Appendix IX.

LAVO Preliminary 2007 NVCS Vegetation and Land-cover Key(s)

LAVO Comparative Vegetation Mapping Project

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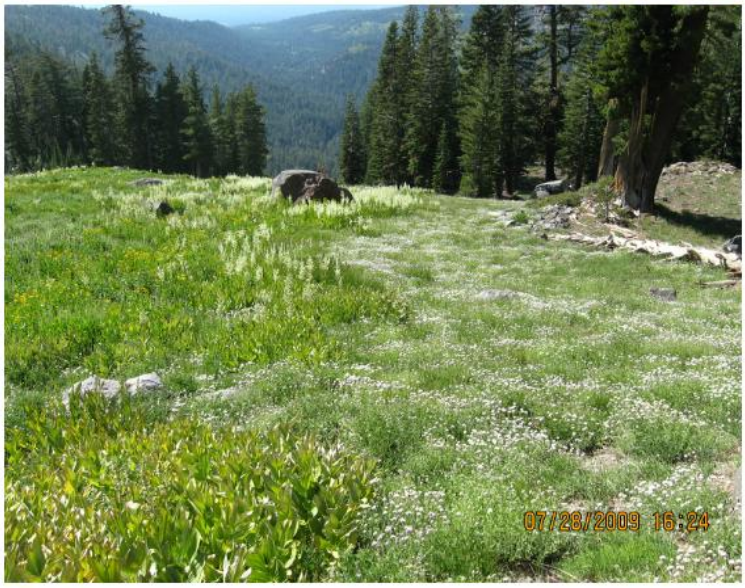

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Organization and Terminology

The LAVO Plant Association and Land Cover Diagrammatic and Narrative Keys included in this document pertain to both the 2007 Vegetation Classification and the Image Classification and Aerial Photo Interpretation map data sets that were developed during the LAVO Comparative Mapping Project (2006-2013).

Two Keys have been developed. One Key is in a narrative form represented by a set keys of a hierarchical dichotomous structure. It is comprised of questions with yes/no answers that will guide the user through this set of keys to a named Plant Association or Land Cover Class. The second Key is a diagrammatic Key that can be used to represent the narrative Key. This diagrammatic Key is an eight page condensation of the lengthy narrative Key that is far easier to use in the field than the lengthy narrative Key. While the use of these keys is often intuitive, there is need for some descriptive information and clarification of the organization of the information.

Organization of LAVO Plant Association and Land Cover Diagrammatic and Narrative Keys

The Plant Association and Land Cover Diagrammatic Key is basically a diagram of the narrative key. The Key steps are similar to the narrative Key and lead to the same set of plant associations and land cover features as the steps and decisions that comprise the narrative key. However, the diagrammatic Key is used in a slightly different manner than the narrative key. The narrative Key leads the user to a plant association or land cover feature/class; all plant associations or land cover features/classes observed in the field during the field data collection efforts, including Accuracy Assessment efforts, are listed in the narrative Key. However, when using the diagrammatic Key, the user first uses the Key to determine the "Sub-Alliance" of the plant community/land cover feature, which is comparable to identifying the overstory lifeform vegetation or predominant land cover component of an association. After identification of the Sub-Alliance, the user then continues to use the Key to determine the "associated component" of the Association (the Sub-Alliance and associated component together comprise the Association). This associated component is either a lower lifeform than the Sub-Alliance or is absent resulting in a "Sparse Understory" designation. The associated component is identified by passing through the Key a second time, but this time answering questions based upon the cover characteristics of the associated vegetation/features rather than the Sub-Alliance. For example, a user observing a mixture of needleleaf components that included *Abies concolor, Calocedrus decurrens, and Pinus jeffreyi* would first determine the Sub-Alliance of the Association based on the highest lifeform (trees) present; for this needleleaf stand, based upon the mix of tree cover observed at this site, the keys would lead to the Sub-Alliance designation **11a. *Abies concolor-Calocedrus decurrens-Pinus jeffreyi* (AC-CD-PJ:tree) Sub-Alliance**. To determine the Association, the user would then need to determine the associated vegetation, if any, by beginning once again at the Primary Key, but keeping in mind that the cover of a lower lifeform (shrubs or herbaceous or neither) will represent the associated vegetation and thereby ignoring (answering as a negative) Key decision rules that concern the lifeform of the Sub-Alliance (tree cover) until a decision rule is encountered that is based on a lower lifeform. Similarly, if the Sub-Alliance were found to be from a shrubland alliance, such as **20a. *Arctostaphylos patula* (AP:shrub) Shrubland Sub-Alliance**, the user would begin once again at the start of the Primary Key again keeping in mind that the cover of the next lower lifeform representing the associated vegetation would be herbaceous. When determining the associated vegetation, the absolute minimum thresholds (10%) for Sub-Alliances are not rigidly enforced, but rather the user realizes that there simply needs to be sufficient cover present of a particular lifeform to warrant the assignment of either a shrub or herbaceous associated vegetation designation. Unlike the narrative Key, the diagrammatic Key identifies all possible associated vegetation/features for a Sub-Alliance. As a result, the user may identify an associated vegetation/feature with a specific Sub-Alliance that has not been observed in the field during either the classification and accuracy assessment efforts and is missing from the narrative Key. This observation would represent the identification of a new Association within the LAVO vicinity.

The narrative and diagrammatic Land Cover and Plant Association Keys are organized at four different hierarchical levels. These levels reflect Classes, Super-Alliances/Alliances, Sub-Alliances, and associated vegetation/features. The major classes are referenced by roman numerals. Each Super-Alliance or Alliance is referenced by a unique number, such as 1, 2, 3, and so forth. Each Sub-Alliance is referenced by its

Super-Alliance/Alliance number and a lower case alpha character (a,b,c, and so forth). For example, the Sub-Alliance **11a.*Abies concolor-Calocedrus decurrens-Pinus jeffreyi* (AC-CD-PJ:tree) Forest Alliance** is referenced as part of Alliance **11.*Abies-concolor*-Mixed Forest and Woodland (Sparse) Alliance**.

With respect to use of the Plant Association and Land Cover Narrative Key, as one proceeds through each narrative Key answering the dichotomous decision rules, the Key either names a subsequent step in the same Key to access, directly names an association, or identifies a subordinate Key to be accessed for subsequent type identification. Most associations are identified using one of the keys under each recognized Sub-Alliance. Each recognized Sub-Alliance is accessed under the appropriate Class and Super-Alliance/Alliance in which it has been grouped (e.g. **5a. AM-(PM)-PJ** is accessed under Alliance **5. *Abies magnifica*–Mixed Needleleaf Forest and Woodland Alliance**). The Association Key within each recognized Sub-Alliance identifies only the associations that were observed in the field for that particular Sub-Alliance. Associations observed during the Vegetation Classification field data collection efforts are indicated by "**[x]**" following the association name, where "**x**" corresponds to the number of field sample sites of that association that were observed. The listed associations are not a comprehensive all-inclusive list; in fact, other unlisted plant associations may exist, even if they are not included in a specific Sub-Alliance key. As a result, the user will know when they have identified an association that has not been observed in the field if their observations do not lead them to a listed association in one of the Sub-Alliance keys; therefore, when the user has exhausted all Sub-Alliance key questions and known associations without determining an association, the user will arrive at an **Unrecognized Association** designation and will be directed to either the Comprehensive Shrubland or Herbaceous Association Key to develop the specific unrecognized association for that particular Sub-Alliance.

When using this key in relation to the Photo Interpretation Map (APMM) of the LAVO Comparative Vegetation Mapping Project, it is important to note that some of the APMM map types could not be converted to the one of the specific detailed associations in the key; as a result, the Generalized Alliances are used to crosswalk the APMM map types to the resulting LAVO APMM Map based on the 2007 Classification.

Key Terminology and Definitions

Association - The term "Association" is used to represent a unique plant community distinguishable from other plant communities by the combination of its overstory composition and it understory composition, if present. For example, the designation ***Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Forest/*Quercus vacciniifolia* (QV:shrub) Shrub** represents a unique Association.

Sub-Alliance - The term "Sub-Alliance" is used to represent the specific overstory component of an Association; it does not have to be dominant in terms of cover. For example, for the aforementioned association ***Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Forest/*Quercus vacciniifolia* (QV:shrub) Shrub Association,** the Sub-Alliance is the ***Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Forest** overstory component of the subject area.

Associated Vegetation - The term "Associated Vegetation" is used to represent the specific understory vegetation component that characterizes a plant community that is associated with a "Sub-Alliance" to form an "Association." For example, for the aforementioned association ***Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Forest/*Quercus vacciniifolia* (QV:shrub) Shrub Association,** the associated vegetation is the ***Quercus vacciniifolia* (QV:shrub) Shrub** understory component of the subject area**.**

Alliance - The term "Alliance" is used to represent a one or more of associations for which the Sub-Alliance is either unique or the Sub-Alliances have similar, but distinguishable species composition from those associations of other Alliances. For example, for the association ***Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Forest/*Quercus vacciniifolia* (QV:shrub) Shrub Association** is a member of the ***Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**.

Super Alliance – The term "Super Alliance" refers to a group of Alliances which may be related to each other or grouped based on their plant community characteristics. The **Dry Mixed Shrubland Alliance** is a Super Alliance of shrub associations comprised of shrub species known to inhabit sites having "dry" environments.

Calculated Class – The calculated class or "calc_class" of a stand or field data assessment is a named Association that has been assigned to a polygon or field site based strictly on species-specific percent cover

composition observed for a field site or estimated for an aggregated polygon without any editing or refinement of the association. As a result, the calc_class may represent an association or a complex of associations.

Component - The term "component" has different meaning and significance depending upon the context in which it is being used. When the term "component" is used during the identification of a Needleleaf Conifer Alliance or a Mixed Shrubland Association, a species is considered to be a component if its individual composition is more than or equal to 5% of the total cover composition of that lifeform **and** its individual species cover is greater than 2%. When the term "component" is used during the identification of a Herbaceous Association, a species is considered a component if its species composition is greater than or equal to 10% of the herbaceous cover composition **and** the species cover is greater than 2%. A species component represents more than the simple presence of or chance occurrence of a species.

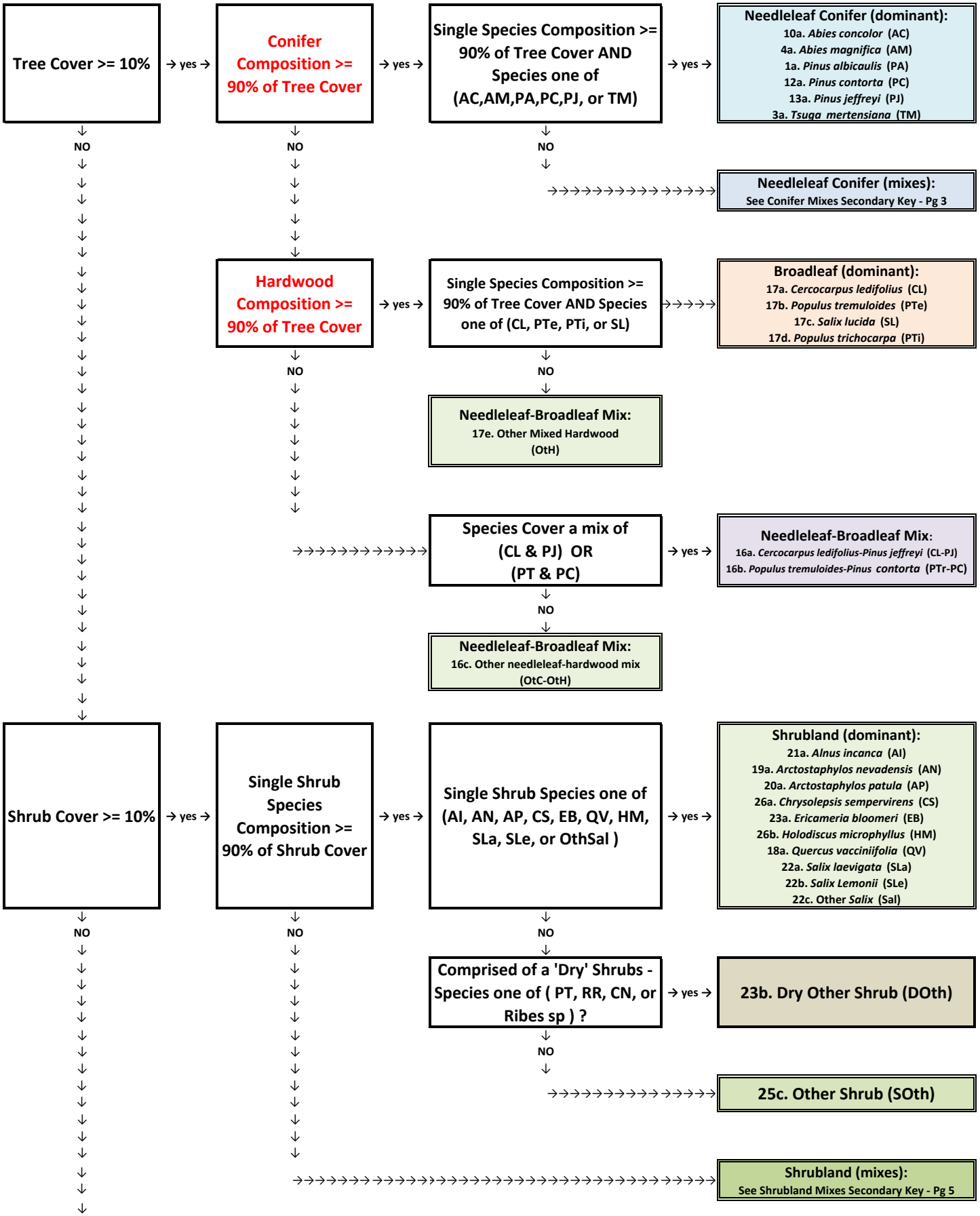
Detailed - The term "Detailed" refers to a more particular or species-specific form of representing Associations and Sub-Alliances. For example, **7a. *Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC) Forest** is a Detailed Sub-Alliance that falls under the more Generalized Alliance of **11. *Abies-concolor*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance.**

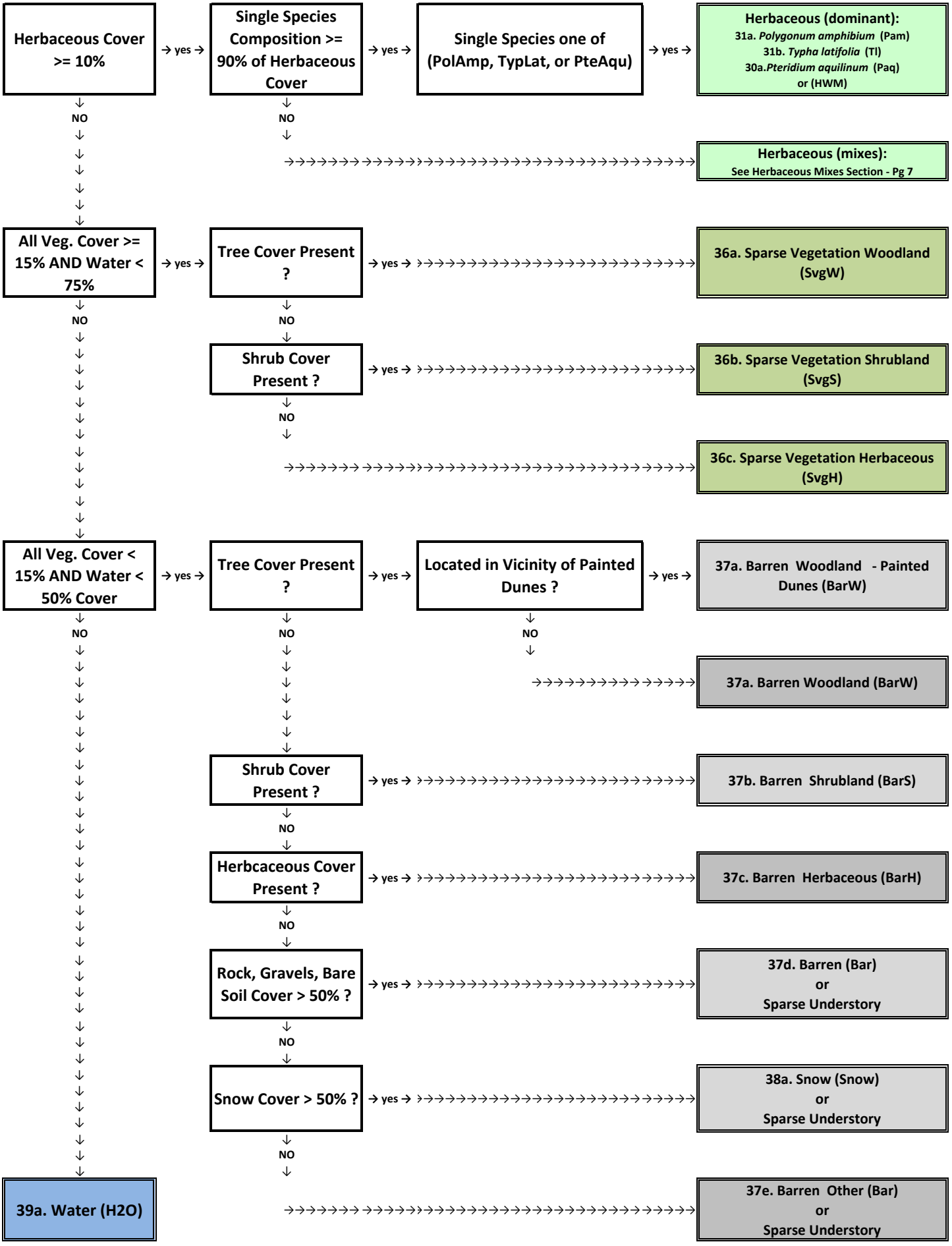
Generalized - The term "Generalized" refers to a more simplified form of representing Alliances. For example, the Super Alliance **11. *Abies-concolor*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance** is a Generalized Alliance for all the Sub-Alliances, such as **11a., 11b., 11c.,** etc., that fall within it. In some cases Generalized shrub or herbaceous designations like AN-Mix:shrub or HWM:herb are used rather than the Detailed values of AN-AP-CS:shrub or TI:herb. The generalization that has been applied enables a grouping of more specific "Detailed" values. Alliances and Super Alliances tend to represent the most generalized level of information.

