Appendix B

Group and Agency Interviews

B.1 Overall Summary of Group Interviews

A total of 63 separate organizations attended one or more of the group interview sessions, during the period from December 10, 2002 through January 9, 2003. This included:
- 51 Local agencies
- 6 State agencies
- 3 Federal agencies
- 3 Private companies

Federal Engineering believes this degree of participation shows a high level of interest in the PSMC Plan and should give sufficient insight to user concerns and needs as the project proceeds.

The following is a summary of all comments/inputs heard/discussed during the group interview sessions:

- Band Use: Low (2%), VHF-HI (84%), UHF (9%), 800 MHz (5%)
  Low band users must be moved to another band
  800 MHz use is new
- Equipment Age: Up to 40 years, much is beyond service life
  Repairs becoming difficult
  Awaiting State plan before replacing
  There is approximately a 2-year window before many start replacing equipment
- Interoperate
  Very/extremely important/critical - 78%
  Ability to communicate with other/any agency - 73%
  Better interoperability with WHP - 49%
  With neighboring states - 30%
  With other counties - 16%
- Coverage
  Dead spots - 57% (one mentioned in-building)
  Regional - 32%
  Statewide - 21% (including off road)
  Out of State - 16%
  No improvement needed - 16%
  Portable coverage is required by most local agencies
      Requires either multiple repeaters, voting receivers, and/or in-vehicle repeaters
  Countywide - 5% (most have countywide coverage today)
  Statewide roaming - 71% yes, 29% no/little value

- Channels
  - Additional "special" channels (tactical/training) - 16%
  - Secure channels - 25%
  - Channels congested (especially during emergencies/events) - 33%
  - Channels are sufficient - 14%
- Data Use
  - Not today - 57%
  - Today - 6%
  - Future - 37%
    - Hi-speed - 34% (>19.2 kbps, up to 10 Mbps)
    - Lo-speed - 3% (< 19.2 kbps)
- Interference
  - Some/considerable - 74%
  - None - 26%
- Maintenance
  - OK/good/excellent - 40%
  - Expensive - 16%
  - Slow response/repairs - 11%
  - Difficult to repair - 10%
  - Marginal/poor quality - 8%
- Cellular/Satellite/Commercial Use
  - Augment PS communications (convenience/wireless phone) - 84%
    - Only non-emergency traffic - 28%
    - Any traffic - 21%
    - Confidentiality - 45%
    - For coverage - 15%
    - Backup - 2%
  - Not used (too expensive, poor coverage, no 2-way, no broadcast)
  - Satellite (for better statewide portable coverage) - 2
  - Paging - 1
- Special/Unique Features
  - Modern features
  - Compatibility with Federal systems
  - De-centralized control (security/vulnerability)
  - Redundancy of key components
  - Spread spectrum technology for data
  - Paging
  - Privacy/secure/encrypted channels
  - Backup communications center
  - AVL
  - Vehicle repeaters
  - Unit ID
  - Emergency signaling
  - Voting receivers

- Participation in statewide network

  Establish plan (frequency, technology, implementation schedule). For the most part, local systems on-hold awaiting solution for at most another two years. If no viable solution, locals will replace their system as necessary and funding permits.

  State commitment of funding/funding plan/reasonable cost

  Willing to pay reasonable subscription fees

  State upgrading of local equipment/sharing of infrastructure/sites

  Local/State support by elected officials

  Better coverage than current system(s)

  Migratible to hi-speed data without multiple radios

  Total State funding

  800 MHz - bad idea

  VHF trunking - good idea

  What are the advantages? Sell it to local users/officials.

B.2 Locations/Dates and Participating Agencies

Group interviews were conducted in seven (7) areas throughout the State. The original six (6) locations were discussed with and approved by the Steering Committee; included: Cheyenne, Rock Springs, Riverton, Douglas, Sheridan, and Cody. In addition, a seventh interview session was added for Gillette. Agencies that participated in-person or by submitting "Interview Guide Sheets," are listed below.

