

2020 Census 19. Response Processing Operation (RPO)

Version: 14.03 – Updated 2019-11-20 with Annotation v12f - Final

Revision Date: November 20, 2019



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Facilitation & Analysis: Lena Oleynikova, Aurelia Gardner, Godfrey Maynor
Model Preparation: Aurelia Gardner, MITRE, Godfrey Maynor
Subject Matter Experts: Thomas Thornton, Juan Morales, Jane Ingold, Tracy Hepburn

Major Revision Change History

Date	Description	Author	Version #	Page #'s
06/08/2016	Draft 3.15	A. Gardner	3.15	All
06/16/2016	MITRE Working Sessions	A. Gardner	3.17	All
06/29/2016	MITRE Working Sessions	MITRE	4.0	All
09/21/2016	MITRE Working Sessions	MITRE	5.0	All
12/19/2016	Update for NRFU Universe Mgmt Flows	MITRE	6.0	All
01/13/2017	Update for GQ and RPO DOP Review	MITRE	7.09c	All
01/31/2017	Update for Coverage Improvement	G. Maynor	8	5, 17, 18
02/01/2017	Updates to Post Data Collection Phase	G. Maynor	8.1	18-22
03/06/2017	Updates to Post Data Collection for Island Areas	G. Maynor	8.2	18, 20, 22
08/05/2017	Updates to various sections of RPO BPMs	G. Maynor	9	All
09/11/2017	Updates to Supplemental NRFU & Island Areas BPMs	G. Maynor	10.0	All
11/03/2017	Updates to remove Disclosure Avoidance from RPO	G. Maynor	10.01	100, 110
11/07/2017	Updates to context diagrams per meetings w/ MITRE	G. Maynor	10.02	Context, 10, 15, 80
03/27/2017	Updates to multiple sections throughout	G. Maynor	10.03	All
06/1/2018	Updates to Data Collection and Post Data Collection	G. Maynor	11.0	All
06/8/2018	Updates to UE, UL, GQ, & ETL Support	G. Maynor	11.01	30,40,50, 60, 80
06/13/2018	Updates to UE Support & IA Post Data Collection Process	G. Maynor	11.02	40, 86.10
12/20/2018	Updates to reflect REQ changes from the OII Lockups	G. Maynor	11.03	All
02/14/2019	CR 7391	G. Maynor	11.03	All
03/21/2019	Updates for RPO DOP Refresh	G. Maynor/MITRE	12.01	All
05/23/2019	Updates to CI, CUF, and Guam Response Data Processing	G. Maynor	12.02	18, 21, 22

CONTINUED ON PAGE 2

2020 Census 19. Response Processing Operation (RPO)

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Major Revision Change History

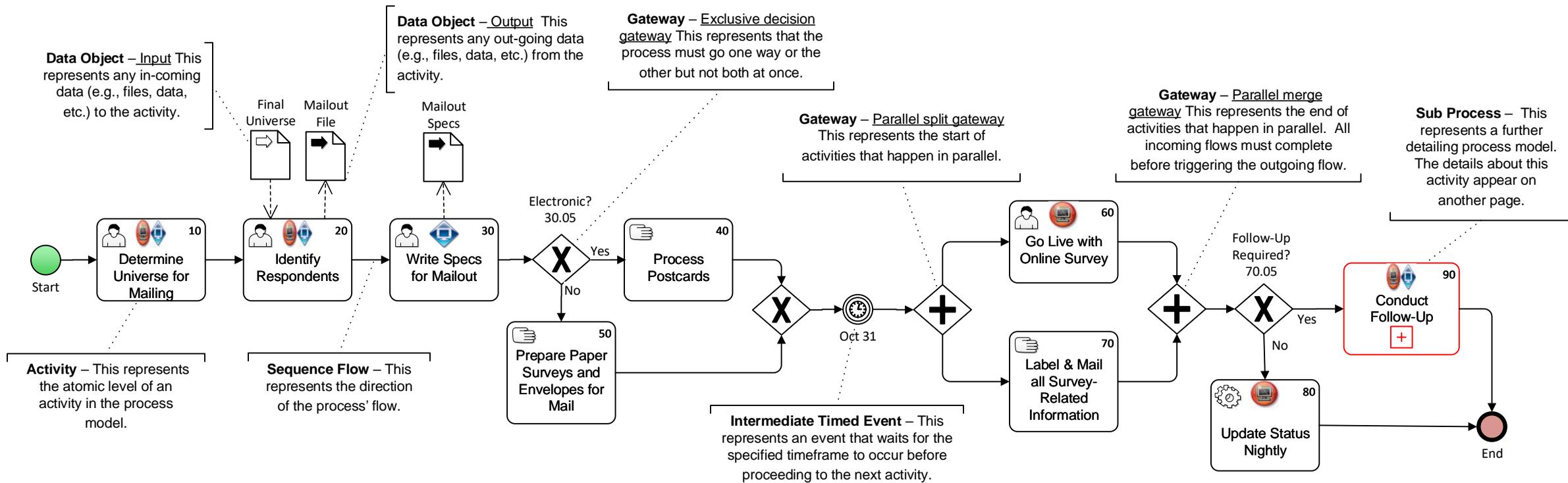
Date	Description	Author	Version #	Page #'s
06/11/2019	Updates per CR 14389 – CM QC Review	G. Maynor	12.03	All
06/24/2019	Baseline - CR 14389	G. Maynor	13.0	All
08/26/2019	Updates to IA Coding BPM for CR 1151	G. Maynor	14.0	21
10/07/2019	CR1295, Final Tabulation MAFX through CARDS	Lena Oleynikova	14.01	24
10/09/2019	CR1414, Review of systems of IA Response Data Coding	Lena Oleynikova	14.02	21
11/20/2019	CR1468, More descriptive RI Adjudication Activities labels	Lena Oleynikova	14.03	10

Reading and Understanding the Model

Example Activity Model

BPM Purpose

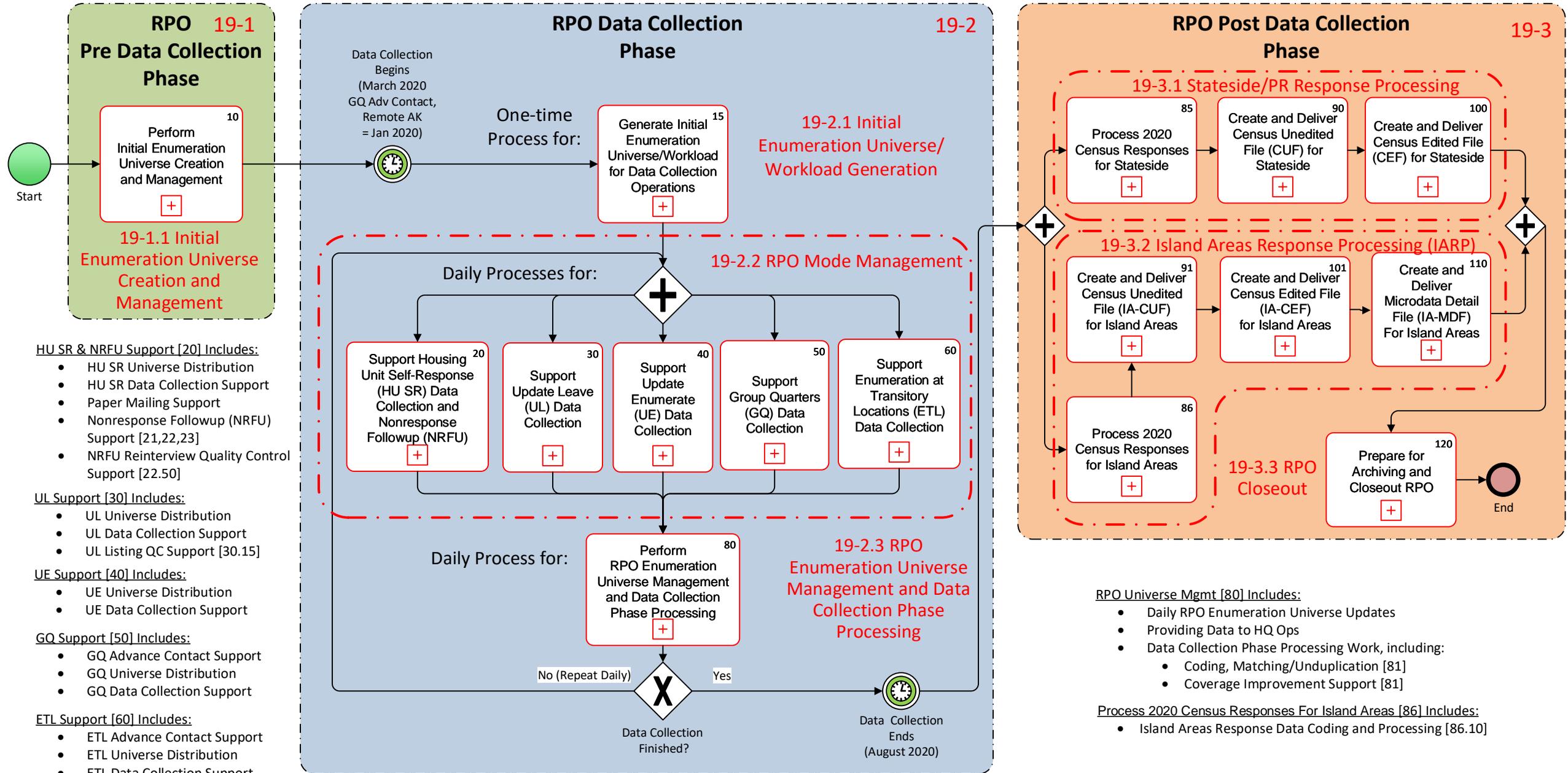
- Describe Census Operations business processes – activities, resources and key milestones
- Provide the details necessary for non-subject matter experts to understand the business process
- Contribute to the requirements development process
- Facilitate the linkage of business processes to IT capabilities
- Capture Operations inputs and outputs



Key:	Activities	Gateways	Data Objects	Other
Events	Activity at atomic level:	Exclusive:	Input:	Sequence Flow:
Start:	Activity containing a sub process:	Parallel:	Output:	Association:
End:	Optional Activity Numbering:	Event Based:	Data Store:	Annotation:
Intermediate Timed Event:	Activity involving:			<small>This file is created by the SME before this process kicks off.</small>
Flow continued on another page:	→ USER interacting with a system or software:			
Flow continued from another page:	→ MANUAL activity (no system/software involved):			
	→ SERVICE or batch processing:			
	→ RECURRING steps:			
	→ SENDING a message:			
	→ RECEIVING a message:			
	→ Any system developed specifically for Census' use:			
	→ Any commercial-off-the-shelf (COTS) products:			
	→ Both a system developed specifically for Census' use <u>and</u> COTS products:			

2020 Census 19. Response Processing Operation (RPO)

Purpose: Create and distribute the initial 2020 Census enumeration universe of living quarters; assign the specific enumeration strategy for each living quarter based on case status and associated paradata; create and distribute the workload files required for enumeration operations; track case enumeration status; run post data collection processing actions in preparation for producing the final 2020 Census results; and check for invalid or potentially fraudulent returns.



HU SR & NRFU Support [20] Includes:

- HU SR Universe Distribution
- HU SR Data Collection Support
- Paper Mailing Support
- Nonresponse Followup (NRFU) Support [21,22,23]
- NRFU Reinterview Quality Control Support [22.50]

UL Support [30] Includes:

- UL Universe Distribution
- UL Data Collection Support
- UL Listing QC Support [30.15]

UE Support [40] Includes:

- UE Universe Distribution
- UE Data Collection Support

GQ Support [50] Includes:

- GQ Advance Contact Support
- GQ Universe Distribution
- GQ Data Collection Support

ETL Support [60] Includes:

- ETL Advance Contact Support
- ETL Universe Distribution
- ETL Data Collection Support

RPO Universe Mgmt [80] Includes:

- Daily RPO Enumeration Universe Updates
- Providing Data to HQ Ops
- Data Collection Phase Processing Work, including:
 - Coding, Matching/Unduplication [81]
 - Coverage Improvement Support [81]

Process 2020 Census Responses For Island Areas [86] Includes:

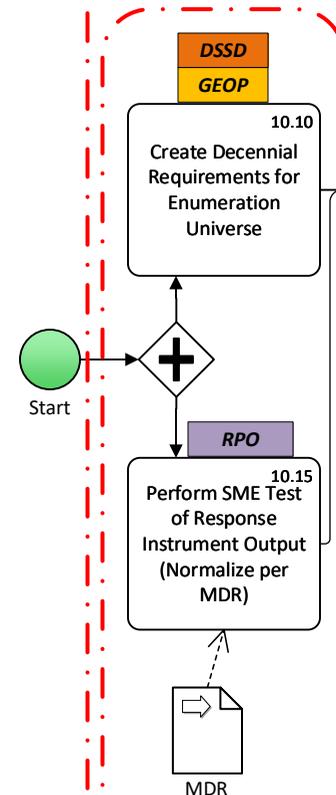
- Island Areas Response Data Coding and Processing [86.10]



Pre Data Collection: 10 Perform Initial Enumeration Universe Creation and Management

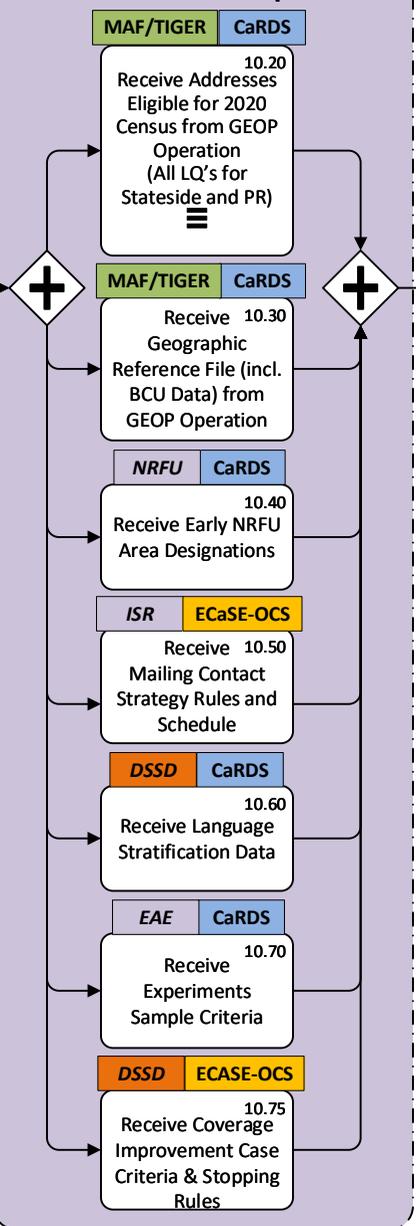
Purpose: To create, stratify, and deliver the initial 2020 Census enumeration universe and deliver workload based on the self-response contact strategy.

