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Community: PIERCE COUNTY *	State: WA	CID: 530138

Date of visit: 09/23/2014	FIRM Effective Date: 08/19/1987
Population: 819743	Current FIRM Date: 08/04/1988
County: Pierce	ISO/CRS Specialist: Marlene Jacobs
Manual Year: 2013	

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aSFHA = 22684 aSH = 999

bSF = 2080

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Activity 310 (Elevation Certificates)

312 Elements

312.a EC

Verified Ratio = Number correct 30 / Number reviewed 30 = 1

[Communities need 90% correct to stay in the CRS, but the score for EC is based on the actual verified ratio, which can be < 0.9.]

cEC = 38 x Verified ratio 1 = 38

312.b ECPO

rECPO = bECPO 1 / bPO 1 = 1

Verified Ratio = Number correct 0 / Number reviewed 0 = 1

cECPO = 48 x rECPO 1 x Verified ratio 1 = 48

312.c ECPR

rECPR = bECPR 0 / bPR 0 = 0

Verified Ratio = Number correct 0 / Number reviewed 0 = 1

cECPR = 48 x rECPR 0 x Verified ratio 1 = 0

313 Credit Calculation

c310 = cEC 38 + cECPO 48 + cECPR 0 = 86

Activity 310 Comments

Pierce County WA applies their Floodplain Development Regulations both inside and outside of the Special Flood Hazard Area (SFHA). Since the date of their last Cycle Verification Visit (01/14/2010), the County has collected a combined total of 51 Elevation Certificates (ECs). Of that total 26 were inside the SFHA. The Specialist reviewed all 26 ECs and found them to be correct and complete.

ECPO credit is based on the fact that the County received credit during the last cycle and per the claim by the County that they have collected all ECs for this time period. ECPOs are stored in electronic file format and paper copies are retained in a file cabinet based on FIRM panels in the PALS office at the Pierce County Annex.

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Activity 320 (Map Information Services)

322 Elements

322.a MI1

Verified Ratio = Number correct 5 / Sample Size 5 = 1

cMI1 = MI1 30 x Verified ratio 1 = 30

322.b MI2

Verified Ratio = Number correct 1 / Sample Size 1 = 1

cMI2 = MI2 20 x Verified ratio 1 = 20

322.c MI3

Verified Ratio = Number correct 1 / Sample Size 1 = 1

cMI3 = MI3 20 x Verified ratio 1 = 20

322.d MI4

Verified Ratio = Number correct 1 / Sample Size 1 = 1

cMI4 = MI4 20 x Verified ratio 1 = 20

322.e MI5

Verified Ratio = Number correct 1 / Sample Size 1 = 1

cMI5 = MI5 20 x Verified ratio 1 = 20

322.f MI6

Verified Ratio = Number correct 0 / Sample Size 0 = 1

cMI6 = MI6 0 x Verified ratio 1 = 0

322.g MI7

Verified Ratio = Number correct 1 / Sample Size 1 = 1

cMI7 = MI7 20 x Verified ratio 1 = 20

324 Credit Calculation

c320 = cMI1 + cMI2 + cMI3 + cMI4 + cMI5 + cMI6 + cMI7 = c320

c320 = 30 + 20 + 20 + 20 + 20 + 0 + 20 = 90

Activity 320 Comments

Pierce County WA provides the Map Information Services to the target audience (Banks, Insurance Companies and Realtors). The Specialist collected a mailing list for each of the 3 key groups. This activity is publicized annually and a copy of the Requisition for printing and confirmation of the costs can be found in the documentation. The County maintains a log as a record of service.

MI 2 credit is applied for coastal high hazard flood depth information provided in place of LiMWA's.

MI 3 credit is applied for the Deep & Fast Flowing mapped area and the Channel Migration Zones.

MI 4 credit is applied based on the map showing flood depths of current structures after LOMA versus flood depth of proposed D FIRM.

MI 5 credit is based on the Lahar map.

MI 7 credit is based on the fish habitat and wetland map.

Activity 330 (Outreach Projects)

332 Elements

332.a OP

Number of OPs: 21

cOP = ∑ (OP 115 + PPI(OP) 38 + STK(OP) 1) = 154

332.b FRP

Number of FRP projects: 0

cFRP = ∑ (FRP 0 + PPI(FRP) 0) = 0

333 Credit Calculation

c330 = cOP 154 + cFRP 0 = 154

Activity 330 Comments

Pierce County completed the PPI process and French Wetmore reviewed the PPI. Outreach Project (OP) score is based on French Wetmore's rescoring of OPs.

Activity 340 (Hazard Disclosure)

342 Elements

342.a DFH

DFH = 0

342.b ODR

ODR = 25

342.c REB

REB = 0

342.d DOH

DOH = 0

343 Credit Calculation

c340 = DFH 0 + ODR 25 + REB 0 + DOH 0 = 25

Activity 340 Comments

Initial Other Disclosure Requirements (ODR) credit is based on the Washington State Uniform Minimum Credit (UMC) worksheet found in activity 230. UMC credits are applied at 10 points for the Real Estate Sellers Disclosure Form which includes a statement about if the property has ever been flooded. Additional ODR credit was applied for the following County requirements: Chapter 18E.10 Critical Areas Flood Hazard Areas also requires that notice of critical areas be placed (1) on the title of the property, (2) within the Homeowners Covenants, and (3) on any construction plans.

Credit for Disclosure of Other Hazards was requested but no awarded due to the credit criteria which states that DFH credit is a prerequisite of DOH credit.

