of draft text for inclusion in the FIS report;
- Digital coastal modeling (input and output files);
- Digital versions of any other supporting computations;
- All backup data used in the analyses; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan.
- Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

In addition, DOGAMI shall submit a coastal study technical documentation notebook with all backup data, description of methodology, and input and output files used in the analyses and mapping as discussed in the G&S.

Independent QA/QC Review of Limited-Detailed Coastal Hazard Analyses

Responsible Mapping Partner: NSP

Scope: The NSP shall review the technical, scientific, and other information submitted by DOGAMI under Coastal Flood Hazard Analyses to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice, and are sufficient to prepare the DFIRM. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work is to include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
    - Use of acceptable models;
    - Use of appropriate methodology(ies);
    - Correctly applied methodology(ies)/model(s) including QC of input parameters.
    - Comparison with gage data, if appropriate; and
    - Comparison with contiguous reaches or flooding sources.
- Maintain records of all contacts, reviews, recommendations, and actions and make the data readily available to FEMA.
- Maintain an archive of all data submitted for coastal modeling review. (All supporting data must be retained for three years from the date a funding recipient submits its final expenditure report to FEMA, and once the study is effective all associated data should be submitted to the FEMA library).

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, The NSP shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the independent QA/QC review.
- Recommendations to resolve any problems that are identified during the independent QA/QC review.
- If the data changed during the QA process, then the updated deliverables from the Coastal Flood Hazard Analyses will be resubmitted at this time.

Floodplain Mapping

Responsible Mapping Partner: DOGAMI

Scope of Redelineation of Detailed Floodplain Boundaries Using Updated Topographic Data: DOGAMI shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries, regulatory floodway boundaries, and coastal high hazard zones (if required) for the flooding sources listed earlier in Table 1.1. DOGAMI shall use the topographic data acquired under Topographic Data Development to delineate the floodplain, regulatory floodway boundaries, and coastal high hazard zones on a digital work map. If the new topographic data do not reflect the same hydraulic characteristics as in the effective study, DOGAMI shall evaluate the topographic data to determine if changes are significant enough to invalidate the floodplain boundary and regulatory floodway boundary redelineations. If so, DOGAMI shall contact the FEMA Regional Project Officer, identified in Section 12 – Points of Contact, with a recommendation.

Coastal redelineation involves the following steps: redelineate the landward extent of the coastal flooding based on existing Stillwater elevations and the new topography. All gutters (elevation change lines between open water and the landward extent of the coastal flooding) need to be digitized (these lines are not directly related to the topography so should be digitized directly). If converting between National Geodetic Vertical Datum (NGVD) and NAVD and the difference is close to 1.0 foot, the elevation can be changed on the map and the gutters will stay at the same location. If the difference between NGVD and NAVD is between 0.1 and 0.9 foot, or greater than 1.1 feet, contact FEMA and the RMC for guidance on how to move the gutters.

If the PFD VE Zone has not been mapped this must also be done during redelineation. PFD involves using the best available topographic data and mapping the heel or landward side of the PFD. The VE zone shall then be extended landward to that line.

DOGAMI should also map the results of any limited-detailed coastal flood analyses used to refine the redelineated coastal flood hazard boundaries.

Scope for Refinement or Creation of Zone A: DOGAMI shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources listed earlier in Table 1.1 or in the subsequent Scoping Report. DOGAMI shall use existing topographic data or the topographic data acquired under Topographic Data Development to delineate the floodplain boundaries on a digital work map. DOGAMI may expand on the approaches for analyzing Zone A areas outlined in G&S and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with and approved by the FEMA Regional Project Officer identified in Section 12 – Points of Contact, before analysis and mapping begin.

Scope for Merging Revised and Non-Revised Information: Upon completion of the floodplain mapping activities for the revised areas, DOGAMI shall merge the new digital floodplain data with existing DFIRM data for Coos County, OR into a single, updated DFIRM. This work is to include tie-in of flood hazard information for areas that were not updated as part of the Flood Map Project documented in this MAS. DOGAMI also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, coastal gutters, and regulatory floodway boundaries with contiguous communities that were not studied as part of the Flood Map Project documented in this MAS. DOGAMI shall coordinate with FEMA and any additional Mapping Partners responsible for other components of Floodplain Mapping, as necessary, to resolve any potential tie-in issues.

DOGAMI shall incorporate the results of all effective Letters of Map Change (LOMCs) for all affected communities on the DFIRM. Also, DOGAMI shall address all concerns or questions regarding Floodplain Mapping that are raised by the NSP during the independent QA review.

Standards: All Floodplain Mapping work shall be performed in accordance with the standards specified in Section 5 - Standards. Mapping quality standards must be consistent with PM 38, dated October 17, 2007. DOGAMI will perform self-certification audits for the Floodplain Boundary Standards, as described in PM 38 and all subsequent revisions, for all flood hazard areas. DOGAMI may expand on the approaches for analyzing Zone A areas outlined in G&S and in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas* (April 1995), and/or develop new approaches. Such approaches must be coordinated with and approved by the FEMA Regional Project Officer before analysis and mapping begin.