19-1.1.1 Decennial Universe Inputs



19-1.1.1.1 Create Decennial Requirements for Enumeration Universe

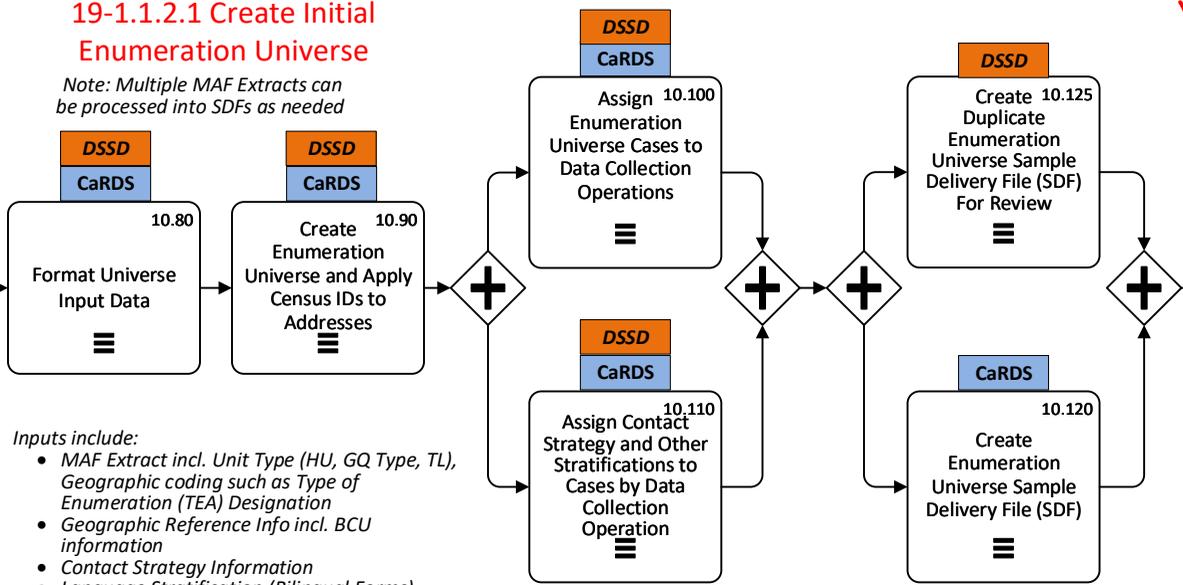
19-1.1.1.2 Receive Universe Input Data



19-1.1.2 Decennial Enumeration Universe Creation and Delivery

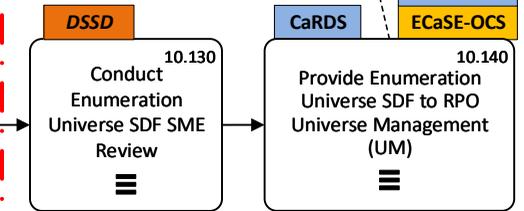
19-1.1.2.1 Create Initial Enumeration Universe

Note: Multiple MAF Extracts can be processed into SDFs as needed



- Inputs include:
- MAF Extract incl. Unit Type (HU, GQ Type, TL), Geographic coding such as Type of Enumeration (TEA) Designation
 - Geographic Reference Info incl. BCU information
 - Contact Strategy Information
 - Language Stratification (Bilingual Forms),
 - Census Experiments Sample Criteria, etc.

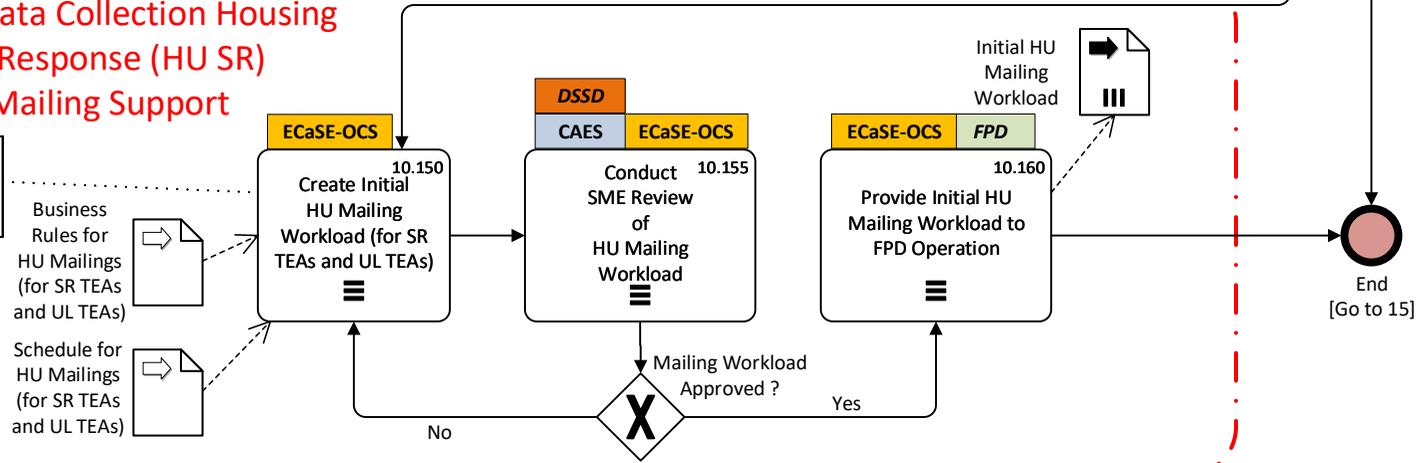
19-1.1.2.2 Provide Initial Enumeration Universe to RPO Universe Management (UM)



Includes SDFs for AdCan MAFX, Interim MAFX and Enumeration MAFX over course of time.

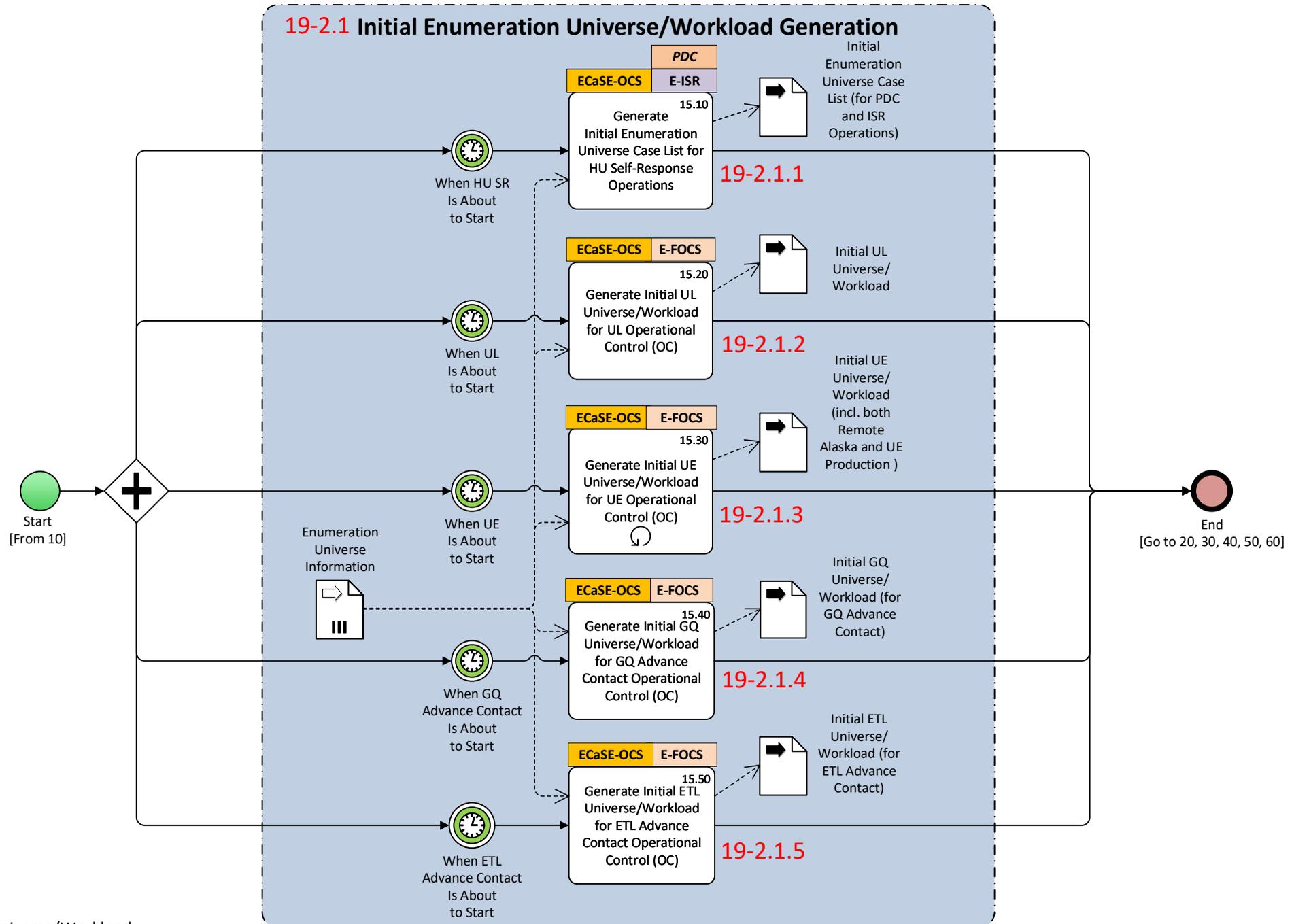
19-1.1.3 Pre Data Collection Housing Unit Self-Response (HU SR) Paper Mailing Support

Includes all HU Mailings that are not dependent on subsequent response



Data Collection: 15 Generate Initial Enumeration Universe/Workload for Data Collection Operations

Purpose: Generate initial enumeration universe/workload information for use by the data collection operations.

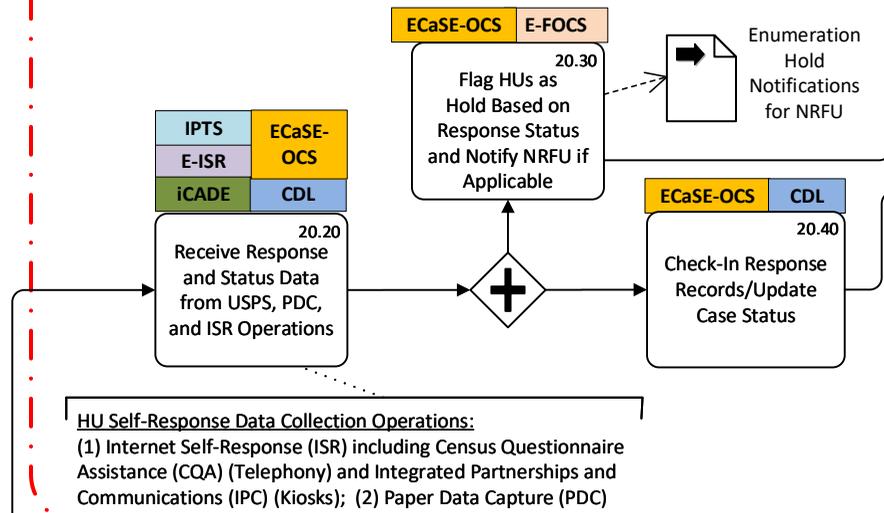




Data Collection: 20 Support Housing Unit Self-Response (HU SR) Data Collection and Nonresponse Followup (NRFU)

