APPENDIX A

**DOCUMENTATION OF THE USE OF
COMMERCIAL OFF-THE-SHELF SOFTWARE**

Documentation of the Use of Commercial Off-The-Shelf Software

This documentation provides a detailed account of the use of COTS software in the preparation of this report. This documentation was developed per the direction of the responsible manager and in accordance with AP-SI.1Q, *Software Management*, and AP-SV.1Q, *Control of the Electronic Management of Information*.

Software identified for use in the preparation of this report

The software used to perform the steps detailed in this documentation is Microsoft Access 2000 (9.0.3821 SR-1) (CRWMS M&O Product ID 31702-OEM-0096947-69083) which operates on Windows 2000, 5.00.2195. Data transmitted in an archived WinZip format that are contained on an Excel spreadsheet are unzipped to Microsoft Excel 2000 (9.0.3821 SR-1) (CRWMS M&O Product ID 31702-OEM-0096947-69083) which operates on Windows 2000, 5.00.2195. Arc/Info V7.2.1, STN: 10033-7.2.1-00 also is used in the preparation of data for this report. This GIS software was added to the M&O Baseline of Qualified Software on February 10, 2000 (CRWMS M&O 2000b), in accordance with AP-SI.1Q, *Software Management*. Arc/Info V7.2.1 was obtained from Configuration Management, run on a SGI-LV platform on workstation ID 110890, identified as the appropriate software for this application, and used within the range of the validation documentation.

Location of files

The files created as a result of the steps detailed in this documentation are located on the H Drive of CPU 152232 under _RadMonitoring\2-1-02 RadMP Investigation, in the folder 02 RadMP Report. Individual file names are identified in the body of the documentation.

Accuracy, completeness, and reproducibility of information

All files located on the H Drive of CPU 152232 are password protected. Any data file (such as an Excel spreadsheet) that is transmitted electronically, is archived (prior to being transmitted) using WinZip software. WinZip software uses a lossless compression scheme that maintains the integrity of the archived (zipped) file. All processes whereby data are placed into or modified within COTS software are described in a series of steps (Step 1, Step 2, etc.). Each step represents a stated objective. Within each step is a particular task, or series of tasks required to accomplish the objective, including any use of data inputs. Each task is identified by the generic name of the COTS software standard function used (e.g. Access Table Design, or Update Query). Once a particular task is completed, a written description of how the task was performed is provided. This description includes a copy of any software query language (SQL) generated by Access that shows how records are selected, grouped, and ordered when the standard function is used. Once all tasks (within a step) are completed, verification is provided to indicate that the stated objective was accomplished. Any new objects/products that are created (such as a table) are saved and identified in the documentation.

Any Access database table that is used to update information in another table contains a key (index) field(s). The key field in a table contains a distinctive set of data--which uniquely identifies each individual record in the table. If Access encounters duplicate values when trying to establish the index, an error message will occur and the index (key) will not be added. This key is the "one" component of the one-to-many relationship necessary to successfully match and

update information from one table to another in Access without errors. Table names are underlined when mentioned in the text, for example, WS Housing dbt. Access database names also are underlined when mentioned in the text, for example, 2002-RadMP Report DB.mdb. Field names are bracketed when mentioned in the text, for example, [2002 Status].

STEP 1

Objective: Create a new Access database named 2002-RadMP Report DB.mdb, and a database table named Census 2000 BG dbt that contains a record for each census BG that is found within the study area and data from the census 2000 table P17. AVERAGE HOUSEHOLD SIZE [1] - Universe: Households. Also include a written description of the census block group geography, a field that identifies county and state, and the 12 digit concatenated Federal Information Processing Standards (FIPS) code associated with the state, county, census tract, and census block group. For example, the components of STFID code 320239804021 contains the following information: 32023980402[1] = Block Group 1, 32023[980402]1 = Census Tract 9804.02, 32[023]9804021 = Nye County, and [32]0239804021 = Nevada

Access task performed: Table Design

Data entry and verification of results: A new Access database named 2002-RadMP Report DB.mdb was created. Then a database table named Census 2000 BG dbt was created. Census 2000 BG dbt contains 19 census BGs and data from the four tables listed above. These data were acquired from Census 2000 Summary File 1 (SF 1) 100-Percent Data (DTN: MO0210GSC2125A.001). Verification was performed by visually comparing the data in this table (shown below) to the original census tables. No errors were found. The combined FIPS code that is used in Arc/Info to identify state, county, census tract, and block group (STFID) also was entered for each of the 19 BGs. Verification was performed by visually comparing the Stfid to the census block group geography. No errors were found.

Census BG Geography	County and State	Stfid	P17# AVERAGE HOUSEHOLD SIZE
Block Group 1, Census Tract 9804.01, Nye County, Nevada	Nye County, NV	320239804011	2.29
Block Group 2, Census Tract 9804.01, Nye County, Nevada	Nye County, NV	320239804012	2.41
Block Group 1, Census Tract 9804.02, Nye County, Nevada	Nye County, NV	320239804021	2.50
Block Group 2, Census Tract 9804.02, Nye County, Nevada	Nye County, NV	320239804022	2.48
Block Group 3, Census Tract 9804.02, Nye County, Nevada	Nye County, NV	320239804023	2.22
Block Group 1, Census Tract 9804.03, Nye County, Nevada	Nye County, NV	320239804031	2.63
Block Group 2, Census Tract 9804.03, Nye County, Nevada	Nye County, NV	320239804032	2.26
Block Group 1, Census Tract 9804.04, Nye County, Nevada	Nye County, NV	320239804041	2.31
Block Group 2, Census Tract 9804.04, Nye County, Nevada	Nye County, NV	320239804042	2.43
Block Group 1, Census Tract 9804.05, Nye County, Nevada	Nye County, NV	320239804051	2.46
Block Group 1, Census Tract 9804.06, Nye County, Nevada	Nye County, NV	320239804061	2.57
Block Group 2, Census Tract 5, Inyo County, California	Inyo County, CA	060270005002	2.16
Block Group 1, Census Tract 58.17, Clark County, Nevada	Clark County, NV	320030058171	2.34
Block Group 1, Census Tract 58.18, Clark County, Nevada	Clark County, NV	320030058181	2.56
Block Group 9, Census Tract 59.02, Clark County, Nevada	Clark County, NV	320030059029	1.48
Block Group 1, Census Tract 7, Inyo County, California	Inyo County, CA	060270007001	1.82
Block Group 1, Census Tract 9803, Nye County, Nevada	Nye County, NV	320239803001	2.15
Block Group 2, Census Tract 9803, Nye County, Nevada	Nye County, NV	320239803002	2.15
Block Group 3, Census Tract 9803, Nye County, Nevada	Nye County, NV	320239803003	2.74

Table created in Access: Census 2000 BG dbt

STEP 2

Objective: Create a new table in the Access database 2001-RadMP Report DB.mdb named Area Names dbt that consists of two key fields [Grid Cell] and [County and State], and also includes [Area], [Town], and [Report Order]. The field [Report Order] provides a field to sort by, when preparing data for the report.

1st Access task performed: Table design and data entry

Data entry and verification of results: A new table Area Names dbt was created in the Access database 2002-RadMP Report DB.mdb that contains 31 records. Two (key) fields [Grid Cell] and [County and State] make up the unique identifier for each record. Verification of the information entered in this table was performed by visually comparing the contents of this table (shown below) to a map of the study area (such as Figure 1 in this report). No errors were found.