Present - The terms "present" or "presence" means that the species is found at the site with percent cover that is greater than or equal to 0.5%. This term typically indicates that the species has very low cover, but that its occurrence at a site is more than a chance or random occurrence. As a result, a species must typically be observed with multiple occurrences to be present at a site.

Trace – A "trace" species is one that is simply observed at a site in a very small amount of cover. A single plant of a species may be recorded as a "trace" of that species.

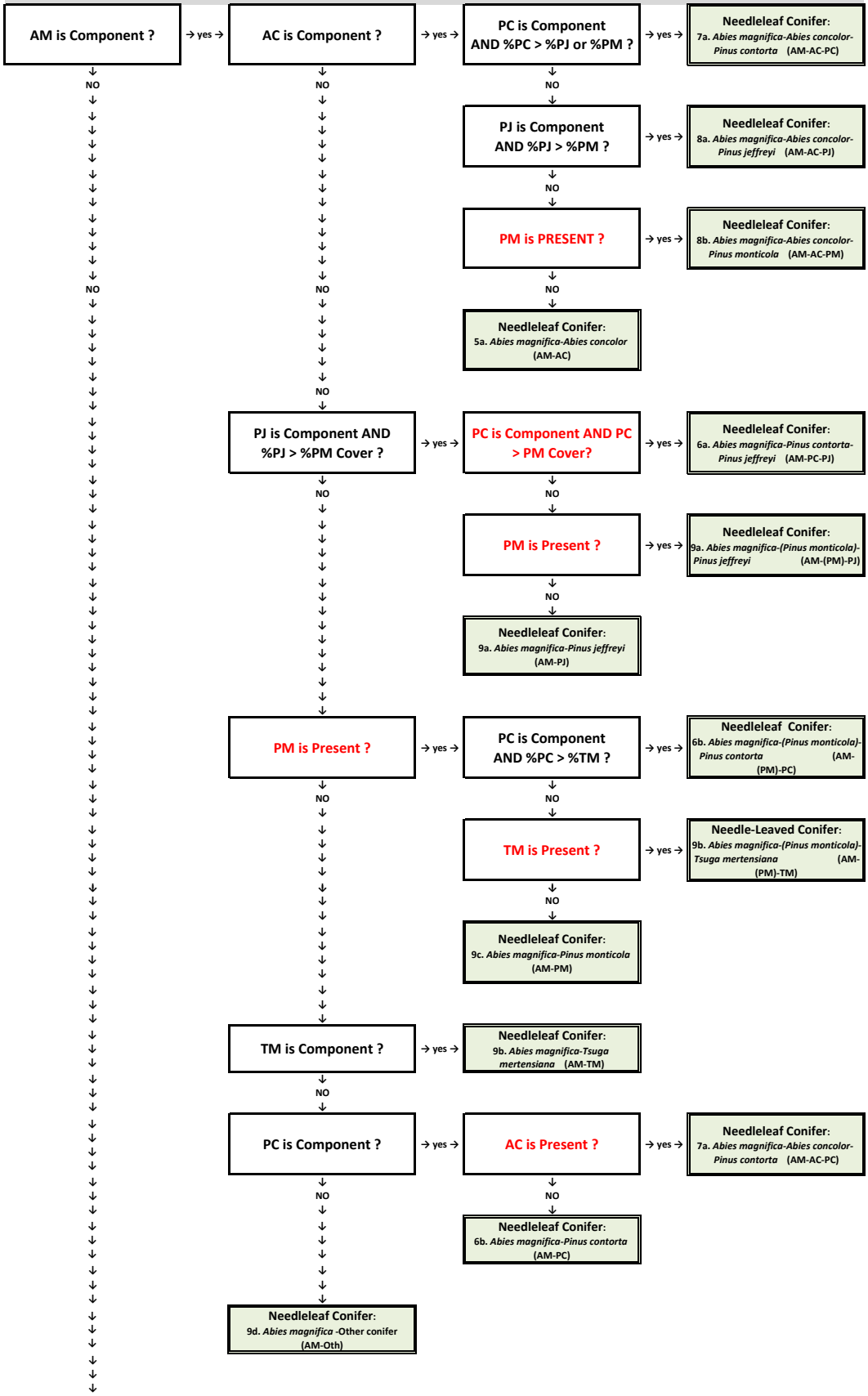
LAVO Plant Association and Land Cover Class - Primary Key

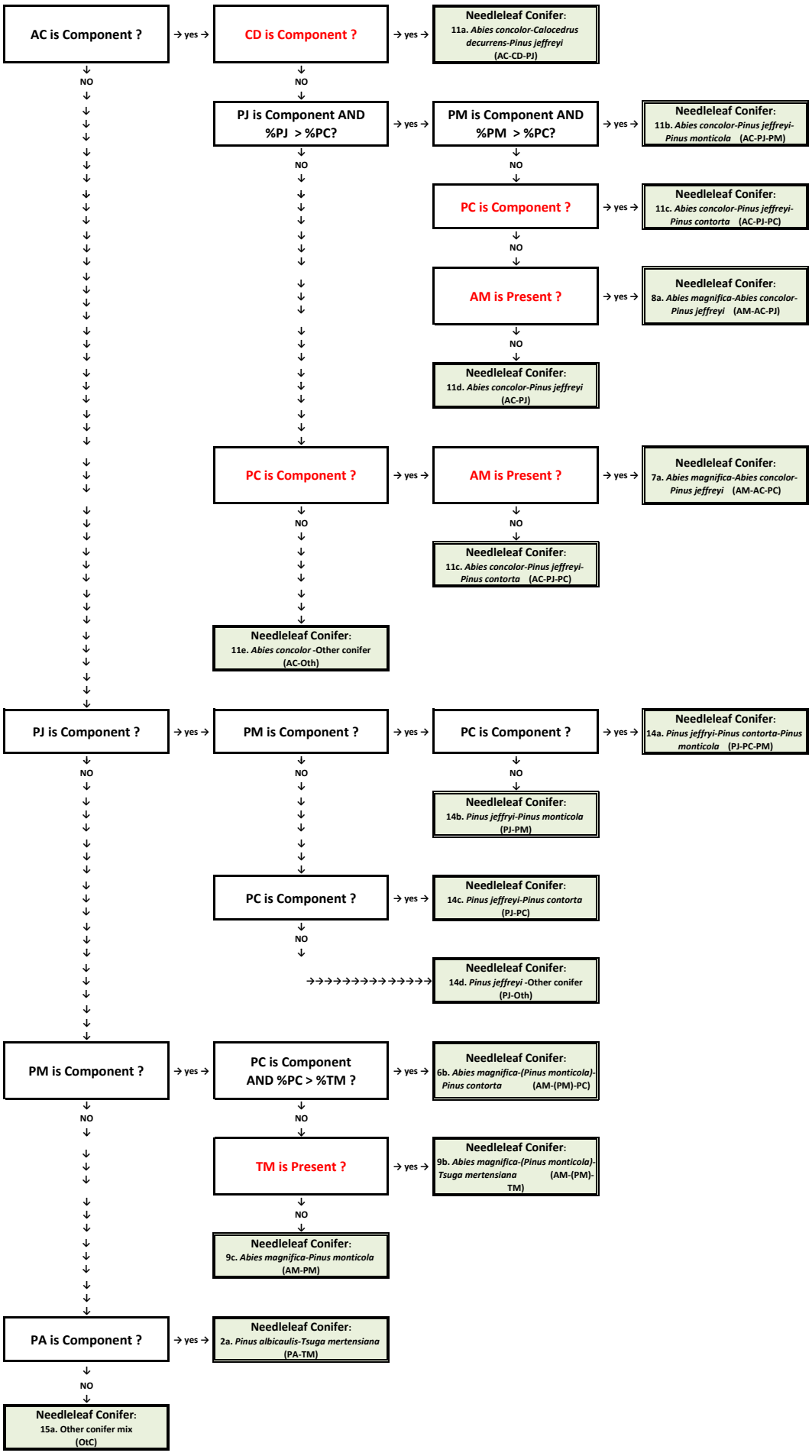



Herbaceous Cover >= 10%
yes
Single Species Composition >= 90% of Herbaceous Cover
yes
Single Species one of (PolAmp, TypLat, or PteAqu)
yes
Herbaceous (dominant):
31a. Polygonum amphibium (Pam)
31b. Typha latifolia (Tl)
30a.Pteridium aquilinum (Paq)
or (HWM)
NO
NO
Herbaceous (mixes):
See Herbaceous Mixes Section - Pg 7
All Veg. Cover >= 15% AND Water < 75%
yes
Tree Cover Present ?
yes
36a. Sparse Vegetation Woodland (SvgW)
NO
NO
Shrub Cover Present ?
yes
36b. Sparse Vegetation Shrubland (SvgS)
NO
36c. Sparse Vegetation Herbaceous (SvgH)
All Veg. Cover < 15% AND Water < 50% Cover
yes
Tree Cover Present ?
yes
Located in Vicinity of Painted Dunes ?
yes
37a. Barren Woodland - Painted Dunes (BarW)
NO
NO
NO
37a. Barren Woodland (BarW)
Shrub Cover Present ?
yes
37b. Barren Shrubland (BarS)
NO
Herbcaceous Cover Present ?
yes
37c. Barren Herbaceous (BarH)
NO
Rock, Gravels, Bare Soil Cover > 50% ?
yes
37d. Barren (Bar)
or
Sparse Understory
NO
Snow Cover > 50% ?
yes
38a. Snow (Snow)
or
Sparse Understory
NO
39a. Water (H2O)
37e. Barren Other (Bar)
or
Sparse Understory

Determine Species Composition Components:
1) Component - Species is a component if % Species Composition is ≥ 5% AND Species Cover > 2% and Top3
2. Present - if species is found at the site with % cover >= 0.5%