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Activity 350 (Flood Protection Information)

352 Elements

352.a LIB

LIB = 3

352.b LPD

LPD = 9

352.c WEB

WEB1:

Topic	Points	Range
Know your flood hazard	3	0-6
Insure your property	2	0-6
Protect people	5	0-6
Protect property	0	0-6
Build responsibly	1	0-6
Protect natural functions	0	0-6
Is there a creditable PPI? If yes, add the credits below.		
PPI topic 7	0	0-6
PPI topic 8	0	0-6
PPI topic 9	0	0-6
PPI topic 10	0	0-6
WEB1 =	11	0-60

WEB2 (warning, safety, evacuation info) = 10

WEB3 (real-time gage info) = 0

WEB4 (ECs on the website) = 0

WEB = WEB1 11 + WEB2 10 + WEB3 0 + WEB4 0 = 21

353 Credit Calculation

c350 = LIB 3 + LPD 9 + WEB 21 = 33

Activity 350 Comments

Web search key word: flood, flooding, floodplain, floodplain information. Flood information was located with two to three steps.

Library - Locally Pertinent Documents:
4 different local Basin plans
Flood Hazard Managment Plan
Supplemental Environmental Impact Statement (EIS)
Staff Report for the EIS
Pierce County Comprehensive Plan
Pierce County flood control zone district Volume 1

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Activity 410 (Floodplain Mapping)

412 Elements

Map#1

412.a NS#1

Verified ratio = Number with BFEs 0 / Number reviewed 0 = 1

cNS#1 = NS#1 230 * Verified ratio 1 = 230

412.b LEV#1

LEV#1 = Non-FEMA share of the study cost 999 / Total cost of the study 999 = 1

412.c SR#1

SR#1 = 0

412.d HSS#1

HSSa#1	factor of safety =	0
HSSb#1	better topo =	60
HSSc#1	future conditions =	0
HSSd#1	500-year =	60
HSSother#1	other =	0
HSS#1 =	total of above =	120

412.e FWS#1

Floodway mapping standard =

FWS#1 = 0

412.g CTP2#1

CTP2#1 = 1.18

413 Impact Adjustment

rMAP#1 = aMAP#1 320 / aSFT#1 22684 = 0.01

MAP#1 = ((cNS#1 230 * LEV#1 1) + SR#1 0 + HSS#1 120
+ FWS#1 0) * rMAP#1 0.01 * CTP2#1 1.18 = 4.13

412.f MAPSH

MAPSH = 50

412.g CTP1

CTP1 = 10

414 Credit Calculation

c410 = MAP#1 4.13 + MAP#2 11.75 + MAP#3 230.4 + MAP#4 0
+ MAP#5 0 + MAP#6 0 + MAPSH 50 + CTP1 10 = 306

Activity 410 (Floodplain Mapping)

412 Elements

Map#2

412.a NS#2

Verified ratio = Number with BFEs 0 / Number reviewed 0 = 1

cNS#2 = NS#2 175 * Verified ratio 1 = 175

412.b LEV#2

LEV#2 = Non-FEMA share of the study cost 999 / Total cost of the study 999 = 1

412.c SR#2

SR#2 = 0

412.d HSS#2

HSSa#2	factor of safety =	0
HSSb#2	better topo =	60
HSSc#2	future conditions =	0
HSSd#2	500-year =	0
HSSother#2	other =	0
HSS#2 =	total of above =	60

412.e FWS#2

Floodway mapping standard =

FWS#2 = 0

412.g CTP2#2

CTP2#2 = 1

413 Impact Adjustment

rMAP#2 = aMAP#2 1112 / aSFT#2 22684 = 0.05

MAP#2 = ((cNS#2 175 * LEV#2 1) + SR#2 0 + HSS#2 60
+ FWS#2 0) * rMAP#2 0.05 * CTP2#2 1 = 11.75

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Activity 410 (Floodplain Mapping)

412 Elements

Map#3

412.a NS#3

Verified ratio = Number with BFEs 0 / Number reviewed 0 = 1

cNS#3 = NS#3 130 * Verified ratio 1 = 130

412.b LEV#3

LEV#3 = Non-FEMA share of the study cost 999 / Total cost of the study 999 = 1

412.c SR#3

SR#3 = 0

412.d HSS#3

HSSa#3	factor of safety =	0
HSSb#3	better topo =	30
HSSc#3	future conditions =	0
HSSd#3	500-year =	0
HSSother#3	other =	0
HSS#3 =	total of above =	30

412.e FWS#3

Floodway mapping standard =

FWS#3 = 0

412.g CTP2#3

CTP2#3 = 1

413 Impact Adjustment

rMAP#3 = aMAP#3 32664.96 / aSFT#3 22684 = 1.44

MAP#3 = ((cNS#3 130 * LEV#3 1) + SR#3 0 + HSS#3 30
+ FWS#3 0) * rMAP#3 1.44 * CTP2#3 1 = 230.4

Activity 410 Comments

Technical review for this activity was provided by Cristina Martinez on 04/16/15.

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Activity 420 (Open Space Preservation)

422 Elements

422.a OSP

AA. Acreage of 10 largest OSP sites = 6825

AB. Acreage of the AA sites that pass the office review = 6825

AF. Acreage of the sample sites that pass the office review = 0

Verified acreage of the remaining sites =

AD 0 * AG 0 / AE 0 = 0

aOSP = AC 6825 + Verified acreage of remaining sites 0 = 6825

rOSP = aOSP 6825 / aSFHA 22684 = 0.3

cOSP = 1,450 * rOSP 0.3 = 435

422.b DR

BA. Acreage of 10 largest DR sites = 554

Verified acreage of the remaining sites =

BC 0 * BE 0 / BD 0 = 0

aDR = BB 554 + Verified acreage of remaining sites 0 = 554

rDR = aDR 554 / aSFHA 22684 = 0.02

cDR = 50 * rDR 0.02 = 1

422.c NFOS

NFOS1 - Natural functions open space (basic)