Grid Cell	County and State	Area	Town	Grid Cell and Town	Report Order
1004	Inyo County, CA	Death Valley Area	Scotty's Castle	Grid Cell 1004 (Scotty's Castle)	31
1010	Inyo County, CA	Death Valley Area	Stewart Valley, CA	Grid Cell 1010 (Stewart Valley, CA)	32
1010	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	23
1011	Clark County, NV	Indian Springs	Cold Creek	Grid Cell 1011 (Cold Creek)	25
304	Nye County, NV	Beatty Area	Hot Springs	Grid Cell 304 (Hot Springs)	11
309	Nye County, NV	Amargosa Valley Area	Lathrop Wells	Grid Cell 309 (Lathrop Wells)	2
403	Nye County, NV	Beatty Area	Hot Springs	Grid Cell 403 (Hot Springs)	12
404	Nye County, NV	Beatty Area	Beatty	Grid Cell 404 (Beatty)	13
405	Nye County, NV	Beatty Area	Beatty	Grid Cell 405 (Beatty)	14
408	Nye County, NV	Amargosa Valley Area	Amargosa Valley	Grid Cell 408 (Amargosa Valley)	3
409	Nye County, NV	Amargosa Valley Area	Amargosa Valley	Grid Cell 409 (Amargosa Valley)	4
505	Nye County, NV	Beatty Area	Rhyolite	Grid Cell 505 (Rhyolite)	15
508	Nye County, NV	Amargosa Valley Area	Amargosa Valley	Grid Cell 508 (Amargosa Valley)	5
509	Nye County, NV	Amargosa Valley Area	Amargosa Valley	Grid Cell 509 (Amargosa Valley)	6
510	Nye County, NV	Amargosa Valley Area	Crystal	Grid Cell 510 (Crystal)	7
609	Nye County, NV	Amargosa Valley Area	Stateline	Grid Cell 609 (Stateline)	9
610	Nye County, NV	Amargosa Valley Area	Crystal	Grid Cell 610 (Crystal)	8
707	Inyo County, CA	Death Valley Area	Furnace Creek	Grid Cell 707 (Furnace Creek)	26
710	Nye County, NV	Amargosa Valley Area	Ash Meadows	Grid Cell 710 (Ash Meadows)	10
711	Nye County, NV	Pahrump Area	Johnnie	Grid Cell 711 (Johnnie)	18
803	Nye County, NV	Beatty Area	Scotty's Junction	Grid Cell 803 (Scotty's Junction)	16
807	Inyo County, CA	Death Valley Area	Timbisha	Grid Cell 807 (Timbisha)	27
808	Inyo County, CA	Death Valley Area	Ryan	Grid Cell 808 (Ryan)	28
809	Inyo County, CA	Death Valley Area	Death Valley Junction	Grid Cell 809 (Death Valley Junction)	29
810	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 810 (Pahrump)	19
811	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 811 (Pahrump)	20
903	Nye County, NV	Beatty Area	Scotty's Junction	Grid Cell 903 (Scotty's Junction)	17
906	Inyo County, CA	Death Valley Area	Stovepipe Wells	Grid Cell 906 (Stovepipe Wells)	30
910	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)	21
911	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 911 (Pahrump)	22
912	Clark County, NV	Indian Springs	Indian Springs & Cactus Springs	Grid Cell 912 (Indian Springs & Cactus Springs)	24

Table created in Access: Area Names dbt

STEP 3

Objective: Obtain RADHAUS4 (DTN: MO0211COV02125.000) in an Excel spreadsheet format, and remove any "-9999" or "0" values. The value "-9999" is used in ArcInfo to indicate a blank cell, and is unnecessary for further processing. Import RADHAUS4.xls into 2002-RadMP Report DB.mdb, and make of copy of this table named 02 RadMP Report Data (save the original RADHAUS4 for verification). Remove and save (for verification) all records from 02

RadMP Report Data where the HU is located outside the 84-km RadMP Grid. Also, delete any fields that are not required for this analysis.

1st Access task performed: Make table query

1st task, query name: Step 3 MTQ

2nd Access task performed: Delete query

2nd task, query name: Step 3 DQ

Computer-generated SQL expression of 1st task, query commands: SELECT [02 RadMP Report Data].[X-coord], [02 RadMP Report Data].[Y-coord], [02 RadMP Report Data].Huid, [02 RadMP Report Data].Source, [02 RadMP Report Data].[00_stat], [02 RadMP Report Data].[00_per_gq], [02 RadMP Report Data].[00_occ_hu], [02 RadMP Report Data].[00_vac_hu], [02 RadMP Report Data].[01_stat], [02 RadMP Report Data].[01_per_gq], [02 RadMP Report Data].[01_occ_hu], [02 RadMP Report Data].[01_vac_hu], [02 RadMP Report Data].[02_stat], [02 RadMP Report Data].[02_per_gq], [02 RadMP Report Data].[02_occ_hu], [02 RadMP Report Data].[02_vac_hu], [02 RadMP Report Data].Ring, [02 RadMP Report Data].Slice, [02 RadMP Report Data].Gridcell, [02 RadMP Report Data].Description, [02 RadMP Report Data].Qual, [02 RadMP Report Data].Dtm, [02 RadMP Report Data].Source_gents, [02 RadMP Report Data].Msym INTO [02 Not RadMP Report Data] FROM [02 RadMP Report Data] WHERE ((([02 RadMP Report Data].Gridcell) Is Null));

Computer-generated SQL expression of 2nd task, query commands: DELETE [02 RadMP Report Data].[X-coord], [02 RadMP Report Data].[Y-coord], [02 RadMP Report Data].Huid, [02 RadMP Report Data].Source, [02 RadMP Report Data].[00_stat], [02 RadMP Report Data].[00_per_gq], [02 RadMP Report Data].[00_occ_hu], [02 RadMP Report Data].[00_vac_hu], [02 RadMP Report Data].[01_stat], [02 RadMP Report Data].[01_per_gq], [02 RadMP Report Data].[01_occ_hu], [02 RadMP Report Data].[01_vac_hu], [02 RadMP Report Data].[02_stat], [02 RadMP Report Data].[02_per_gq], [02 RadMP Report Data].[02_occ_hu], [02 RadMP Report Data].[02_vac_hu], [02 RadMP Report Data].Ring, [02 RadMP Report Data].Slice, [02 RadMP Report Data].Gridcell, [02 RadMP Report Data].Description, [02 RadMP Report Data].Qual, [02 RadMP Report Data].Dtm, [02 RadMP Report Data].Source_gents, [02 RadMP Report Data].Msym FROM [02 RadMP Report Data] WHERE ((([02 RadMP Report Data].Gridcell) Is Null));

Description of the Access tasks performed and verification of the results: The file RADHAUS4 was transmitted electronically from Dolf Cardenas, to Linda Roe on 11/14/02 in accordance with AP-SV.1Q, *Control of the Management of Electronic Data*. This was accomplished by transmitting the data in a WinZip format. The zipped file, RADHAUS4.zip, was unzipped, creating an Excel spreadsheet, RADHAUS4.xls. A search and replace function was used in Excel to clear all “-9999” and “0” values. All fields in RADHAUS4.xls were imported, resulting in an Access table named RADHAUS4 that consists of 15,864 records. If Access encounters errors when trying to import a spreadsheet, an import errors table is automatically created that includes field names and row numbers that indicate which data have caused errors. No errors occurred while importing these data. A copy was made of RADHAUS4 named 02 RadMP Report Data. A total of 5,310 records were removed from 02 RadMP Report Data where [Gridcell] is null, and these records were saved as 02 Not in RadMP Report Data. The following is a list of all fields in RADHAUS4, and the fields that were removed from 02 RadMP Report Data.