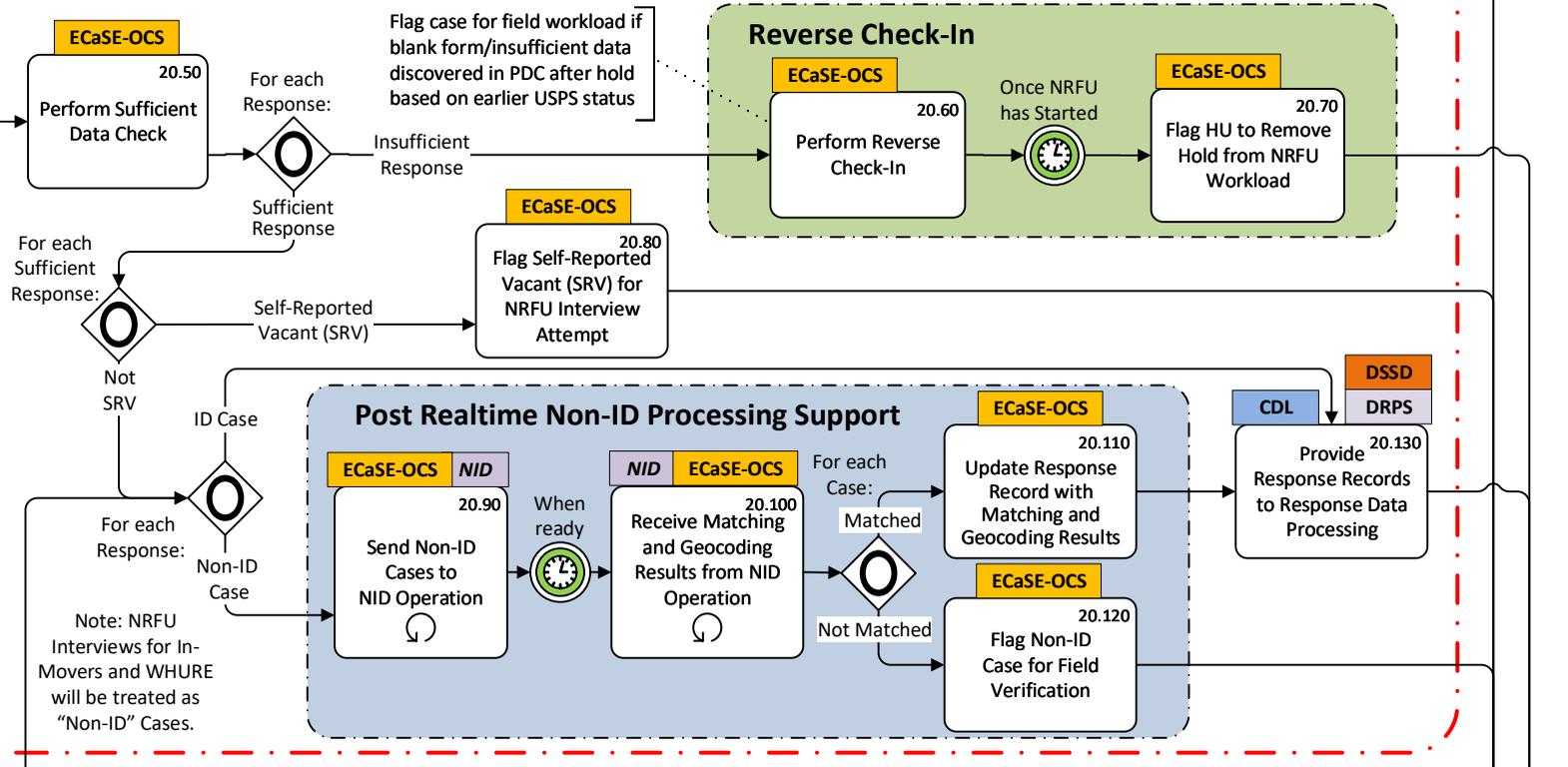
Purpose: Receive and process response data from self-response modes (Internet and paper) and, based on case status, provide reminder mailing workload and field followup support for nonresponding housing units (HUs).

19-2.2.1.2 Receive HU Self-Response Status and Response Data

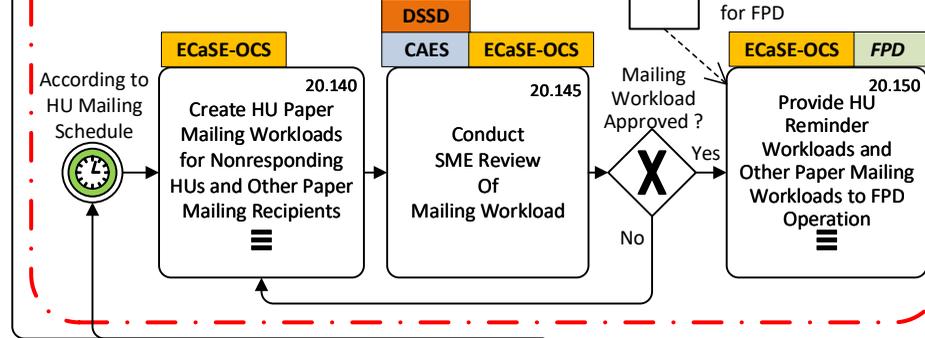


19-2.2.1 Support Housing Unit Self-Response (HU SR) Data Collection and Nonresponse Followup (NRFU)

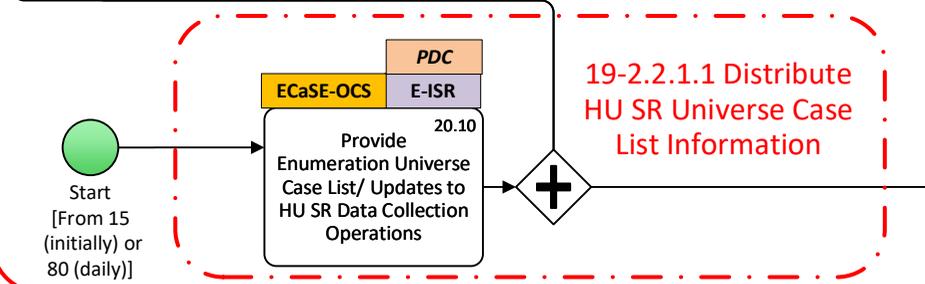
19-2.2.1.3 Manage HU Self-Response and NRFU Response Results



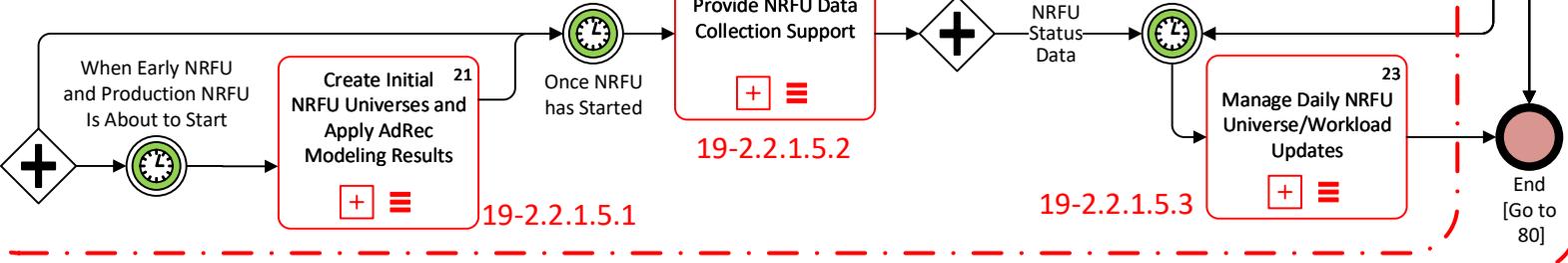
19-2.2.1.4 Provide HU Self-Response Data Collection Paper Mailing Support



19-2.2.1.1 Distribute HU SR Universe Case List Information



19-2.2.1.5 Provide Nonresponse Followup (NRFU) Support



Data Collection: 21 Create Initial NRFU Universes and Apply AdRec Modeling Results

Purpose: Create initial NRFU universe/workload for Early NRFU and NRFU Production including applying results of AdRec Modeling analysis work.



19-2.2.1.5.1 Create Initial NRFU Universes and Apply AdRec Modeling Results

19-2.2.1.5.1.1 Create Early NRFU Universe

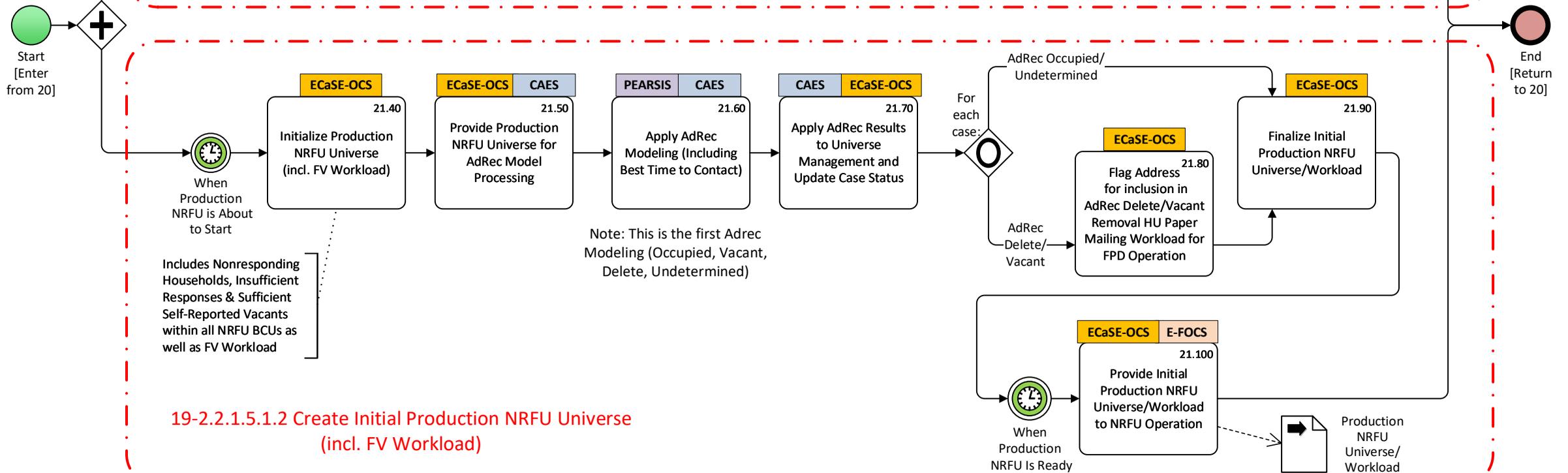
Includes Nonresponding Households, Insufficient Responses, & Sufficient Self-Reported Vacants within Early NRFU BCUs



19-2.2.1.5.1.2 Create Initial Production NRFU Universe (incl. FV Workload)

Includes Nonresponding Households, Insufficient Responses & Sufficient Self-Reported Vacants within all NRFU BCUs as well as FV Workload

Note: This is the first Adrec Modeling (Occupied, Vacant, Delete, Undetermined)

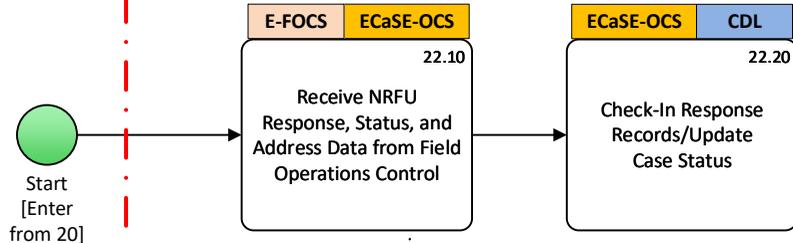


Data Collection: 22 Provide NRFU Data Collection Support

Purpose: Receive and process response and status data from field followup of nonresponding cases in the Self-Response Type of Enumeration Area (TEA). Also collect field verification results and support nonresponse followup quality control activities.

19-2.2.1.5.2 Provide NRFU Data Collection Support

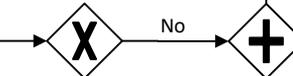
19-2.2.1.5.2.1 Receive NRFU Response and Status Data



- NRFU Status Data includes:
- NRFU Interview Case Status
 - Field Verification (FV) Case Status
 - NRFU Case Operational
 - Characteristics from Field Work
 - Reverse Check-ins

19-2.2.1.5.2.2 Manage NRFU Response Results

For each Case:
Is Case Identified as AdRec Occupied with One Unsuccessful Attempt?

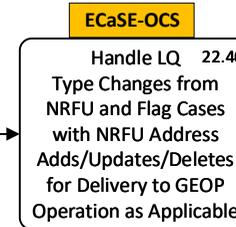
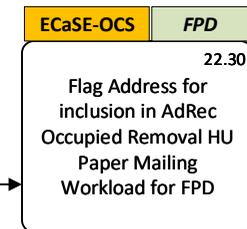


19-2.2.1.5.2.2.1 Perform Reinterview Quality Control Support for NRFU



19-2.2.1.5.2.2.2 Process NRFU Response Results

NOTE: Assume NRFU Address Data includes Adds. E.g. For discovery of Hidden Units or Single Unit to Multi-Unit Conversions