CA. Acreage of 10 largest NFOS1 sites = 0

CB. Acreage of the CA sites that pass the office review = 0

CF. Acreage of the sample sites that pass the office review = 0

Verified acreage of the remaining sites =

CD 0 * CG 0 / CE 0 = 0

aNFOS1 = CC 0 + Verified acreage of remaining sites 0 = 0

rNFOS1 = aNFOS1 0 / aSFHA 22684 = 0

cNFOS1 = NFOS1 0 * rNFOS1 0 = 0

NFOS2 - NFOS1 parcel in a natural functions plan

DA. Acreage of 10 largest NFOS2 sites = 0

Verified acreage of the remaining sites =

DC 0 * DE 0 / DD 0 = 0

aNFOS2 = DB 0 + Verified acreage of remaining sites 0 = 0

rNFOS2 = aNFOS2 0 / aSFHA 22684 = 0

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Activity 420 (Open Space Preservation)

422 Elements

NFOS3 - NFOS1 parcel has ESA habitat

EA. Acreage of 10 largest NFOS3 sites = 0

Verified acreage of the remaining sites =

EC 0 * EE 0 / ED 0 = 0

aNFOS3 = EB 0 + Verified acreage of remaining sites 0 = 0

rNFOS3 = aNFOS3 0 / aSFHA 22684 = 0

cNFOS3 = NFOS3 0 * rNFOS3 0 = 0

NFOS4 - NFOS1 parcel in a designated corridor

FA. Acreage of 10 largest NFOS4 sites = 0

Verified acreage of the remaining sites =

FC 0 * FE 0 / FD 0 = 0

aNFOS4 = FB 0 + Verified acreage of remaining sites 0 = 0

rNFOS4 = aNFOS4 0 / aSFHA 22684 = 0

cNFOS4 = NFOS4 0 * rNFOS4 0 = 0

NFOS5 - NFOS1 parcel has educational materials

GA. Acreage of 10 largest NFOS5 sites = 0

Verified acreage of the remaining sites =

GC 0 * GE 0 / GD 0 = 0

aNFOS5 = GB 0 + Verified acreage of remaining sites 0 = 0

rNFOS5 = aNFOS5 0 / aSFHA 22684 = 0

cNFOS5 = NFOS5 0 * rNFOS5 0 = 0

cNFOS

cNFOS = cNFOS1 0 + cNFOS2 0 + cNFOS3 0 + cNFOS4 0 + cNFOS5 0 = 0

422.d SHOS

GGA. Acreage of the largest SHOS sites = 0

GGB. Acreage of the GGA sites that pass the office review = 0

GGF. Acreage of the sample sites that pass the office review 0

Verified acreage of the remaining sites =

GGD 0 * GGG 0 / GGE 0 = 0

aSHOS = GGC 0 + Verified acreage of remaining sites 0 = 0

rSHOS = aSHOS 0 / aSFHA 22684 = 0

cSHOS = SHOS 0 * rSHOS 0 = 0

Activity 420 (Open Space Preservation)

422 Elements

422.e OSI

OSI1 - Set aside all floodplain in a subdivision

HB.Number of the samples that pass the office review = 1

rOSI1 = aOSI1 15992.22 / aSFHA 22684 = 0.71

Verified ratio = HC 1 / HA 1 = 1

cOSI1 = OSI1 248 * rOSI1 0.71 * Verified ratio 1 = 176.08

OSI2 - Building sites must be on natural high ground

IB.Number of the samples that pass the office review = 0

rOSI2 = aOSI2 0 / aSFHA 22684 = 0.1

Verified ratio = IC 0 / IA 0 = 1

cOSI2 = OSI2 0 * rOSI2 0.1 * Verified ratio 1 = 0

OSI3 - Building sites must be on natural high ground, to the extent possible

JB.Number of the samples that pass the office review = 0

rOSI3 = aOSI3 0 / aSFHA 22684 = 0.1

Verified ratio = JC 0 / JA 0 = 1

cOSI3 = OSI3 0 * rOSI3 0.1 * Verified ratio 1 = 0

OSI4 - TDRs and density bonuses

KB.Number of the samples that pass the office review = 0

rOSI4 = aOSI4 0 / aSFHA 22684 = 0.1

Verified ratio = KC 0 / KA 0 = 1

cOSI4 = OSI4 0 * rOSI4 0.1 * Verified ratio 1 = 0

OSI5 - Cluster development and PUDs

LB.Number of the samples that pass the office review = 1

rOSI5 = aOSI5 15878.8 / aSFHA 22684 = 0.7

Verified ratio = LC 1 / LA 1 = 1

cOSI5 = OSI5 25 * rOSI5 0.7 * Verified ratio 1 = 17.5

Activity 420 (Open Space Preservation)

422 Elements

OSI6 - Tax incentives

MB.Number of the samples that pass the office review = 0

rOSI6 = aOSI6 15878.8 / aSFHA 22684 = 0.7

Verified ratio = MC 0 / MA 0 = 1

cOSI6 = OSI6 25 * rOSI6 0.7 * Verified ratio 1 = 17.5

OSI7 - Land use plan

OSI7 = 10

cOSI

cOSI =

cOS1 76.08 + cOSI2 0 + cOSI3 0 + cOSI4 0 + cOSI5 17.5 + cOSI6 17.5 + OSI7 10 = 21.08

422.f LZ

First LZ District

LZs#1 = 60 * s#1 10 = 600

PA. Acreage of 10 largest LZs#1 sites = 3014

PB. Acreage of the PA sites that pass the office review = 3014

PF. Acreage of the sample sites that pass the office review = 0

Verified acreage of the remaining sites =

PD 0 * PG 0 / PE 0 = 0

aLZs#1 = PC 3014 + Verified acreage of remaining sites 0 = 3014

rLZs#1 = aLZs#1 3014 / aSFHA 22684 = 0.13

cLZs#1 = LZs#1 600 * rLZs#1 0.13 = 78

Second LZ District

LZs#2 = 60 * s#2 5 = 300

PA. Acreage of 10 largest LZs#2 sites = 24250

PB. Acreage of the PA sites that pass the office review = 24250

PF. Acreage of the sample sites that pass the office review = 0

Verified acreage of the remaining sites =

PD 0 * PG 0 / PE 0 = 0

aLZs#2 = PC 24250 + Verified acreage of remaining sites 0 = 24250

rLZs#2 = aLZs#2 24250 / aSFHA 22684 = 1.07

cLZs#2 = LZs#2 300 * rLZs#2 1.07 = 321

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Activity 420 (Open Space Preservation)