Fields in Radhaus4	Fields in 02 RadMP Report Data
X-coord	Removed
Y-coord	Removed
Huid	Huid
Source	Source
00_stat	00_stat
00_per_gg	00_per_gg
00_occ_hu	00_occ_hu
00_vac_hu	00_vac_hu
01_stat	01_stat
01_per_gg	01_per_gg
01_occ_hu	01_occ_hu
01_vac_hu	01_vac_hu
02_stat	02_stat
02_per_gg	02_per_gg
02_occ_hu	02_occ_hu
02_vac_hu	02_vac_hu
Ring	Removed
Slice	Removed
Gridcell	Gridcell
Description	Removed
Qual	Removed
Dtn	Removed
Source_gents	Removed
Msym	Removed

Verification was performed by adding the total number of records in 02 RadMP Report Data (10,554) and 02 Not in RadMP Report (5,310), which is equal to 15,864 (the total records in the source table RADHAUS4).

Tables created in Access: RADHAUS4
02 RadMP Report Data
02 Not in RadMP Report

STEP 4

Objective: Identify the Census 2000 tract and BG location for each of the housing unit locations in 02 RadMP Report Data.

1st Access task performed: Table design

2nd Access task performed: Update query

2nd task, query name: Step 4 UDQ

Computer-generated SQL expression of 2nd task, query commands: UPDATE [RadMP radblkgrp4] INNER JOIN [02 RadMP Report Data] ON [RadMP radblkgrp4].Huid = [02 RadMP Report Data].Huid SET [02 RadMP Report Data].Stfid = [RadMP radblkgrp4].[Stfid];

Description of how this table was created and verification of the results:

All fields from two qualified sources (RADHAUS4 (DTN: MO0211COV02125.000), and BLKGRP2KS (DTN: MO0107COV01066.000)) were joined in Arc/Info to create a table named radblkgrp4. Radblkgrp4 was transmitted electronically from Dolf Cardenas, to Linda Roe on 11/18/02 in accordance with AP-SV.1Q, *Control of the Management of Electronic Data*. This was accomplished by transmitting the data in a WinZip format. The zipped file, Radblkgrp4.zip, was unzipped creating an Excel spreadsheet, Radblkgrp4.xls that consists of 15,864 records. Only two fields in this table are needed to identify the Census 2000 tract and BG location. They are [Huid] and [Stfid]. All other fields were deleted from this table, and the new table was saved as RadMP Radblkgrp4.xls. RadMP Radblkgrp4.xls was imported into 2002-RadMP Report DB.mdb. If Access encounters errors when trying to import a spreadsheet, an import errors table is automatically created that includes field names and row numbers that indicate which data have

caused errors. No errors occurred while importing these data. A new field [Stfid] was added to 02 RadMP Report Data (in table design), and 10,554 records were updated with data from [Stfid] in RadMP Radblkgrp4. Verification was performed (during the update query) by checking the total number of records where [Huid] in 02 RadMP Report Data is equal to [Huid] in RadMP Radblkgrp4. This number (10,554) is correct.

Table created in Access: RadMP Radblkgrp4

STEP 5

Objective: Add two new fields [P17# AVERAGE HOUSEHOLD SIZE] and [County and State] to 02 RadMP Report Data and update these fields with the value from [P17# AVERAGE HOUSEHOLD SIZE] and [County and State] in Census 2000 BG dbt for each HU record. Then add the fields [Area], [Town], [Grid Cell and Town], and [Report order] to 02 RadMP Report Data and update these 4 fields with the information in Area Names dbt.

1st Access task performed: Table design

2nd Access task performed: Update query

2nd task, query name: Step 5a UDAQ

3rd Access task performed: Update query

3rd task, query name: Step 5b UDAQ

Computer-generated SQL expression of 2nd task, query commands: UPDATE [02 RadMP Report Data] INNER JOIN [Census 2000 BG dbt] ON [02 RadMP Report Data].Stfid = [Census 2000 BG dbt].Stfid SET [02 RadMP Report Data].[P17# AVERAGE HOUSEHOLD SIZE] = [Census 2000 BG dbt].[P17# AVERAGE HOUSEHOLD SIZE], [02 RadMP Report Data].[County and State] = [Census 2000 BG dbt].[County and State];

Computer-generated SQL expression of 3rd task, query commands:

UPDATE [02 RadMP Report Data] INNER JOIN [Area Names dbt] ON ([02 RadMP Report Data].Gridcell = [Area Names dbt].[Grid Cell]) AND ([02 RadMP Report Data].[County and State] = [Area Names dbt].[County and State]) SET [02 RadMP Report Data].Area = [Area Names dbt].[Area], [02 RadMP Report Data].Town = [Area Names dbt].[Town], [02 RadMP Report Data].[Grid Cell and Town] = [Area Names dbt].[Grid Cell and Town], [02 RadMP Report Data].[Report Order] = [Area Names dbt].[Report Order];

Description of the Access tasks performed and verification of the results: In the 1st Access task, five new fields called [P17# AVERAGE HOUSEHOLD SIZE], [County and State], [Area], [Town], and [Grid Cell and Town] were added to 02 RadMP Report Data (in table design). In the 2nd Access task, 10,554 records in 02 RadMP Report Data were updated with the value in [P17# AVERAGE HOUSEHOLD SIZE] and [County and State] from the table Census 2000 BG dbt. In the 3rd Access task, 10,554 records in 02 RadMP Report Data were updated with the value in [Area], [Town], and [Grid Cell and Town] from the table Area Names dbt. Verification was performed by running a query that returned all possible combinations (48 total) of [GridCell] and the 5 other fields that were updated in this step, and visually checking the consistency of information. The 48 combinations are shown below. No errors were found.