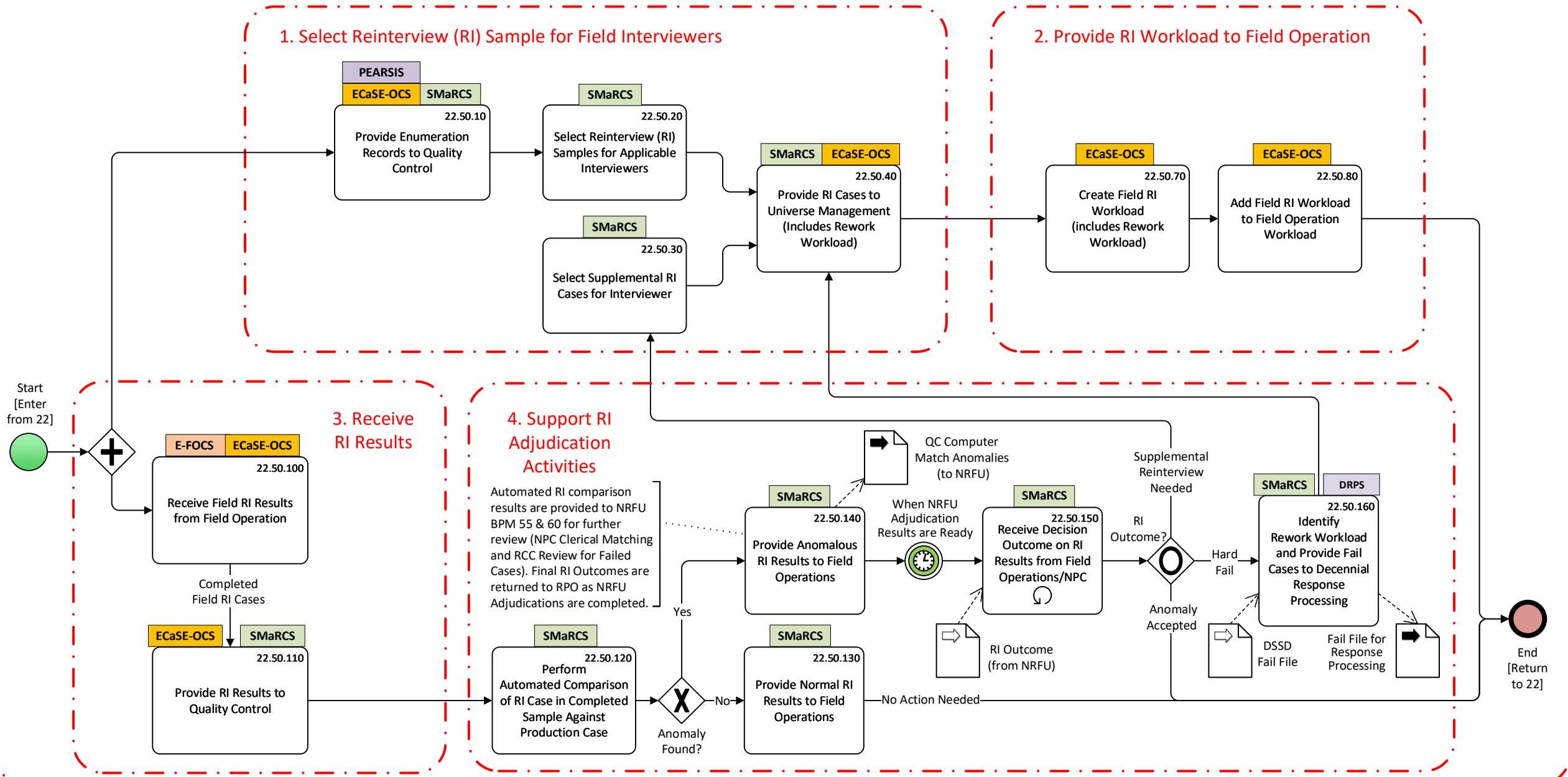
HU Paper Mailing Workload

End [Return to 20]

Data Collection: 22.50 Perform Reinterview Quality Control Support For NRFU

Purpose: Select cases for Reinterview (RI), conduct automated comparisons of RI results against production response data, and process RI decisions made by field operations quality control activities.

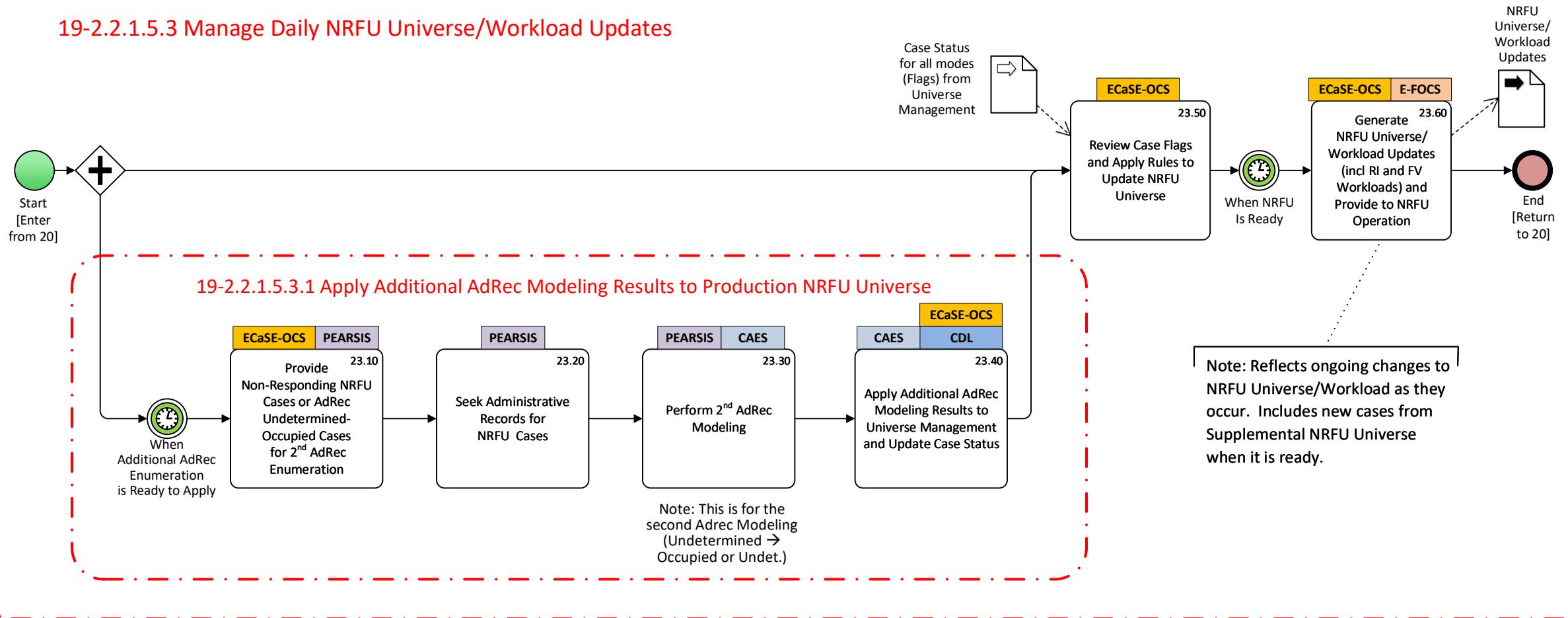
19-2.2.1.5.2.2.2 Perform Reinterview Quality Control Support for NRFU



Data Collection: 23 Manage Daily NRFU Universe/Workload Updates

Purpose: Manage updates to NRFU universe/workload (incl. Field Verification (FV) workload) for Early NRFU and NRFU Production.
 Note: Updates include application of results of follow-on AdRec Modeling to the NRFU universe/workload.

19-2.2.1.5.3 Manage Daily NRFU Universe/Workload Updates

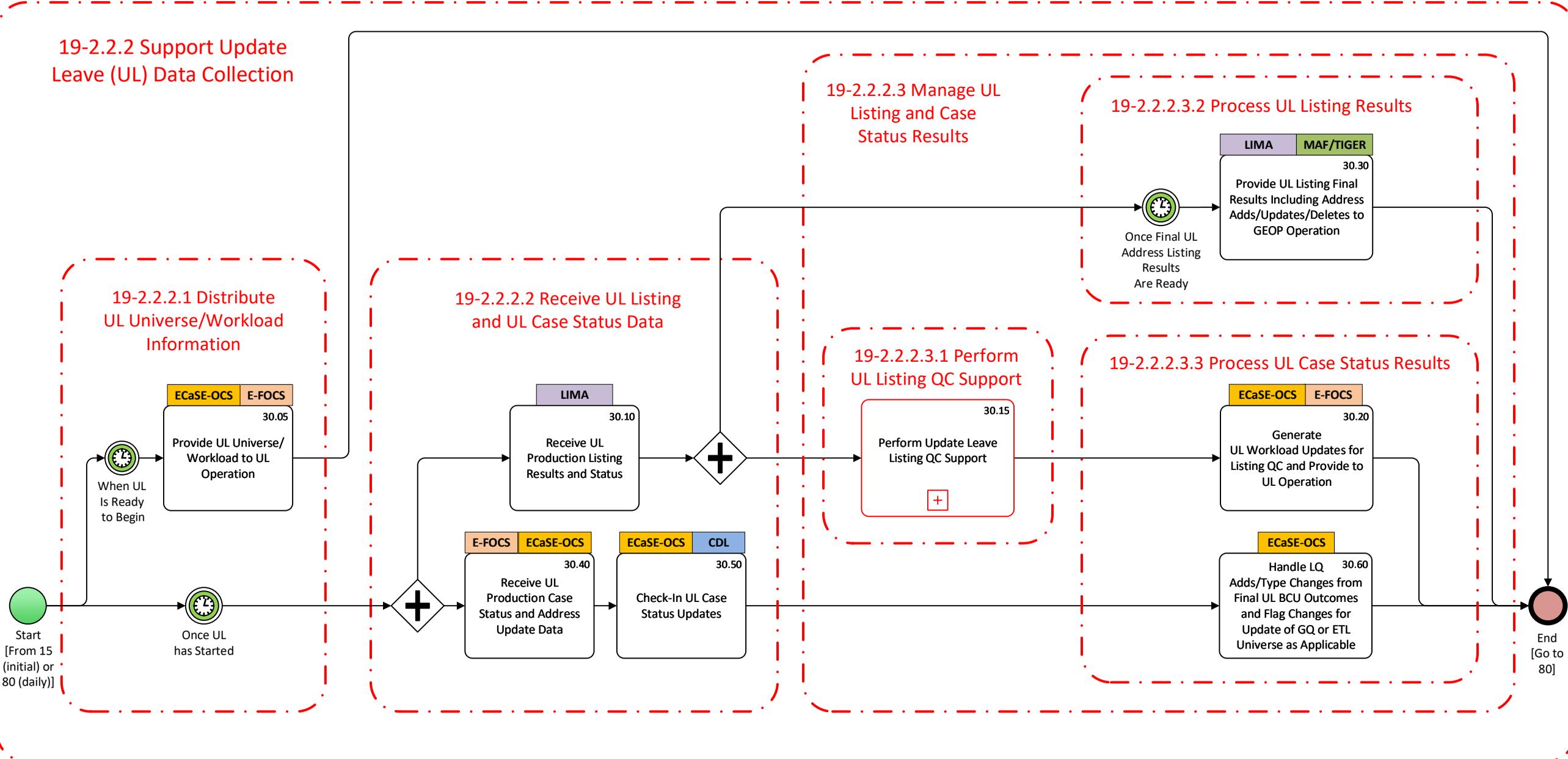




Data Collection: 30 Support Update Leave Data Collection

Purpose: Receive and process listing and case status data from the Update Leave (UL) operation and provide support for nonresponding cases in the UL Type of Enumeration Area (TEA). Also support UL listing and enumeration quality control activities.

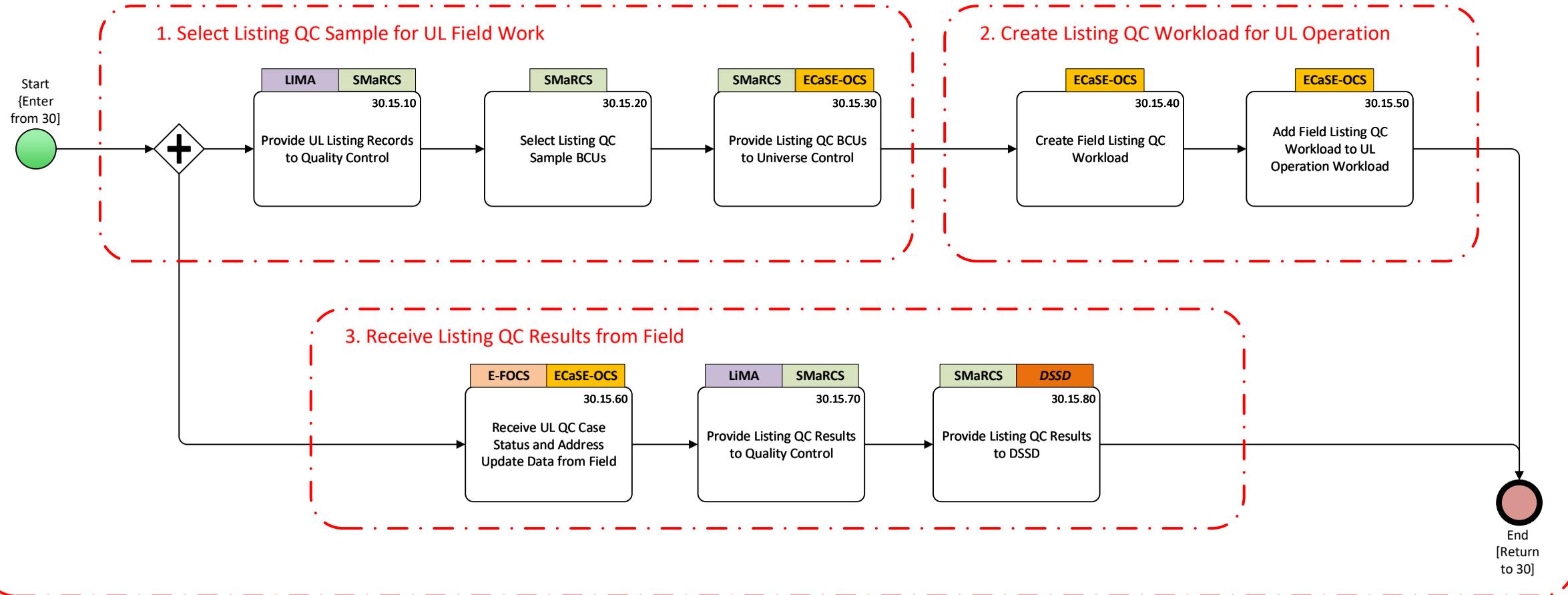
19-2.2.2 Support Update Leave (UL) Data Collection



Data Collection: 30.15 Perform Update Leave Listing Quality Control (QC) Support

Purpose: To provide support for the Update Leave (UL) Listing Quality Control activities.