Cheyenne - December 10, 2002
Eleven (11) agencies participated:
        State of Wyoming - General Services
        Warren AFB - Fire Department
        Warren AFB - 90th Medical Group
        Wyoming State Forestry Division
        WYDOT - Telecommunications
        Laramie County EMA
        Cheyenne Fire and Rescue
        Wyoming Department of Health
        Cheyenne Police Department
        Wyoming Supreme Court
        Laramie County SO

Rock Springs - December 12, 2002
Eleven (11) agencies participated:
        Sweetwater County Transit Authority - STAR
        SC&E
        Rock Springs Police Department
        WYDOT - Telecommunications
        Sweetwater County EMA
        Com Tech, Inc.
        Rock Springs Fire Department
        Green River Police Department
        Wamsutter Police Department
        Wamsutter Ambulance Service
        Bairoil Police Department

Riverton - December 17, 2002
Nine (9) agencies participated:
     Fremont County EMA
     Lander City Council
     Riverton Police Department
     School District #6/Fremont Fire
     BLM
     City of Riverton - Engineering
     North Lincoln County EMA
     Fremont County SO
     Lander EMA

Douglas - December 19, 2002
Ten (10) agencies participated:
     WYDOT - Telecommunications
     Converse County SO
     Converse County EMA
     Platte County SO/EMA
     Glenrock Fire Department
     Douglas Police Department
     Converse County Commissioner
     Town of Glendo
     Converse County Ambulance
     Douglas Fire Department

Gillette - January 6, 2003
Nine (9) agencies participated:
     Newcastle Police Department
     Campbell County SO
     Campbell County Memorial Hospital/Ambulance
     Campbell County Fire Department
     Sundance Police Department
     Sundance Fire Department
     Two Way Radio Service
     Gillette Police Department
     WYDOT - Telecommunications

Sheridan - January 7, 2003
Seven (7) agencies participated:
  Sheridan County SO
  Sheridan County Fire and Rescue
  Ranchester Police Department
  Dayton Fire Department
  Sheridan Police Department/PSAP
  State Fire Marshal
  WYDOT - Telecommunications

Cody - January 9, 2003
Eleven (11) agencies participated:
  Jackson Wireless
  WYDOT -Telecommunications
  Powell Police Department
  Park County Fire District #2
  Park County Fire District #5
  Park County EMA
  Clark Fire Department
  Park County Public Works
  Powell Hospital EMS
  Park County SO
  Cody Police Department

B.3 Individual Group Interviews

The following is a summary of significant issues discussed by individuals representing the agencies.

Cheyenne - December 10, 2002
    Frequency Band: 6 VHF-Hi, 3 800 MHz
    Equipment Age (years): 30-40, 6, 1-15, 5, 25+, 5
    Interoperability (included in Section 1 - Interoperability Matrices)
        All extremely important
        Ability to communicate with other/any agencies (local, state, or federal)
        With WHP
        With neighboring states
    Coverage - no dead spots
        Expand: 1-Yes, 2-No expansion needed
                  1-Regional, 2-Statewide, 1-Outside state
        Statewide roaming: 4-Yes, 1-No value
    Channels
        1 Need additional "special" channels
        2 Need secure channels
        2 OK
        1 New backbone
        1 Channels congested
    Data: 6 Not today, 4 Needed in future
        1 9600 bps
        2 Hi-speed (broadband)
        1 Maybe 700 MHz
    Interference: 3 None, 3 Some
    Maintenance: 4 OK/good, 2 Expensive, 1 Marginal quality
    Cellular/Satellite
        Augment PS communications (convenience, wireless phone)
            Only non-emergency traffic
        Too expensive
        Poor coverage
        No 2-way direct service
        No broadcast mode
        Satellite (for statewide coverage)
    Special/Unique Features: Modern features, Compatibility with Federal systems
    Participation in statewide system
        Establish plan (frequency, technology, implementation schedule, local systems on-hold)
        State commitment of funding/reasonable cost
        Willing to pay reasonable subscription fees
        State upgrading of equipment

Rock Springs - December 12, 2002

     Frequency Band: 8 VHF-Hi, 2 UHF

     Equipment Age (years): 4-15, 4-8, 20+, 7 (with yearly partial replacements), 20+

     Interoperability (included in Section 1 - Interoperability Matrices)

          8 Extremely important/critical

          6 Ability to communicate with other/any agencies (local, state, federal)

          4 With WHP

          1 With neighboring states

          3 Other counties

     Coverage

          1 Portable coverage

          1 800 MHz concerns

          7 Dead spots

          Expand

               1 Yes (emergencies)

               1 Statewide (including off road)

          Statewide roaming: 7 Yes, 0 No value

     Channels

          2 Need additional "special" channels

          2 Need secure channels

          4 Channels congested (especially during emergencies)

     Data: 5 Not today, 1 Today, 3 Needed in future

          1 Hi-speed (broadband)/1.5 Mbps

     Interference: 2 None, 5 Some

     Maintenance:

          6 OK/good/excellent

          2 Expensive

     Cellular/Satellite/Commercial

          5 Augment PS communications (convenience, wireless phone)

               4 Any traffic (PS coverage/congestion problems)

               3 Confidentiality

               1 For coverage

          1 Paging

     Special/Unique Features

          1 Centralized system is security risk

          1 Redundancy is needed

          1 Spread spectrum for data

     Participation in statewide system

          1 Establish plan (frequency, technology, implementation schedule, local systems on-hold)

          4 State commitment of funding/reasonable cost

          2 State upgrading/sharing of equipment/sites

          1 Unknown (mutual aid used)

          2 Local/State support by elected officials

Riverton - December 17, 2002

     Frequency Band: 5 VHF-Hi

     Equipment Age (years): 20, 1-15

     Interoperability (included in Section 1 - Interoperability Matrices)

          3 Extremely important/critical

          2 Ability to communicate with other/any agencies (local, state, federal)

          2 With neighboring states

          1 Other counties

     Coverage

          5 Dead spots

          Expand

               2 Yes

               3 Regional

               1 Statewide

               2 Outside state

          Statewide roaming: 1 Yes

     Channels

          3 Need additional "special" channels

          4 Need secure channels

          1 OK

          3 Channels congested (especially during emergencies)

     Data: 3 Not today, 3 Needed in future

          1 Hi-speed (10 Mbps)

     Interference: 1 None, 2 Some (or more)

     Maintenance:

          2 OK/good

          2 Expensive

          2 Marginal quality/poor

     Cellular/Satellite

          5 Augment PS communications (convenience, wireless phone)

               1 Any traffic (PS coverage/congestion problems)

               4 Confidentiality

               1 For coverage

          1 Satellite (for statewide/problem coverage)

     Special/Unique Features

          2 Paging

     Participation in statewide system

          3 State commitment of funding/reasonable cost

Douglas - December 19, 2002

Frequency Band: 1 Low, 9 VHF-Hi, 1 UHF

Equipment Age (years): <1yr, 10, 5-15, 30, 27, 30

Interoperability (included in Section 1 - Interoperability Matrices)

    1 No common frequency for FD, EMS, PD to share

    10 Extremely important/critical

    9 Ability to communicate with other/any agencies (local, state, federal)

    7 With WHP

    1 Other counties

Coverage

    1 No portable coverage

    1 Using command conference phone line to notify 1st responders

    10 Dead spots

    Expand: 1 Yes, 2 None needed

        1 Countywide, 8 Regional, 4 Statewide, 1 Outside state

    Statewide roaming: 4 Yes, 3 No value

Channels

    2 Need additional "special" channels

    3 Need secure channels

    1 OK

    4 Channels congested (especially during emergencies)

    1 Move Low band users

Data: 5 Not today, 1 today, 4 Needed in future

    1 Hi-speed (broadband)/1.5 Mbps

Interference: 2 None, 4 Some

Maintenance:

    1 OK/good

    1 Expensive

    1 Marginal quality/poor

    3 Slow

    2 Outdated equipment (difficult to repair)

Cellular/Satellite

    11 Augment PS communications (convenience, wireless phone)

        4 Any traffic (PS coverage/congestion problems)

        6 Confidentiality

        3 For coverage

Special/Unique Features

    3 Privacy/secure channels

    1 Backup communications center

Participation in statewide system

    2 State commitment of funding/reasonable cost

    1 Better coverage than current system(s)

Gillette - January 6, 2003

Frequency Band: 7 VHF-Hi, 1 UHF

Equipment Age (years): 1-21, 2-17, 10-15, 10+, 10-15

Interoperability (included in Section 1 - Interoperability Matrices)

      6 Extremely important/critical

      6 Ability to communicate with other/any agencies (local, state, federal)

      1 With WHP

      2 Other counties

Coverage

      6 Dead spots

      Expand

            1 Countywide

            3 Regional

            1 Statewide

            1 Outside state

            1 None needed

      Statewide roaming: 1 Yes, 4 No/little value

Channels

      1 Need additional "special" channels (tactical/training/events)

      3 Need secure channels

      5 Channels congested (especially during emergencies)

Data: 5 Not today, 1 today, 2 Needed in future

      2 Hi-speed (broadband)/1.5 Mbps

Interference: 2 None, 5 Some/considerable

Maintenance:

      3 OK/good

      1 Expensive

      2 Slow response/repairs

Cellular/Satellite

      7 Augment PS communications (convenience, wireless phone)

            2 Any traffic (PS coverage/congestion problems)

            5 Confidentiality

            2 For coverage

            1 Out of County

      1 Quality/reliability poor

Special/Unique Features

      1 AVL

      1 Vehicle repeaters

      1 Paging

Participation in statewide system

      4 State commitment of funding/reasonable cost

      1 Better coverage than current system(s)

      1 Migratible to hi-speed data without multiple radios

Sheridan - January 7, 2003
    Frequency Band: 6 VHF-Hi
    Equipment Age (years): 10+, 1-15+, 10-30, 25+, 4
    Interoperability (included in Section 1 - Interoperability Matrices)
        4 Extremely important/critical
        5 Ability to communicate with other/any agencies (local, state, federal)
        2 With WHP
        1 With neighboring states
    Coverage
        1 No/poor portable coverage
        5 Dead spots
        Expand: 1 None needed
            1 countywide, 3 Regional, 1 Statewide, 2 Outside state
        Statewide roaming: 4 Yes, 1 No value
    Channels
        1 Need secure channels
        2 OK
        4 Channels congested (especially during emergencies)
    Data: 5 Not today, 3 Needed in future
    Interference: 1 None, 5 Some
    Maintenance:
        2 OK/good
        1 Expensive
        1 Marginal quality/poor
        1 Slow response/repairs
        1 Outdated equipment (difficult to repair)
    Cellular/Satellite
        6 Augment PS communications (convenience, wireless phone)
            1 Only non-emergency traffic
            1 Confidentiality
            1 For coverage
            1 Backup
        2 Poor coverage
    Special/Unique Features
        1 Privacy/secure channels
    Participation in statewide system
        1 Establish plan (frequency, technology, implementation schedule, local systems on-hold)
        3 State commitment of funding/reasonable cost
        1 Total funding, suggest not 800 MHz
        1 Sell idea to elected officials

<u>Cody - January 9, 2003</u>
       Frequency Band: 8 VHF-Hi, 1 UHF
       Equipment Age (years): 1-20, 1-20, 20+, 1-20, 2-15+, 0-10, 0-25
       Interoperability (included in Section 1 - Interoperability Matrices)
              7 Extremely important/critical
              7 Ability to communicate with other/any agencies (local, state, federal)
              6 With WHP
              4 With neighboring states
              3 Other counties
       Coverage
              3 No/poor portable/pager coverage
              3 Dead spots (in-buildings mentioned)
              Expand: 4 None needed
                     2 Regional, 3 Statewide, 3 Outside state
              Statewide roaming: 6 Yes, 2 No value
       Channels
              1 Need additional "special" channels
              2 Need secure channels
              3 OK
              4 Channels congested (especially during emergencies/storms)
                     Same frequency channel used by every hospital/school bus in state
       Data: 7 Not today, 1 Today, 4 Needed in future
              1 Higher Speed
       Interference: 8 Some/considerable
       Maintenance:
              7 OK/good
              1 Expensive
              1 Slow response/repairs
               3 Outdated equipment (difficult to repair)
       Cellular/Satellite
              8 Augment PS communications (convenience, wireless phone)
                     3 Only non-emergency traffic
                     5 Confidentiality
                     1 For coverage
              1 Poor coverage
              1 Satellite (for better/statewide coverage)
       Special/Unique Features
              2 Unit ID
              2 Emergency signaling
              1 Privacy/secure channels
              1 Paging
              1 Voting receivers
       Participation in statewide system
              3 Establish plan (frequency, technology, implementation schedule, local systems on-hold)
              5 State commitment of funding/reasonable cost
              1 State upgrading/sharing of equipment - Prefer VHF trunking
              2 Without a statewide system - plan to use analog conventional/trunking
              2 What are advantages?