County and State	Gridcell	Area	Town	Grid Cell and Town	P47# AVERAGE HOUSEHOLD SIZE
Clark County, NV	1011	Indian Springs	Cold Creek	Grid Cell 1011 (Cold Creek)	2.34
Clark County, NV	1011	Indian Springs	Cold Creek	Grid Cell 1011 (Cold Creek)	2.56
Clark County, NV	912	Indian Springs	Indian Springs & Cactus Springs	Grid Cell 912 (Indian Springs & Cactus Springs)	1.48
Clark County, NV	912	Indian Springs	Indian Springs & Cactus Springs	Grid Cell 912 (Indian Springs & Cactus Springs)	2.56
Inyo County, CA	1004	Death Valley Area	Scotty's Castle	Grid Cell 1004 (Scotty's Castle)	2.16
Inyo County, CA	1010	Death Valley Area	Stewart Valley, CA	Grid Cell 1010 (Stewart Valley, CA)	1.82
Inyo County, CA	707	Death Valley Area	Furnace Creek	Grid Cell 707 (Furnace Creek)	1.82
Inyo County, CA	807	Death Valley Area	Timbisha	Grid Cell 807 (Timbisha)	1.82
Inyo County, CA	808	Death Valley Area	Ryan	Grid Cell 808 (Ryan)	1.82
Inyo County, CA	809	Death Valley Area	Death Valley Junction	Grid Cell 809 (Death Valley Junction)	1.82
Inyo County, CA	806	Death Valley Area	Stovepipe Wells	Grid Cell 806 (Stovepipe Wells)	1.82
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.22
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.26
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.29
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.31
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.43
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.46
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.48
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.5
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.57
Nye County, NV	1010	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)	2.63
Nye County, NV	304	Beatty Area	Hot Springs	Grid Cell 304 (Hot Springs)	2.15
Nye County, NV	309	Amargosa Valley Area	Lathrop Wells	Grid Cell 309 (Lathrop Wells)	2.74
Nye County, NV	403	Beatty Area	Hot Springs	Grid Cell 403 (Hot Springs)	2.15
Nye County, NV	404	Beatty Area	Beatty	Grid Cell 404 (Beatty)	2.15
Nye County, NV	405	Beatty Area	Beatty	Grid Cell 405 (Beatty)	2.15
Nye County, NV	408	Amargosa Valley Area	Amargosa Valley	Grid Cell 408 (Amargosa Valley)	2.74
Nye County, NV	409	Amargosa Valley Area	Amargosa Valley	Grid Cell 409 (Amargosa Valley)	2.74
Nye County, NV	505	Beatty Area	Rhyolite	Grid Cell 505 (Rhyolite)	2.15
Nye County, NV	508	Amargosa Valley Area	Amargosa Valley	Grid Cell 508 (Amargosa Valley)	2.74
Nye County, NV	509	Amargosa Valley Area	Amargosa Valley	Grid Cell 509 (Amargosa Valley)	2.74
Nye County, NV	510	Amargosa Valley Area	Crystal	Grid Cell 510 (Crystal)	2.29
Nye County, NV	510	Amargosa Valley Area	Crystal	Grid Cell 510 (Crystal)	2.74
Nye County, NV	609	Amargosa Valley Area	Stateline	Grid Cell 609 (Stateline)	2.74
Nye County, NV	610	Amargosa Valley Area	Crystal	Grid Cell 610 (Crystal)	2.29
Nye County, NV	610	Amargosa Valley Area	Crystal	Grid Cell 610 (Crystal)	2.74
Nye County, NV	710	Amargosa Valley Area	Ash Meadows	Grid Cell 710 (Ash Meadows)	2.74
Nye County, NV	711	Pahrump Area	Johnnie	Grid Cell 711 (Johnnie)	2.29
Nye County, NV	803	Beatty Area	Scotty's Junction	Grid Cell 803 (Scotty's Junction)	2.15
Nye County, NV	810	Pahrump Area	Pahrump	Grid Cell 810 (Pahrump)	2.29
Nye County, NV	811	Pahrump Area	Pahrump	Grid Cell 811 (Pahrump)	2.29
Nye County, NV	903	Beatty Area	Scotty's Junction	Grid Cell 903 (Scotty's Junction)	2.15
Nye County, NV	910	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)	2.26
Nye County, NV	910	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)	2.29
Nye County, NV	910	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)	2.41
Nye County, NV	910	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)	2.5
Nye County, NV	910	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)	2.63
Nye County, NV	911	Pahrump Area	Pahrump	Grid Cell 911 (Pahrump)	2.29

Table modified in Access: 02 RadMP Report Data

STEP 6

Objective: Add three new records to 02 RadMP Report Data and enter applicable data for the three census blocks identified as having a group quarters population. Then add three new fields [00 HUxPPH+GQ], [01 HUxPPH+GQ], and [02 HUxPPH+GQ] to 02 RadMP Report Data. Update [00 HUxPPH+GQ] with the value in [00 Occupied HU] multiplied by [P17# AVERAGE HOUSEHOLD SIZE] plus [00 Persons in GQ]. Update [01 HUxPPH+GQ] with the value in [01 Occupied HU] multiplied by [P17# AVERAGE HOUSEHOLD SIZE] plus [01 Persons in GQ]. Update [02 HUxPPH+GQ] with the value in [02 Occupied HU] multiplied by [P17# AVERAGE HOUSEHOLD SIZE] plus [02 Persons in GQ]. And finally, create a new table in the Access database 2001-RadMP Report DB.mdb that shows total resident population by state, county, area, and grid cell. These data are for use in Table 1 of the report.

1st Access task performed: Data entry

2nd Access task performed: Table design

3rd Access task performed: Update query

3rd task, query name: Step 6a UDAQ

4th Access task performed: Update query

4th task, query name: Step 6b UDAQ

5th Access task performed: Update query

5th task, query name: Step 6c UDAQ

6th Access task performed: Make table query

6th task, query name: MTQ Report Table 1

Computer-generated SQL expression of 3rd task, query commands: UPDATE [02 RadMP Report Data] SET [02 RadMP Report Data].[00 HUxPPH+GQ] = [02 RadMP Report Data].[00_occ_hu]*[02 RadMP Report Data].[P17# AVERAGE HOUSEHOLD SIZE]+[02 RadMP Report Data].[00_per_gq];

Computer-generated SQL expression of 4th task, query commands: UPDATE [02 RadMP Report Data] SET [02 RadMP Report Data].[01 HUxPPH+GQ] = [02 RadMP Report Data].[01_occ_hu]*[02 RadMP Report Data].[P17# AVERAGE HOUSEHOLD SIZE]+[02 RadMP Report Data].[01_per_gq];

Computer-generated SQL expression of 5th task, query commands: UPDATE [02 RadMP Report Data] SET [02 RadMP Report Data].[02 HUxPPH+GQ] = [02 RadMP Report Data].[02_occ_hu]*[02 RadMP Report Data].[P17# AVERAGE HOUSEHOLD SIZE]+[02 RadMP Report Data].[02_per_gq];

Computer-generated SQL expression of 6th task, query commands: SELECT [02 RadMP Report Data].[County and State], [02 RadMP Report Data].Area, [02 RadMP Report Data].[Grid Cell and Town], Sum([02 RadMP Report Data].[00 HUxPPH+GQ]) AS [SumOf00 HUxPPH+GQ], Sum([02 RadMP Report Data].[01 HUxPPH+GQ]) AS [SumOf01 HUxPPH+GQ], Sum([02 RadMP Report Data].[02 HUxPPH+GQ]) AS [SumOf02 HUxPPH+GQ] INTO [02 Report Table] FROM [02 RadMP Report Data] GROUP BY [02 RadMP Report Data].[County and State], [02 RadMP Report Data].Area, [02 RadMP Report Data].[Grid Cell and Town], [02 RadMP Report Data].[Report Order] ORDER BY [02 RadMP Report Data].[Report Order];

Description of the Access tasks performed and verification of the results: In the 1st task, three new records were added to 02 RadMP Report Data ($10,554 + 3 = 10,557$) for the three census blocks identified as having a group quarters population, and the following data were

entered:

Huid	Stfid	Source	00_stat	00_per_gq	01_stat	01_per_gq	02_stat	02_per_gq	Gridcell	P17# AVERAGE HOUSEHOLD SIZE	County and State	Area	Town	Grid Cell and Town
Block 1104	320239 804011	Census	8	24	8	24	8	24	1010	2.29	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)
Block 2000	320239 804012	Census	8	23	8	23	8	23	910	2.41	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 910 (Pahrump)
Block 1145	320239 804031	Census	8	11	8	11	8	11	1010	2.63	Nye County, NV	Pahrump Area	Pahrump	Grid Cell 1010 (Pahrump)

These data were acquired from the Census 2000 Summary File 1 (SF 1) 100-Percent Data (DTN: MO0210GSC2125A.001). Verification was performed by visually comparing the contents of this table (shown below) to the print outs of the original census tables. No errors were found. In the 2nd task, three new fields [00 HUxPPH+GQ], [01 HUxPPH+GQ] and [02 HUxPPH+GQ] were added in table design. In the 3rd task, [00 HUxPPH+GQ] was updated with the value in [00 Occupied HU] multiplied by [P17# AVERAGE HOUSEHOLD SIZE] plus [00 Persons in GQ]. In the 4th task, [01 HUxPPH+GQ] was updated with the value in [01 Occupied HU] multiplied by [P17# AVERAGE HOUSEHOLD SIZE] plus [01 Persons in GQ]. In the 5th task, [02 HUxPPH+GQ] was updated with the value in [02 Occupied HU] multiplied by [P17# AVERAGE HOUSEHOLD SIZE] plus [02 Persons in GQ]. The results of Step 6, tasks 3, 4 and 5, were verified by visually checking a list of all combinations of the 11 applicable fields (shown below). The results were checked by hand calculations. No errors were found.