422 Elements

Third LZ District

LZs#3 = 60 * s#3 10 = 600

PA. Acreage of 10 largest LZs#3 sites = 0

PB. Acreage of the PA sites that pass the office review = 0

PF. Acreage of the sample sites that pass the office review = 0

Verified acreage of the remaining sites =

PD 0 * PG 0 / PE 0 = 0

aLZs#3 = PC 0 + Verified acreage of remaining sites 0 = 0

rLZs#3 = aLZs#3 0 / aSFHA 22684 = 0

cLZs#3 = LZs#3 600 * rLZs#3 0 = 0

cLZ

cLZ = cLZs#1 78 cLZs#2 321 cLZs#3 0 = 399

422.g NSP

rNSP = aNSP 0 / aSL 0 = 0.1

Verified ratio = Number of sites that passed the field check 0 / Number of sites checked in the field 0 = 1

cNSP = NSP 0 * rNSP 0.1 * Verified ratio 1 = 0

423 Credit Calculation

c420 =

cOSP 435 + cDR 1 + cNFOS 0 + cSHOS 0 + cOSI 21.08 + cLZ 399 + cNSP 0 = 1056

Activity 420 Comments

During the Verification Visit the Specialist, the Consultant and County Staff conducted field work and viewed several Open Space Areas where RL structures have been removed. Additional OSP site visits included the South Hill Park and Wetlands, Storage Basin land along Clover Creek, NFOS land along Aqueduct Drive, the Revetment projects along 177th Street E and again near 197th Avenue E and further downstream at 188th Street E. In total, more than 10 OSP sites were viewed while conducting field work.

For rLZ#2, Specialist recorded 24250 because the software requires that the combined rate of OSP and LZ not exceed 1.5. If OSP = .30 and LZ1 = .13 then LZ2 must = 1.07 to not exceed the allowed 1.5 impact adjustment. Actual areas for LZ 1 and LZ 2 (reported by the community) were aLZ(5ac) = 58,592 & aLZ(10) = 3014.

OSI technical review was provided by Sherry Harper. Since the calculation software has a glitch that will not allow the Specialist to enter credits for OSI 1, 2, 3 & 4, the technical reviewer suggested entering the calculation as shown in only OSI 1 which results in the same credit level that would occur under OSI 1, 2, & 4 combined.

Activity 430 (Higher Regulatory Standards)

432 Elements

432.a DL

DL1 - No fill

DL1a (No fill)

rDL1a#1 = aDL1a#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of sites that passed 0 / Number of permits sampled 0 = 1

cDL1a#1 = DL1a#1 0 * rDL1a#1 0.1 * verified ratio 1 = 0

DL1b (Compensatory storage)

rDL1b#1 = aDL1b#1 77821 / aSFHA 22684 = 1.5

Verified ratio = Number of sites that passed the office review 1 / Number of sites checked 1 = 1

cDL1b#1 = DL1b#1 130 * rDL1b#1 1.5 * verified ratio 1 = 195

DL2 - No buildings

rDL2#1 = aDL2#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of sites that passed 0 / Number of sites checked 0 = 1

cDL2#1 = DL2#1 0 * rDL2#1 0.1 * verified ratio 1 = 0

DL3 - Storage of materials

DL3a - no outdoor storage

rDL3a#1 = aDL3a#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of sites that passed 0 / Number of sites checked 0 = 1

cDL3a#1 = DL3a#1 0 * rDL3a#1 0.1 * verified ratio 1 = 0

DL3b - no storage of hazardous materials

rDL3b#1 = aDL3b#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of permits that passed the office review 0 / Number of permits sampled 0 = 1

cDL3b#1 = DL3b#1 0 * rDL3b#1 0.1 * verified ratio 1 = 0

DL3c - Indoor Storage

rDL3c#1 = aDL3c#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of permits that passed the office review 0 / Number of permits sampled 0 = 1

cDL3c#1 = DL3c#1 0 * rDL3c#1 0.1 * verified ratio 1 = 0

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Activity 430 (Higher Regulatory Standards)

432 Elements

432.a DL

cDL

cDL#1 = cDL1a#1 + cDL1b#1 + cDL2#1 + cDL3a#1 + cDL3b#1 + cDL3c#1 = cDL#1

cDL#1 = 0 + 195 + 0 + 0 + 0 + 0 = 195

cDL#2 = cDL1a#2 + cDL1b#2 + cDL2#2 + cDL3a#2 + cDL3b#2 + cDL3c#2 = cDL#2

cDL#2 = 0 + 0 + 0 + 0 + 0 + 0 = 0

cDL#3 = cDL1a#3 + cDL1b#3 + cDL2#3 + cDL3a#3 + cDL3b#3 + cDL3c#3 = cDL#3

cDL#3 = 0 + 0 + 0 + 0 + 0 + 0 = 0

cDL = cDL#1 195 + cDL#2 0 + cDL#3 0 = 195

432.b FRB

rFRB#1 = aFRB#1 77821 / aSFHA 22684 = 1.5

Verified ratio = Number of Certificates that passed the office review 5 / Number of Certificates sampled 5 = 1

cFRB#1 = FRB#1 110 * rFRB#1 1.5 * verified ratio 1 = 165

cFRB

cFRB = cFRB#1 165 + cFRB#2 0 + cFRB#3 0 = 165

432.c FDN

rFDN#1 = aFDN#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of permits that passed the office review 0 / Number of permits sampled 0 = 1