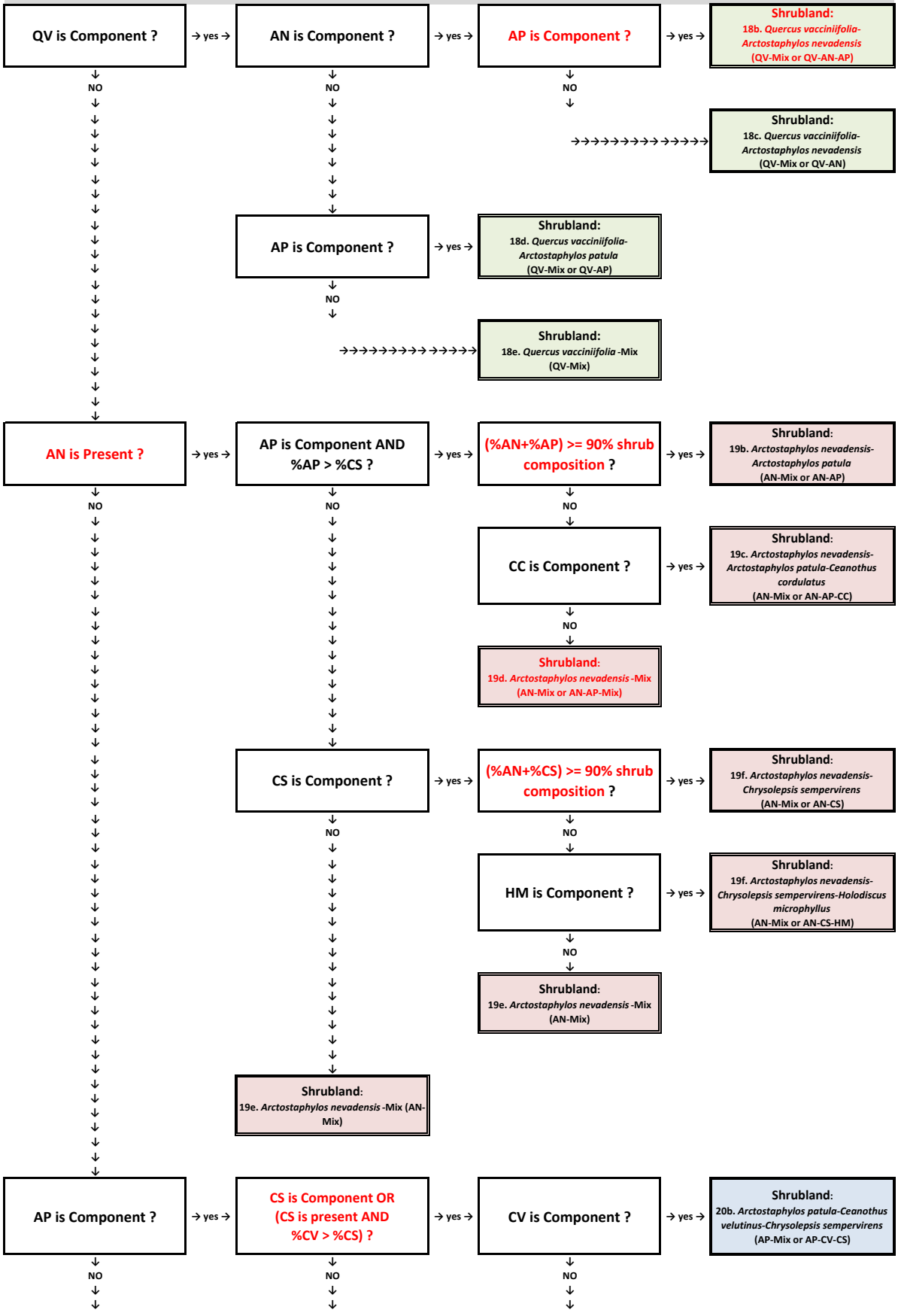
Needleleaf Mixes - Secondary Key

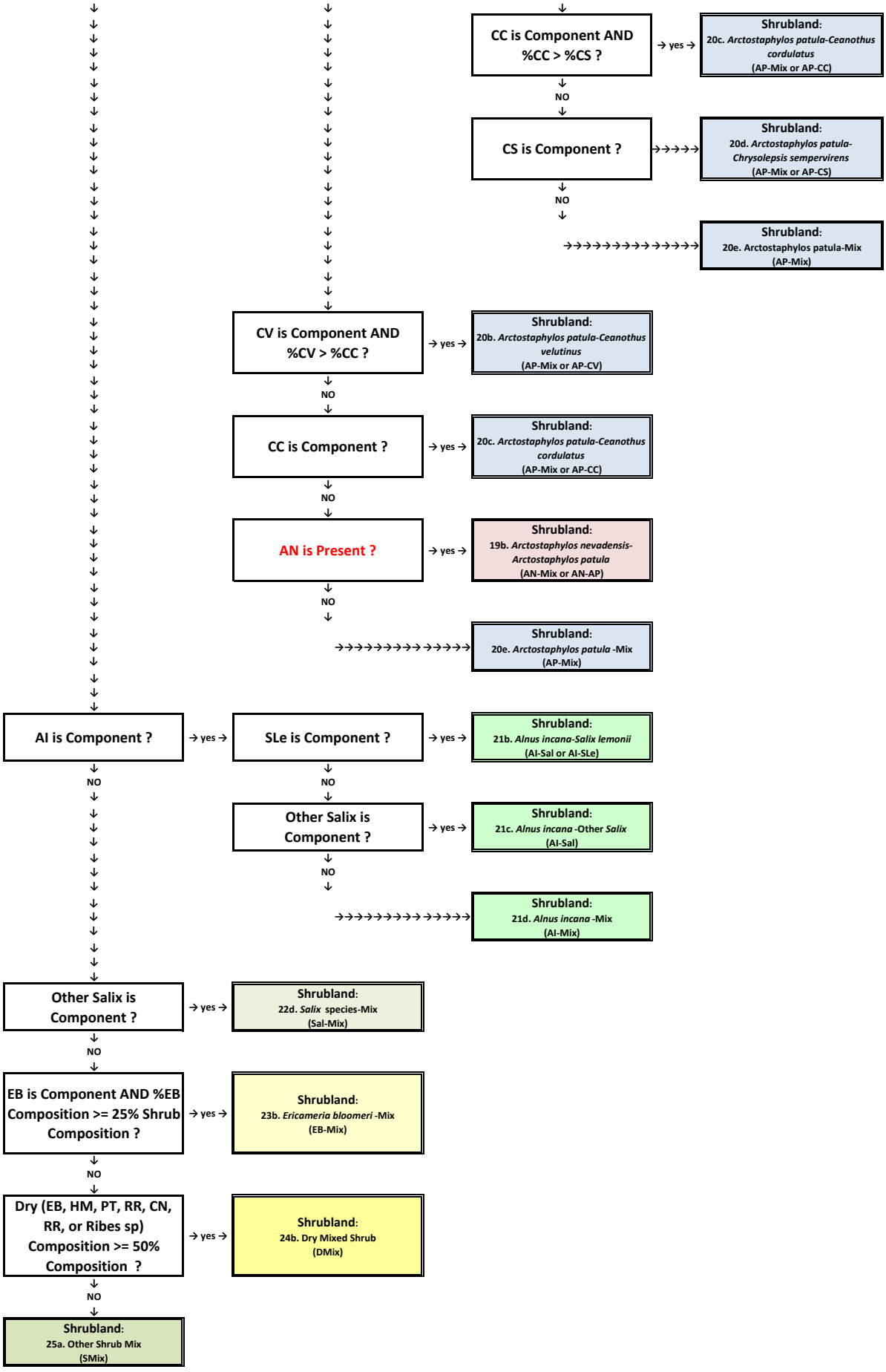



AC is Component ?
yes
CD is Component ?
yes
Needleleaf Conifer: 11a. Abies concolor-Calocedrus decurrens-Pinus jeffreyi (AC-CD-PJ)
NO
PJ is Component AND %PJ > %PC?
yes
PM is Component AND %PM > %PC?
yes
Needleleaf Conifer: 11b. Abies concolor-Pinus jeffreyi-Pinus monticola (AC-PJ-PM)
NO
PC is Component ?
yes
Needleleaf Conifer: 11c. Abies concolor-Pinus jeffreyi-Pinus contorta (AC-PJ-PC)
NO
AM is Present ?
yes
Needleleaf Conifer: 8a. Abies magnifica-Abies concolor-Pinus jeffreyi (AM-AC-PJ)
NO
Needleleaf Conifer: 11d. Abies concolor-Pinus jeffreyi (AC-PJ)
PC is Component ?
yes
AM is Present ?
yes
Needleleaf Conifer: 7a. Abies magnifica-Abies concolor-Pinus jeffreyi (AM-AC-PC)
NO
Needleleaf Conifer: 11c. Abies concolor-Pinus jeffreyi-Pinus contorta (AC-PJ-PC)
NO
Needleleaf Conifer: 11e. Abies concolor -Other conifer (AC-Oth)
PJ is Component ?
yes
PM is Component ?
yes
PC is Component ?
yes
Needleleaf Conifer: 14a. Pinus jeffryi-Pinus contorta-Pinus monticola (PJ-PC-PM)
NO
Needleleaf Conifer: 14b. Pinus jeffryi-Pinus monticola (PJ-PM)
NO
PC is Component ?
yes
Needleleaf Conifer: 14c. Pinus jeffreyi-Pinus contorta (PJ-PC)
NO
Needleleaf Conifer: 14d. Pinus jeffreyi -Other conifer (PJ-Oth)
PM is Component ?
yes
PC is Component AND %PC > %TM ?
yes
Needleleaf Conifer: 6b. Abies magnifica-(Pinus monticola)-Pinus contorta (AM-(PM)-PC)
NO
TM is Present ?
yes
Needleleaf Conifer: 9b. Abies magnifica-(Pinus monticola)-Tsuga mertensiana (AM-(PM)-TM)
NO
Needleleaf Conifer: 9c. Abies magnifica-Pinus monticola (AM-PM)
PA is Component ?
yes
Needleleaf Conifer: 2a. Pinus albicaulis-Tsuga mertensiana (PA-TM)
NO
Needleleaf Conifer: 15a. Other conifer mix (OtC)

Determine Species Composition Components:
1) Component - Species is a component if % Species Composition is ≥ 5% AND Species Cover > 2%
2. Present - if species is found at the site with % cover >= 0.5%

Shrubland Mixes - Secondary Key




CC is Component AND %CC > %CS ?
yes
Shrubland: 20c. Arctostaphylos patula-Ceanothus cordulatus (AP-Mix or AP-CC)
NO
CS is Component ?
Shrubland: 20d. Arctostaphylos patula-Chrysolepsis sempervirens (AP-Mix or AP-CS)
NO
Shrubland: 20e. Arctostaphylos patula-Mix (AP-Mix)
CV is Component AND %CV > %CC ?
yes
Shrubland: 20b. Arctostaphylos patula-Ceanothus velutinus (AP-Mix or AP-CV)
NO
CC is Component ?
yes
Shrubland: 20c. Arctostaphylos patula-Ceanothus cordulatus (AP-Mix or AP-CC)
NO
AN is Present ?
yes
Shrubland: 19b. Arctostaphylos nevadensis-Arctostaphylos patula (AN-Mix or AN-AP)
NO
Shrubland: 20e. Arctostaphylos patula -Mix (AP-Mix)
AI is Component ?
yes
SLe is Component ?
yes
Shrubland: 21b. Alnus incana-Salix lemonii (AI-Sal or AI-SLe)
NO
NO
Other Salix is Component ?
yes
Shrubland: 21c. Alnus incana -Other Salix (AI-Sal)
NO
Shrubland: 21d. Alnus incana -Mix (AI-Mix)
Other Salix is Component ?
yes
Shrubland: 22d. Salix species-Mix (Sal-Mix)
NO
EB is Component AND %EB Composition >= 25% Shrub Composition ?
yes
Shrubland: 23b. Ericameria bloomeri -Mix (EB-Mix)
NO
Dry (EB, HM, PT, RR, CN, RR, or Ribes sp) Composition >= 50% Composition ?
yes
Shrubland: 24b. Dry Mixed Shrub (DMix)
NO
Shrubland: 25a. Other Shrub Mix (SMix)

Determine Species Composition Components:

1) Component - Species is a component if % Species Composition is ≥ 10% AND Species Cover > 2%

2. Present - if species is found at the site with % cover >= 0.5%

Herbaceous Mixes - Secondary Key

LupObt and/or PolDav are Components ?

→ yes →

AchOcc or ElyEly is Present AND Ao/Ee Cover > PolDav Cover ?

→ yes →

Herbaceous:
27a. LupObt-AchOcc-ElyEly-Mix
(LoAE)

NO

Herbaceous:
27b. LupObt-PolDav
(LoPd)

NO

WyeMol and/or BalSag are Components ?

→ yes →

Herbaceous:
29a. WyeMol-BalSag
(WmBs)

NO

SenTri, VerCal, and LupPol are Components ?

→ yes →

Wet Conditions Exist ?

→ yes →

Herbaceous:
32a. Mesic Herb. Complex
(HMC or HMM)

NO

Herbaceous:
32b. SenTri-VerCal-(LupPol)
Mesic Herbaceous Meadow
(HMM)

NO

TypLat is at least 25% Cover ?

→ yes →

Herbaceous:
31b. TypLat Marsh
(Tl or HWM)

NO

MenTri and/or NupLut are Present ?

→ yes →

Herbaceous:
31c. MenTri-NupLat
(MtNl or HWM)

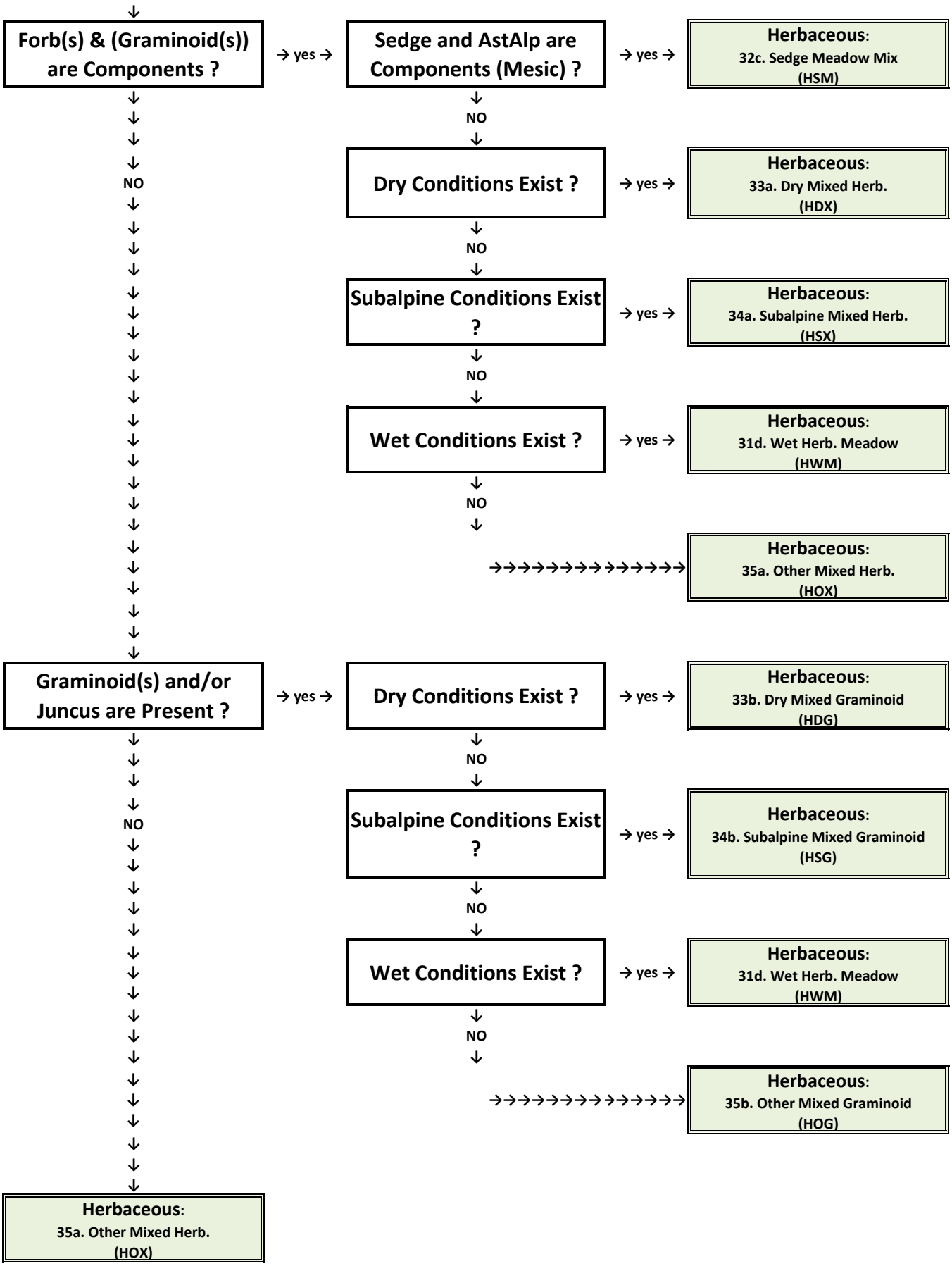
NO

AchOcc and/or ElyEly are Components ?

→ yes →

Herbaceous:
28a. AchOcc-ElyEly
(AoEe-(Mix))

NO


Forb(s) & (Graminoid(s)) are Components ?
→ yes →
Sedge and AstAlp are Components (Mesic) ?
→ yes →
Herbaceous:
32c. Sedge Meadow Mix
(HSM)
NO
Dry Conditions Exist ?
→ yes →
Herbaceous:
33a. Dry Mixed Herb.
(HDX)
NO
Subalpine Conditions Exist ?
→ yes →
Herbaceous:
34a. Subalpine Mixed Herb.
(HSX)
NO
Wet Conditions Exist ?
→ yes →
Herbaceous:
31d. Wet Herb. Meadow
(HWM)
NO
Herbaceous:
35a. Other Mixed Herb.
(HOX)
Graminoid(s) and/or Juncus are Present ?
→ yes →
Dry Conditions Exist ?
→ yes →
Herbaceous:
33b. Dry Mixed Graminoid
(HDG)
NO
Subalpine Conditions Exist ?
→ yes →
Herbaceous:
34b. Subalpine Mixed Graminoid
(HSG)
NO
Wet Conditions Exist ?
→ yes →
Herbaceous:
31d. Wet Herb. Meadow
(HWM)
NO
Herbaceous:
35b. Other Mixed Graminoid
(HOG)
Herbaceous:
35a. Other Mixed Herb.
(HOX)

LAVO Primary Key

Alliance, Sub-Alliance, Association, and Feature Keys

1. Tree cover at least 10% cover ..... **I. Forest & Woodland (Sparse) Sub-Alliance/Alliance Key (go to page 520)**
1'. Not as above 2

2. Shrub cover at least 10% cover ..... **V. Shrubland Sub-Alliance/Alliance Key (go to page 525)**
2'. Not as above 3

3. Herbaceous cover at least 10% cover ..... **VI. Herbaceous Alliance/Association Key (go to page 529)**
3'. Not as above 4

4. All cover at least 15% cover and water less than 75% cover ..... **VII. Sparse Vegetation Feature Key (go to page 531)**
4.' Not as above 5

5. All cover less than 15% cover and water less than 50% cover ..... **VIII. Barren/Snow Feature Key (go to page 531)**
5'. Not as above 6

6. Water is greater than or equal to 50% cover ..... **39a. Water (H2O:other) Feature[10]**
6'. Not as above ..... Unknown Feature

I. Forest & Woodland (Sparse) Sub-Alliance/Alliance Key

Tree species with at least 10% cover

1. Conifer composition at least 90% of tree cover 2
1'. Not as above 9

2. Single species composition at least 90% of tree cover 3
2'. Not as above **II. Mixed Needleleaf Forest and Woodland (Sparse) Sub-Alliance/Alliance Key (go to page 521)**