Grid Cell and Town	P17# AVERAGE HH SIZE	SumOf00 c. hu	SumOf00 p. gq	SumOf00 HUxPPH+G Q	SumOf01 c. hu	SumOf01 p. gq	SumOf01 HUxPPH+G Q	SumOf02 c. hu	SumOf02 p. gq	SumOf02 HUxPPH+G Q
Grid Cell 1004 (Scotty's Castle)	2.16	2	3	7.32	0	7	7	0	8	8
Grid Cell 1010 (Pahrump)	2.22	649	0	1440.8	684	0	1518.5	728	0	1616.2
Grid Cell 1010 (Pahrump)	2.26	406	0	917.56	414	0	935.64	418	0	944.68
Grid Cell 1010 (Pahrump)	2.29	229	24	548.41	221	24	530.09	188	24	454.52
Grid Cell 1010 (Pahrump)	2.31	1276	0	2947.6	1412	0	3261.7	1496	0	3455.8
Grid Cell 1010 (Pahrump)	2.43	466	0	1132.4	558	0	1355.9	595	0	1445.9
Grid Cell 1010 (Pahrump)	2.46	26	0	63.96	24	0	59.04	23	0	56.58
Grid Cell 1010 (Pahrump)	2.48	494	0	1225.1	539	0	1336.7	544	0	1349.1
Grid Cell 1010 (Pahrump)	2.5	173	0	432.5	185	0	462.5	185	0	462.5
Grid Cell 1010 (Pahrump)	2.57	7	0	17.99	9	0	23.13	10	0	25.7
Grid Cell 1010 (Pahrump)	2.63	798	11	2109.7	869	11	2296.5	911	11	2406.9

Grid Cell and Town	P17# AVERAGE HH SIZE	SumOf00_oc c.hu	SumOf00_pe r.gg	SumOf00 HUxPPH+G Q	SumOf01_oc c.hu	SumOf01_pe r.gg	SumOf01 HUxPPH+G Q	SumOf02_oc c.hu	SumOf02_pe r.gg	SumOf02 HUxPPH+G Q
Grid Cell 1010 (Stewart Valley, CA)	1.82	7	0	12.74	7	0	12.74	8	0	14.56
Grid Cell 1011 (Cold Creek)	2.34	72	0	168.48	65	0	152.1	61	0	142.74
Grid Cell 1011 (Cold Creek)	2.56	5	0	12.8	4	0	10.24	4	0	10.24
Grid Cell 304 (Hot Springs)	2.15	14	0	30.1	20	0	43	16	0	34.4
Grid Cell 309 (Lathrop Wells)	2.74	9	0	24.66	5	0	13.7	5	0	13.7
Grid Cell 403 (Hot Springs)	2.15	11	0	23.65	12	0	25.8	10	0	21.5
Grid Cell 404 (Beatty)	2.15	379	0	814.85	318	0	683.7	334	0	718.1
Grid Cell 405 (Beatty)	2.15	233	0	500.95	191	0	410.65	198	0	425.7
Grid Cell 408 (Amargosa Valley)	2.74	144	0	394.56	113	0	309.62	110	0	301.4
Grid Cell 409 (Amargosa Valley)	2.74	104	0	284.96	103	0	282.22	100	0	274
Grid Cell 505 (Rhyolite)	2.15	2	0	4.3	4	0	8.6	4	0	8.6
Grid Cell 508 (Amargosa Valley)	2.74	28	0	76.72	22	0	60.28	23	0	63.02
Grid Cell 509 (Amargosa Valley)	2.74	215	0	589.1	169	0	463.06	174	0	476.76
Grid Cell 510 (Crystal)	2.29	11	0	25.19	9	0	20.61	10	0	22.9
Grid Cell 510 (Crystal)	2.74	0	0	0	1	0	2.74	0	0	0
Grid Cell 609 (Stateline)	2.74	55	0	150.7	38	0	104.12	38	0	104.12
Grid Cell 610 (Crystal)	2.29	49	0	112.21	51	0	116.79	52	0	119.08
Grid Cell 610 (Crystal)	2.74	2	0	5.48	2	0	5.48	2	0	5.48
Grid Cell 707 (Furnace Creek)	1.82	168	98	403.76	64	346	462.48	53	322	418.46
Grid Cell 710 (Ash Meadows)	2.74	10	0	27.4	6	0	16.44	6	0	16.44
Grid Cell 711 (Johnnie)	2.29	9	0	20.61	9	0	20.61	10	0	22.9
Grid Cell 803 (Scotty's Junction)	2.15	1	0	2.15	0	0	0	0	0	0
Grid Cell 807 (Timbisha)	1.82	10	0	18.2	10	0	18.2	10	0	18.2
Grid Cell 808 (Ryan)	1.82	1	0	1.82	1	0	1.82	1	0	1.82
Grid Cell 809 (Death Valley Junction)	1.82	6	0	10.92	1	0	1.82	2	0	3.64
Grid Cell 810 (Pahrump)	2.29	19	0	43.51	22	0	50.38	20	0	45.8

Grid Cell and Town	P17# AVERAGE HH SIZE	SumOf00 cc c.hu	SumOf00 per t.gg	SumOf00 HxPPH+G Q	SumOf01 cc c.hu	SumOf01 per t.gg	SumOf01 HxPPH+G Q	SumOf02 cc c.hu	SumOf02 per t.gg	SumOf02 HxPPH+G Q
Grid Cell 811 (Pahrump)	2.29	0	0	0	1	0	2.29	1	0	2.29
Grid Cell 903 (Scotty's Junction)	2.15	10	0	21.5	11	0	23.65	12	0	25.8
Grid Cell 906 (Stovepipe Wells)	1.82	29	0	52.78	0	68	68	0	66	66
Grid Cell 910 (Pahrump)	2.26	287	0	648.62	316	0	714.16	337	0	761.62
Grid Cell 910 (Pahrump)	2.29	483	0	1106.1	559	0	1280.1	581	0	1330.5
Grid Cell 910 (Pahrump)	2.41	810	23	1975.1	880	23	2143.8	899	23	2189.6
Grid Cell 910 (Pahrump)	2.5	351	0	877.5	358	0	895	365	0	912.5
Grid Cell 910 (Pahrump)	2.63	212	0	557.56	241	0	633.83	249	0	654.87
Grid Cell 911 (Pahrump)	2.29	0	0	0	1	0	2.29	2	0	4.58
Grid Cell 912 (Indian Springs & Cactus Springs)	1.48	38	0	56.24	47	0	69.56	43	0	63.64
Grid Cell 912 (Indian Springs & Cactus Springs)	2.56	474	0	1213.4	488	0	1249.3	506	0	1295.4

And finally, in task 6, a query was run that created the Access table, 02 Report Table (shown below), that is the source of the information provided in Table 1, in Section 3 of this report.