19-2.2.2.3.1 Perform UL Listing QC Support

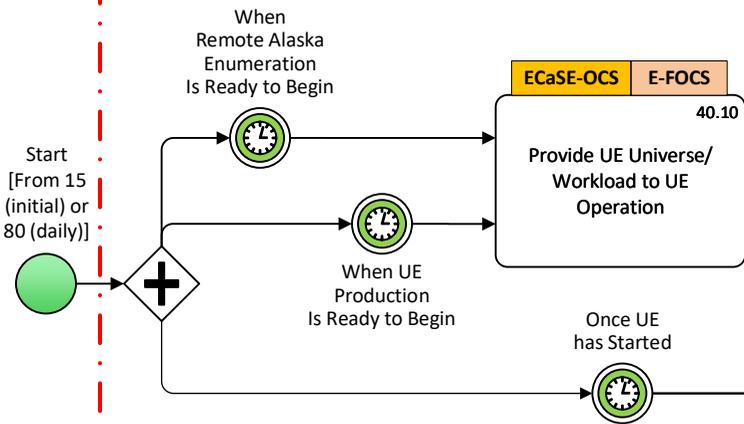


Data Collection: 40 Support Update Enumerate Data Collection

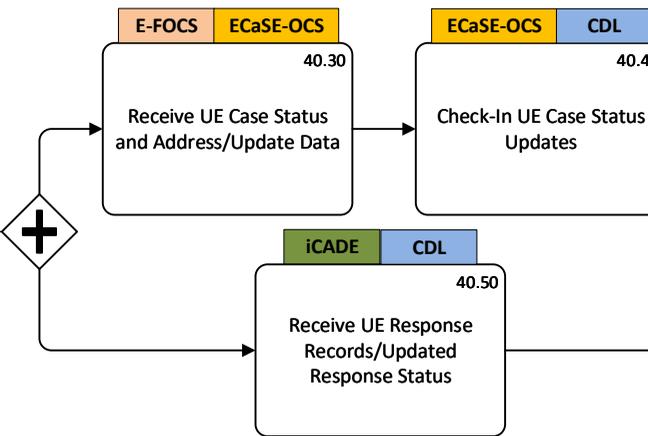
Purpose: Receive and process listing and response data from the Update Enumerate (UE) operation and provide support for nonresponding cases in the UE Type of Enumeration Area (TEA).

19-2.2.3 Support Update Enumerate (UE) Data Collection

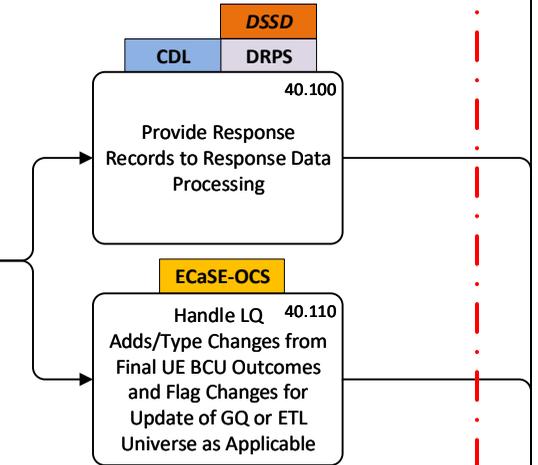
19-2.2.3.1 Distribute UE Universe/ Workload Information



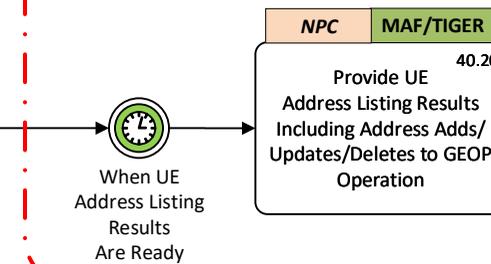
19-2.2.3.2 Receive UE Response and Status Data



19-2.2.3.3 Process UE Response/Status Results



19-2.2.3.4 Process UE Listing Results

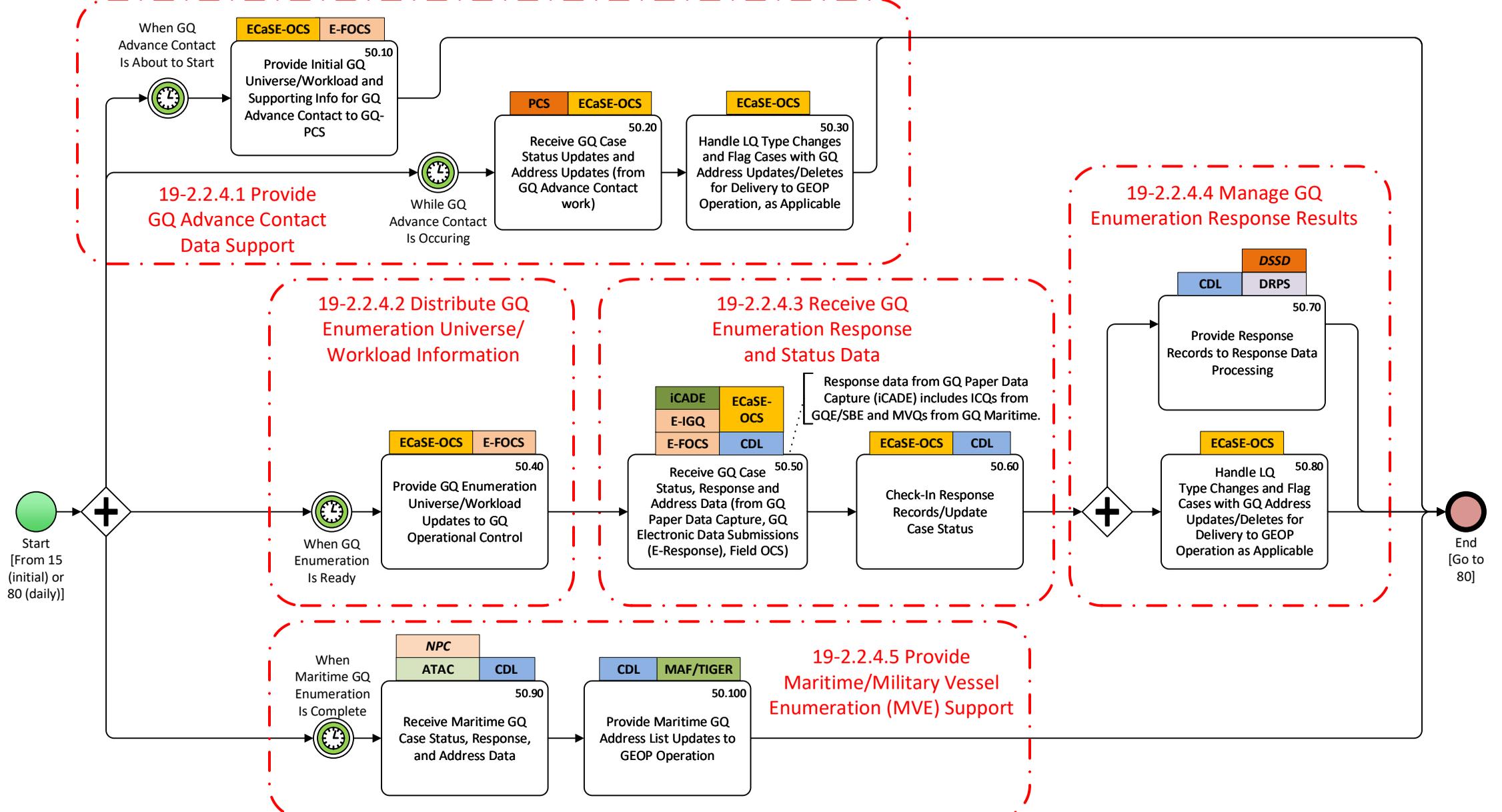


End
[Go to
80]

Data Collection: 50 Support Group Quarters Data Collection

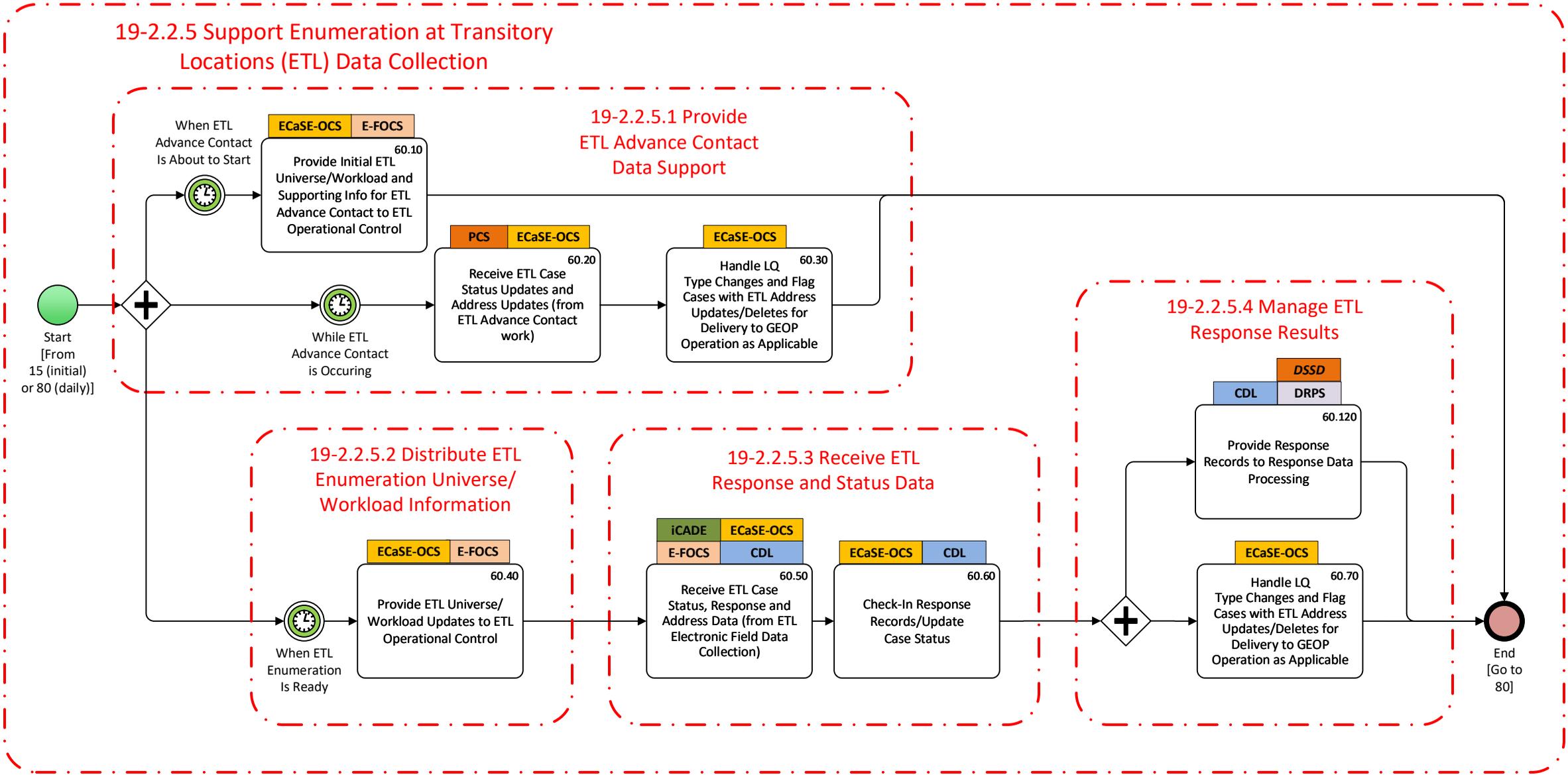
Purpose: Receive and process response data from the Group Quarters operation.

19-2.2.4 Support Group Quarters (GQ) Data Collection



Data Collection: 60 Support Enumeration at Transitory Locations Data Collection

Purpose: Receive and process response data from the ETL operation.

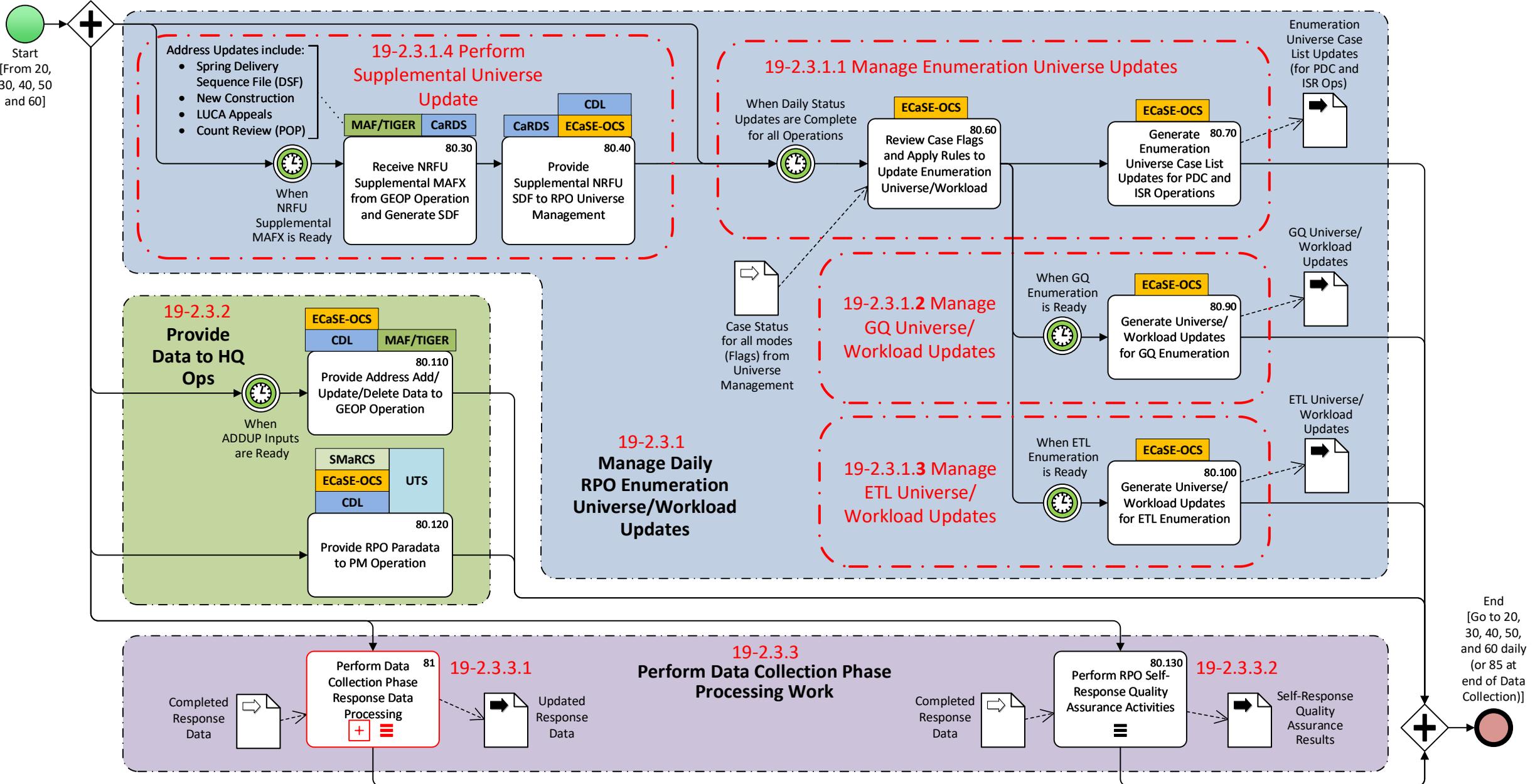




Data Collection: 80 Perform RPO Enumeration Universe Management & Data Collection Phase Processing

Purpose: Maintain RPO Enumeration Universe and associated workload data for use by the data collection operations. Also perform Data Collection Phase data processing.