cFDN#1 = FDN#1 0 * rFDN#1 0.1 * verified ratio 1 = 0

cFDN

cFDN = cFDN#1 0 + cFDN#2 0 + cFDN#3 0 = 0

432.d CSI

CSI1#1 = 20 Count improvements cumulatively

CSI2#1 = 0 Count repairs cumulatively

CSI3#1 = 0 ICC language

CSI4#1 = 20 All additions must be protected

CSI#1= CSI1#1 20 + CSI2#1 0 + CSI3#1 0 + CSI4#1 20 = 40

rCSI#1 = aCSI#1 15859 / aSFHA 22684 = 0.7

Verified ratio = Number of permits that passed the office review 5 / Number of permits sampled 5 = 1

cCSI#1 = CSI#1 40 * rCSI#1 0.7 * verified ratio 1 = 28

cCSI

cCSI = cCSI#1 28 + cCSI#2 0 + cCSI#3 0 = 28

Activity 430 (Higher Regulatory Standards)

432 Elements

432.e LSI

rLSI#1 = aLSI#1 0 / aSFHA 22684 = 0.1

Verified ratio = Number of permits that passed the office review 0 / Number of permits sampled 0 = 1

cLSI#1 = LSI#1 0 * rLSI#1 0.1 * verified ratio 1 = 0

cLSI

cLSI = cLSI#1 0 + cLSI#2 0 + cLSI#3 0 = 0

432.f PCF

PCF1 (prohibition of critical facilities)

rPCF1#1 = aPCF1#1 0 / a500 0 = 0.1

Verified ratio = Number of permits that passed 0 / Number of permits sampled 0 = 1

cPCF1#1 = PCF1#1 0 * rPCF1#1 0.1 * verified ratio 1 = 0

cPCF1

cPCF1 = cPCF1#1 0 + cPCF1#2 0 + cPCF1#3 0 = 0

PCF2 (protection of critical facilities)

rPCF2#1 = aPCF2#1 0 / a500 0 = 0.1

Number of permits that passed the office review = 1

Verified ratio = Number of permits that passed the field check 1 / Number of permits sampled 1 = 1

cPCF2#1 = PCF2#1 0 * rPCF2#1 0.1 * verified ratio 1 = 0

cPCF2

cPCF2 = cPCF2#1 0 + cPCF2#2 0 + cPCF2#3 0 = 0

cPCF

cPCF = cPCF1 0 + cPCF2 0 = 0

Activity 430 (Higher Regulatory Standards)

432 Elements

432.g ENL

ENL1,2 (no enclosures or small enclosures)

rENL1,2 #1 = aENL1,2 #1 77821 / aSFHA 22684 = 1.5

Verified ratio:

$$\frac{\text{Number of ECs that passed } 1 + \text{Number of buildings passed field check } 1}{\text{Number of ECs sampled } 1 + \text{Number of buildings field checked } 1} = 1$$

cENL1,2 #1 = ENL1,2 #1 240 * rENL1,2 #1 1.5 * verified ratio 1 = 360

cENL1,2

cENL1,2 = cENL1,2 #1 360 + cENL1,2 #2 0 + ENL1,2 #3 0 = 360

ENL3 (nonconversion agreements)

rENL3#1 = aENL3#1 0 / aSFHA 22684 = 0.1

$$\text{Verified ratio} = \frac{\text{Number of permits that passed the office review } 0}{\text{Number of permits sampled } 0} = 1$$

cENL3#1 = ENL3#1 0 * rENL3#1 0.1 * verified ratio 1 = 0

cENL3

cENL3 = cENL3#1 0 + cENL3#2 0 + cENL3#3 0 = 0

cENL

cENL = cENL1,2 360 + cENL3 0 = 360

432.h BC

BCEGS classification = 3

If the BCEGS classification number = 1, then BC2 = 50
If the BCEGS classification number = 2, then BC2 = 40
If the BCEGS classification number = 3, then BC2 = 30
If the BCEGS classification number = 4, then BC2 = 20
If the BCEGS classification number = 5, then BC2 = 10

cBC = cBC1 48 + cBC2 30 = 78

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Activity 430 (Higher Regulatory Standards)

432 Elements

432.i LDP

LDP = LDP1 0 + LDP2 40 + LDP3 0 + LDP4 0 = 40

Number of permits that passed the office review 1

Verified ratio = Number of permits that passed the field check 1 / Number of permits sampled 1 = 1

cLDP = LDP 40 * verified ratio 1 = 40

432.j MHP

Verified ratio = Number of permits that passed the office review 0 / Number of permits sampled 0 = 1

cMHP = MHP 0 * verified ratio 1 = 0

432.k CAZ#1

rCAZ#1 = aCAZ#1 0.5 / aSFHA 22684 = 0.5

CAZ#1 = CAZ1#1 475 + CAZ2#1 150 = 625

Number of permits that passed the office review 1

Verified ratio = Number of permits that passed the field check 1 / Number of permits sampled 1 = 1

cCAZ#1 = CAZ#1 625 * rCAZ#1 0.5 * verified ratio 1 = 312.5

432.k CAZ#2

rCAZ#2 = aCAZ#2 0 / aSFHA 22684 = 0.1

CAZ#2 = CAZ1#2 0 + CAZ2#2 0 = 0

Number of permits that passed the office review 0

Verified ratio = Number of permits that passed the field check 0 / Number of permits sampled 0 = 1

cCAZ#2 = CAZ#2 0 * rCAZ#2 0.1 * verified ratio 1 = 0

432.k CAZ#3

rCAZ#2 = aCAZ#3 0 / aSFHA 22684 = 0.1

CAZ#3 = CAZ1#3 0 + CAZ2#3 0 = 0

Number of permits that passed the office review 0

Verified ratio = Number of permits that passed the field check 0 / Number of permits sampled 0 = 1

cCAZ#3 = CAZ#3 0 * rCAZ#3 0.1 * verified ratio 1 = 0

cCAZ

cCAZ = cCAZ#1 312.5 + cCAZ#2 0 + cCAZ#3 0 = 312.5

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Activity 430 (Higher Regulatory Standards)