County and State	Area	Grid Cell and Town	SumOf00 HxPPH+GQ	SumOf01 HxPPH+GQ	SumOf02 HxPPH+GQ
Nye County, NV	Amargosa Valley Area	Grid Cell 309 (Lathrop Wells)	24.66	13.7	13.7
Nye County, NV	Amargosa Valley Area	Grid Cell 408 (Amargosa Valley)	394.560000000001	309.620000000001	301.4
Nye County, NV	Amargosa Valley Area	Grid Cell 409 (Amargosa Valley)	284.96	282.22	274
Nye County, NV	Amargosa Valley Area	Grid Cell 508 (Amargosa Valley)	76.72	60.28	63.02
Nye County, NV	Amargosa Valley Area	Grid Cell 509 (Amargosa Valley)	589.100000000001	463.060000000001	476.760000000001
Nye County, NV	Amargosa Valley Area	Grid Cell 510 (Crystal)	25.19	23.35	22.9
Nye County, NV	Amargosa Valley Area	Grid Cell 610 (Crystal)	117.69	122.27	124.56
Nye County, NV	Amargosa Valley Area	Grid Cell 609 (Stateline)	150.7	104.12	104.12
Nye County, NV	Amargosa Valley Area	Grid Cell 710 (Ash Meadows)	27.4	16.44	16.44
Nye County, NV	Beatty Area	Grid Cell 304 (Hot Springs)	30.1	43	34.4
Nye County, NV	Beatty Area	Grid Cell 403 (Hot Springs)	23.65	25.8	21.5
Nye County, NV	Beatty Area	Grid Cell 404 (Beatty)	814.849999999995	683.699999999996	718.099999999996
Nye County, NV	Beatty Area	Grid Cell 405 (Beatty)	500.949999999998	410.649999999999	425.699999999999

County and State	Area	Grid Cell and Town	SumCR00 HUXPPH+GQ	SumCR01 HUXPPH+GQ	SumCR02 HUXPPH+GQ
Nye County, NV	Beatty Area	Grid Cell 505 (Rhyolite)	4.3	8.6	8.6
Nye County, NV	Beatty Area	Grid Cell 803 (Scotty's Junction)	2.15	0	0
Nye County, NV	Beatty Area	Grid Cell 903 (Scotty's Junction)	21.5	23.65	25.8
Nye County, NV	Pahrump Area	Grid Cell 711 (Johnnie)	20.61	20.61	22.9
Nye County, NV	Pahrump Area	Grid Cell 810 (Pahrump)	43.51	50.38	45.8
Nye County, NV	Pahrump Area	Grid Cell 811 (Pahrump)	0	2.29	2.29
Nye County, NV	Pahrump Area	Grid Cell 910 (Pahrump)	5164.85000000006	5666.90000000005	5849.07000000005
Nye County, NV	Pahrump Area	Grid Cell 911 (Pahrump)	0	2.29	4.58
Nye County, NV	Pahrump Area	Grid Cell 1010 (Pahrump)	10836.0000000001	11779.73	12217.8
Clark County, NV	Indian Springs	Grid Cell 912 (Indian Springs & Cactus Springs)	1269.67999999999	1318.83999999999	1358.99999999999
Clark County, NV	Indian Springs	Grid Cell 1011 (Cold Creek)	181.28	162.34	152.98
Inyo County, CA	Death Valley Area	Grid Cell 707 (Furnace Creek)	403.759999999999	462.48	418.46
Inyo County, CA	Death Valley Area	Grid Cell 807 (Timbisha)	18.2	18.2	18.2
Inyo County, CA	Death Valley Area	Grid Cell 808 (Ryan)	1.82	1.82	1.82
Inyo County, CA	Death Valley Area	Grid Cell 809 (Death Valley Junction)	10.92	1.82	3.64
Inyo County, CA	Death Valley Area	Grid Cell 906 (Stovepipe Wells)	52.78	68	66
Inyo County, CA	Death Valley Area	Grid Cell 1004 (Scotty's Castle)	7.32	7	8
Inyo County, CA	Death Valley Area	Grid Cell 1010 (Stewart Valley, CA)	12.74	12.74	14.56

Table created in Access: 02 Report Table

QA: QA

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November 2002

**Yucca Mountain Project
Summary of Socioeconomic Data Analyses
Conducted in Support of the Radiological Monitoring
Program, During FY 2002**

Prepared for:
U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Office of Repository Development
P.O. Box 364629
North Las Vegas, Nevada 89036-8629

Prepared by:
Bechtel SAIC Company, LLC
1180 Town Center Drive
Las Vegas, Nevada 89144

Under Contract Number
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**Yucca Mountain Project
Summary of Socioeconomic Data Analyses
Conducted in Support of the Radiological Monitoring
Program, During FY 2002**

Prepared by:

L. K. Roe
Environmental Scientist, Regional Data Analysis

11/26/02
Date

Checked by:

C. B. Ellis
Environmental Scientist, Regional Data Analysis

11/26/02
Date

Approved by:

Robert L. Kimble
Manager, Regional Data Analysis

11/26/02
Date

EXECUTIVE SUMMARY

This report is a summary of socioeconomic data analyses conducted in support of the Radiological Monitoring Program for the Yucca Mountain Project during fiscal year 2002. Socioeconomic data contained in this report include estimates for the years 2000, 2001, and 2002 of the resident population in the vicinity of Yucca Mountain. The estimates presented in this report are based on selected Census 2000 statistics, and housing and population data that were acquired and developed in accordance with LP-RS-001Q-M&O, *Scientific Investigation of Economic, Demographic, and Agricultural Characteristics in the Vicinity of Yucca Mountain*.

The study area from which data were collected is delineated by a radial grid, consisting of 160 grid cells, that is suitable for evaluating the pathways and potential impacts of a release of radioactive materials to the environment within a distance of 84 kilometers from Yucca Mountain. Data are presented in a tabular format by the county, state, area, and grid cell in which housing units, households, and resident population are located. Also included is a visual representation of the distribution of the 2002 residential population within the study area.

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ACRONYMS AND ABBREVIATIONS

BG	block group
COTS	commercial off-the-shelf
CRWMS	Civilian Radioactive Waste Management System
DTN	Data tracking number
DVNP	Death Valley National Park
FIPS	Federal Information Processing Standards
FY	fiscal year
GIS	Geographic Information System
GQ	group quarters
H	number of households
HU	housing unit
km	kilometer
M&O	Management and Operating Contractor
PPH	persons per household
RadMP	Radiological Monitoring Program
SQL	software query language
WS	windshield survey

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1. INTRODUCTION

This document is the twelfth in a series of annual reports that present site-specific socioeconomic data compiled for the Radiological Monitoring Program (RadMP). Data compiled for the RadMP are an integral component of studies conducted in support of the Total System Performance Assessment, and License Application. Socioeconomic data contained in this report include estimates for the years 2000, 2001, and 2002 of the resident population in the vicinity of Yucca Mountain.

Socioeconomic support for the RadMP performed by Bechtel SAIC Company, LLC, Regional Data Analysis personnel, is subject to the requirements in *Quality Assurance Requirements and Description*, DOE/RW-0333P (DOE 2002). Quality-affecting activities include the collection, analysis, and reporting of socioeconomic data suitable for use in the RadMP. The *Technical Work Plan for: Socioeconomic Support for the Radiological Monitoring Program (RadMP)* (BSC 2001a) was prepared in accordance with AP-2.21Q, *Quality Determinations and Planning for Scientific, Engineering, and Regulatory Compliance Activities*. The requirements of this plan were addressed during the collection and analysis of data, including implementation of LP-RS-001Q-M&O, *Scientific Investigation of Economic, Demographic, and Agricultural Characteristics in the Vicinity of Yucca Mountain*. This report was prepared in accordance with AP-3.11Q, *Technical Reports*.

1.1 BACKGROUND

Data requirements for the RadMP are based on the "General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories; Yucca Mountain Site Suitability Guidelines" (66 FR 57298). These guidelines indicate the socioeconomic data necessary for evaluating the suitability of the Yucca Mountain site for development as a repository, which includes a description of the population density and distribution of the region surrounding the site.