3. Species is *Pinus albicaulis* ..... **1a. *Pinus albicaulis* (PA:tree) Sub-Alliance**
.....*Pinus albicaulis* Woodland Sparse Alliance
3'. Not as above 4

4. Species is *Tsuga mertensiana* ..... **3a. *Tsuga mertensiana* (TM:tree) Sub-Alliance**
.....*Tsuga mertensiana* Woodland (Sparse) Alliance
4'. Not as above 5

5. Species is *Abies magnifica* ..... **4a. *Abies magnifica* (AM:tree) Sub-Alliance**
.....*Abies magnifica* Forest and Woodland (Sparse) Alliance
5'. Not as above 6

6. Species is *Abies concolor* ..... **10a. *Abies concolor* (AC:tree) Sub-Alliance**
.....*Abies concolor* Forest and Woodland (Sparse) Alliance
6'. Not as above 7

7. Species is *Pinus contorta* ..... **12a. *Pinus contorta* (PC:tree) Sub-Alliance**
..... *Pinus contorta* Forest and Woodland (Sparse) Alliance
7'. Not as above 8

8. Species is *Pinus jeffreyi* ..... **13a. *Pinus jeffreyi* (PJ:tree) Sub-Alliance**
.....*Pinus jeffreyi* Forest and Woodland (Sparse) Alliance
8'. Not as above ..... **Mixed Needleleaf Forest Sub-Alliance Key**

9. Hardwood composition at least 90% of tree cover .....
.....III. Broadleaf Forest and Woodland Sub-Alliance/Alliance Key (go to page 524)

9'. Not as above .....
.....**IV. Needleleaf-Broadleaf Forest and Woodland (Sparse) Sub-Alliance/Alliance Key (go to page 524)**

II. Mixed Needleleaf Forest and Woodland (Sparse) Sub-Alliance/Alliance Key

No single needleleaf conifer tree species cover at least 90% of tree cover composition

1. *Abies magnifica* is a component 2
1'. Not as above 15

2. *Abies concolor* is a component 3
2'. Not as above 6

3. *Pinus contorta* is a component and the cover of *Pinus contorta* is greater than the cover of *Pinus jeffreyi* or *Pinus monticola* ..... **9a. *Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Sub-Alliance .....True-Fir-Lodgepole Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**
3'. Not as above 4

4. *Pinus jeffreyi* is a component and the cover of *Pinus jeffreyi* is greater than the cover of *Pinus monticola* ..... **8a. *Abies magnifica-Abies concolor-Pinus jeffreyi* (AM-AC-PJ:tree) Sub-Alliance .....True-Fir-Longneedle Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**
4.' Not as above 5

5. *Pinus monticola* is present ..... **8b. *Abies magnifica-Abies concolor-Pinus monticola* (AM-AC-PM:tree) Sub-Alliance .....True-Fir-Longneedle Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**
5'. Not as above ..... **7a. *Abies magnifica-Abies concolor* (AM-AC:tree) Sub-Alliance .....True-Fir-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**

6. *Pinus jeffreyi* is a component and the cover of *Pinus jeffreyi* is greater than the cover of *Pinus monticola* *7*
6'. Not as above 8

7. *Pinus contorta* is a component ..... **6a. *Abies magnifica-Pinus contorta-Pinus jeffreyi* (AM-PC-PJ:tree) Sub-Alliance .....*Abies magnifica- Pinus contorta*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**
7'. Not as above ..... **5a. *Abies magnifica –(Pinus monticola)-Pinus jeffreyi* (AM-(PM)-PJ:tree) Sub-Alliance ..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**

8. *Pinus monticola* is present 9
8'. Not as above 12

9. *Pinus contorta* is a component and the cover of *Pinus contorta* is greater than the cover of *Pinus jeffreyi and* is greater than the cover of *Tsuga mertensiana* ..... **6b. *Abies magnifica-(Pinus monticola)-Pinus contorta* (AM-(PM)-PC:tree) Sub-Alliance .....*Abies magnifica- Pinus contorta*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance**
9'. Not as above 10

10. *Pinus jeffreyi* is a component and the cover of *Pinus jeffreyi* is greater than the cover of *Tsuga mertensiana* ..... **5a. *Abies magnifica-(Pinus monticola)-Pinus jeffreyi* (AM-(PM)-PJ:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

10'. Not as above 11

11. *Tsuga mertensiana* is present ..... **5b. *Abies magnifica-(Pinus monticola)-Tsuga mertensiana* (AM-(PM)-TM:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

11'. Not as above ..... **5c. *Abies magnifica-Pinus monticola* (AM-PM:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

12. *Tsuga mertensiana* is present ..... **5b. *Abies magnifica-(Pinus monticola)-Tsuga mertensiana* (AM-(PM)-TM:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

12'. Not as above 13

13. *Pinus contorta* is a component 14

13'. Not as above ..... **5d. *Abies magnifica*-Other conifer (AM-OtC:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

14. *Abies concolor* is a present ..... **9a. *Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Sub-Alliance**
.....True-Fir-Lodgepole Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

14'. Not as above ..... **6b. *Abies magnifica-(Pinus monticola)-Pinus contorta* (AM-(PM)-PC:tree) Sub-Alliance**
.....*Abies magnifica-Pinus contorta*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

15. *Abies concolor* is a component 16

15'. Not as above. 23

16. *Calocedrus decurrens* is a component. ..... **11a.*Abies concolor-Calocedrus decurrens-Pinus jeffreyi* (AC-CD-PJ:tree) Sub-Alliance**
..... *Abies concolor* Mixed Needleleaf Forest and Woodland (Sparse) Alliance

16'. Not as above 17

17. *Pinus jeffreyi* is a component and the cover of *Pinus jeffreyi* is greater than the cover of *Pinus contorta*. 18

17'. Not as above. 21

18. *Pinus monticola* is a component and the cover of *Pinus monticola* is greater than the cover of *Pinus contorta* ..... **11b. *Abies concolor-Pinus jeffreyi-Pinus monticola* (AC-PJ-PM:tree) Sub-Alliance**
..... *Abies concolor* Mixed Needleleaf Forest and Woodland (Sparse) Alliance

18'. Not as above 19

19. *Pinus contorta* is a component ..... **11c.*Abies concolor-Pinus jeffreyi-Pinus contorta* (AC-PJ-PC:tree) Sub-Alliance**
..... *Abies concolor* Mixed Needleleaf Forest and Woodland (Sparse) Alliance

19'. Not as above 20

20. *Abies magnifica* is present ..... **8a. *Abies magnifica-Abies concolor-Pinus jeffreyi* (AM-AC-PJ:tree) Sub-Alliance**
.....True-Fir-Longneedle Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

20'. Not as above ..... **11d. *Abies concolor-Pinus jeffreyi* (AC-PJ:tree) Forest Alliance**

21. *Pinus contorta* is a component 22

21'. Not as above ..... **11e. *Abies concolor-Other conifer* (AC-Oth:tree) Sub-Alliance**
..... *Abies concolor* Mixed Needleleaf Forest and Woodland (Sparse) Alliance

22. *Abies magnifica* is present
..... **9a. *Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Sub-Alliance**
.....True-Fir-Lodgepole Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance
22'. Not as above..... **11c.*Abies concolor-Pinus jeffreyi-Pinus contorta* (AC-PJ-PC:tree) Sub-Alliance**
..... *Abies concolor* Mixed Needleleaf Forest and Woodland (Sparse) Alliance

23. *Pinus jeffreyi* is a component. 24
23'. Not as above 29

24. *Pinus monticola* is a component..... 25
24'. Not as above 27

25. *Pinus contorta* is a component
..... **14a. *Pinus jeffreyi-Pinus contorta-Pinus monticola* (PJ-PC-PM:tree) Sub-Alliance**
..... *Pinus jeffreyi* Mixed Needleleaf Woodland (Sparse) Alliance
25'. Not as above..... 26

26. *Abies magnifica* is present
.....**5a.*Abies magnifica-(Pinus monticola)-Pinus jeffreyi* (AM-(PM)-PJ:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance
26'. Not as above.....**14b. *Pinus jeffreyi-Pinus monticola*(PJ-PM:tree) Sub-Alliance**
..... *Pinus jeffreyi* Mixed Needleleaf Woodland (Sparse) Alliance

27. *Pinus contorta* is a component .....**14c.*Pinus jeffreyi-Pinus contorta* (PJ-PC:tree) Sub-Alliance**
..... *Pinus jeffreyi* Mixed Needleleaf Woodland (Sparse) Alliance
27'. Not as above 28

28. *Abies magnifica* is present
.....**5a.*Abies magnifica-(Pinus monticola)-Pinus jeffreyi* (AM-(PM)-PJ:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance
28'. Not as above ..... **14d. *Pinus jeffreyi*-Other conifer (PJ-Oth:tree) Sub-Alliance**
..... *Pinus jeffreyi* Mixed Needleleaf Woodland (Sparse) Alliance

29. *Pinus monticola* is a component..... 30
29'. Not as above 32

30. *Pinus contorta* is a component and the cover of *Pinus contorta*
Is greater than the cover of *Tsuga mertensiana*
.....**6b. *Abies magnifica-(Pinus monticola)-Pinus contorta* (AM-(PM)-PC:tree) Sub-Alliance**
.....*Abies magnifica-Pinus contorta*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance
30'. Not as above 31

31. *Tsuga mertensiana* is present
.....**5b. *Abies magnifica-(Pinus monticola)-Tsuga mertensiana* (AM-(PM)-TM:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance
31'. Not as above. ..... **5c. *Abies magnifica-Pinus monticola* (AM-PM:tree) Sub-Alliance**
..... *Abies magnifica*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

32. *Pinus albicaulis* is a component ..... **2a. *Pinus albicaulis-Tsuga mertensiana* (PA-TM:tree) Sub-Alliance**
..... Subalpine-Mixed Needleleaf Woodland (Sparse) Alliance
32'. Not as above ..... **15a. Other Conifer Mix (OtC:tree) Sub-Alliance**
.....Other Needleleaf Alliance

III. Broadleaf Forest and Woodland Sub-Alliance/Alliance Key

Hardwood species composition at least 90% of tree cover

1. Species is *Cercocarpus ledifolius* ..... **17a. *Cercocarpus ledifolius* (CL:tree) Sub-Alliance**
..... *Cercocarpus ledifolius* Woodland Sparse Alliance
1'. Not as above 2

2. Species is Populus tremuloides ..... **17b. *Populus tremuloides* (PTe:tree) Sub-Alliance**
..... *Populus tremuloides* Forest and Woodland Alliance
2'. Not as above 3

3. Species is *Salix lucida* ..... **17c. *Salix lucida* (SL:tree) Sub-Alliance**
..... *Salix lucida ssp. lasiandra* Forest and Woodland Alliance
3'. Not as above 4

4. Species is *Populus trichocarpa* ..... **17d. *Populus trichocarpa* (PTi:tree) Sub-Alliance**
..... *Populus trichocarpa* Forest and Woodland Alliance
4'. Not as above ..... **17e. Other Hardwood Forest (OtH:tree) Sub-Alliance**
.....Other Hardwood Forest Alliance

IV. Needleleaf-Broadleaf Forest and Woodland (Sparse) Sub-Alliance/Alliance Key

Mixed species composition of conifer and hardwood tree cover – neither conifer or hardwood cover at least 90% of tree cover composition

1. Mixed cover of *Cercocarpus ledifolius* and *Pinus jeffreyi*
..... **16a. *Cercocarpus ledifolius-Pinus jeffreyi* (CL-PJ:tree) Sub-Alliance**
.....*Cercocarpus ledifolius* Woodland (Sparse) Alliance
1'. Not as above 2

2. Mixed cover of *Populus tremuloides* and *Pinus contorta*
..... **16b. *Populus tremuloides-Pinus contorta* (PTe-PC:tree) Sub-Alliance**
..... *Populus tremuloides* Forest and Woodland Alliance
2'. Not as above ..... **16c. Other Needleleaf-Hardwood (OtC-OtH:tree) Sub-Alliance**
.....Other Needleleaf-Hardwood Alliance

V. Shrubland Sub-Alliance/Alliance Key

Shrub cover at least 10% of cover

1. Single shrub species composition more than or equal to 90% of shrub cover 2
1'. Not as above 13

2. Single species is *Alnus incana* ..... **21a.*Alnus incana* (Al:shrub) Sub-Alliance**
..... ***Alnus incana* Shrubland Alliance**
2'. Not as above 3

3. Single species is *Arctostaphylos nevadensis* ..... **19a. *Arctostaphylos nevadensis* (AN:shrub) Sub-Alliance**
..... ***Arctostaphylos nevadensis* Shrubland Alliance**
' 3'. Not as above 4

4. Single species is *Arctostaphylos patula* ..... **20a. *Arctostaphylos patula* (AP:shrub) Sub-Alliance**
..... ***Arctostaphylos patula* Shrubland Alliance**
4'. Not as above 5

5. Single species is *Chrysolepis sempervirens* ..... **26a.*Chrysolepis sempervirens* (CS or SOth:shrub) Sub-Alliance**
..... ***Chrysolepis sempervirens* Shrubland Alliance**
5'. Not as above 6

6. Single species is *Ericameria bloomeri* ..... **23a. *Ericameria bloomeri* (EB:shrub) Sub-Alliance**
..... ***Ericameria bloomeri* Shrubland Alliance**
6'. Not as above 7

7. Single species is *Holodiscus microphyllus* ..... **26b. *Holodiscus microphyllus* (HM or SOth:shrub) Sub-Alliance**
..... ***Holodiscus microphyllus* Shrubland Alliance**
7'. Not as above 8

8. Single species is *Quercus vacciniifolia* ..... **18a. *Quercus vacciniifolia* (QV:shrub) Sub-Alliance**
..... ***Quercus vacciniifolia* Shrubland Alliance**
8'. Not as above 9

9. Single species is *Salix laevigata* ..... **22a. *Salix laevigata* (SLa or Sal:shrub) Sub-Alliance**
..... ***Salix* Shrubland Alliance**
9'. Not as above 10

10. Single species is *Salix Lemonii* ..... **22b. *Salix lemmonii* (SLe or Sal:shrub) Sub-Alliance**
..... ***Salix* Shrubland Alliance**
10'. Not as above 11

11. Single species is another *Salix* ..... **22c. Other *Salix* (Sal-Oth or Sal-(Mix) :shrub) Sub-Alliance**
..... ***Salix* Shrubland Alliance**
11'. Not as above 12

12. Species is *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus,* or other *Ribes* species ..... **24a. Dry Other (DOth:shrub) Shrub Sub-Alliance**
..... **Dry Other-(Mixed) Shrubland Alliance**

12'. Not as above ..... **26c.Other (SOth:shrub) Shrub Sub-Alliance**
..... **Other Shrubland Alliance**

13. *Quercus vacciniifolia* is a component 14
13'. Not as above. 17

14. *Arctostaphylos nevadensis* is a component. 15
14'. Not as above 16

15. *Arctostaphylos patula* is a component .....
..... **18b *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN-AP or QV-Mix:shrub) Sub-Alliance**
..... ***Quercus vacciniifolia* Shrubland Alliance**

15'. Not as above. .....
.. **18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Sub-Alliance**
..... ***Quercus vacciniifolia* Shrubland Alliance**

16. *Arctostaphylos patula* is a component .....
..... **18d. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Sub-Alliance**
..... ***Quercus vacciniifolia* Shrubland Alliance**

16'. Not as above ..... **18e. *Quercus vacciniifolia*-Mix (QV-Mix:shrub) Shrubland Alliance**
..... ***Quercus vacciniifolia* Shrubland Alliance**

17. *Arctostaphylos nevadensis* is present 18
17'. Not as above 23

18. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula*
is greater than the % of *Chrysolepis sempervirens*..... 19
18'. Not as above 21

19. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together
is greater than or equal to 90% of the shrub composition .....
19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Sub-Alliance
..... ***Arctostaphylos nevadensis* Shrubland Alliance**

19'. Not as above 20

20. *Ceanothus cordulatus* is a component.....
..... **19c. *Arctostaphylos nevadensis-Arctostaphylos patula-Ceanothus cordulatus***
..... **(AN-AP-CC or AN-Mix:shrub) Sub-Alliance**
..... ***Arctostaphylos nevadensis* Shrubland Alliance**