432 Elements

432.l SHR#1

rSHR#1 = aSHR#1 999 / aSH 999 = 1

Number of permits that passed the office review 0

Verified ratio = Number of permits that passed the field check 0 / Number of permits sampled 0 = 1

cSHR#1 = SHR#1 65 * rSHR#1 1 * verified ratio 1 = 65

cSHR

cSHR = cSHR#1 65 + cSHR#2 0 + cSHR#3 0 = 65

432.m OHS#1

rOHS#1 = aOHS#1 22684 / aSFHA 22684 = 1

Number of permits that passed the office review 1

Verified ratio = Number of permits that passed the field check 1 / Number of permits sampled 1 = 1

cOHS#1 = OHS#1 25 * rOHS#1 1 * verified ratio 1 = 25

cOHS

cOHS = cOHS#1 25 + cOHS#2 0 + cOHS#3 0 = 25

432.n SMS

NS =	0	LZ =	0	BC =	45	PUB =	0
HSS =	0	NSP =	0	LDP =	0	LID =	0
FWS =	0	DL =	0	MHP =	0	WMP =	185
MAPSH =	0	FRB =	0	CAZ =	0	ESC =	30
OSP =	0	FDN =	0	SHR =	0	WQ =	20
DR =	0	CSI =	0	OHS =	0		
NFOS =	0	LSI =	0	RA4 =	0		
SHOS =	0	PCF =	0	SZ =	0		
OSI =	0	ENL =	0	DS =	0		

Total of above = 280

cSMS = total 280 * 0.1 = 20

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Activity 430 (Higher Regulatory Standards)

432 Elements

432.o RA

RA1 Staffing

RA1 = 25

RA2 IAS accredation

RA2 = 0

RA3 Inspections

Verified ratio = Number of Inspection Records that passed the office review 1 / Number of Inspection Records sampled 1 = 1

cRA3 = RA3 16 * verified ratio 1 = 16

RA4 Reinspections

Verified ratio = Number of Inspection Records that passed the office review 0 / Number of Inspection Records sampled 0 = 1

cRA4 = RA4 0 * verified ratio 1 = 0

RA5 Off-site storage

RA5 = 5

cRA

cRA = RA1 25 + RA2 0 + cRA3 16 + cRA4 0 + RA5 5 = 46

433 Credit Calculation

c430 = cDL 195 + cFRB 165 + cFDN 0 + cCSI 28 + cLSI 0
+ cPCF 0 + cENL 360 + cBC 78 + cLDP 40 + cMHP 0
+ cCAZ 312.5 + cSHR 65 + cOHS 25 + cSMS 20 + cRA 46
= 1335

Activity 430 Comments

The County requires compensatory storage at a 1:1 ratio.

Freeboard (FRB) credit is awarded based on all new construction and substantial improvements being elevated to a minimum of 2 feet above the Base Flood Elevation. Specialist used the 2 foot FRB because it was the lowest common denominator.

Utilities are also required to be elevated to the height of the finished flood depending on foundation type. Elevation Certificates in activity 310 were used to validate the 2 foot FRB requirement.

Title 18.25 Definitions - includes language which describes the Protection of Storage Capacity.

BC credit includes the Fuel Gas Code as required by the State Building Code Council.

OHS credit is based on the Technical Review provided by Cristina Martinez.

CAZ credit is based on the Technical Review provided by Wes Shaw.

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Activity 440 (Flood Data Maintenance)

442 Elements

442.a AMD#1

AMD1#1: SFHA, corporate limits, streets, and lot boundaries = 20
AMD2#1: buildings, building outlines, or building footprints = 26
AMD3#1: floodways or coastal high hazard areas = 12
AMD4#1: base flood elevations = 12
AMD5#1: FIRM zone attributes = 10
AMD6#1: 500-year floodplain elevations or boundaries = 10
AMD7#1: other natural hazards = 12
AMD8#1: topographic contour lines = 10
AMD9#1: floodplain data in the tax assessmant data base = 0
AMD10#1: old FIRMs = 0
AMD11#1: other regulations = 8
AMD12#1: natural floodplain functions = 14
AMD13#1: building elevation data = 0

AMD#1 = 134

rAMD#1 = aAMD#1 77821 / aSFHA 22684 = 1.5

Verified ratio = Number correct 10 / Sample size 10 = 1

cAMD#1 = AMD#1 134 * rAMD#1 1.5 * Verified ratio 1 = 201

442.b FM

FM = 0

442.c BMM

BMM1 Benchmarks

rBMM1 = aBMM1 0 / aSFHA 22684 = 0.1

Verified ratio = Number qualifying 0 / Sample size 0 = 1

cBMM1 = BMM1 0 * rBMM1 0.1 * Verified ratio 1 = 0

BMM2 CORS

rBMM2 = aBMM2 77821 / aSFHA 22684 = 1.5

cBMM2 = BMM2 27 * rBMM2 1.5 = 40.5

cBMM = cBMM1 0 + cBMM2 40.5 = 40.5

442.d EDM

EDM = 0

443 Credit Calculation

cAMD = cAMD#1 201 + cAMD#2 0 + cAMD#3 0 = 201

c440 = cAMD 201 + FM 0 + cBMM 40.5 + EDM 0 = 242

Activity 440 Comments

The County uses digital maps when making decisions about development in the floodplain.

The County is not applying for FM credit at this time.

The County has provided a map for BMM showing they have 3 or more CORS stations within a 30 mile radius of their entire regulated floodplain.