B.4 Individual Agency Interviews

<u>WHP</u>
Major points are summarized below:
- Centralized dispatch in Cheyenne for HP and SALECS
- Five district, 14 field geographic divisions
- Interoperate to any and all law enforcement and Fire/EMS
- Poor interstate interoperability with agencies outside Wyoming
- Generally not public service except occasionally to utilities/railroads, not via radio
- Life-safety issues: improvements needed for state mutual aid especially in rural areas (less a problem in urban areas)
- Interagency intrastate interoperability is difficult at best
- WYDOT Maintenance's five regional dispatchers use trooper-to-WYDOT car-to-car crossover channels - main issue: keeping roads open or to close roads
- Troopers communicate directly to WYDOT dispatch, however WYDOT maintenance must go through WYDOT dispatch to HP dispatch to trooper,
- Note: This is not a technical issue, HP can monitor any VHF-Hi band channel, but few MOUs exist. During critical situations this is not good.
- New 800 MHz systems (Casper for example) may have second vehicle radio to communicate to State mutual aid
- Some dead spots on State/Interstate highways (troopers know where), particularly in northeast WY
- Intersite interference tower-to-tower is minimized using PL tones, however once channel is opened there are problems - all towers use the same frequencies
- Voice traffic can be heavy, data is probable solution to reduce voice traffic, currently no mobile data
- Supervisors do use cellular phones and pagers
- Troopers (estimated at 50% +/-20%) have their own cellular phones
- NCIC2000 suggests real-time images being sent to field units, however WHP believes rare (a.k.a. insignificant) use of video from field vehicles
- Email to/from officer, District HQ and/or home (if available) would be useful
- Encryption for criminal investigations and drug situations would be helpful
- Cellular users (public) can use #HELP to call directly to HP (911 normally goes to County PSAPs)
- Traffic is not equalized among dispatch consoles - reorganization may be needed
- AVL, event and weather reports would be nice features

<u>DCI</u>
Major points are summarized below:
- DCI personnel are truly statewide and as such statewide roaming would be a helpful feature
- Data is a required feature that is needed today. Estimates of bandwidth usage for wireless communication into the message switch:
  - Typical outbound inquiry 50-75 kbytes
  - Typical inbound response 250-1500 bytes
  - Typical image size 5 kbytes

Typical monthly usage for CAD/mobile data
- ▸ 40 unit fleet, vehicles used 16 hours per day
- ▸ Average monthly usage 3.23 Mbytes per vehicle
- ▸ Average monthly usage 350 kbytes per vehicle (if query only)

- DCI strongly believes in hi-speed applications as their needs evolve to meet future NCIC and internal requirements - DCI may have to implement their own network to get coverage requirements met, this does include real-time video for surveillance requirements
- Encryption is a strong requirement (although not private or secure cellular offers more that state radio networks)
- Additional private (probable secure) channels needed for tactical situations, shared channel are confusing at best and lead to problems - cellular phones are not the answer
- DCI also has many applications for special wireless communications, such as criminal vehicle tracking - generally these are local rather than statewide

Department of Health
Major points are summarized below:
- No real radio network for Public Health Nurses (PHN)
- There should be an available statewide EMS channel - funding has been the real show stopper, especially in small counties without any funds
- Health has local VHF sites in state office buildings, but by no means statewide coverage (currently three Cheyenne repeaters)
- Strongly against 800 MHz due to coverage limitations
- Health does their own FCC licensing and maintenance
- Some school buses use special allocated Health frequencies
- Need interoperability with first responders during "events", there are political issues for MOUs and use of existing county mutual aid mountaintop repeaters
- No statewide interoperability among Public Health Nurses (possible solution would be State mutual aid channel, however this would require complex dispatch patching, using WEMA repeaters in Cheyenne area
- Public Health Nurses use either county repeaters or communicate simplex (direct nurse-to-nurse; coverage footprint is very poor)
- Talk about Hospital Association funding a statewide health repeater network, however past plans were not functional
- Strong need for statewide SOP (Standard Operating Procedures) - current varies from area to area
- Encryption is becoming a strong issue with health information becoming private with HEPA
- Approximately 11 mobiles and 35-38 portables, 2-3 years old
- Local EMS (hospitals/ambulances) is different than State Health issues
- All counties have at least one PHN and all report to both County and State
- PHNs use a wide variety of communication tools seeking to solve their communication problems: some satellite phones, all have cellular phones, pages and facsimile units, only ~1/3 have radios
- Cellular (coverage) and satellite (cost) are not the answers and neither allow the communication modes needed
- Ultimately whatever solution is implemented needs redundancy for high

reliability
- There are difficult interference issues on some Health radio network (example: 400 watt directional signal from Fort Collins Hospital)
- Wireless data is not an issue today, however future need to share common, non-sensitive files
- HF (3-30 MHz) is available for Federal Health interconnection