19-2.3 RPO Enumeration Universe Management and Data Collection Phase Processing



Data Collection: 81 Perform Data Collection Phase Response Data Processing

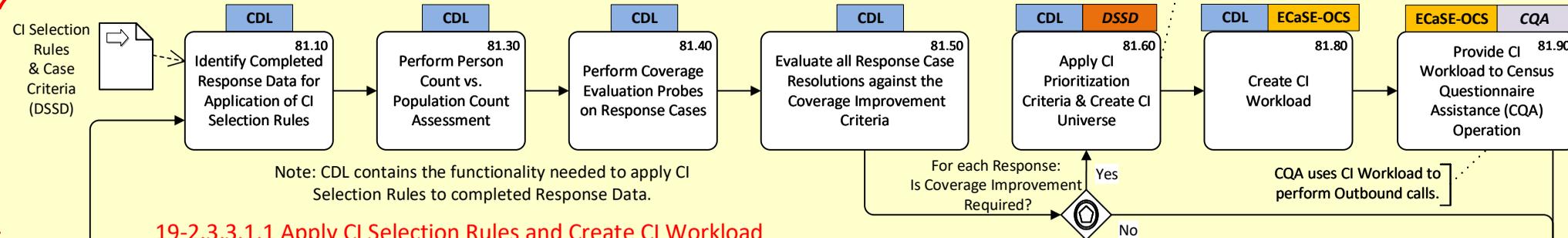
Purpose: Perform selected data processing on collected response data.

19-2.3.3.1 Perform Data Collection Phase Response Data Processing

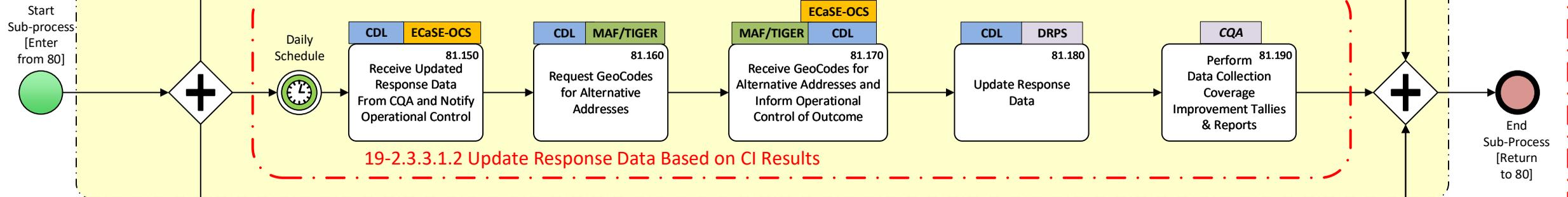
19-2.3.3.1.1 Perform Coverage Improvement (CI) Related Support Activities

Coverage Improvement Support

DSSD provides review support for CI case selection.



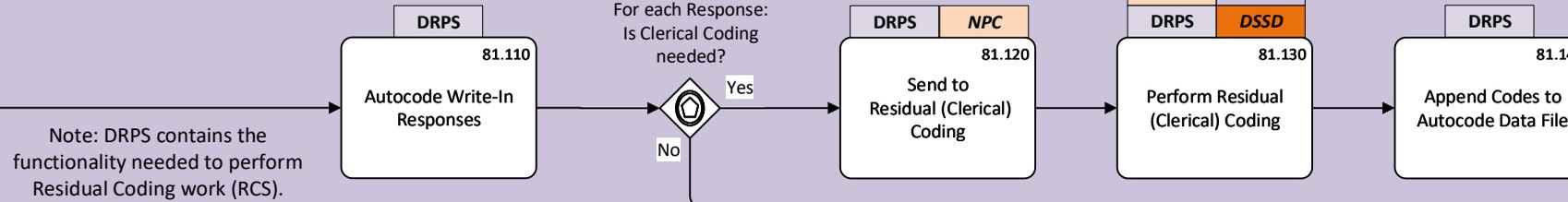
19-2.3.3.1.1 Apply CI Selection Rules and Create CI Workload



19-2.3.3.1.2 Update Response Data Based on CI Results

19-2.3.3.1.2 Perform Coding Related Support Activities

Race and Ethnicity Coding Support

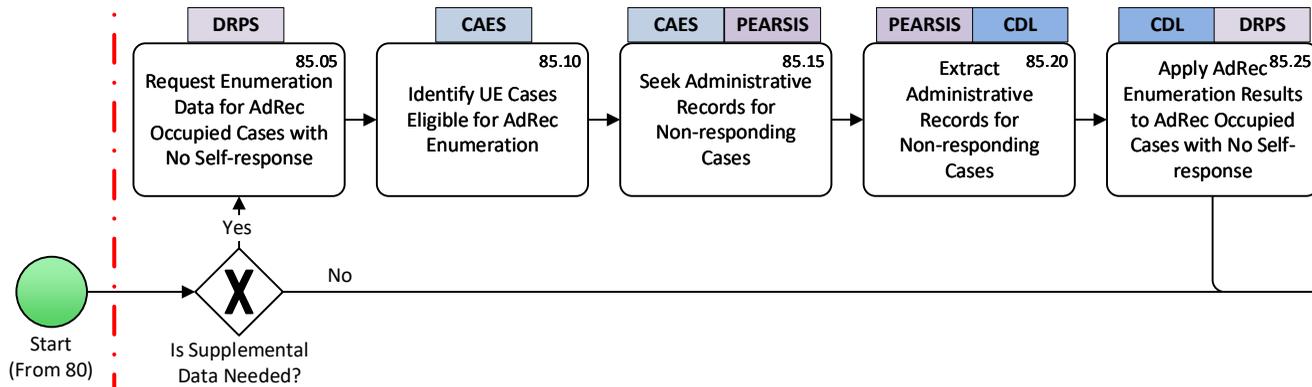


Post Data Collection: 85 Process 2020 Census Responses for Stateside Responses

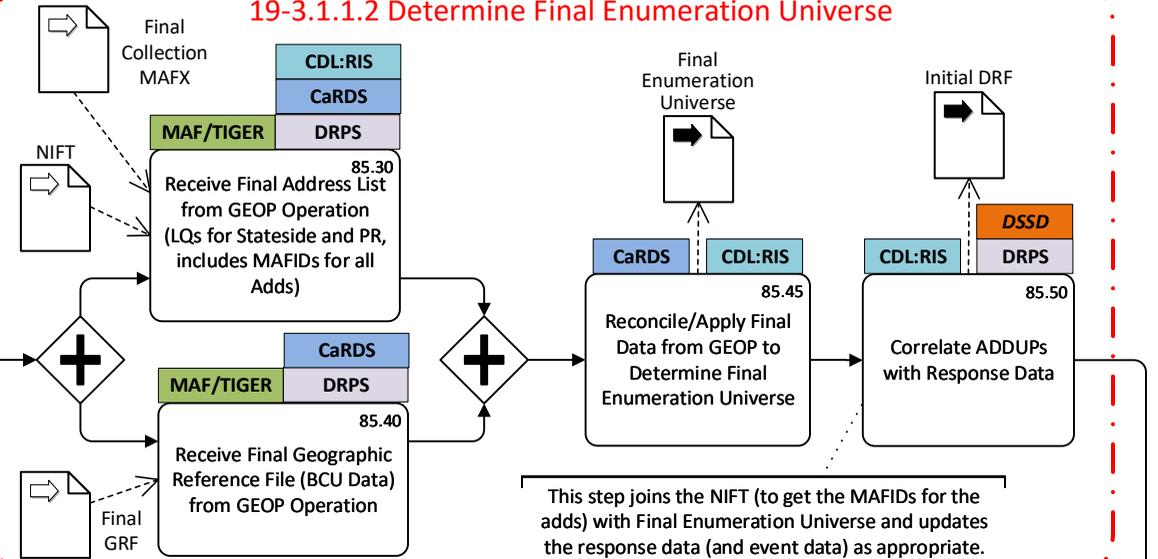
Purpose: Perform additional data processing on all 2020 Census response data and create the Decennial Response File (DRF).

19-3.1.1 Process 2020 Census Responses for Stateside/PR

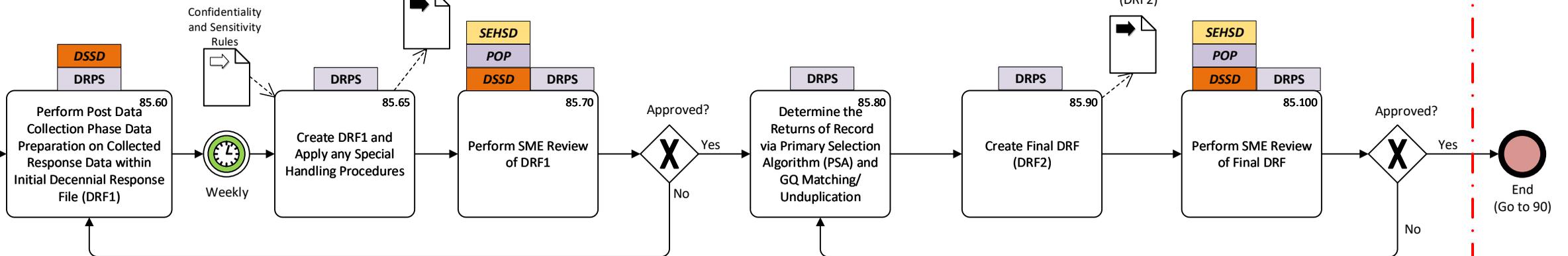
19-3.1.1.1 Supplement Enumeration with AdRec Data



19-3.1.1.2 Determine Final Enumeration Universe



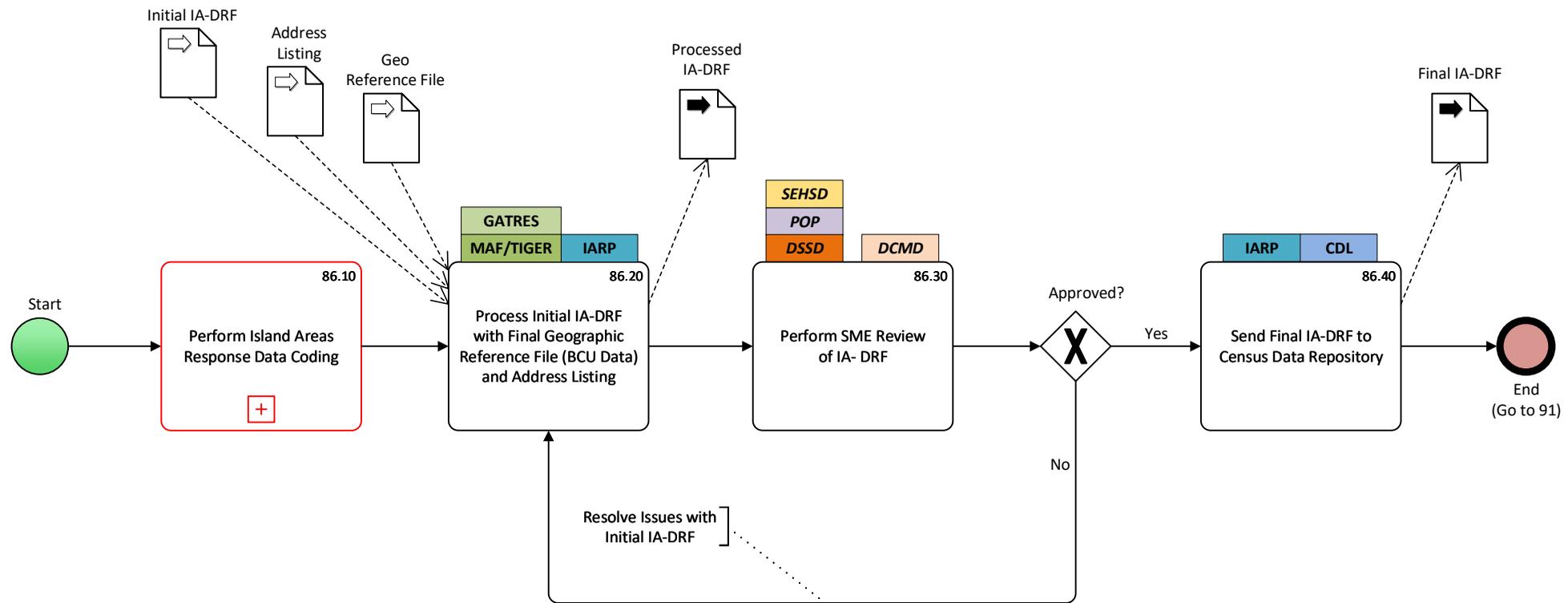
19-3.1.1.3 Update and Finalize Decennial Response File (DRF)