DOGAMI shouldcomplete all activities pertaining to levees in accordance with the G&S, PMs 34, 43 and others that may be appropriate.

Deliverables: In accordance with the G&S, and upon completion of the floodplain mapping task, DOGAMI shall make the following products available to FEMA by uploading the digital data to the MIP so that the NSP can access it for the independent QA review in accordance with the schedule outlined in Section 6 – Schedule. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal. The mapping for the remaining flooding sources including any non-revised digital panels and all merged revised and non-revised floodplain mapping data is to be submitted for the Independent QA review at the completion of this activity.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Digital work map showing the Coastal High Hazard Area (V zone) delineated along the Pacific Ocean shoreline, any new transect locations, 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone designation labels, gutters, PFD, and all applicable base map features;
- Draft DFIRM database prepared in accordance with the requirements in G&S;
- Digital versions of input and output for any computer programs that were used consistent with the DCS–in the G&S;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in the approved QA/QC Plan;
- Any backup or supplemental information including supporting calculations and assumptions used in the mapping required for the independent QA/QC review of Hydrologic, Coastal and /or Hydraulic Analyses and Floodplain Mapping consistent with the DCS–in the G&S;
- An explanation for the use of existing topography for the studied reaches, if appropriate.
- Written summary of the analysis methodologies;
- Digital versions of draft FIS report, Floodway Data Tables and updated profiles including all profiles and tables converted appropriate datum, as well as any other necessary items for the finalization of the preliminary FIS;

- If automated GIS-based models are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted consistent with the DCS–in the G&S;
- Where paper documentation is required by State Law for Professional certifications, you may submit the paper in addition to a scanned version of the paper for the digital record.

Independent QA/QC Review of Floodplain Mapping

Responsible Mapping Partner: NSP

Scope: The NSP shall review the floodplain mapping submitted by DOGAMI under Floodplain Mapping to ensure that the results of the analyses performed are accurately represented, the redelineation of existing data on new, updated topography is appropriate, and to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRMs and/or existing Coos County, OR DFIRMs for the unrevised areas that are mapped. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- Review any new coastal transects for proper location and orientation on the work maps and agreement with the Transect Descriptions table. Ensure that the transects on the work maps extend to the inland limit of the coastal modeling results used for mapping.
- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.
- Review the BFEs and coastal flood zones (both Zones VE and Zones AE) shown on the work map for proper location and agreement with the results of the coastal modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the PFD and Zone VE/Zone AE boundary delineations to ensure that the PFD delineation is coincident with, or seaward of, the Zone VE/Zone AE boundary.
- Review the floodplain widths at cross sections as shown on the work maps to ensure the data matches the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure the data matches the Flood Profiles.
- For non-revised floodplain areas, the 1- and 0.2-percent-annual-chance floodplain boundaries agree with the floodplain boundaries shown on the FIRM, the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- Road and floodplain relationships are maintained for all unrevised areas.
- Review the flood insurance risk zones as shown on the work maps to ensure the data are labeled properly.

- Review the DFIRM mapping files to ensure the data were prepared in accordance with the requirements in G&S.
- Review the metadata files to ensure the data includes all required information shown in the NFIP Metadata Profiles Specifications.

Standards: All Independent QA/QC work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, the NSP shall make the following products available to FEMA by uploading the digital data to MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review;
- An annotated work map with all questions and/or concerns indicated, if necessary; and
- If data changed during review, then updated deliverables for previous tasks will be submitted at this time.

Develop Draft DFIRM Database

Responsible Mapping Partner: DOGAMI

Scope: DOGAMI shall prepare the database in accordance with G&S, for upload to the MIP. DOGAMI shall coordinate with appropriate Mapping Partners, as necessary, to resolve any problems that are identified during development of the DFIRM Database.

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with G&S, DOGAMI shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the Technical Support Data Notebook format described in G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

- DFIRM database files prepared in accordance with the requirements in G&S and in the required format(s) and
- A metadata file complying with the FEMA NFIP Metadata Profile Specifications.

Produce Preliminary Map Products

Responsible Mapping Partner: DOGAMI

Scope: DOGAMI shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Floodplain Mapping. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user). DOGAMI will be preparing the database for this project in the Standard format. The database shall be produced in accordance with the G&S. DOGAMI shall coordinate with those Mapping Partners responsible for Floodplain Mapping and/or Redelineation, as necessary, to resolve any problems that are identified during development of the DFIRM Database and graphics.