20'. Not as above ..... **19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix Shrub**
..... **(AN-AP-Mix or AN-Mix:shrub) Sub-Alliance**
..... ***Arctostaphylos nevadensis* Shrubland Alliance**

21. *Chrysolepis sempervirens* is a component. 22
21'. Not as above ..... **19e.*Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrubland Sub-Alliance**
..... ***Arctostaphylos nevadensis* Shrubland Alliance**

22. The % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)* (AN-CS-(HM) or AN-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos nevadensis* Shrubland Alliance**

22'. Not as above ..... **19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos nevadensis* Shrubland Alliance**

23. *Arctostaphylos patula* is a component 24

23'. Not as above 31

24. *Chrysolepis sempervirens* is a component or *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens* 25

24'. Not as above 28

25. *Ceanothus velutinus* is a component ..... **20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos patula* Shrubland Alliance**

25'. Not as above 26

26. *Ceanothus cordulatus* is a component and the % of *Ceanothus cordulatus* is greater than the % of *Chrysolepis sempervirens* ..... **20c. *Arctostaphylos patula-Ceanothus cordulatus* (AP-CC or AP-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos patula* Shrubland Alliance**

26'. Not as above. 27

27. *Chrysolepis sempervirens* is a component ..... **20d. *Arctostaphylos patula-Chrysolepis sempervirens* (AP-CS or AP-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos patula* Shrubland Alliance**

27'. Not as above ..... **20e. *Arctostaphylos patula*-Mixed (AP-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos patula* Shrubland Alliance**

28. *Ceanothus velutinus* is a component and the % of *Ceanothus velutinus* is greater than ..... the % of *Ceanothus cordulatus* ..... **20b. *Arctostaphylos patula-Ceanothus velutinus -(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos patula* Shrubland Alliance**

28'. Not as above 29

29. *Ceanothus cordulatus* is a component ..... **20c. *Arctostaphylos patula-Ceanothus cordulatus* (AP-CC or AP-Mix:shrub) Shrubland Sub-Alliance *Arctostaphylos patula* Shrubland Alliance**

29'. Not as above 30

30. *Arctostaphylos nevadensis* is present ..... **19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrubland Sub-Alliance**
.....*Arctostaphylos nevadensis* Shrubland Alliance

30'. Not as above ..... **20e.*Arctostaphylos patula*-Mix (AP-Mix:shrub) Shrubland Sub-Alliance**
.....*Arctostaphylos patula* Shrubland Alliance

31. *Alnus incana* is a component 32
31'. Not as above 34

32. *Salix lemonii* is a component..... **21b. *Alnus incana-Salix lemmonii* (Al-SLe or Al-Sal:shrub) Shrubland Sub-Alliance**
.....*Alnus incana* Shrubland Alliance

32'. Not as above 33

33. Other *Salix* is a component ..... **21c. *Alnus incana-Other Salix* (Al-Sal:shrub) Shrubland Sub-Alliance**
.....*Alnus incana* Shrubland Alliance

33'. Not as above ..... **21d. *Alnus incana*-Mix (Al-Mix:shrub) Shrubland Sub-Alliance**
.....*Alnus incana* Shrubland Alliance

34. *Salix* is a component ..... **22d. *Salix*-Mix (Sal-Mix:shrub) Shrubland Sub-Alliance**
..... *Salix* Shrubland Alliance

34'. Not as above 35

35. *Ericameria bloomeri* is a component and
the % of *Ericameria bloomeri* composition is greater than or equal to
25% of the shrub composition ..... **23b. *Ericameria bloomeri* –Mix (EB-Mix:shrub) Shrubland Sub-Alliance**
.....*Ericameria bloomeri* Shrubland Alliance

35'. Not as above 36

36. *The sum of Ericameria bloomeri , Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus*
and/or *Ribes sp.* composition is more than or equal to
50% composition ..... **24b. Dry Mixed (DMix:shrub) Shrub Sub-Alliance**
..... Dry Other (Mixed) Shrubland Alliance

36'. Not as above ..... **25a. Other Mixed (SMix:shrub) Shrub Sub-Alliance**
..... Other Mixed Shrubland Alliance

VI. Herbaceous Alliance/Association Key

Herbaceous cover at least 10% of cover

1. Single herbaceous species composition more than or equal to 90% of herbaceous cover 2
1'. Not as above 5

2. Single species is *Polygonum amphibium* ..... **31a. *Polygonum amphibium* (Pam:herb) Association [1]**
.....*Polygonum amphibium var. stipulaceum* Permanently Flooded Herbaceous Alliance
2'. Not as above 3

3. Single species is *Typha latifolia*..... **31b. *Typha latifolia* (Tl or HWM:herb) Association [1]**
.....*Typha latifolia* Saturated Herbaceous Alliance
' 3'. Not as above 4

4. Single species is *Pteridium aquilinum* ..... **30a. *Pteridium aquilinum* (Paq:herb) Association [0]**
..... *Pteridium aquilinum* Perennial Herbaceous Alliance
4'. Not as above .....Unrecognized

5. *Lupinus obtusilobus* and/or *Polygonum davisae* are components 6
5'. Not as above 7

6. *Achnatherum occidentale* or *Elymus elymoides* is present
and *Achnatherum occidentale/Elymus elymoides* cover
is greater than *Polygonum davisiae* cover.....
..... **27a. *Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides***
.....**(LoAE:herb) Mixed Herbaceous Association [7]**
..... *Lupinus obtusilobus* Perennial Herbaceous Alliance
6'. Not as above. ..... **27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) (Mixed) Association [14]**
..... *Lupinus obtusilobus* Perennial Herbaceous Alliance

7. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components.....
..... **29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Association [7]**
..... *Wyethia mollis* Perennial Herbaceous Alliance
7'. Not as above 8

8. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components..... 9
8'. Not as above. 10

9. Wet conditions exist ..... **32a. Mesic Herbaceous Meadow/Complex (HMC or HMM:herb) Association [1]**
..... Other Herbaceous Alliance
9'. Not as above .....**32b. Mesic Herbaceous Meadow (HMM) Herbaceous Association [4]**
..... Other Herbaceous Alliance

10. *Typha latifolia* is at least 25% cover..... **31b. *Typha latifolia* (Tl or HWM:herb) Association [1]**
.....*Typha latifolia* Saturated Herbaceous Alliance
10'. Not as above 11

11. *Menyanthes trifoliata* and/or *Nuphar luteum* are present ..... **31c. *Menyanthes trifoliata-Nuphar luteum* (MtNl:herb) Mixed Herbaceous Association [1]**
.....*Menyanthes trifoliata-Nuphar luteum ssp. polysepala* Saturated Alliance
11'. Not as above 12

12. *Achnatherum occidentale* and/or *Elymus elymoides* are components
28a. *Achnatherum occidentale-Elymus elymoides*-(Mix) *(AoEe-*(Mix):herb) Herbaceous [10]
..... *Achnatherum occidentale-Elymus elymoides* Herbaceous Alliance
12'. Not as above 13

13. Forb(s) and graminoid(s) are components 14
13'. Not as above 18

14. Sedge and *Aster alpigenus* are components. ..... **32c. Sedge Mixed Herbaceous Meadow (HSM:herb) Herbaceous Association [2]**
..... Other Herbaceous Alliance
14'. Not as above 15

15. Dry conditions exist ..... **33a. Dry Mixed Herbaceous (HDX:herb) Association [7]**
..... Other Herbaceous Alliance
15'. Not as above 16

16. Subalpine conditions exist..... **34a.Subalpine Herbaceous Meadow (HSX:herb) Association [0]**
..... Other Herbaceous Alliance
16'. Not as above 17

17. Wet conditions exist ..... **31d. Wet Herbaceous Meadow (HWM:herb) Association [21]**
..... Other Herbaceous Alliance
17'. Not as above ..... **35a. Other Mixed Herbaceous (HOX:herb) Association [2]**
..... Other Herbaceous Alliance

18. Graminoid(s) and/or *Juncus* present 19
18'. Not as above ..... **35a. Other Mixed Herbaceous (HOX) Association [2]**
..... Other Herbaceous Alliance

19. Dry conditions exist ..... **33b. Dry Mixed Graminoid (HDG:herb) Association [0]**
.....Other Graminoid Dominated Herbaceous Alliance
19'. Not as above 20

20. Subalpine conditions exist..... **34b.Subalpine Graminoid Meadow (HSG:herb) Herbaceous Alliance[0]**
.....Other Graminoid Dominated Herbaceous Alliance
20'. Not as above. 21

21. Wet conditions exist ..... **31d. Wet Herbaceous Meadow (HWM:herb) Herbaceous Alliance [21]**
.....Other Graminoid Dominated Herbaceous Alliance
21'. Not as above ..... **35b. Other Mixed Graminoid (HOG:herb) Herbaceous Alliance [0]**
.....Other Graminoid Dominated Herbaceous Alliance

VII. Sparse Vegetation Feature Key

All cover at least 15% cover and cover of water less than 75% cover

1. Tree cover present ..... **36a Sparse Vegetation Woodland (SVgW:other) Features[2]**
1'. Not as above 2

2. Shrub cover present ..... **36b. Sparse Vegetation Shrubland (SVgS:other) Features[0]**
2'. Not as above ..... **36c. Sparse Vegetation Herbaceous (SVgH:other) Features[0]**

VIII. Barren/Snow Feature Key

All cover less than 15% cover and water less than 50% cover

1. Tree cover present ..... **37a Barren Woodland (BarW:other)[5]**
1'. Not as above 2

2. Shrub cover present ..... **37b. Barren Shrubland (BarS:other)[1]**
2'. Not as above 3

3. Herbaceous cover present ..... **37c. Barren Herbaceous (BarH:other)[5]**
3'. Not as above 4

4. Rock, gravels, bar soil cover greater than 50% ..... **37d. Barren (Bar:other)[37]**
4'. Not as above 5

5. Snow cover > 50% ..... **38a. Snow (Snow:other)[3]**
5'. Not as above ..... **37e. Barren Other (Bar:other)[37]**

LAVO Plant Association and Land Cover Keys

Needleleaf Forest and Woodland (Sparse) Alliances

1. *Pinus albicaulis* Woodland Sparse Alliance

Pinus albicaulis cover is at least 90% of the tree cover composition

1a. ***Pinus albicaulis* (PA:tree) Sub-Alliance**

1. Shrub cover is associated .....Unrecognized, go to the Comprehensive Shrublands Association Key
1'. Not as above 2

2. *Lupinus obtusilobus* and/or *Polygonum davisae* are associated components.....
.....**/27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [2]**
2'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

2. Subalpine Mixed Needleleaf Woodland (Sparse) Alliance

The cover of Pinus albicaulis and *Tsuga mertensiana* are mixed with neither at least 90% of the tree cover composition

2a. ***Pinus albicaulis-Tsuga mertensiana* (PA-TM:tree) Sub-Alliance**

1. Shrub cover is associated .....Unrecognized, go to the Comprehensive Shrublands Association Key
1'. Not as above 2

2. Herbaceous cover is associated 3
2'. Not as above ..... Sparse Understory[0]

3. *Lupinus obtusilobus* and/or *Polygonum davisae* are associated components
.....**/27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [8]**
3'. Not as above 4

4. *Achnatherum occidentale* and/or *Elymus elymoides* are associated components
.....**/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
4'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

3. *Tsuga mertensiana* Woodland (Sparse) Alliance

Tsuga mertensiana cover is at least 90% of the tree cover composition

3a. *Tsuga mertensiana* (TM:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 7

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis* ..... **/19a.*Arctostaphylos nevadensis* (AN:shrub) Shrub [1]**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

4. *Arctostaphylos nevadensis* is present 5
4'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

5. *Chrysolepis sempervirens* is an associated component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f.*Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)* (AN-CS-HM:shrub) Shrub [0]**
5'. Not as above 6

6. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component ..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**
6'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

7. Herbaceous cover is associated 8
7'. Not as above ..... Sparse Understory[0]

8. *Lupinus obtusilobus* and/or *Polygonum davisae* are associated components 9
8'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

9. *Achnatherum occidentale* and/or *Elymus elymoides* are present and *Achnatherum occidentale/Elymus elymoides* cover is greater than *Polygonum davisiae* cover ..... **/27a.*Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides* (LoAE:herb) Herbaceous [3]**
9'. Not as above ..... **/27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [2]**

4. *Abies magnifica* Forest and Woodland (Sparse) Alliance

Abies magnifica cover at least 90% of the tree cover composition

4a. *Abies magnifica* (AM:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 8

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis*..... **/19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [2]**
3'. Not as above..... **/26c. Other (SOth:shrub) Shrub [0]**

4.. *Arctostaphylos nevadensis* is an associated shrub component 5
4'. Not as above ..... **/25a. Other Mixed (SMix:shrub) Shrub [0]**

5. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens.* The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition. ..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
5'. Not as above..... 6

6. *Chrysolepis sempervirens* is a component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)* (AN-CS-HM or AN-Mix:shrub) Shrub [0]**
6'. Not as above..... 7

7. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix) Shrub [0]**
7'. Not as above..... Unrecognized, go to the Comprehensive Shrublands Association Key

8. Herbaceous cover is associated 9
8'. Not as above ..... **Sparse Understory [5]**

9. *Wyethia mollis* and *Balsamorhiza sagittata* are associated herbaceous components ..... **/29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [0]**
9'. Not as above 10

10. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are associated herbaceous components and wet conditions do not exist ..... **/32b. Mesic Herbaceous Meadow (HMM:herb) [0]**
10'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

5. Abies magnifica – Mixed Needleleaf Forest and Woodland (Sparse) Alliance

Abies magnifica is a component and mix is comprised of *Tsuga mertensiana*, *Pinus jeffreyi*, and/or *Pinus monticola*

5a. ***Abies magnifica–(Pinus monticola)-Pinus jeffreyi* (AM-(PM)-PJ:tree) Sub-Alliance**

1. Shrub cover is associated 2
1'. Not as above 12

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 5

3. Single species is *Arctostaphylos nevadensis*..... **/19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [1]**
3'. Not as above 4

4. Single species is *Arctostaphylos patula* ..... **/20a. *Arctostaphylos patula* (AP) Shrub [0]**
4'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

5. *Arctostaphylos nevadensis* is an associated shrub component 6
5'. Not as above 9

6. *Arctostaphylos patula* is an associated shrub component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens*..... **/19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mixed Shrub (AN-AP-Mix or AN-Mix:shrub) Shrub [0]**
6'. Not as above 7

7. *Chrysolepis sempervirens* is an associated component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-Holodiscus microphyllus* (AN-CS-HM:shrub) Shrub [2]**
7'. Not as above 8

8. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [2]**
8'. Not as above ..... Unrecognized, go to the Shrublands Association Key

9. *Arctostaphylos patula* is an associated shrub component..... 10
9'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

10. *Ceanothus velutinus* is a component and *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens*..... **/20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AN-Mix:shrub) Shrub [0]**

10'. Not as above..... 11

11. A shrub other than *Chrysolepis sempervirens, Ceanothus cordulatus, Ceanothus velutinus,* or *Arctostaphylos nevadensis* Is an associated component..... **/20e. *Arctostaphylos patula*-Mix (AP-Mix:shrub) Shrub [0]**

11'. Not as above..... Unrecognized, go to the Comprehensive Shrublands Association Key

12. Herbaceous cover is associated 13

12'. Not as above ..... Sparse Understory[0]

13. *Achnatherum occidentale* and/or *Elymus elymoides* are associated components ..... **/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe*-(Mix);herb) Herbaceous[0]**

13'. Not as above 14

14. Forb(s) and graminoid(s) are associated components and dry conditions exist..... **/33a. Dry Mixed Herbaceous (HDX:herb) Herbaceous [0]**

14'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

5b. *Abies magnifica-(Pinus monticola)-Tsuga mertensiana* (AM-(PM)-TM:tree) Sub-Alliance