Post Data Collection: 86 Process 2020 Census Responses for Island Areas (IA)

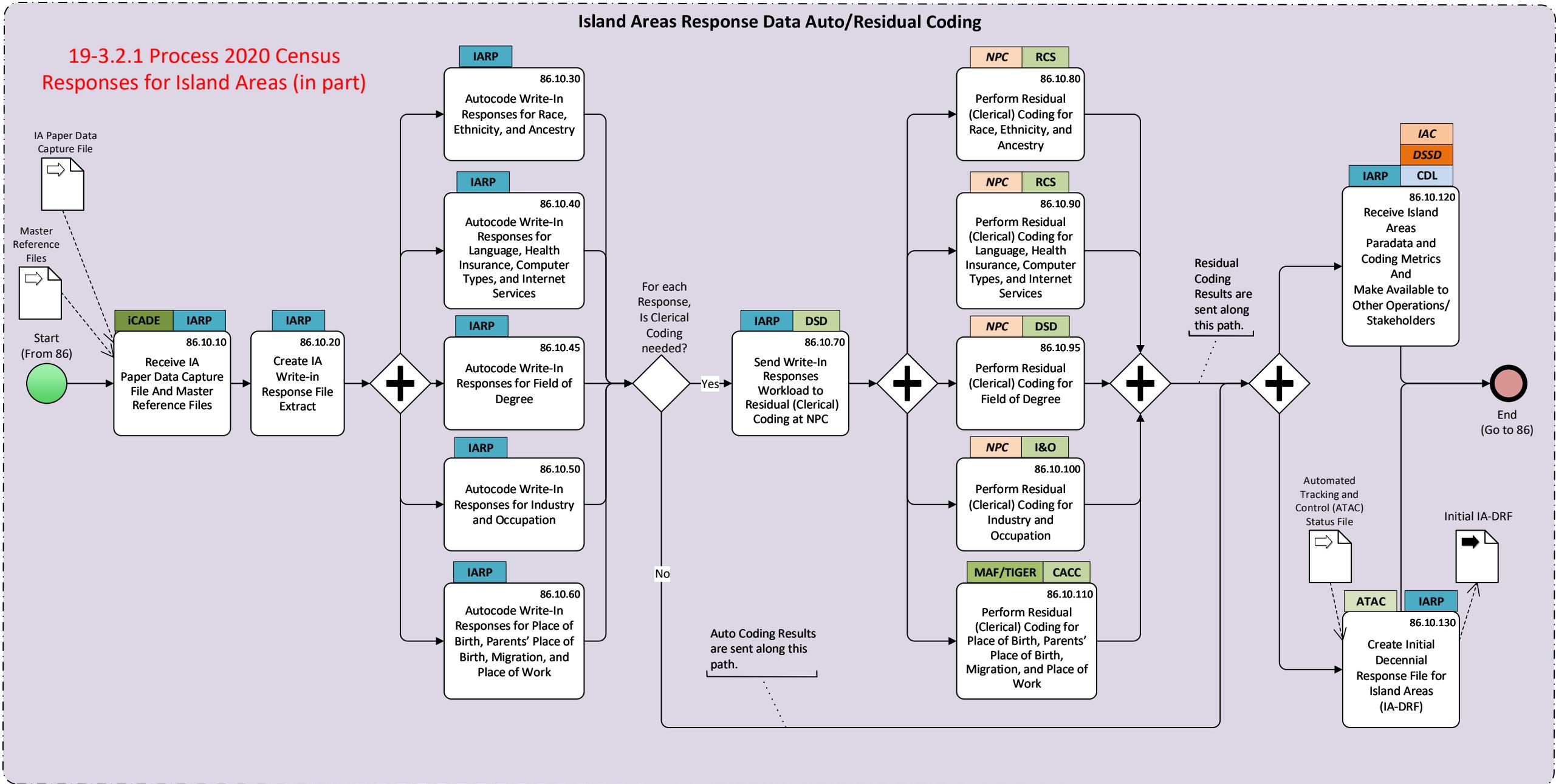
Purpose: Perform additional data processing on all 2020 Census response data and finalize the creation of the Decennial Response File (DRF) for Island Areas.

19-3.2.1 Process 2020 Census Responses for Island Areas



Data Collection: 86.10 Perform Island Areas Response Data Coding

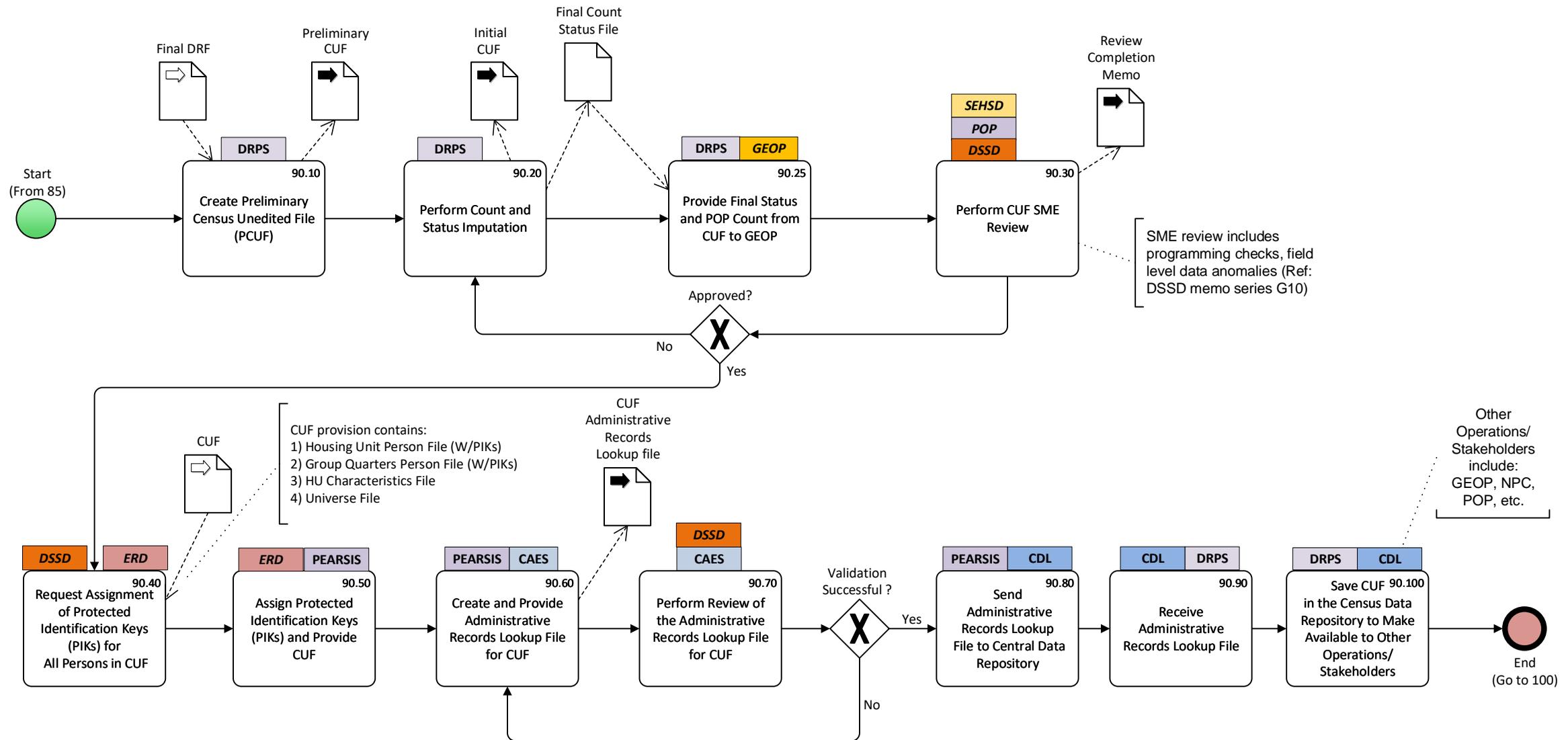
Purpose: Perform auto/residual coding processing on collected Island Areas (IA) response data.



Post Data Collection: 90 Create And Deliver Census Unedited File (CUF) for Stateside Responses

Purpose: Create and deliver the Census Unedited File that includes population data for apportionment.

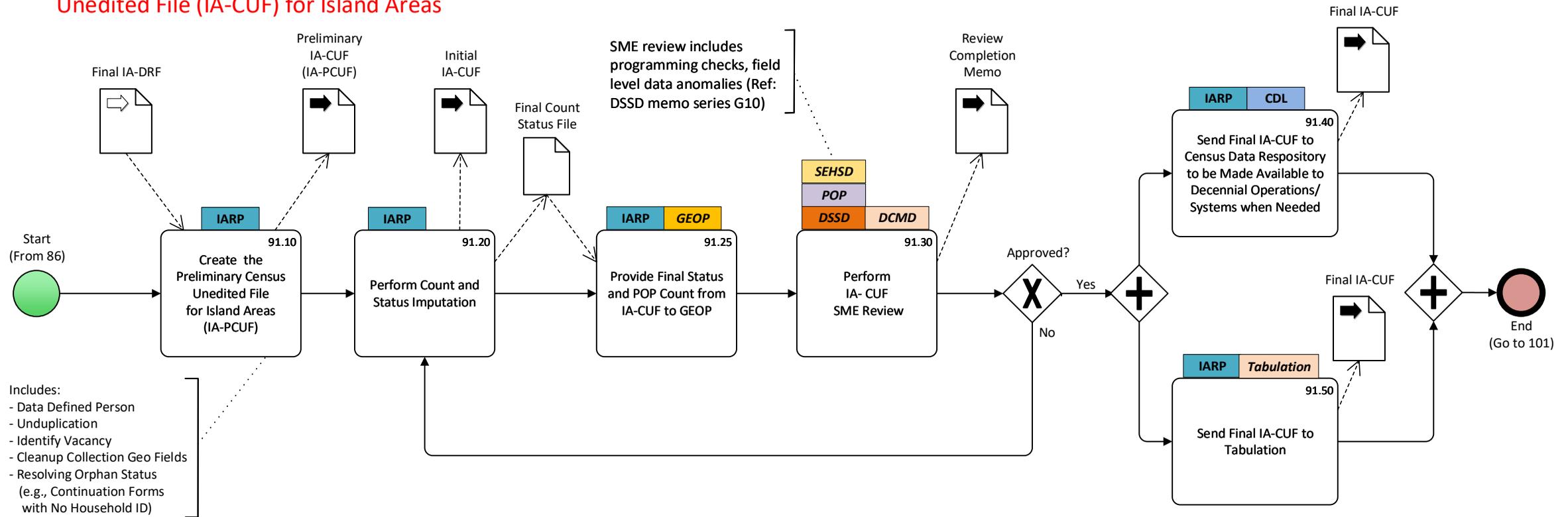
19-3.1.2 Create and Deliver Census Unedited File (CUF) for Stateside/PR



Post Data Collection: 91 Create And Deliver Census Unedited File (IA-CUF) for Island Areas

Purpose: Create and deliver the Census Unedited File that includes population data for housing count tabulations for Island Areas.

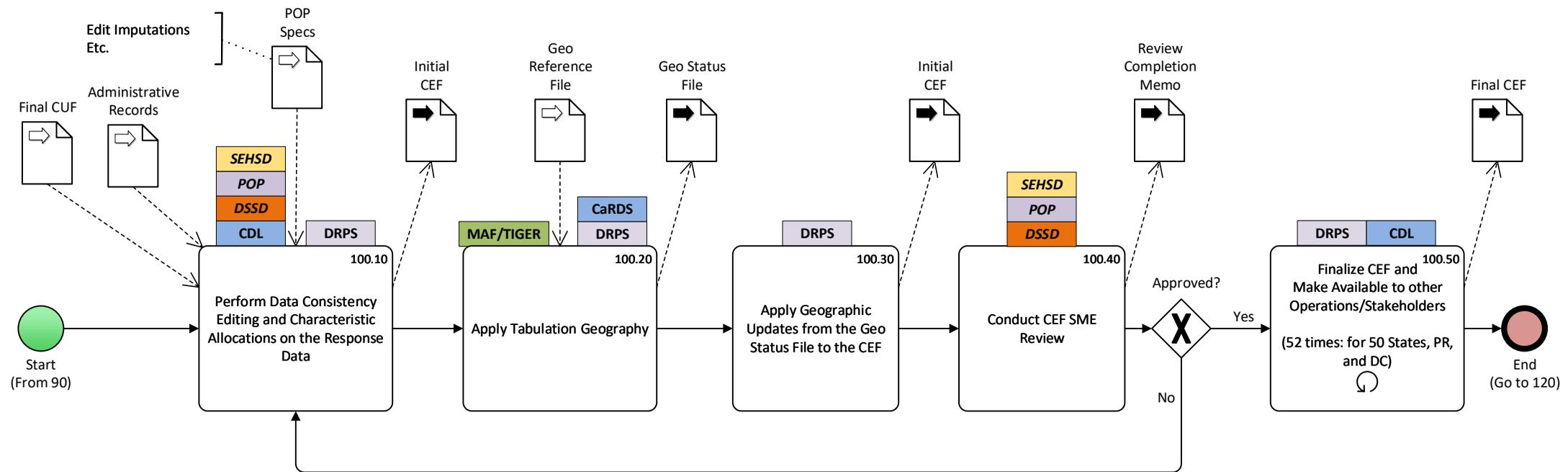
19-3.2.2 Create and Deliver Census Unedited File (IA-CUF) for Island Areas



Post Data Collection: 100 Create and Deliver the Census Edited File (CEF) for Stateside Responses

Purpose: Perform final data consistency editing and characteristic imputation of response data to create the Census Edited File (CEF).