Preliminary Summary of Map Actions (SOMA) Preparation: DOGAMI shall prepare Preliminary SOMAs for all affected communities, if appropriate. The SOMA shall list pertinent information regarding LOMCs that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

FIS Report Preparation. DOGAMI shall prepare the Preliminary FIS Report for Coos County, OR. This FIS should include information specific to the processes and methodologies used to create the data listed under Floodplain Mapping, as well as any additional analyses performed to determine the exent of coastal flooding.

Standards: All DFIRM Database work shall be performed in accordance with the standards specified in Section 5 - Standards. All work must pass the automated and visual "National QA/QC" reviews prior to the distribution of the preliminary copies of the DFIRM and FIS report and the Preliminary SOMA.

Deliverables: In accordance with the G&S, DOGAMI shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Preliminary DFIRM database or revised Preliminary DFIRM database prepared in accordance with the requirements in G&S;
- FIS Report and the Preliminary SOMA prepared using the SOMA Tool on the MIP.
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM as outlined in approved QA/QC Plan.
- Passing Quality Review report

Independent QA/QC Review of Produce Preliminary Map Products

Responsible Mapping Partner: NSP

Scope: Upon completion of the floodplain mapping and redelineation activities, The NSP shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. In addition, The NSP shall review the DFIRM to ensure it meets current FEMA graphic specifications. The NSP shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and following the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, gutters, cross sections, transects, studied streams and shorelines, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in G&S.
- All map collar information is complete, correct, and follows the requirements specified in G&S.
- Preliminary DFIRM database is in a GIS file and database format as specified in FEMA's G&S, and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's G&S, and conform to those specifications for content and attribution.

Standards: All DFIRM Database Development work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, The NSP shall make the following products available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 – Schedule.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.
- If the data changed during the QA/QC process, then the updated deliverables from Floodplain Mapping and Redelineation will be resubmitted at this time.

Distribute Preliminary Map Products

Responsible Mapping Partners: NSP and DOGAMI (outreach only)

Scope: Preliminary Map Products consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report and the Preliminary SOMA for community officials and the general public review and comment. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

Preliminary Transmittal Letter Preparation: The NSP shall prepare letters and transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA. This letter will be prepared for FEMA Region X signature.

Distribution of Preliminary DFIRM and FIS Report: The NSP shall distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

News Release Preparation:: The NSP shall use the BFEs on the Web tool in accordance with PM 44 to create BFE notices for studies that result in new or modified BFEs. The NSP shall prepare the BFE determination letters as well as the news release notifications of BFE changes for all affected communities. The NSP shall perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The NSP shall file the notifications for later submittal to FEMA for review.

Standards: All Preliminary Map Products work shall be performed in accordance with the standards specified in Section 5 - Standards. Mapping quality standards must be consistent with PM 38, dated October 17, 2007. Preliminary DFIRM Maps shall pass the QRs, as outlined in PM 42, before this activity is completed and the maps are issued Preliminary.

Deliverables: In accordance with the G&S, The NSP shall make the appropriate deliverables available to FEMA by uploading the digital data to the MIP. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule. Preliminary transmittal letters shall be prepared and transmitted. These letters and any additional letters requested by FEMA shall be prepared in accordance with the current version of the FEMA *Document Control Procedures Manual* and in conjunction with Guidance provided by the Region and/or its contractor.

- Preliminary copies of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.

- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the final preparation of the preliminary DFIRM shall be provided as outlined in the approved QA/QC Plan.

- The NSP and DOGAMI will submit a summary of outreach activities, if any, and any changes made in the outreach approach based on the actual implementation.

Post-Preliminary Processing

Responsible Mapping Partners: NSP and FEMA

Scope: Post-Preliminary Processing includes coordination with FEMA and the Community to schedule a Community Meeting(s) for review of the Preliminary DFIRM, if required. This activity consists of finalizing the DFIRM and FIS report after the Preliminary copies of the DFIRM and FIS report have been issued to community officials and the public for review and comment. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

Community Coordination Meeting: If a community coordination meeting is required it is recommended that it be held within 60 days of the issuance of the Preliminary DFIRM. FEMA and the NSP shall arrange for and verify that the following activities are completed:

- Establish invitee list,
- Schedule meeting date and place,
- Complete and Distribute Meeting Notice/Letter,
- Record Meeting Minutes, and
- Identify any/all communities with BFE changes for required appeal period.

Initiation of Statutory 90-Day Appeal Period: When required, upon completion of a 30-day community comment period and/or final coordination meeting with the affected communities, FEMA and the NSP shall arrange for and verify that the following activities are completed in accordance with the current version of the FEMA G&S, appropriate PMs and Document Control Procedures Manual:

- Proposed BFE determination letters are sent to the community CEOs and floodplain administrators.
- Ensure that news release notifications of BFE changes are published in prominent newspapers with local circulation in accordance with 44 CFR.
- The NSP shall prepare the appropriate notices (Proposed Rules) that are to be published in the *Federal Register*. The NSP shall then deliver those notices to FEMA for publication.
- When DOGAMI holds public meetings to present and discuss the results of this Flood Map Project, FEMA may attend the meetings and assist where possible, if requested.