1. Shrub cover is associated 2

1'. Not as above 9

2. Single shrub species composition is more than or equal to 90% of shrub cover 3

2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis* ..... **/19a. *Arctostaphylos nevadensis (*AN:shrub) Shrub [5]**

3'. Not as above..... Unrecognized, go to the Comprehensive Shrublands Association Key

4. *Arctostaphylos nevadensis* is an associated component 5

4'. Not as above 7

5. *Chrysolepis sempervirens* is an associated component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)* (AN-CS-HM:shrub) Shrub [1]**

5'. Not as above..... 6

6. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**

6'. Not as above..... Unrecognized, go to the Comprehensive Shrublands Association Key

7. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is more than or equal to 50% composition ..... **/24b. Dry Mixed (DMix:shrub) Shrub [0]**

7'. Not as above 8

8. A shrub other than *Arctostaphylos nevadensis, Arctostaphylos patula, Alnus incana, Chrysolepis sempervirens, Ericameria bloomeri, Quercus vacciniifolia,* or a *Salix sp.* is an associated component ..... **/25a. Other Mixed (SMix:shrub) Shrub [0]**

8'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

9. Herbaceous cover is associated 10

9'. Not as above ..... **Sparse Understory [5]**

10. *Lupinus obtusilobus* and/or *Polygonum davisae* are components 11

10'. Not as above 12

11. *Achnatherum occidentale* or *Elymus elymoides* is present and *Achnatherum occidentale/Elymus elymoides* cover is greater than *Polygonum davisiae* cover ..... **/27a. *Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides* (LoAE:herb)Herbaceous [0]**

11'. Not as above ..... **/27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [1]**

12. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... **/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):herb) Herbaceous [1]**

12'. Not as above 13

13. Forbs(s), graminoid(s), *Aster alpigenus* and sedge are associated components and wet, subalpine, and dry conditions do not exist ..... **/35a. Other Mixed (HOX:herb) Herbaceous [0]**

13'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

5c. *Abies magnifica-Pinus monticola* (AM-PM:tree) Sub-Alliance

1. Shrub cover is associated 2

1'. Not as above 12

2. Single shrub species composition is more than or equal to 90% of shrub cover 3

2'. Not as above 5

3. Single species is *Arctostaphylos nevadensis* ..... **/19a. *Arctostaphylos nevadensis (*AN:shrub) Shrub [11]**

3'. Not as above 4

4. Single species is *Holodiscus microphyllus* ..... **/26b. *Holodiscus microphyllus* (HM or Other:shrub) Shrub [0]**

4'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

5. *Arctostaphylos nevadensis* is an associated component 6
5'. Not as above 11

6. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens* 7
6'. Not as above 9

7. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition ..... **/19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [1]**
7'. Not as above 8

8. *Ceanothus cordulatus* is not a component ..... **/19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix Shrub (AN-AP-Mix or AN-Mix:shrub) Shrub [0]**
8'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

9. *Chrysolepis sempervirens* is a component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-Holodiscus microphyllus* (AN-CS-HM or AN-Mix:shrub) Shrub [1]**
9'. Not as above 10

10. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component ..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [1]**
10'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

11. *Salix* is a component ..... **/22d. *Salix*-Mix (Sal-Mix:shrub) Shrub [0]**
11'. Not as above ..... Unrecognized, go to Comprehensive Shrublands Association Key

12. Herbaceous cover is associated 13
12'. Not as above ..... **Sparse Understory [1]**

13. *Lupinus obtusilobus* and/or *Polygonum davisae* are components ..... **/27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [0]**
13'. Not as above 14

14. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... **/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe*-(Mix):herb) Herbaceous [0]**
14'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

5d. *Abies magnifica*-Other conifer (AM-OtC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 3

2. *Arctostaphylos nevadensis* is an associated component ..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [1]**
2'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

3. Herbaceous cover is associated ..... Unrecognized, go to the Comprehensive Herbaceous Association Key
3'. Not as above ..... **Sparse Understory[0]**

<insert descriptions here>

6. *Abies magnifica-Pinus contorta*- Mixed Needleleaf Forest and Woodland (Sparse) Alliance

Abies magnifica and *Pinus contorta* are components

6a. *Abies magnifica-Pinus contorta-Pinus jeffreyi* (AM-PC-PJ:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 6

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis*..... **/19a. *Arctostaphylos nevadensis (*AN:shrub) Shrub [0]**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Arctostaphylos nevadensis* and *Arctostaphylos patula* are components and the % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition ..... **/19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
4'. Not as above 5

5. *Arctostaphylos nevadensis* is a component and a shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component ..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [1]**
5'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

6. Herbaceous cover is associated ..... Unrecognized, go to the Comprehensive Herbaceous Association Key
6'. Not as above ..... **Sparse Understory [2]**

6b. *Abies magnifica-(Pinus monticola)-Pinus contorta* (AM-(PM)-PC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 10

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 5

3. Single species is *Arctostaphylos nevadensis*..... **/19a. *Arctostaphylos nevadensis (*AN:shrub) Shrub [20]**
3'. Not as above..... 4

4. Single species is *Ericameria bloomeri* ..... **/23a. *Ericameria bloomeri* (EB:shrub) Shrub [0]**
4'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

5. *Arctostaphylos nevadensis* is an associated component 6
5'. Not as above 9

6. *Quercus vacciniifolia* is an associated component..... **/18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Shrub [0]**
6'. Not as above..... 7

7. *Chrysolepis sempervirens* is an associated component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-Holodiscus microphyllus* (AN-CS-HM or AN-Mix:shrub) Shrub [0]**
7'. Not as above..... 8

8. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix) Shrub [1]**
8'. Not as above.....Unrecognized, go to the Comprehensive Shrublands Association Key

9. *Alnus incana* and *Salix sp.* are associated components ..... **/21c. *Alnus incana-Other Salix* (Al-Sal:shrub) Shrub [0]**
9'. Not as above .....Unrecognized, go to the Comprehensive Shrublands Association Key

10. Herbaceous cover is associated 11
10'. Not as above .....**Sparse Understory [6]**

11. *Lupinus obtusilobus* and/or *Polygonum davisae* are associated components..... 12
11'. Not as above 13

12. *Achnatherum occidentale* or *Elymus elymoides* is present and *Achnatherum occidentale/Elymus elymoides* cover is greater than *Polygonum davisiae* cover ..... **/27a. *Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides* (LoAE:herb)Herbaceous [0]**
12'. Not as above..... **/27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [0]**

13. *Achnatherum occidentale* and/or *Elymus elymoides* are associated components..... **/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):shrub) Herbaceous [4]**
13'. Not as above 14

14. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are associated components ..... **/32b. Mesic Herbaceous Meadow (HMM) [1]**
14'. Not as above 15

15. Forb(s) and graminoid(s) are associated components 16
15'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

16. Sedge and *Aster alpigenus* are components ..... **/32c. Sedge Mixed Herbaceous Meadow (HSM:herb) [0]**
16'. Not as above 17

17. Dry conditions exist ..... **/33a. Dry Mixed Herbaceous (HDX:herb) [1]**
17'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

7. True-Fir-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

Abies magnifica and *Abies concolor* are components

7a. *Abies magnifica-Abies concolor* (AM-AC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 12

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis* ..... **/19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [0]**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrublands Association Key

4. *Arctostaphylos nevadensis* is an associated component 5
4'. Not as above 8

5. *Quercus vacciniifolia* is an associated component and *Arctostaphylos patula* is not ..... **/18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Shrub [0]**
5'. Not as above 6

6. *Chrysolepis sempervirens* is an associated component and the % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... **/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-Holodiscus microphyllus* (AN-CS-HM or AN-Mix:shrub) Shrub [1]**
6'. Not as above 7

7. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component ..... **/19e. *Arctostaphylos nevadensis*-Mix(AN-Mix:shrub) Shrub [0]**
7'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

8. *Arctostaphylos patula* is an associated component 9
8'. Not as above 11

9. *Ceanothus velutinus* is an associated component ..... **/20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrub [2]**
9'. Not as above 10

10. *Chrysolepis sempervirens* is an associated component ..... **/20d. *Arctostaphylos patula-Chrysolepis sempervirens* (AP-CS or AP-Mix:shrub) Shrub [1]**
10'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

11. Shrubs other than *Arctostaphylos nevadensis, Arctostaphylos patula, Alnus incana, Chrysolepis sempervirens, Ericameria bloomeri, Quercus vacciniifolia,* or a *Salix sp.* are associated components ..... **/25a. Other Mixed (SMix:shrub) Shrub [0]**
11'. Not as above ..... Unrecognized , go to the Comprehensive Shrubland Association Key

12. Herbaceous cover is associated 13
12'. Not as above ..... **Sparse Understory [6]**

13. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... **/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):herb) Herbaceous [1]**
13'. Not as above 14

14. Forb(s) and graminoid(s) are associated components and dry conditions exist ..... **/33a. Dry Mixed Herbaceous (HDX:herb) Herbaceous [0]**
14'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

8. True-Fir-Long Needle Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

Abies magnifica and *Abies concolor* are components and mix is comprised of

Pinus jeffreyi and/or *Pinus monticola*

8a. *Abies magnifica-Abies concolor-Pinus jeffreyi* (AM-AC-PJ:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 17

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 8

3. Single species is *Arctostaphylos nevadensis*..... **/19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [0]**
3'. Not as above 4

4. Single species is *Arctostaphylos patula*..... **/20a. *Arctostaphylos patula* (AP:shrub) Shrub [0]**
4'. Not as above 5

5. Single species is *Chrysolepis sempervirens*..... **/26a. *Chrysolepis sempervirens* (CS:shrub) Shrub [0]**
5'. Not as above 6

6. Single species is *Ericameria bloomeri* ..... **/23a. *Ericameria bloomeri* (EB:shrub) Shrub [0]**
6'. Not as above 7

7. A shrub other than *Alnus incana, Quercus vacciniifolia, Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or other *Ribes sp.* ..... is an associated component ..... **/26c .Other (SOth:shrub) Shrub [1]**
7'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

8. *Quercus vacciniifolia* is an associated component..... **/18a. *Quercus vacciniifolia*-Mix (QV-Mix:shrub) Shrub [0]**
8'. Not as above 9

9. *Arctostaphylos nevadensis* is an associated component 10
9'. Not as above 15

10. *Arctostaphylos patula* is an associated component 11
10'. Not as above 13

11. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition .... **/19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub[0]**
11'. Not as above 12

12. *Ceanothus cordulatus* is not a component..... ..... **/19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix Shrub** ..... **(AN-AP-Mix or AN-Mix:shrub) Shrub[0]**
12'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

13. *Chrysolepis sempervirens* is a component and
The % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together
is greater than or equal to 90% of the shrub composition .....
.....**/19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens***
..... **(AN-CS or AN-Mix:shrub) Shrub [1]**
13'. Not as above 14

14. A shrub other than *Arctostaphylos patula* or
Chrysolepis sempervirens is an associated component.....
..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**
14'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

15. *Arctostaphylos patula* is an associated component 16
15'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

16. *Chrysolepis sempervirens* is a component .....
..... /**20d. *Arctostaphylos patula-Chrysolepis sempervirens* (AP-CS or AP-Mix:shrub) Shrub [0]**
16'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

17. Herbaceous cover is associated 18
17'. Not as above .....**Sparse Understory [3]**

18. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components .....
..... **29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [1]**
18'. Not as above 19

19. *Achnatherum occidentale* and/or *Elymus elymoides* are associated components.....
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):herb) Herbaceous [0]**
19'. Not as above 20

20. Forb(s) and graminoid(s) are associated components..... 21
20'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

21. Dry condition exist.....**33a. Dry Mixed Herbaceous (HDX:herb) [0]**
21'. Not as above..... 22

22. Subalpine and wet conditions do not exist
..... **35a. Other Mix Herbaceous (HOX:herb) [0]**
22'. Not as above.....Unrecognized, go to the Comprehensive Herbaceous Association Key

8b. *Abies magnifica-Abies concolor-Pinus monticola* (AM-AC-PM) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 8

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis*..... **/19a. *Arctostaphylos nevadensis (*AN:shrub) Shrub [2]**
3'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Arctostaphylos nevadensis* is an associated component 5
4'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

5. *Arctostaphylos patula* is an associated component 6
5'. Not as above..... 7

6. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition .... **/19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
6'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

7. A shrub other than *Arctostaphylos patula* or *Chrysolepis sempervirens* is an associated component..... ..... **/19e. *Arctostaphylos nevadensis*-Mix (AN-Mix) Shrub [0]**
7'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

8. Herbaceous cover is associated 9
8'. Not as above .....**Sparse Understory [2]**

9. *Achnatherum occidentale* and/or *Elymus elymoides* are associated components .....**/28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):herb) Herbaceous [0]**
9'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

9. True-Fir-Lodgepole Pine-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

Abies magnifica, Abies concolor, and *Pinus contorta* are components

9a. *Abies magnifica-Abies concolor-Pinus contorta* (AM-AC-PC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 15

2. Single shrub species composition is more than or equal to 90% of shrub cover 3
2'. Not as above 7

3. Single species is *Arctostaphylos nevadensis* ..... **/19a. *Arctostaphylos nevadensis (*AN:shrub) Shrub [5]**
3'. Not as above..... 4

4. Single species is *Quercus vacciniifolia* ..... **/18a. *Quercus vacciniifolia* (QV:shrub) Shrub [1]**
4'. Not as above..... 5

5. Single species is *Ericameria bloomeri* ..... /**23a. *Ericameria bloomeri* (EB:shrub) Shrub [1]**
5'. Not as above 6

6. Single species is *Chrysolepis sempervirens* ..... /**26a.*Chrysolepis sempervirens* (CS:shrub) Shrub [0]**
6'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

7. *Arctostaphylos nevadensis* is an associated component 8
7'. Not as above 14

8. *Quercus vacciniifolia* is an associated component and *Arctostaphylos patula* is not a component ..... /**18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Shrub [0]**
8'. Not as above 9

9. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens* 10
9'. Not as above 12

10. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition ..... **/19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
10'. Not as above 11

11. *Ceanothus cordulatus* is not a component ..... /**19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix Shrub (AN-AP-Mix or AN-Mix:shrub) Shrub [0]**
11'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

12. *Chrysolepis sempervirens* is an associated component 13
12'. Not as above ..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**

13. The % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... /**19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)* (AN-CS-HM or AN-Mix:shrub) Shrub [0]**
13'. Not as above ..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**

14. *Ericameria bloomeri* is a component and the % of *Ericameria bloomeri* composition is greater than or equal to 25% of the shrub composition ..... /**23b. *Ericameria bloomeri*–Mix (EB-Mix:shrub) Shrub [0]**
14'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

15. Herbaceous cover is associated 16
15'. Not as above ..... **Sparse Understory [5]**

16. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components and wet condition exist ..... /**32a. Mesic Herbaceous Meadow/Complex (HMC or HMM:herb) [0]**
16'. Not as above 17

17. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):herb) Herbaceous [2]
17'. Not as above 18

18. Forb(s) and graminoid(s) are associated components 19
18'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

19. Sedge and *Aster alpigenus* are not components and dry conditions exist ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [0]**
19'. Not as above 20

20. Sedge and *Aster alpigenus* are not components and dry, subalpine, and wet conditions do not exist ..... /**35a. Other Mixed Herbaceous (HOX) [0]**
20'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

10. *Abies concolor* Forest and Woodland (Sparse) Alliance

Abies concolor cover is at least 90% of the tree cover composition

10a. *Abies concolor* (AC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 23

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 7

3. Single species is *Alnus incana* ..... /**21a.*Alnus incana* (AI:shrub) Shrub [0]**
3'. Not as above 4

4. Single species is *Arctostaphylos nevadensis* ..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [1]**
4'. Not as above 5

5. Single species is *Chrysolepis sempervirens* ..... /**26a.*Chrysolepis sempervirens* (CS:shrub) Shrub [2]**
5'. Not as above 6

6. Single species is *Quercus vacciniifolia* ..... /**18a. *Quercus vacciniifolia* (QV:shrub) Shrub [2]**
6'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