RadMP data also must be suitable for input to analyses conducted in support of Total System Performance Assessment, and License Application. To evaluate potential radiation exposure, performance assessments use biosphere models that describe the pathways by which individuals might receive radiation doses. Area-specific population data are required to estimate potential radiation exposure to the resident population within approximately 50 miles of the Yucca Mountain site. The specifications for these analyses are determined, in part, by technical guidelines set forth by the Nuclear Regulatory Commission in Regulatory Guide 4.2 (1976), *Preparation of Environmental Reports for Nuclear Power Stations*.

1.2 METHODOLOGICAL AND DATA IMPROVEMENTS

Improvements were made that contribute to the reliability of information collected using the windshield survey (WS) method of data collection. During 2002, new field maps were developed for the areas of Cold Creek and Indian Springs, that show aerial photography and County Assessor parcel map boundaries. These maps assist in the identification of streets, tracts, and potential housing unit (HU) locations, and are particularly useful in areas of Cold Creek that are otherwise difficult to map.

Another improvement was made to the method of data collection used for Park Village in Death Valley National Park (DVNP). The WS method of data collection (previously used in this area) was replaced with occupancy rates acquired directly from Park Village administrative offices (DTN: MO0210GSC2125A.005). This significantly upgrades the validity of estimates reported for this area of Inyo County, California.

1.3 GENERAL ASSESSMENT OF THE QUALITY OF THE ESTIMATES

An overall assessment of the quality of RadMP population estimates was conducted by investigating the extent to which 2000 RadMP estimates of occupied housing units are comparable with "100-Percent Data" compiled by the Bureau of the Census in 2000 (DTN: MO0210GSC2125A.001), for all census blocks located entirely within the RadMP grid. A detailed account of the methods used in this investigation can be found in "Documentation of the Use of COTS Software In RDA Investigation ID: 2/1/02 Evaluation of RadMP and Census Household Estimates for Selected Areas of the RadMP Grid" (Roe 2002). The table "Results Of 2000 Census-RadMP Investigation" (DTN: MO0210GSC2125B.003) provides the results of this evaluation at a level of detail sufficient to estimate percent differences at the census block level. The following paragraph provides a summary of the findings.

A total of 2,538 census blocks were evaluated. For all (2,538) census blocks located entirely within the RadMP grid, the 2000 RadMP estimates of occupied housing units were found to be just 2.27 percent different (higher) than the Census 2000 estimates of households. At the census block or block group level of geography, 2,083 census blocks showed either no difference, a difference of just 1 household, or the blocks were contained within block groups where the overall difference (for the entire block group geography) is less than 2 percent. The other 455 blocks represent areas where the RadMP estimates of occupied housing units are relatively high or low, in comparison to the 2000 census estimates of households. The RadMP estimates were found to be relatively high for Amargosa Valley and Beatty, low for the Death Valley area, and within 1 percent of the census estimates for Pahrump and Indian Springs.

1.4 CHANGES TO THE PREVIOUS REPORT

The "100-Percent Data" compiled by the Bureau of the Census in 2000 (DTN: MO0210GSC2125A.001) provided a benchmark for comparing 2000 RadMP estimates of occupied housing units with Census 2000 estimates of households at the census block level, and assessing any apparent discrepancies. As a result of conducting this assessment (described in the previous section), three master-metered mobile home parks were identified that had not been counted in previous RadMP estimates, and 17 housing unit locations, previously identified as

occupied, were found to be vacant lots. Based on these findings, the following adjustments were made to the total number of occupied housing units at each location. In the case of the master-metered mobile home parks, 2000 RadMP estimates were adjusted to the number of households reported in the 2000 census (DTN: MO0210GSC2125A.001); the actual counts of occupied housing units, recorded during a 2002 windshield survey (DTN: MO0210GSC2125B.002) were entered for 2002; and 2001 estimates were derived from the midpoint between the 2000 and 2002 estimates. The 17 housing unit locations previously identified as occupied, that were found to be vacant lots (DTN: MO0210GSC2125B.002), were changed to "inactive" for 2000, 2001, and 2002. These changes are reflected in the 2000, 2001, and 2002 data presented in Section 3 of this report.

1.5 REPORT ORGANIZATION

The following section of this document (Section 2) provides a description of the procedures and methods used to develop estimates for the years 2000, 2001 and 2002 of the resident population within an 84 kilometer (km) radius of Yucca Mountain. A summary of these data is presented in the third section. References for this document are shown in Section 4.

2. PROCEDURES AND METHODS

This section provides a description of the study area from which data were collected, data sources and data collection techniques, and the method used to calculate population estimates. The software and GIS coverages used to identify the distribution of occupied HU locations within the study area also are identified in this section. A detailed account of the use of commercial off-the-shelf (COTS) software to process and organize information for this report, and the methods used to control the electronic management of data, is provided in Appendix A, Documentation of the Use of Commercial Off-the-Shelf Software.

2.1 STUDY AREA

The study area consists of a radial grid that is suitable for evaluating the pathways and potential impacts of a release of radioactive materials to the environment within a distance of 84 km of Yucca Mountain. This radial grid was developed as a Geographic Information System (GIS) coverage (DTN: MO0110COV01122.000) using Arc/Info software (CRWMS M&O 2000a) in accordance with AP-3.12Q, *Calculations*. The study area, referred to as the 84-km RadMP Grid, is centered on Nevada State Plane coordinates Northing 765621.5, and Easting 570433.6, which is on the eastern side of Exile Hill at the Yucca Mountain site. The North Portal Pad is located over this point. The 84-km RadMP Grid consists of 160 cells formed by 10 concentric rings and 16 evenly-spaced sections (22.5 degrees each) radiating from the center. The cell labels are derived from a concatenation of the numbering system of the rings and sections. The 16 sections are numbered counterclockwise beginning with the section directly north. Example: Ring 6 and section 4 = cell 604. The dimensions of this study area are based, in part, on the technical guidelines set forth by the Nuclear Regulatory Commission in Regulatory Guide 4.2 (1976), *Preparation of Environmental Reports for Nuclear Power Stations*.

2.2 DATA SOURCES AND DATA COLLECTION METHODS

The information presented in this report includes estimates for the years 2000, 2001, and 2002 of the resident population located within the 84-km RadMP Grid. These estimates are based on selected Census 2000 statistics, and housing and population data that were acquired and developed in accordance with LP-RS-001Q-M&O, *Scientific Investigation of Economic, Demographic, and Agricultural Characteristics in the Vicinity of Yucca Mountain*. Each data source that is used in this analysis to produce the current estimates (for the year 2002) is identified below, including a description of the data and the locations from which data were acquired. With the exception of the references cited in Section 1.4, all data sources used to produce the estimates for the years 2000 and 2001 can be found in the previous report, *Yucca Mountain Site Characterization Project: Summary of Socioeconomic Data Analyses Conducted in Support of the Radiological Monitoring Program, During FY 2001* (BSC 2001b).

2.2.1 Direct Windshield Survey

The WS method of data collection (observations made from a motorized vehicle) was used in 2002 to acquire the location and occupancy status of HUs in Cold Creek, Indian Springs, Cactus Springs, Johnnie, and selected areas of Pahrump (in Nevada); and Timbisha Village, Ryan, Death

Valley Junction, and Stewart Valley (in California). The sources of 2002 WS data used in this report include two sets of data collection logs (DTN: MO0210GSC2125B.001 and DTN: MO0210GSC2125B.002).

2.2.2 Electric Utility Administrative Records

Data acquired from electric utility administrative records for 2002 (DTN: MO0210GSC2125A.002 and DTN: MO0210GSC2125A.003) includes the number and location of active residential meters. The areas in Nevada for which electric utility data are used as the source of housing information include Amargosa Valley, Ash Meadows, Beatty, Crystal, Lathrop Wells, Pahrump, Rhyolite, Stateline, and Stewart Valley.