Resolution of Appeals and Protests: The NSP, with assistance from DOGAMI, shall review and resolve appeals and protests received during the 90-day appeal period. For each appeal and protest, the following activities shall be conducted as appropriate:

- Initial processing and acknowledgment of submittal;

- Technical review of submittal;
- Preparation of letter(s) requesting additional supporting data;
- Performance of revised analyses; and
- Preparation of a draft resolution letter for signature with FEMA and revised DFIRM and FIS report materials for FEMA review.

The NSP shall mail all associated correspondence upon authorization by FEMA.

Preparation of Special Correspondence: The NSP and DOGAMI shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as "special correspondence") including drafting responses for FEMA review when appropriate and finalizing responses for co-signature. The NSP and DOGAMI also shall mail the final correspondence (and enclosures, if appropriate) and distribute appropriate copies of the correspondence and enclosures upon receipt of authorization from FEMA.

Revision of FIRM and FIS Report: If necessary, The NSP and DOGAMI shall work together with FEMA to revise the DFIRM and FIS report and shall distribute revised Preliminary copies of the DFIRM and FIS report to the CEO and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.

Final SOMA Preparation: The NSP shall prepare Final SOMAs for the affected communities with assistance from FEMA, as appropriate.

Processing of Letter of Final Determination: The NSP shall work with FEMA to establish the effective date for the DFIRM and FIS report, and shall prepare Letters of Final Determination (LFDs) for each affected community for FEMA review in coordination with the Region and its contractor, and in accordance with the FEMA *Document Control Procedures Manual.* FEMA or its designated contractor shall mail the final signed LFDs and enclosures and distribute appropriate copies of the signed LFDs. All work must pass the automated and visual "National QA/QC" reviews and review of LFD prior to the distribution of the LFD.

- The NSP shall prepare the appropriate notices (Final Rules) that are to be published in the *Federal Register.* The NSP shall then deliver those notices to FEMA for publication.

Processing of Final DFIRM and FIS Report for Printing. The NSP shall prepare final reproduction materials for the DFIRM and FIS report and provide these materials to The MSC in accordance with PM 42 for printing by the United States Government Printing Office. The NSP shall also prepare the appropriate paperwork to accompany the DFIRM and FIS report (including Print Processing Worksheet, Printing Requisition Forms, and Community Map Actions Form) and transmittal letters to the community CEOs.

Revalidation Letter Processing: The NSP shall prepare and distribute letters for FEMA signature to the community CEOs and floodplain administrators to notify the affected communities about LOMCs for which determinations will remain in effect after the DFIRM and FIS report become effective.

Archiving Data: The NSP shall ensure that technical and administrative support data are packaged in the FEMA required format and stored properly in the library archives until transmitted to the FEMA

Engineering Study Data Package Facility. In addition, the NSP will maintain copies of all data for a period of no less than three years.

Standards: All Post Preliminary DFIRM work shall be performed in accordance with the standards specified in Section 5 - Standards.

Deliverables: In accordance with the G&S, The NSP shall make the following products available to FEMA by uploading the digital data to the MIP. A metadata file complying with the NFIP Metadata Profiles Specifications, must accompany the compliant digital data. Additionally, the TSDN format described in the G&S must be delivered in accordance with Section 2 – Technical and Administrative Support Data Submittal.

This submittal will occur in accordance with the schedule outlined in Section 6 - Schedule.

- Documentation that the news releases were published in accordance with FEMA requirements;
- Documentation that the appropriate *Federal Register* notices (Proposed and Final Rules) were published in accordance with FEMA requirements;
- Draft and final Special Correspondence (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final Appeal and Protest acknowledgment, additional data, and resolution letters (and all associated enclosures, backup data, and other related information) for FEMA review and signature, as appropriate;
- Draft and final LFDs (and all associated enclosures, backup data, and other related information) for FEMA review and signature;
- DFIRM negatives and final FIS report materials including all updated data tables and Flood Profiles;
- Paperwork for the final DFIRM and FIS report materials;
- Transmittal letters for the printed DFIRM and FIS report;
- LOMC Revalidation Letters, if appropriate;
- Completed, organized, and archived technical and administrative support data; and
- Completed, organized, and archived case files and flood elevation dockets.

SECTION 2—TECHNICAL AND ADMINISTRATIVE SUPPORT DATA SUBMITTAL

The Project Team members for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this MAS/SOW shall be submitted in the TSDN format in accordance with the FEMA G&S. Table 2.1 Mapping Activities and Applicable TSDN Sections indicates the sections of the TSDN that apply to each mapping activity.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to the G&S.)