7. *Quercus vacciniifolia* is a component 8
7'. Not as above 11

8. *Arctostaphylos nevadensis* is a component 9
8'. Not as above 10

9. *Arctostaphylos patula* is a component ..... /**18b *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN-AP or QV-Mix:shrub) Shrub [0]**
9'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

10. *Arctostaphylos patula* is a component ..... /**18c. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-MIx:shrub) Shrub [1]**
10'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

11. *Arctostaphylos nevadensis* is present 12
11'. Not as above 15

12. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens* 13
12'. Not as above 14

13. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition ..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
13'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

14. *Arctostaphylos patula* and *Chrysolepis sempervirens* are not components ..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**
14'. Not as above .....Unrecognized, got o the Comprehensive Shrubland Association Key

15. *Arctostaphylos patula* is a component 16
15'. Not as above 19

16. *Chrysolepis sempervirens* is a component or *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens* 17
16'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

17. *Ceanothus velutinus* is a component ..... /**20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrub [4]**
17'. Not as above 18

18. *Chrysolepis sempervirens* is a component..... /**20d. *Arctostaphylos patula-Chrysolepis sempervirens* (AP-CS or AP-Mix:shrub) Shrub [0]**
18'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

19. *Alnus incana* is a component 20
19'. Not as above 21

20. *Salix sp.* is not a component..... /**21d. *Alnus incana*-Mix (AI-Mix:shrub) Shrub [0]**
20'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

21. *Salix sp.* and *Ericameria bloomeri* are not components 22
21'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

22. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is less than 50% composition ..... /**25a. Other Mixed (SMix:shrub) Shrub [0]**
22'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

23. Herbaceous cover is associated 24
23'. Not as above .....**Sparse Understory [16]**

24. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides*-(Mix) (AoEe-(Mix):herb) Herbaceous [0]**
24'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

11. *Abies concolor*-Mixed Needleleaf Forest and Woodland (Sparse) Alliance

Abies concolor is a component and mix is comprised of

Pinus jeffreyi, Calocedrus decurrens, Pinus monticola and/or *Pinus contorta*

11a. *Abies concolor-Calocedrus decurrens-Pinus jeffreyi* (AC-CD-PJ:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 18

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 9

3. Single species is *Arctostaphylos nevadensis* ..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [1]**
3'. Not as above 4

4. Single species is *Arctostaphylos patula* ..... /**20a. *Arctostaphylos patula* (AP:shrub) Shrub [0]**
4'. Not as above 5

5. Single species is *Chrysolepis sempervirens* ..... /**26a.*Chrysolepis sempervirens* (CS:shrub) Shrub [0]**
5'. Not as above 6

6. Single species is *Quercus vacciniifolia* ..... /**18a. *Quercus vacciniifolia* (QV:shrub) Shrub [1]**
6'. Not as above 7

7. Species is *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus,* or other *Ribes* species..... /**24a. Dry Other (DOth:shrub) Shrub [1]**

7'. Not as above..... 8

8. Species is a shrub other than *Salix sp., Alnus incana* or *Ericameria bloomeri* ..... /**26c.Other (SOth:shrub) Shrub [1]**

8'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

9. *Quercus vacciniifolia* is a component 10

9'. Not as above 12

10. *Arctostaphylos nevadensis* is a component and *Arctostaphylos patula* is not..... .....**18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Shrub [0]**

10'. Not as above..... 11

11. *Arctostaphylos patula* is a component and *Arctostaphylos nevadensis* is not ....**/18c. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Shrub [2]**

11'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

12. *Arctostaphylos patula* is a component..... 13

12'. Not as above 15

13. *Chrysolepis sempervirens* is a component or *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens*..... 14

13'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

14. *Ceanothus velutinus* is a component .... /**20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)*** .....**(AP-CV-(CS) or AP-Mix:shrub) Shrub [0]**

14'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

15. *Ericameria bloomeri* is not a component 16

15'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

16. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is more than or equal to ..... /**24b. Dry Mixed (DMix:shrub) Shrub [1]**

16'. Not as above..... 17

17. *Salix sp., Alnus incana,* and *Arctostaphylos nevadensis*..... are not components ..... /**25a. Other Mixed (SMix:shrub) Shrub [0]**

17'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

18. Herbaceous cover is associated 19

18'. Not as above .....**Sparse Understory [4]**

19. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)* Herbaceous [0]**

19'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

11b. *Abies concolor-Pinus jeffreyi-Pinus monticola* (AC-PJ-PM:tree) Sub-Alliance

1. Shrub cover is associated .....Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
2'. Not as above .....**Sparse Understory [2]**

11c. *Abies concolor-Pinus jeffreyi-Pinus contorta* (AC-PJ-PC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 19

2. Single shrub species composition more than or equal to 90% of shrub cover..... 3
2'. Not as above 7

3. Single species is *Alnus incana* ..... /**21a.*Alnus incana* (AI:shrub) Shrub [0]**
3'. Not as above..... 4

4. Single species is *Arctostaphylos nevadensis*..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [1]**
4'. Not as above..... 5

5. Single species is *Ericameria bloomeri* ..... /**23a. *Ericameria bloomeri* (EB:shrub) Shrub [0]**
5'. Not as above..... 6

6. Single species is *Quercus vacciniifolia* ..... /**18a. *Quercus vacciniifolia* (QV:shrub) Shrub [0]**
6'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

7. *Quercus vacciniifolia* is a component 8
7'. Not as above 10

8. *Arctostaphylos nevadensis* is a component..... 9
8'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

9. *Arctostaphylos patula* is a component ..... /**18b *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN-AP or QV-Mix:shrub) Shrub [0]**
9'. Not as above ..... /**18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Shrub [0]**

10. *Arctostaphylos nevadensis* is present 11
10'. Not as above 16

11. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens* 12
11'. Not as above 14

12. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition ..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [1]**
12'. Not as above 13

13. *Ceanothus cordulatus* is not a component ..... /**19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix (AN-AP-Mix or AN-Mix:shrub) Shrub [0]**
13'. Not as above ..... /**19c. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix (AN-AP-CC or AN-Mix:shrub) Shrub [1]**

14. *Chrysolepis sempervirens* is a component 15
14'. Not as above ..... /**19e.*Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**

15. The % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... /**19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)*** ..... **(AN-CS-HM or AN-Mix:shrub) Shrub [0]**
15'. Not as above ..... /**19e.*Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [0]**

16. *Arctostaphylos patula* is a component 17
16'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

17. *Chrysolepis sempervirens* is a component or *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens* 18
17'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

18. *Ceanothus cordulatus* is a component and the % of *Ceanothus cordulatus* is greater than the % of *Chrysolepis sempervirens* ..... /**20c. *Arctostaphylos patula-Ceanothus cordulatus* (AP-CC or AP-Mix:shrub) Shrub [0]**
18'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

19. Herbaceous cover is associated 20
19'. Not as above ..... Sparse Understory[0]

20. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)* Herbaceous [2]**
20'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

11d. 11d. *Abies concolor-Pinus jeffreyi* (AC-PJ:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 22

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 7

3. Single species is *Arctostaphylos patula* ..... /**20a. *Arctostaphylos patula* (AP:shrub) Shrub [1]**
3'. Not as above 4

4. Single species is *Chrysolepis sempervirens* ..... /**26a.*Chrysolepis sempervirens* (CS:shrub) Shrub [1]**
4'. Not as above 5

5. Single species is *Ericameria bloomeri* ..... /**23a. *Ericameria bloomeri* (EB:shrub) Shrub [0]**
5'. Not as above 6

6. Species is something other than *Alnus incana, Arctostaphylos nevadensis, Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus,* or other *Ribes* species ..... /**26c.Other (SOth:shrub) Shrub [0]**
6'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

7. *Quercus vacciniifolia* is an associated component 8
7'. Not as above 11

8. *Arctostaphylos nevadensis* is a component 9
8'. Not as above 10

9. *Arctostaphylos patula* is a component ..... /**18b *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN-AP or QV-Mix:shrub) Shrub [0]**
9'. Not as above ..... Unrecognized, go to the Shrubland Association Key

10. *Arctostaphylos patula* is a component ..... /**18c. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Shrub [0]**
10'. Not as above ..... /**18d. *Quercus vacciniifolia*-Mix (QV-Mix:shrub) Shrub [0]**

11. *Arctostaphylos nevadensis* is present 12
11'. Not as above 14

12. *Arctostaphylos patula* is not a component and *Chrysolepis sempervirens* is a component 13
12'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

13. The % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together is greater than or equal to 90% of the shrub composition ..... /**19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)* (AN-CS-HM:shrub) Shrub [0]**

13'. Not as above ..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [2]**

14. *Arctostaphylos patula* is a component 15

14'. Not as above 19

15. *Chrysolepis sempervirens* is a component or *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens* 16

15'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

16. *Ceanothus velutinus* is a component ..... /**20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrub [5]**

16'. Not as above 17

17. *Ceanothus cordulatus* is a component and the % of *Ceanothus cordulatus* is greater than the % of *Chrysolepis sempervirens* ..... /**20c. *Arctostaphylos patula-Ceanothus cordulatus* (AP-CC or AP-Mix:shrub) Shrub [2]**

17'. Not as above 18

18. *Chrysolepis sempervirens* is a component ..... /**20d. *Arctostaphylos patula-Chrysolepis sempervirens* (AP-CS or AP-Mix:shrub) Shrub [1]**

18'. Not as above ..... /**20e. *Arctostaphylos patula*-Mixed (AP-Mix:shrub) Shrub [0]**

19. *Ericameria bloomeri* is a component and the % of *Ericameria bloomeri* composition is greater than or equal to 25% of the shrub composition ..... /**23b. *Ericameria bloomeri*–Mix (EB-Mix:shrub) Shrub [1]**

19'. Not as above 20

20. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is more than or equal to 50% composition ..... /**24b. Dry Mixed (DMix:shrub) Shrub [0]**

20'. Not as above 21

21. *Alnus incana* and *Salix sp.* are not components ..... /**25a. Other Mixed (SMix:shrub) Shrub [2]**

21'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

22. Herbaceous cover is associated 23

22'. Not as above ..... **Sparse Understory**, **[11]**

23. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [2]**

23'. Not as above 24

24. Forb(s) and graminoid(s) are components 25
24'. Not as above 27

25. Sedge and *Aster alpigenus* are not components and dry conditions exist ..... /**33a. Dry Mixed (HDX) Herbaceous [0]**
25'. Not as above 26

26. Subalpine and wet conditions do not exist ..... /**35a. Other Mixed (HOX) Herbaceous [1]**
26'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

27. Graminoid(s) and/or *Juncus* present 28
27'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

28. Dry conditions do not exist ..... /**35b. Other Mixed Graminoid (HOG) Herbaceous [1]**
28'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

11e. *Abies concolor*-Other conifer (AC-Oth:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 4

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

3. Single species is *Arctostaphylos nevadensis* ..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [0]**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

4. Herbaceous cover is associated 5
4'. Not as above ..... Sparse Understory[0]

5. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
5'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

12. *Pinus contorta var. murrayana* Forest and Woodland (Sparse) Alliance

Pinus contorta cover is at least 90% of the tree cover composition

12a. *Pinus contorta* (PC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 16

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 5

3. Single species is *Arctostaphylos nevadensis* ..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [2]**
3'. Not as above 4

4. Single species is *Ericameria bloomeri* ..... /**23a. *Ericameria bloomeri* (EB:shrub) Shrub [2]**
4'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

5. *Quercus vacciniifolia* is a component 6
5'. Not as above 8

6. *Arctostaphylos nevadensis* is a component 7
6'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

7. *Arctostaphylos patula* is a component ..../**18b *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN-AP or QV-Mix:shrub) Shrub [0]**
7'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

8. *Arctostaphylos nevadensis* is present 9
8'. Not as above 11

9. *Arctostaphylos patula* is a component and
the % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together
is greater than or equal to 90% of the shrub composition ..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
9'. Not as above 10

10. *Arctostaphylos patula* and *Chrysolepis sempervirens*
are not components ..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [1]**
10'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

11. *Alnus incana* is a component 12
11'. Not as above 14

12. *Salix sp.* is a component ..... /**21c. *Alnus incana-Salix* (Al-Sal:shrub) Shrub [0]**
12'. Not as above 13

13. A different shrub is a component ..... /**21d. *Alnus incana*-Mix (Al-Mix:shrub) Shrub [2]**
13'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

14. *Ericameria bloomeri* is a component and
the % of *Ericameria bloomeri* composition is greater than or equal to 25% of the shrub composition ..... /**23b. *Ericameria bloomeri* –Mix (EB-Mix:shrub) Shrub [0]**
14'. Not as above 15

15. *Arctostaphylos patula, and Salix sp.* are not components and
Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus, or *Ribes sp.*
composition is not more than or equal to 50% composition ..... **25a. Other Mixed (SMix:shrub) Shrub [1]**
15'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

16. Herbaceous cover is associated 17
16'. Not as above .....**Sparse Understory [2]**

17. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components. ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [1]**
17'. Not as above 18

18. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components..... 19
18'. Not as above 20

19. Wet conditions exist ...../**32a. Herbaceous Mesic Meadow/Complex (HMC or HMM:herb) [0]**
19'. Not as above...../**32b. Herbaceous Mesic Meadow (HMM) [1]**

20. *Achnatherum occidentale* and/or *Elymus elymoides* are components .....
.....**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [10]**
20'. Not as above 21

21. Forb(s) and graminoid(s) are components..... 22
21'. Not as above 25

22. Sedge and *Aster alpigenus* are components ..... /**32c. Sedge Mixed Herbaceous Meadow (HSM:herb) [0]**
22'. Not as above..... 23

23. Dry conditions exist...../**33a. Dry Mixed Herbaceous (HDX:herb) [2]**
23'. Not as above..... 24

24. Wet and subalpine conditions do not exist
..... /**35a. Other Mixed Herbaceous (HOX:herb) [0]**
24'. Not as above.....Unrecognized, go to the Comprehensive Herbaceous Association Key

25. Graminoid(s) and/or *Juncus* present and
dry conditions exist ..... /**33b. Dry Mixed Graminoid (HDG:herb) [0]**
25'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

13. *Pinus jeffreyi* Forest and Woodland (Sparse) Alliance

Pinus jeffreyi cover at least 90% of the tree cover composition

13a. *Pinus jeffreyi* (PJ:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 20

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 6

3. Single species is *Arctostaphylos patula* ..... /**20a. *Arctostaphylos patula* (AP:shrub) Shrub [3]**
3'. Not as above 4

4. Single species is *Holodiscus microphyllus* ..... /**26b. *Holodiscus microphyllus* (HM or Other:shrub) Shrub [1]**
4'. Not as above 5

5. Single species is a shrub other than *Alnus incana, Arctostaphylos nevadensis, Chrysolepis sempervirens, Ericameria bloomeri, Quercus vacciniifolia, Salix sp., Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus,* or other *Ribes* species ..... /**26c.Other (SOth:shrub) Shrub [0]**
5'. Not as above 6

6. Single species is a Dry shrub ..... /**23b.Dry Other (DOth:shrub) Shrub [1]**
6'. ..... Unrecognized, go to the Comprehensive Shrubland Association Key

6. *Quercus vacciniifolia* is a component 7
6'. Not as above 8

7. *Arctostaphylos patula* is a component and *Arctostaphylos nevadensis* is not ..... /**18c. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Shrub [2]**
7'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

8. *Arctostaphylos nevadensis* is present 9
8'. Not as above 13

9. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* is greater than the % of *Chrysolepis sempervirens* 10
9'. Not as above 12

10. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together is greater than or equal to 90% of the shrub composition ..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [1]**

10'. Not as above 11

11. *Ceanothus cordulatus* is not a component ..... /**19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix Shrub (AN-AP-Mix or AN-Mix:shrub) Shrub [0]**

11'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

12. *Chrysolepis sempervirens* is not a component ..... /**19e.*Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub [2]**

12'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

13. *Arctostaphylos patula* is a component 14

13'. Not as above 17

14. *Chrysolepis sempervirens* is a component or *Chrysolepis sempervirens* is present and the% of *Ceanothus velutinus* Is greater than the % of *Chrysolepis sempervirens* 15