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Activity 450 (Stormwater Management)

452 Elements

452.a SMR#1

SMR#1 = SZ#1 90 + DS#1 175 + LID#1 25 + PUB#1 20 = 310

rSMR#1 = aSMR#1 950 / aW 999 = 0.95

Number of permits that passed the office review = 5

Verified ratio = Number of permits that passed the field check 5 / Number of permits sampled 5 = 1

cSMR#1 = SMR#1 310 * rSMR#1 0.95 * Verified ratio 1 = 294.5

452.b WMP#1

WMP1#1: Plan meets all of the criteria listed in Section 452.b = 90

WMP2#1: Manage all storms up to and including the 100-year = 30

WMP3#1: Management of future peak flows and volumes = 55

WMP4#1: Manage all storms up to & including the 5-day event = 35

WMP5#1: Natural areas to provide retention or detention = 0

WMP6#1: Prohibit alteration of existing natural channels = 0

WMP7#1: Projects must use natural or "soft" approaches = 0

WMP8#1: Dedicated funding source to imlement the plan = 25

WMP#1 = The total of WMP1#1 - WMP8#1 = 235

rWMP#1 = aWMP#1 950 / aW 999 = 0.95

cWMP#1 = WMP#1 235 * rWMP#1 0.95 * verified ratio for SMR#1 1 = 223.25

452.c ESC

Number of permits that passed the office review = 5

Verified ratio = Number of permits that passed the field check 5 / Number of permits sampled 5 = 1

cESC = ESC 30 * verified ratio 1 = 30

452.d WQ

Verified ratio = Number of permits that passed the office review 5 / Number of permits sampled 5 = 1

cWQ = WQ 20 * verified ratio 1 = 20

453 Credit Calculation

cSMR = cSMR#1 294.5 + cSMR#2 0 + cSMR#3 0 = 294.5

cWMP = cWMP#1 223.25 + cWMP#2 0 + cWMP#3 0 = 223.25

c450 = cSMR 294.5 + cWMP 223.25 + cESC 30 + cWQ 20 = 568

Activity 450 Comments

Technical Review for SMR & WMP was provided by Dave Carlton.

ESC credit is applied at 30 points because the County requires single family development to provide a grading and temporary erosion sediment control plan prior to issuance of a building permit.

ESC sites were visited while conducting field work and include a single family site at Vickor Road & 457th Avenue E, a failing system at Brookfield Farms #4 which was later enforced on and documented with photographs, a Habitat for Humanity building site at Golden Given Road E & 109th Street E, a site at 133rd Street S & A Street near an RL property, and the Walgreens site near A Street & 121st Street E. Additional ESC and WQ sites were viewed while traveling with County Staff.

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REPETITIVE LOSS

Section 501 (Repetitive Loss List)

Repetitive Loss Category:	C	*[A, B or C]*
Number of Properties on the Community's Repetitive Loss List:	40	
Number of Properties that have been mitigated:	11	
Number of unmitigated Properties remaining:	29	
Number of Repetitive Loss Areas:	4	
Number of Properties in the Repetitive Loss Areas (bRLA):	449	

Activity 500 Comments

Pierce County is a Category C RL community with 29 RL structures as of 2013.

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Activity 510 (Floodplain Management Planning)

512 Elements

512.a FMP

Step 1: Organize	=	13	Step 6: Set goals	=	2
Step 2: Involve the public	=	71	Step 7: Review possible activities	=	35
Step 3: Coordinate	=	5	Step 8: Draft an action plan	=	45
Step 4: Assess the hazard	=	30	Step 9: Adopt a plan		2
Step 5: Assess the problem	=	47	Step 10: Implement, evaluate, revise	=	2

FMP = total for all 10 steps = 252

cFMP = FMP 252 * rFMP 1 = 252

☐ FEMA has approved the plan as a multi-hazard mitigiation plan

512.b RLAA

First Occurence

rRLAA = bAA 0 / bRLA 449 = 0

cRLAA1 = RLAA 0 * rRLAA 0 = 0

Second Occurence

rRLAA = bAA 0 / bRLA 449 = 0

cRLAA2 = RLAA 0 * rRLAA 0 = 0

Third Occurence

rRLAA = bAA 0 / bRLA 449 = 0

cRLAA3 = RLAA 0 * rRLAA 0 = 0

cRLAA = cRLAA1 0 + cRLAA2 0 + cRLAA3 0 = 0

512.c NFP

cNFP = NFP1 0 + NFP2 0 = 0

513 Credit Calculation

c510 = cFMP 252 + cRLAA 0 + cNFP 0 = 252

Activity 510 Comments

Technical Review of the Pierce County Rivers Flood Hazard Management Plan dated February 19, 2013 was reviewed and scored by Sherry Harper.

Activity 520 (Acqusition and Relocation)

522 Elements

522.a bAR

Number of properties that pass the office review = 5

Verified ratio = Number of properties that passed the field check 5 / Number of properties sampled 5 = 1

cbAR= bAR 346 * Verified ratio 1 = 346

522.b bRL

Number of properties that pass the office review = 5

Verified ratio = Number of properties that passed the field check 5 / Number of properties sampled 5 = 1

cbRL= bRL 23 * Verified ratio 1 = 23

522.c bSRL

Number of properties that pass the office review = 1

Verified ratio = Number of properties that passed the field check 1 / Number of properties sampled 1 = 1

cbSRL= bSRL 1 * Verified ratio 1 = 1

522.d bCF

Number of properties that pass the office review = 0

Verified ratio = Number of properties that passed the field check 0 / Number of properties sampled 0 = 1

cbCF= bCF 0 * Verified ratio 1 = 0

522.e bVZ

Number of properties that pass the office review = 0

Verified ratio = Number of properties that passed the field check 0 / Number of properties sampled 0 = 1

cbVZ= bVZ 0 * Verified ratio 1 = 0

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Activity 520 (Acquisition and Relocation)

523 Credit Calculation

523.a Option 1

c520 = (cbAR _____ * 3) + (cbRL _____ * 6) + (cbSRL _____ * 9)

(cbCF _____ * 6) + (cbVZ _____ * 4.5) = _____

523.b Option 2

Step 1 =

$$1{,}900 * \frac{(cbAR\ 346 + (cbRL\ 23 * 2) + (cbSRL\ 1 * 3) + (cbCF\ 0 * 2) + (cbVZ\ 0 * 1.5))}{bSF\ 2080 + cbAR\ 346 + cbRL\ 23 + cbSRL\ 1 + cbCF\ 0 + cbVZ\ 0} = 304$$

Step 2

bARSF = 0

Step 2 = ((bARSF 0 * 100) / (bSF 2080 + bARSF 0)) - 30 * 5 = 0

c520 = Step 1 304 + Step 2 0 = 304

Activity 520 Comments

Based on the spreadsheet provided by the community, Specialist determined the community has the following number of Acquired or Relocated buildings: bAR = 346 bRL=23 bSRL=1 (for a total of 370).