Table 2.1- Mapping Activities and Applicable TSDN Sections

TSDN Section	Mapping Activities													
	Scoping	Field Survey	Topo Data	QA/QC of Topo	Base Map	Coastal	QA/QC of Coastal	Hydraulic Analysis	QA/QC of Hydraulics	Flood-plain Mapping (and Re-delineation)	QA/QC of FP Mapping	DFIRM Database	Preliminary Map Products	Post-Preliminary
General Documentation														
Special Problem Reports	X		X	X	X	X	X			X	X	X	X	X
Telephone Conversation Reports	X		X	X	X	X	X			X	X	X	X	X
Meeting, Minutes/ Reports	X		X	X	X	X	X			X	X	X	X	X
General Correspon-dence	X		X	X	X	X	X			X	X	X	X	X
Engineering Analyses														
Hydrologic Analyses														

TSDN Section	Mapping Activities													
	Scoping	Field Survey	Topo Data	QA/QC of Topo	Base Map	Coastal	QA/QC of Coastal	Hydraulic Analysis	QA/QC of Hydraulics	Floodplain Mapping (and Re-delineation)	QA/QC of FP Mapping	DFIRM Database	Preliminary Map Products	Post-Preliminary
Hydraulic Analyses														
Key to Cross-Section Labeling														
Key to Transect Labeling														
Draft FIS Report					X	X	X	X	X					
Mapping Information	X		X	X	X					X	X	X	X	X
Miscellaneous Reference Information	X		X	X	X	X	X			X	X	X	X	X

SECTION 3—PERIOD OF PERFORMANCE (for CTPs)

The mapping activities outlined in this MAS will be completed by September 30, 2010, with the option to extend as necessary. The Mapping Activities may be terminated at the option of FEMA or DOGAMI { in accordance with the provisions of the Partnership Agreement dated August 6, 2008. If these mapping activities are terminated, all products produced to date must be returned and updated into the MIP and the remaining funds from uncompleted activities, provided by FEMA for this MAS, will be returned to FEMA.

SECTION 4—FUNDING/LEVERAGE (FOR CTP, OFA and/or COMMUNITY)

FEMA is providing funding, in the amount of $762,960, to DOGAMI for the completion of this Flood Map Project. DOGAMI shall provide any additional resources required to complete the assigned activities for this Flood Map Project. During the scoping process, additional needs may be identified. Activities associated with any additional needs would be performed based on availability of additional funds. The leverage listed below includes in-kind services and blue book values for acquired information (i.e. base map data, hydrologic and hydraulic analyses, etc.). These values should also be reported in the MIP by the appropriate task owner. The current Blue Book is dated November 2006 and can be downloaded from FEMA's Information Resource Library at http://www.fema.gov/library/index.jsp. DOGAMI shall complete Table 4.1 Contribution and Leverage

Table 4.1-Contribution and Leverage

Project Task	FEMA Contribution	Partner Contribution	% Partner Leverage	Total Project Cost
Coos County DFIRM/multi-hazard mapping				
TOTAL FUNDING AMOUNTS				

Leverage dollars or units shall be entered as applicable within the Manage Data Development task in the MIP workflow.

SECTION 5—STANDARDS

The standards relevant to this MAS are provided in Tables 5-1 Applicable Standards for Project Activities and 5-2 Project Activities and Applicable Portions of FEMA Guidelines and Specifications. Information on the correct volume and appendix of the G&S to be referenced for each mapping activity are summarized in Table 5-2 for convenience. However, all mapping partners working on a Flood Map Project are responsible for complying with all appropriate requirements in FEMA's G&S including the Final Draft Guidelines for Coastal Flood Hazard Analysis and Mapping for the Pacific Coast of the United States and Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update Final Draft, collectively referred to as "Coastal Guidelines Updates"; and related PMs published by FEMA as of the date of this agreement.

These guidelines may be downloaded from the FEMA Flood Hazard Mapping website at http://www.fema.gov/plan/prevent/fhm/dl_cgs.shtm. The Geospatial Data Coordination Policy and the Geospatial Data Coordination Implementation Guide are located at https://hazards.fema.gov under "Tools & Links."

Table 5-1. Applicable Standards for Project Activities

	Activities																
Applicable Standards	Scoping	Field Survey	Topo Data	QA/QC Topo Data	Base Map	Coastal	QA/QC Coastal	Hydrology	QA/QC Hydrology	Hydraulic Analysis	QA/QC of Hydraulic Analysis	Floodplain Mapping (inc. Redelineation	QA/Qc Flood-plain Mapping	DFIRM Dbase	QA/QC DFIRM Database	Preliminary Map Products	Post-Preliminary Processing
Guidelines and Specifications for Flood Hazard Mapping Partners and Procedure Memorandums	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FEMA's Geospatial Data Coordination Policy	X		X		X												
FEMA's Geospatial Data Coordination Implementation Guide	X		X		X												