2.2.3 Employee Housing Records

Employee housing information were acquired from two sources in 2002. The DVNP management company provided the actual number of persons residing at Furnace Creek, Scotty's Castle, and Stovepipe Wells Village in Inyo County, California (DTN: MO0210GSC2125A.004). Park Village administrative offices provided the number and location of occupied housing units in the Park Village area of DVNP (DTN: MO0210GSC2125A.005).

2.2.4 Bureau of the Census

Bureau of the Census data include block group (BG) information from four census tables: P1. Total Population; P15. Households; P17. Average Household Size; and P37. Group Quarters Population By Group Quarters Type. The BG level of census geography is a subdivision of a census tract that contains a cluster of census blocks. Census tracts are subdivisions of counties that are designed to be relatively homogeneous with respect to population characteristics, economic status, and living conditions. Total population includes all persons living in households and group quarters. A household includes all the people who occupy a HU as their usual place of residence; the number of households is equal to the count of occupied HUs. Average household size is the total number of persons living in households divided by the number of households. Group quarters are places where people live or stay other than the usual HU (house, apartment, or mobile home). Examples of group quarters include nursing homes, hospitals or wards for chronically ill patients, hospices, prison wards, military barracks, and group homes (DTN: MO0210GSC2125A.001).

Table P37. Group Quarters Population by Group Quarters Type is the source for the number of persons living in group quarters in the Nevada part of the study area. Three census BGs located within the 84-km RadMP Grid were identified as having a group quarters population. Census block-level geography for the three blocks in which the group quarters populations are located was used to determine the location of the group quarters population within the study area. These locations include Block 1104, BG 1, Census Tract 9804.01 (in Grid Cell 1010); Block 2000, BG 2, Census Tract 9804.01 (in Grid Cell 910); and Block 1145, BG 1, Census Tract 9804.03 (in Grid Cell 1010).

2.3 ESTIMATIONS OF TOTAL POPULATION

The housing unit method was used to calculate population estimates for all areas of the 84-km RadMP Grid. The basis for this method is that the population of any given geographic area is equal to the number of households (H) times the average number of persons per household (PPH), plus the number of persons living in group quarters (GQ) (Smith 1986):

$$\text{Population} = (H * \text{PPH}) + \text{GQ} \quad (\text{Eq. 1})$$

A description of each component of the housing unit method and the data sources and definitions used in this particular application to estimate the value of H, PPH, and GQ are provided below.

2.3.1 Number of Households

H is equal to the count of occupied HUs. In this application, the value of H is defined in terms of the source of the information and by location. In the areas where the WS method of data collection was used, H is equal to the number of occupied HUs, based on direct observation. For all other areas, H is equal to the number of "active" residential electric utility accounts.

2.3.2 Persons Per Household

PPH is the number of persons divided by the number of households. The value of PPH used in this application is equal to the average household size reported in Census 2000 Table P17. Average Household Size (DTN: MO0210GSC2125A.001), for the tract and BG in which each household is located.

2.3.3 Persons Living in Group Quarters

GQ include places where people live or stay other than the usual house, apartment, or mobile home. In this application, GQ in Inyo County is equal to the total number of persons residing in employee housing complexes, as reported by the DVNP management company (DTN: MO0210GSC2125A.004). For the remainder of the study area, GQ is equal to the total group quarters population reported in the Census 2000 in Table P37. Group Quarters Population by Group Quarters Type (DTN: MO0210GSC2125A.001). Section 2.2.4 of this report identifies the number and location of Census 2000 blocks in the Nevada part of the study area having a group quarters population.

3. SUMMARY OF SOCIOECONOMIC DATA

Estimates, for the years 2000, 2001 and 2002, of the resident population located within the 84-km RadMP Grid, are presented in Table 1. Data are organized in this table by the county, state, area, and grid cell in which the resident population are located. Figure 1 provides a visual representation of the distribution of residential housing, and therefore, the residential population, within the 84-km RadMP Grid. This figure also shows Census 2000 geography (tracts and BG boundaries).

The information reported in this section is not an exhaustive account of the resident population located within the 84-km RadMP Grid. The findings are simply descriptive, no inferences or conclusions are presented in this report, and there are no particular restrictions on the use of these data.

Table 1. 2000, 2001, and 2002 Estimates of the Resident Population Located Within the 84-Kilometer Radiological Monitoring Grid^{a,b}

		Population		
		2000	2001	2002
Nye County, NV				
Amargosa Valley area				
	Grid Cell 309 (Lathrop Wells)	25	14	14
	Grid Cell 408 (Amargosa Valley)	395	310	301
	Grid Cell 409 (Amargosa Valley)	285	282	274
	Grid Cell 508 (Amargosa Valley)	77	60	63
	Grid Cell 509 (Amargosa Valley)	589	463	477
	Grid Cell 510 (Crystal)	25	23	23
	Grid Cell 610 (Crystal)	118	122	125
	Grid Cell 609 (Stateline)	151	104	104
	Grid Cell 710 (Ash Meadows)	27	16	16
	Amargosa Valley area subtotal	1,691	1,395	1,397
Beatty area				
	Grid Cell 304 (Hot Springs)	30	43	34
	Grid Cell 403 (Hot Springs)	24	26	22
	Grid Cell 404 (Beatty)	815	684	718
	Grid Cell 405 (Beatty)	501	411	426
	Grid Cell 505 (Rhyolite)	4	9	9
	Grid Cell 803 (Scotty's Junction)	2	0	0
	Grid Cell 903 (Scotty's Junction)	22	24	26
	Beatty area subtotal	1,397	1,195	1,234
Pahrump area				
	Grid Cell 711 (Johnnie)	21	21	23
	Grid Cell 810 (Pahrump)	44	50	46
	Grid Cell 811 (Pahrump)	0	2	2
	Grid Cell 910 (Pahrump)	5,165	5,667	5,849
	Grid Cell 911 (Pahrump)	0	2	5
	Grid Cell 1010 (Pahrump)	10,836	11,780	12,218
	Pahrump area subtotal	16,065	17,522	18,142
Mercury				
	Mercury subtotal	0	0	0
Clark County, NV				
Indian Springs area				
	Grid Cell 912 (Indian Springs & Cactus Springs)	1,270	1,319	1,359
	Grid Cell 1011 (Cold Creek)	181	162	153
	Indian Springs subtotal	1,451	1,481	1,512
Esmeralda County, NV				
	Esmeralda County subtotal	0	0	0
Lincoln County, NV				
	Lincoln County subtotal	0	0	0
NEVADA				
	Nevada subtotal	20,604	21,594	22,285
Inyo County, CA				
Death Valley area				
	Grid Cell 707 (Furnace Creek)	404	462	418
	Grid Cell 807 (Timbisha)	18	18	18
	Grid Cell 808 (Ryan)	2	2	2
	Grid Cell 809 (Death Valley Junction)	11	2	4
	Grid Cell 906 (Stovepipe Wells)	53	68	66
	Grid Cell 1004 (Scotty's Castle)	7	7	8
	Grid Cell 1010 (Stewart Valley)	13	13	15
	California subtotal	508	572	531
GRAND TOTAL IN THE 84KM GRID		21,112	22,166	22,816

NOTES: ^a Appendix A, Documentation of the Use of Commercial Off-The-Shelf Software, provides a detailed account of the process and data (including all data tracking numbers) used to develop estimates.

^b Figures reported in this table have been rounded, therefore, they may not add to the totals and subtotals for the table.

Figure 1. 2002 Population Distribution Within the 84km Radiological Monitoring Grid (Census 2000 Geography)

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