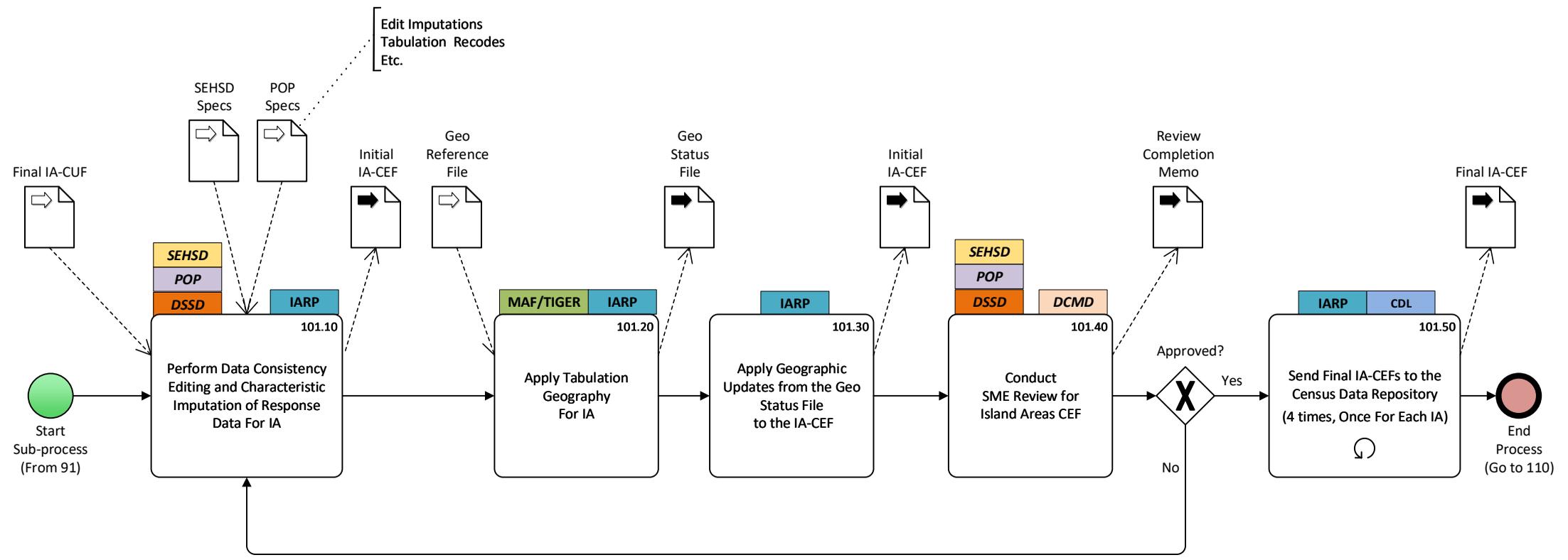
19-3.1.3 Create and Deliver Census Edited File (CEF) for Stateside/PR



Post Data Collection: 101 Create and Deliver Census Edited File (IA-CEF) for Island Areas

Purpose: Perform final data consistency editing and characteristic imputation of IA-CUF to create the IA-CEF.

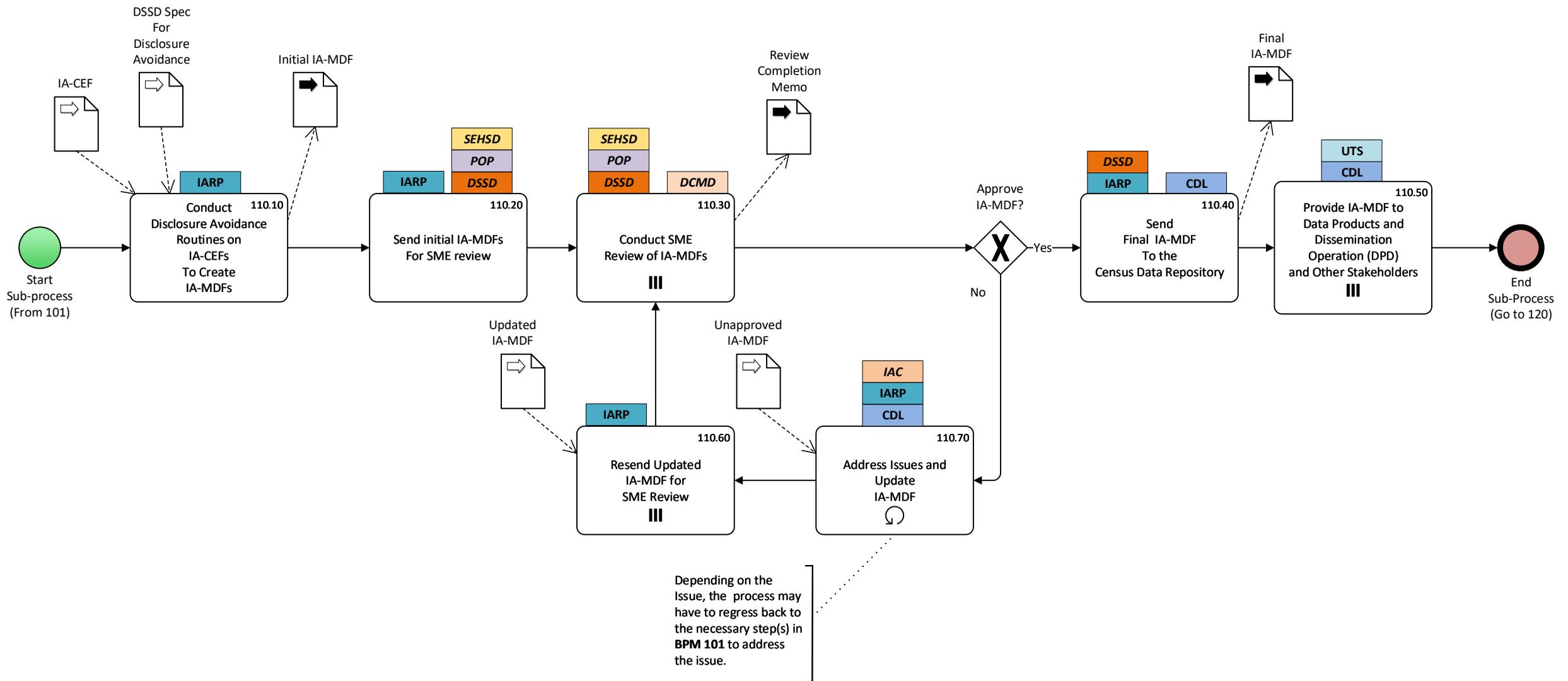
19-3.2.3 Create and Deliver Census Edited File (IA-CEF) for Island Areas



Post Data Collection: 110 Create and Deliver Microdata Detail File (IA-MDF) for Island Areas

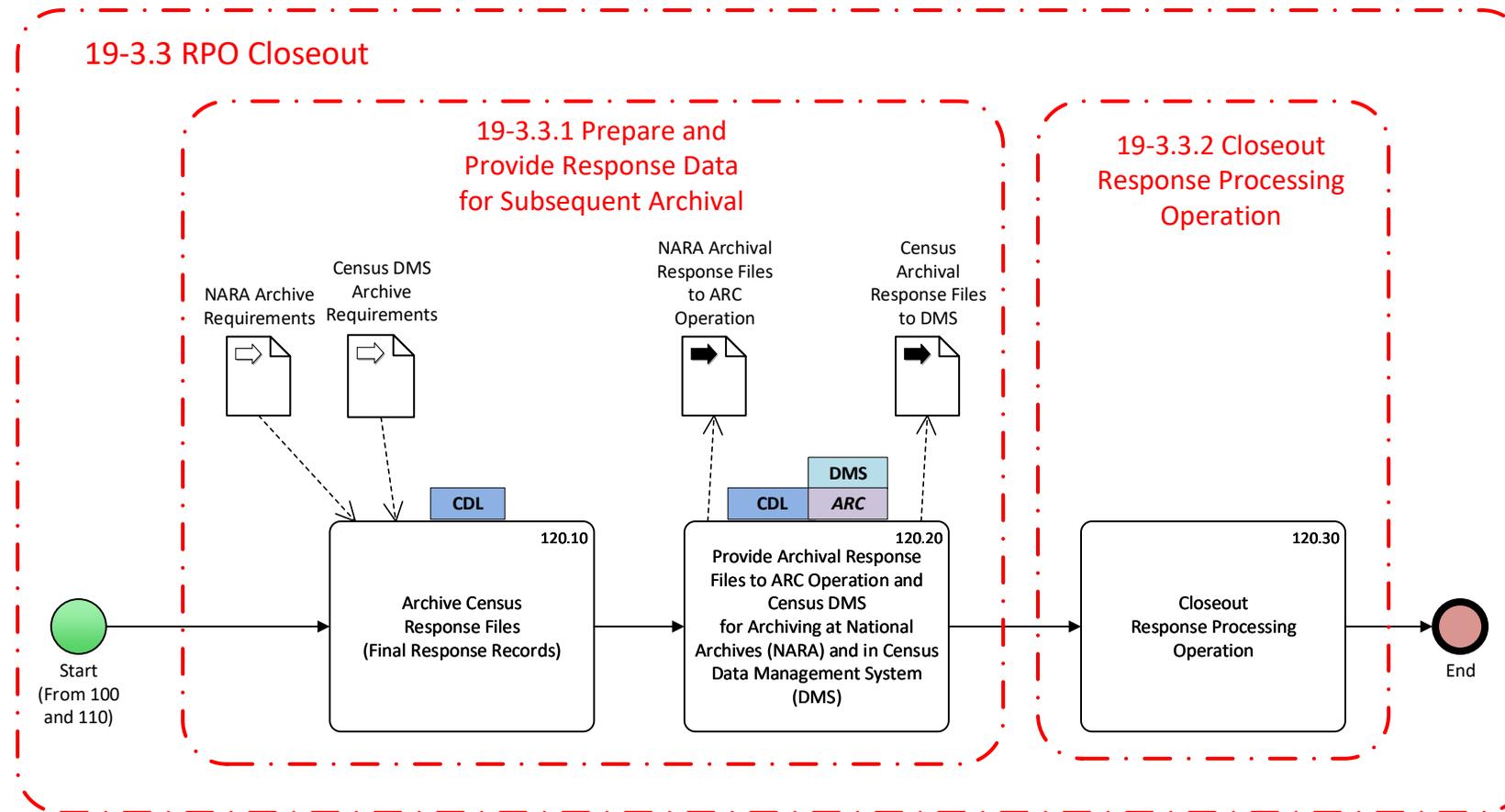
Purpose: Apply Disclosure Avoidance to the IA-CEF to create the Island Area Microdata Detail Files (IA-MDF) and deliver the IA-MDF for tabulation and data dissemination.

19-3.2.4 Create and Deliver Microdata Detail File (IA-MDF) for Island Areas



Post Data Collection: 120 Prepare for Archiving and Closeout RPO

Purpose: Prepare Data for Archiving Operation and closeout all activities for Response Processing Operation.



Systems and Actors List

Notes:

- “Systems” are either existing systems (like iCADE or MAF/TIGER) or newly developed systems (like IARP or E-FOCS).
- System Acronyms are in plain text.
- “Actors” are either Organizations (like DSSD or NPC) or Operations (like CQA or FPD).
- Actor Acronyms are in *italic text*.

Note: Systems and Actors Icons on BPM Sheets are in a Visio Layer that can be hidden as needed.

CACC	DRPS: Clerical Coding System, Computer Assisted Clerical Coder
DSD	DRPS: Clerical Coding System, Demographic Survey Division
I&O	DRPS: Clerical Coding System, Industry and Occupation System
RCS	DRPS: Clerical Coding System, Residual Coding System

ARC	Archiving Operation
ATAC	Automated Tracking and Control System
CAES	Concurrent Analysis and Estimation System
CaRDS	Control and Response Data System (RPO Universe Creation Function)
CDL	Census Data Lake
CDL:RIS	Census Data Lake: Response Integration System (RPO Response Data Integration Function)
CQA	Census Questionnaire Assistance Operation
DCMD	Decennial Census Management Division
DMS	Census Data Management System
DRPS	Decennial Response Processing System (RPO Decennial Response Processing Function)
DSSD	Decennial Statistical Studies Division
EAE	Evaluations and Experiments Operation
ECaSE-OCS	ECaSE Survey Operational Control System (RPO Universe Management Function)
E-FOCS	ECaSE Field Operational Control System
E-IGQ	ECaSE Internet Self Response GQ System
E-ISR	ECaSE Internet Self Response System
FPD	Forms Printing and Distribution Operation
GATRES	Geographic Acquis-based Topological Real-time Editing System
GEOP	Geographic Programs Operation
IAC	Island Areas Censuses Operation
IARP	Island Areas Response Processing System
iCADE	Integrated Computer Assisted Data Entry System
IPTS	Intelligent Mail Barcode (IMB) Postal Tracking System
ISR	Internet Self Response Operation
MAF/TIGER	Master Address File/Topologically Integrated Geographic Encoding and Referencing System
NID	Non-ID Processing Operation
NPC	National Processing Center
NRFU	Nonresponse Followup Operation
PCS	Production Control System
PDC	Paper Data Capture Operation
PEARSIS	Production Environment for Administrative Records Staging, Integration and Storage System
POP	Population Division
RPO	Response Processing Operation
SEHSD	Social, Economic & Housing Statistics Division
SMaRCS	Sampling, Matching, Review and Coding System (RPO Quality Control Management Function)
UTS	Unified Tracking System