Applicable Standards	Activities																
	Scoping	Field Survey	Topo Data	QA/QC Topo Data	Base Map	Coastal	QA/QC Coastal	Hydrology	QA/QC Hydrology	Hydraulic Analysis	QA/QC of Hydraulic Analysis	Floodplain Mapping (inc. Redelineation	QA/Qc Flood-plain Mapping	DFIRM Dbase	QA/QC DFIRM Database	Preliminary Map Products	Post-Preliminary Processing
Engineer Manual 1110-2-1003, *Hydrographic Surveys* (USACE), January 1, 2002	X	X															
"Numerical Models Accepted by FEMA for NFIP Usage," Updated April 2003	X					X	X	X	X	X	X						
NFIP Metadata Profile Specifications	X		X	X								X	X	X	X	X	X
Document Control Procedures Manual	X															X	X
44 Code of Federal Regulations Parts 65, 66 and 67	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Scoping	Volume 1 Appendix I Scoping Report document 44 Code of Federal Regulations Part 66 and 67
Outreach	Volume 1 Appendix I
Field Survey	Volume 1 Appendices A, B, C, F, and M
Topographic Data Development and Independent QA/QC Review of Topographic Data	Volume 1, Appendices A and M
Base Map Acquisition and Preparation And Independent QA/QC Review of Base Map	Volume 1 Appendices A, K, L, and M
Hydrologic Analyses and Independent QA/QC Review of Hydrologic Analyses	Volume 1 Appendices A, C, E, F, G, H, and M
Hydraulic Analyses and Independent QA/QC Review of Hydraulic Analyses	Volume 1 Appendices A, B, C, E, F, G, H, and M

Activity Description	Applicable Volume, Section/Subsection, and Appendix
Coastal Hazard Analyses and Independent QA/QC of Coastal Hazard Analyses	Volume 1 Appendices A, B, C, D, H, and M Coastal Guidelines Updates"
Floodplain Mapping and Independent QA/QC Floodplain Mapping (including Redelineation/Digitization)	Volume 1 Appendices C, D, E, F, G, H, K, L, and M
Produce Preliminary Map Products and Independent QA/QC Review of Produce Preliminary Map Products	Volume 1 Appendices K, L, and M
Distribute Preliminary Map Products and Independent QA/QC Review of Distribute Preliminary Map Products	Volume 1 Appendices J, K, L, and M
Post-Preliminary Processing	Volume 1 Appendices J, K, L, and M

SECTION 6— SCHEDULE

The activities documented in this MAS shall be completed in accordance with Table 6.1 Mapping Activities Schedule. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner. Please also identify to whom the products associated with each task are to be submitted to (i.e. the MIP, FEMA Regional Office, etc.).

Table 6.1 Mapping Activities Schedule

ACTIVITIES	RESPONSIBLE PARTNER(S)	START DATE	END DATE	COST
Scoping	DOGAMI/FEMA/NSP	9/1/08		
Field Surveys				
Topographic Data Development	DOGAMI			
Independent QA/QC Review of Topographic Data	NSP			
Base Map Acquisition	DOGAMI			
Independent QA/QC Review of Base Map	NSP			
Hydrologic Analyses				
Independent QA/QC Review of Hydrologic Analyses				
Hydraulic Analyses				
Independent QA/QC Review of Hydraulic Analyses				
Coastal Flood Hazard Analyses	DOGAMI			
Independent QA/QC Review of Coastal Hazard Analyses	NSP			
Floodplain Mapping: Detailed Riverine or Coastal Analysis				
Floodplain Mapping: Refinement or Creation of Zone A	DOGAMI			
Floodplain Mapping: Merging Revised and Unrevised Areas	DOGAMI			
Floodplain Mapping: Redelineation	DOGAMI			
Independent QA/QC Review of Floodplain Mapping	NSP			
Develop Draft DFIRM Database	DOGAMI			

ACTIVITIES	RESPONSIBLE PARTNER(S)	START DATE	END DATE	COST
Produce Preliminary Map Products (including Graphic Specifications)	DOGAMI			
Independent QA/QC Review of Produce Preliminary Map Products	NSP			
Distribute Preliminary Map Products	NSP			
Post-Preliminary Processing	NSP			
TOTAL COST				

FEMA shall enter the MIP workflow tasks with schedule and cost information within 60 days once funds are awarded.

SECTION 7—CERTIFICATIONS

Data Capture Standards

- **DCS Certification Form** {Insert appropriate Data Capture Standards (DCS) language applicable to this Mapping Activity Statement. PLEASE NOTE: The DCS are being updated. FEMA Region X will update this document accordingly in coordination with DOGAMI and the NSP once the DCS update is complete.}

Field Surveys and Topographic Data Development

A Registered Professional Engineer or Licensed Land Surveyor shall provide an accuracy statement for field surveys and/or topographic data used and shall certify these data meet the accuracy statement provided. Data accuracy should be stated used the Federal Geographic Data Committee National Standards for Spatial Data Accuracy, but the American Society for Photogrammetry and Remote Sensing accuracy reporting standards are acceptable.