For all of the structures identified, no FMA funding was used to acquire or relocate buildings from the SFHA or the Regulatory Floodplain.

Activity 530 (Flood Protection)

532 Elements

532.a Techniques used

Number of buildings protected by each technique used

TUE Elevation	=	0
TUD Dry floodproofing	=	0
TUW Wet floodproofing	=	0
TUS sewer backup	=	12278
TUB Barrier, levee or floodwall	=	0
TUC Channel modifications, etc.	=	0
TUF Storage facilities	=	0

Number of buildings by technique = 12278

533 Credit Calculation

533.a Option 1

Total number of buildings that qualify (from Excel spreadsheet) = 254

c530 = 2.4 * Total number of buildings that qualify 254 = 160

If total number of buildings that qualify > 67, the Option 1 score is the max of 160.

533.b Option 2

Total protected building score (∑ PB) (from Excel spreadsheet) = _____

c530 = 16 * ∑ PB _____ * 100 / bSF _____ = _____

Activity 530 Comments

TUS calculations are based on (268 x 0.2) structures located in the SFHA and (12,010 x 0.1) structures located in the Regulatory Floodplain. Regulatory Floodplain credits are capped at 200 points. Option 1 is used because it results in higher credit. Floodplain Development Regulations outside of the SFHA are documented in activity 430.

Activity 610 (Flood Warning and Response)

612 Elements

612.a FTR#1

rFTR#1 = bFTR#1 2080 / bSF 2080 = 1

cFTR#1 = FTR#1 75 * rFTR#1 1 = 75

612.b EWD#1

rEWD#1 = bEWD#1 2080 / bSF 2080 = 1

cEWD#1 = EWD#1 65 * rEWD#1 1 = 65

612.c FRO#1

rFRO#1 = bFRO#1 2080 / bSF 2080 = 1

cFRO#1 = FRO#1 45 * rFRO#1 1 = 45

612.d CFP

CFP1 = 25

CFP2 = 0

CFP = 25

612.e SRC

SRC = 25

612.f TRC

TRC = 0

614 Credit Calculation

cFTR = cFTR#1 75 + cFTR#2 0 + cFTR#3 0 = 75

cEWD = cEWD#1 65 + cEWD#2 0 + cEWD#3 0 = 65

cFRO = cFRO#1 45 + cFRO#2 0 + cFRO#3 0 = 45

c610 = cFTR 75 + cEWD 65 + cFRO 45 + CFP 25
+ SRC 25 + TRC 0 = 235

Activity 610 Comments

Current calculations are based on full coverage of the 2080 structures in the RF.

Activity 630 (Dams)

632 Elements

632.a SDS

SDS1 = 15

SDS2 = 15

SDS3 = 15

SDS = SDS1 15 + SDS2 15 + SDS3 15 = 45

632.b DFR#1

rDFR#1 = bDFR#1 0 / bDF 0 = 0

cDFR#1 = DFR#1 0 * rDFR#1 0 = 0

632.c DFW#1

rDFW#1 = bDFW#1 0 / bDF 0 = 0

cDFW#1 = DFW#1 0 * rDFW#1 0 = 0

632.d DFO#1

rDFO#1 = bDFO#1 0 / bDF 0 = 0

cDFO#1 = DFO#1 0 * rDFO#1 0 = 0

632.e DCF

DCF1 = 0

DCF2 = 0

DCF = 0

634 Credit Calculation

cDFR = cDFR#1 0 + cDFR#2 0 + cDFR#3 0 = 0

cDFW = cDFW#1 0 + cDFW#2 0 + cDFW#3 0 = 0

cDFO = cDFO#1 0 + cDFO#2 0 + cDFO#3 0 = 0

c630 = SDS 45 + cDFR 0 + cDFW 0
+ cDFO 0 + DCF 0 = 45

Activity 630 Comments

State Dam Safety credit is based on the Washington State UMC sheet attached in activity 230. The community has identified several high-hazard potential dams, provided the inundation maps and the Emergency Action Plans contain the flood threat descriptions.

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720 COMMUNITY CREDIT CALCULATIONS

Calculation Section:

Verified Activity Calculations:						Credit
c310	86	=				86
c320	90	=				90
c330	154	=				154
c340	25	=				25
c350	33	=				33
c360	0	=				0
c370	0	=				0
c410	306	x CGA	1.07	=		327
c420	1056	x CGA	1.07	=		1130
c430	1335	x CGA	1.07	=		1428
c440	242	x CGA	1.07	=		259
c450	568	x CGA	1.07	=		608
c510	252	=				252
c520	304	=				304
c530	160	=				160
c540	0	=				0
c610	235	=				235
c620	0	=				0
c630	45	=				45

cT = total of above cT = 5136

Community Classification (from Table 110-1): Class = 2

CEO Name / Address	CRS Coordinator Name / Address
Pat McCarthy	Harold Smelt, PE
County Executive	Surface Water Management Manager
930 Tacoma Avenue South, Room 737	2702 South 42nd Street, Ste 201
Tacoma, WA 98402-2100	Tacoma, WA 98409-7322
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	Fax:

Date Report Prepared: _____