Base Map Acquisition and Preparation

- A community official or responsible party shall provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner shall provide documentation that the digital base map can be used by FEMA. Please note that uploading base map data to the MIP does not constitute agreement that the digital base map can be used by FEMA. Documentation that the digital base map can be used by FEMA is still required.
- Certifications must be made at the time the intermediate data is submitted. For example, if hydrologic data is submitted, certification will be required at the time it is submitted.

Hydrologic Analyses, Hydraulic Analyses, Coastal Analyses, and Floodplain Mapping

- A Registered Professional Engineer shall certify hydrologic and hydraulic and coastal analyses and data in accordance with 44 CFR 65.6(f).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10.

SECTION 8—TECHNICAL ASSISTANCE AND RESOURCES

Project Team members may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from FEMA and/or your Regional Project Officer.

General technical and programmatic information, such as FEMA 265 and the Quick-2 computer program, can be downloaded from the FEMA website at http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm Specific technical and programmatic support may be provided through FEMA and/or its contractor; such assistance should be requested through the FEMA Project Officer specified in Section 12 – Points of Contact.

Project Team members also may 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 subcontractors, and GIS-based engineering and modeling training.

Assistance with the MIP may be requested at miphelp@mapmodteam.com.

SECTION 9—CONTRACTORS (CTP)

DOGAMI does not intend to use the services of a contractor for the Flood Map Project documented in this MAS. DOGAMI shall ensure that the procurement for all contractors, if any, are used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

Part 13 may be downloaded in PDF or text format from the United States Government Printing Office website at http://www.access.gpo.gov/nara/cfr/waisidx_04/44cfr13_04.html.

SECTION 10—REPORTING (CTP)

Financial Reporting: Because funding has been provided to DOGAMI by FEMA, financial reporting requirements for DOGAMI will be in accordance with Cooperative Agreement Articles. DOGAMI shall also refer to 44 CFR 13.41.

DOGAMI shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer in accordance with the terms of the signed Cooperative Agreement for this MAS.

Status Reporting: Status reports will be submitted on a monthly basis in accordance with the financial reporting submittals. DOGAMI shall refer to 44 CFR 13.4 to obtain minimum requirements for status reporting. The Project Officer, as needed, may request additional information on status.

DOGAMI may meet with FEMA and/or its contractor up to bi-weekly, or more frequently if needed, to review the progress of the project in addition to the quarterly financial and status submittals. These meetings will alternate between FEMA's Regional Office, the DOGAMI office, the NSP office, and conference calls, as necessary.

Earned Value Reporting: The MIP Workflow is designed to track the Earned Value of mapping projects. This information is automatically calculated by the MIP, using the Actual cost and schedule of work performed, or "actuals" and comparing them to the expected cost and schedule of work performed, or "baseline".

Once the FEMA Regional office has funded a project , FEMA will complete the "Obligate Project Funds" screen in the MIP. This step establishes the baseline for the project in the MIP, using the cost and schedule information for each task as outlined in this document and agreed to at the completion of the scoping process.

The MIP study workflow allows DOGAMI and the NSP to report on the status of these projects at a task level. The cost and schedule information, updated by DOGAMI and the NSP for each contracted task, is compared to the baseline established for those tasks. This information is rolled up to a project level and monitored by the FEMA Region to assess progress and Earned Value.

Earned Value reporting involves the reporting of cost, schedule and performance (physical percent complete) in the MIP by DOGAMI and the NSP. Training on the use of and updates for the MIP will be provided by the NSP.

Once the baseline has been established in the MIP, the DOGAMI shall input the performance and actual cost to date for each contracted task for each project. This must be completed at minimum every thirty days and at the completion of the task. When a task is completed, including all QA/QC activities in this MAS plus the Quality Control Reviews established in PM 42. the DOGAMI and the NSP shall enter 100% complete, enter the actual completion cost, and the actual completion date within the Manage Data Development, Manage Preliminary Map Production, or Manage Post Preliminary Processing tasks, as applicable.

The Project Officer, as needed, may request additional information on status on an ad hoc basis.

Section 11—Project Coordination

Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities shall include:

Meetings, teleconferences, and video conferences with FEMA and other Project Team members;

- Telephone conversations with FEMA and other Project Team members on a scheduled basis and an ad hoc basis, as required;
- Updates to the MIP and other FEMA status information systems in accordance with requirements in Volumes 1 and 3 of G&S; and
- E-mail, facsimile transmissions, and letters, as required.

SECTION 12—POINTS OF CONTACT (CTP)

The points of contact for this Flood Map Project are Ryan Ike, the FEMA Regional Project Officer; Don Lewis, the Project Manager for DOGAMI; Ryan Carroll, The Project Manager for the NSP; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, any additional FEMA assistance should be requested through the FEMA Regional Project Officer.

Each party has caused this MAS to be executed by its duly authorized representative.

Don Lewis
Project Manager
{Insert CTP name}

September 5, 2008
Date

Ryan Ike
Regional Project Officer
Federal Emergency Management Agency, Region X

Date

Vicki McConnell
state Geologist/Director of DOGAMI

Sept. 5, 2008
Date

Appendix A

MAS No. 2008-02

State of Oregon, Department of Geology and Mineral Industries

Scope of Work for Multi-Hazard Identification, Mapping, and Delivery

Section 1- Introduction

To support certain goals outlined in Oregon's Statewide Planning Goals and Guidelines (specifically, Goal 7, "Areas Subject to Natural Hazards," dated 6/1/02), as well as goals outlined in the Disaster Mitigation Act of 2000, DOGAMI will develop natural hazard data and provide inventory of this data in a multi-hazard platform as well as technical assistance including coordination with the State of Oregon, Department of Land Conservation and Development (DLCD) on the development of model ordinances and risk evaluation methodologies to local governments within the State of Oregon. The natural hazards being evaluated under this effort include:

- Flooding (both coastal and riverine storm events)
- Landslides
- Earthquakes
- Tsunamis
- Coastal erosion; and
- Wildfires

For the purposes of this appendix, Wildfire hazards will not be addressed.

Section 2- Multi-Hazard Identification and Evaluation

DOGAMI will develop and/or obtain hazard data related to storms causing both coastal and riverine flooding, Landslides, Tsunami, Earthquakes, and Coastal Erosion hazards, and analyze that data to determine areas of vulnerability.

Tasks in this section involve redelineation of existing riverine and coastal flood hazard data; the creation of new flood hazard data; Identification and evaluation of channel migration zones; creation of 1%-annual-chance and .2-%-annual-chance flood depth grids within the HAZUS program using best available topographic data, redelineated effective flood hazard data, and current building inventory; as well as perform a loss estimation analysis within HAZUS. DOGAMI will also develop vulnerability mapping associated with the aforementioned hazards. Deliverables under this task will be:

- Redelineated flood hazard mapping as outlined in the MAS
- Channel Migration Zone Mapping
- 1%-annual-Chance and .2-%-annual-chance riverine flood depth grids
- Loss estimation outputs from the HAZUS program, (including appropriate tables and GIS data)
- Landslide Hazard Mapping
- Earthquake Hazard Mapping, including ground-shaking amplification hazards and absolute-earthquke hazard mapping
- Liquefaction Hazard Mapping
- Tsunami Inundation Mapping
- Coastal Erosion Mapping
- A report summarizing each deliverable and the methods used

All raw hazard mapping layers will be provided to FEMA Region X in a GIS format.

Section 3 – Compilation and Dissemination of a Multi-Hazard Map

DOGAMI will process and combine the deliverables listed in Section 2 above into a multi-hazard map for Coos County, OR that should be distributed to affected communities as well as made available to the public via internet tools. The base map used for this effort should be coordinated and approved by FEMA, and should be consistent with the basemap selected for the DFIRM and outlined in the MAS. The internet tools should describe the datasets used and the processes employed to arrive at the mapping being displayed. Under this task, DOGAMI should also coordinate an outreach strategy (as mentioned in the MAS) for showcasing the mulit-hazard data and mapping to communities within Coos County. The deliverables under this task are:

- Multi-hazard maps delivered in both paper and digital format;
- On-line tool for describing, cataloging, and viewing the multi-hazard mapping;
- Metadata for all applicable map layers, including the base map;
- A report detailing the processes used during the multi-hazard map production; and
- A separate report specific to the outreach strategy for disseminating the multi-hazard data mapping to Coos County and the general public.

Section 4- Standards

All work described in this appendix must conform with all applicable spatial mapping standards, as well as FEMA's *Guidelines and Specifications for Flood Hazard Mapping Partners,* dated April, 2003 (including all subsequent updates and Procedure Memorandums).

Section 6- Schedule

The schedule for the production of mutli-hazard mapping in Coos County, OR is as follows:

By January 1, 2009: an online platform for viewing hazard mapping should be established, functioning, and made available to Coos County and the general public.

Quarterly, by Federal Fiscal Quarters (by March 31, 2009; by June 30, 2009; by September 30, 2009): update the established platform with a minimum of one hazard layer by the end of each Federal fiscal quarter. These updates should continue at least through the end of Federal fiscal year 2009 (Septebmer 30, 2009).

Section 7- Signatures

All requirements under MAS Section 7- Certifications and Section 10- Reporting must also be met for the work outlined in this appendix. All parties identified under MAS Section 12- Points of Contact remain unchanged. Initials of all signature parties identified in the MAS should be provided below.

Don Lewis, PM DOGAMI

Ryan Ike, RPO, FEMA Region X

Vicki McConnell, State Geologist, Director of DOGAMI