14'. Not as above 16

15. *Ceanothus velutinus* is a component ..... /**20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrub [5]**

15'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

16. *Ceanothus velutinus, Ceanothus cordulatus,* and *Arctostaphylos nevadensis* are not components ..... /**20g.*Arctostaphylos patula*-Mix (AP-Mix:shrub) Shrub [1]**

16'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

17. *Ericameria bloomeri* is a component and the % of *Ericameria bloomeri* composition is greater than or equal to 25% of the shrub composition ..... /**23b. *Ericameria bloomeri* –Mix (EB-Mix:shrub) Shrub [0]**

17'. Not as above 18

18. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is more than or equal to 50% composition ..... /**24b. Dry Mixed (DMix:shrub) Shrub [0]**

18'. Not as above 19

19. *Alnus incana* and *Salix sp.* are also not components ..... /**25a. Other Mixed (SMix:shrub) Shrub [0]**

19'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

20. Herbaceous cover is associated 21

20'. Not as above ..... **Sparse Understory [4]**

21. Single herbaceous species composition more than or equal to 90% of herbaceous cover 22
21'. Not as above 23

22. Single species is *Pteridium aquilinum*...../**30a. *Pteridium aquilinum* (Paq:herb) Herbaceous [1]**
22'. Not as above.....Unrecognized, go to the Comprehensive Herbaceous Association Key

23. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components. ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [3]**
23'. Not as above 24

24. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... **28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [2]**
24'. Not as above 25

25. Forb(s) are not components..... 26
25'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

26. Sedge and *Aster alpigenus* are not components and dry conditions exist..... /**33b. Dry Mixed Graminoid (HDG:herb) [1]**
26'. Not as above.....Unrecognized, go to the Comprehensive Herbaceous Association Key

14. *Pinus jeffreyi*-Mixed Needleleaf Woodland (Sparse) Alliance

Pinus jeffreyi is a component and mix is comprised of

Pinus contorta, Pinus monticola, or other conifer

14a. *Pinus jeffreyi-Pinus contorta-Pinus monticola* (PJ-PC-PM:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 5

2. Single shrub species composition more than or equal to 90% of shrub cover..... 3
2'. Not as above 4

3. Single species is *Arctostaphylos nevadensis* ..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [0]**
3'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Ericameria bloomeri* is a component and the % of *Ericameria bloomeri* composition is greater than or equal to 25% of the shrub composition, and *Quercus vacciniifolia, Arctostaphylos nevadensis, Arctostaphylos patula Alnus incana* and *Salix* are not components..... /**23b. *Ericameria bloomeri*–Mix (EB-Mix:shrub) Shrub [0]**
4'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

5. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
5'. Not as above .....Sparse Understory **[5]**

14b. *Pinus jeffreyi-Pinus monticola* (PJ-PM:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 10

2. Single shrub species composition more than or equal to 90% of shrub cover..... 3
2'. Not as above 5

3. Single species is *Arctostaphylos nevadensis*.....
..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [0]**
3'. Not as above..... 4

4. Single species is *Holodiscus microphyllus*.....
...../**26b. *Holodiscus microphyllus* (HM or Other:shrub) Shrub [2]**
4'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

5. *Arctostaphylos nevadensis* is present 6
5'. Not as above 7

6. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula*
and *Arctostaphylos nevadensis* together
is greater than or equal to 90% of the shrub composition .....
..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
6'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

7. *Arctostaphylos patula* is a component..... 8
7'. Not as above 9

8. *Ceanothus velutinus* is a component .....
..... /**20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)***
.....**(AP-CV-(CS) or AP-Mix:shrub) Shrub [1]**
8'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

9. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is more than or equal to
50% composition and *Quercus vacciniifolia, Alnus incana* and *Salix* are not components.....
...../**24b. Dry Mixed (DMix:shrub) Shrub [0]**
9'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

10. Herbaceous cover is associated 11
10'. Not as above ..... Sparse Understory [0]

11. *Achnatherum occidentale* and/or *Elymus elymoides* are components
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
11'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

14c. *Pinus jeffreyi-Pinus contorta* (PJ-PC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 11

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 5

3. Single species is *Arctostaphylos nevadensis*..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub [1]**
3'. Not as above 4

4. Single species is *Ericameria bloomeri* ..... /**23a. *Ericameria bloomeri* (EB:shrub) Shrub [0]**
4'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

5. *Arctostaphylos nevadensis* is present 6
5'. Not as above 8

6. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula* and *Arctostaphylos nevadensis* together is greater than or equal to 90% of the shrub composition ..... /**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub [0]**
6'. Not as above 7

7. *Arctostaphylos patula* is a component and *Ceanothus cordulatus* is a component..... /**19c. *Arctostaphylos nevadensis-Arctostaphylos patula-Ceanothus cordulatus* *(*AN-AP-CC or AN-Mix:shrub) Shrub [1]**
7'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

8. *Alnus incana* is a component 9
8'. Not as above 10

9. *Salix* is a component ..... /**21c. *Alnus incana- Salix* (Al-Sal:shrub) Shrub [0]**
9'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

10. *Salix* is a component ..... /**22d. *Salix*-Mix (Sal-Mix:shrub) Shrub [0]**
10'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

11. Herbaceous cover is associated 12
11'. Not as above ..... Sparse Understory[0]

12. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [0]**
12'. Not as above 13

13. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
13'. Not as above 14

14. Forb(s) are not components 15
14'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

15. Dry , wet, or subalpine conditions so not exist ..... /**35b. Other Mixed Graminoid (HOG) Herbaceous [1]**
15'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

14d. *Pinus jeffreyi*-Other conifer (PJ-Oth:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 9

2. Single shrub species composition more than or equal to 90% of shrub cover 3
2'. Not as above 4

3. Single species is *Quercus vacciniifolia* ..... /**18a. *Quercus vacciniifolia* (QV:shrub) Shrub [0]**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Quercus vacciniifolia* is a component 5
4'. Not as above 6

5. *Arctostaphylos patula* is a component and *Arctostaphylos nevadensis* is not ..... /**18c. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Shrub [0]**
5'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

6. *Arctostaphylos patula* is a component and *Arctostaphylos nevadensis* is not 7
6'. Not as above 8

7. *Ceanothus velutinus* is a component ..... **20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Shrub [1]**
7'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

8. *Arctostaphylos nevadensis, Alnus incana, Salix, Ericameria bloomeri, Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus,* and *Ribes sp.* are not components ..... /**25a. Other Mixed (SMix:shrub) Shrub [0]**
8'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

9. Herbaceous cover is associated 10
9'. Not as above ..... **Sparse Understory [1]**

10. *Achnatherum occidentale* and/or *Elymus elymoides* are components .....
.....**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)* Herbaceous[1]**
10'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

15. Other Needleleaf Forest and Woodland Alliances

15a. Other Conifer-(Mix) (OtC-(Mix):tree) Sub-Alliance

1. Shrub cover is associated .....Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
2'. Not as above .....**Sparse Understory**[0]

Mixed Needleleaf – Broadleaf Forest and Woodland (Sparse) Alliances

16. Mixed Needleleaf-Broadleaf Woodland (Sparse) Alliances

16a. *Cercocarpus ledifolius-Pinus jeffreyi* (CL-PJ:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 5

2. Single shrub species composition more than or equal to 90% of shrub cover..... 3
2'. Not as above 4

3. Single species is *Holodiscus microphyllus*
...../**26b. *Holodiscus microphyllus* (HM or Other:shrub) Shrub [1]**
..... *Cercocarpus ledifolius Woodland (Sparse) Alliance*
3'. Not as above.....Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Arctostaphylos patula* is a component and *Chrysolepis sempervirens, Ceanothus velutinus, Ceanothus cordulatus,* and *Arctostaphylos nevadensis* are not components
...../**20g.*Arctostaphylos patula*-Mix (AP-Mix:shrub) Shrub [1]**
..... *Cercocarpus ledifolius Woodland (Sparse) Alliance*
4'. Not as above .....Unrecognized, go to the Comprehensive Shrubland Association Key

5. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
5'. Not as above .....**Sparse Understory**[0]

16b. *Populus tremuloides-Pinus contorta* (PTe-PC:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 5

2. *Alnus incana* is a component 3
2'. Not as above 4

3. *Salix* is a component ..... /**21c. *Alnus incana-Salix* (Al-Sal:shrub) Shrub [0]** ..... ***Populus tremuloides* Forest and Woodland Alliance**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Salix* is a component ..... /**22d. *Salix*-Mix (Sal-Mix) Shrub [1]** ..... ***Populus tremuloides* Forest and Woodland Alliance**
4'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

5. Herbaceous cover is associated ..... Unrecognized, go to the Comprehensive Herbaceous Association Key
5'. Not as above ..... **Sparse Understory**[0]

16c. Other Needleleaf-Hardwood Mix (OtC-OtH:tree) Sub-Alliance

1. Shrub cover is associated ..... Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated ..... Unrecognized, go to the Comprehensive Herbaceous Association Key
2'. Not as above ..... Sparse Understory

Broadleaf Forest and Woodland (Sparse) Alliances

17. Broadleaf Forest and Woodland Alliances

Broadleafs consist of *Populus tremuloides, Salix, Cercocarpus ledifolius*

And/or Other Hardwoods

17a. *Cercocarpus ledifolius* (CL:tree) Sub-Alliance

1. Shrub cover is associated ..... Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated 3
2'. Not as above ..... Sparse Understory[0]

3. Forb(s) and graminoid(s) are components and sedge and *Aster alpigenus* are not components and dry conditions, subalpine conditions, and wet conditions ..... /**35a. Other Mixed Herbaceous (HOX:herb) [1]**
do not exist ..... ***Cercocarpus ledifolius Woodland (Sparse) Alliance***
3'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

17b. *Populus tremuloides* (PTe:tree) Sub-Alliance

1. Shrub cover is associated .....Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated 3
2'. Not as above .....**Sparse Understory [1]**

3. *Achnatherum occidentale* and/or *Elymus elymoides* are components .....
.....**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)* Herbaceous[2]**
..... ***Populus tremuloides* Forest and Woodland Alliance**
3' Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

17c. *Salix lucida* (SL:tree) Sub-Alliance

1. Shrub cover is associated .....Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated 3
2'. Not as above .....**Sparse Understory [0]**

3. Graminoid(s) and/or *Juncus* present 4
3'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

4. Dry conditions exist ...../**33b. Dry Mixed Graminoids (HDG) Herbaceous Association [1]**
..... ***Salix lucida ssp. lasiandra* Forest and Woodland Alliance**
4'. Not as above 5

5. Subalpine or wet do not exist ..... /**35b. Other Mixed Graminoids (HOG) Herbaceous Association [1]**
..... ***Salix lucida ssp. lasiandra* Forest and Woodland Alliance**
5'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

17d. *Populus trichocarpa* (PTi:tree) Sub-Alliance

1. Shrub cover is associated 2
1'. Not as above 5

2. *Alnus incana* is a component 3
2'. Not as above 4

3. *Salix* is a component ..... /**21c. *Alnus incana-Salix* (Al-Sal:shrub) Shrub [0]**
..... ***Populus trichocarpa* Forest and Woodland Alliance**
3'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

4. *Salix* is a component ..... /**22d. *Salix*-Mix (Sal-Mix) Shrub [0]**
..... ***Populus trichocarpa* Forest and Woodland Alliance**
4'. Not as above ..... Unrecognized, go to the Comprehensive Shrubland Association Key

5. Herbaceous cover is associated 6
5'. Not as above ..... **Sparse Understory [0]**

6. Graminoid(s) and/or *Juncus* present 7
6'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

7. Dry conditions exist ..... /**33b. Dry Mixed Graminoids (HDG) Herbaceous Association [0]**
..... ***Populus trichocarpa* Forest and Woodland Alliance**
7'. Not as above 8

8. Subalpine or wet do not exist ..... /**35b. Other Mixed Graminoids (HOG) Herbaceous Association [0]**
..... ***Populus trichocarpa* Forest and Woodland Alliance**
8'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

17e. Other Hardwood Mix (OtH:tree) Sub-Alliance

1. Shrub cover is associated ..... Unrecognized, go to the Comprehensive Shrubland Association Key
1'. Not as above 2

2. Herbaceous cover is associated ..... Unrecognized, go to the Comprehensive Herbaceous Association Key
2'. Not as above ..... **Sparse Understory [0]**

Shrubland Alliances

18. *Quercus vacciniifolia* Shrubland Alliance

Quercus vacciniifolia is a component

18a. *Quercus vacciniifolia* (QV:shrub) Sub-Alliance

1. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
1'. Not as above ..... No Associated Herbaceous Understory **[0]**

18b. *Quercus vacciniifolia-Arctostaphylos nevadensis Arctostaphylos patula* (QV-AN-AP or QV-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above .....**No Associated Herbaceous Understory [1]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
2'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
1'. Not as above ..... No Associated Herbaceous Understory **[0]**

18d. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above .....**No Associated Herbaceous Understory [2]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* 0]**
2'. Not as above 3

3. Forb(s) and graminoid(s) are components and
dry conditions exist ...../**33a. Dry Mixed Herbaceous (HDX:herb) [1]**
3'. Not as above 4

4. Graminoid(s) and/or *Juncus* present and
dry conditions exist ...../**33b. Dry Mixed Graminoid (HDG) [0]**
4'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

18e. *Quercus vacciniifolia*-Mix (QV-Mix) Shrubland Alliance

1. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
1'. Not as above .....**No Associated Herbaceous Understory [1]**

19. *Arctostaphylos nevadensis* Shrubland Alliance

Arctostaphylos nevadensis is present

19a *Arctostaphylos nevadensis* (AN:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above .....**No Associated Herbaceous Understory [3]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components .....
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [2]**
2'. Not as above 3

3. *Lupinus obtusilobus, Polygonum davisae, Wyethia mollis, Balsamorhiza sagittata*
Senecio triangularis, Veratrum californicum, Lupinus polyphyllus, Typha latifolia
Menyanthes trifoliata, Nuphar luteum, Forb(s) and graminoid(s), and Graminoid(s) and/or *Juncus*
are not components
...../**35a. Other Mixed Herbaceous (HOX) [0]**
3'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above .....**No Associated Herbaceous Understory [3]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components .....
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
2'. Not as above 3

3. Graminoid(s) and/or *Juncus* are not present and
dry conditions exist ...../**33a. Dry Mixed Herbaceous (HDX:herb) [1]**
3'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

19c. *Arctostaphylos nevadensis-Arctostaphylos patula-Ceanothus cordulatus (*AN-AP-CC or AN-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
1'. Not as above .....**No Associated Herbaceous Understory [0]**

19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix (AN-AP-Mix or AN-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
2'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrubland Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [2]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [4]**
2'. Not as above 3

3. Forb(s) and graminoid(s) are components and dry conditions exist ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [0]**
3'. Not as above 4

4. *Lupinus obtusilobus, Polygonum davisae, Wyethia mollis, Balsamorhiza sagittata Senecio triangularis, Veratrum californicum, Lupinus polyphyllus, Typha latifolia Menyanthes trifoliata, Nuphar luteum,* and Graminoid(s) and/or *Juncus* are not components ..... /**35a. Other Mixed Herbaceous (HOX:herb) [0]**
4'. Not as above 5

5. Graminoid(s) and/or *Juncus* present and dry, subalpine, and wet conditions do not exist ..... /**35b. Other Mixed Graminoid (HOG:herb) [0]**
5'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-Holodiscus microphyllus* (AN-CS-HM or AN-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [3]**

2. *Lupinus obtusilobus* and/or *Polygonum davisae* are components and *Achnatherum occidentale/Elymus elymoides* cover is not greater than *Polygonum davisiae* cover ..... /**27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [1]**
2'. Not as above 3

3. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [1]**

3'. Not as above 4

4. Forb(s) and graminoid(s) are components and dry conditions exist..... /**33a. Dry Mixed Herbaceous (HDX:herb) [0]**

4'. Not as above 5

5. *Wyethia mollis, Balsamorhiza sagittata, Senecio triangularis Veratrum californicum, Lupinus polyphyllus, Typha latifolia Menyanthes trifoliata, Nuphar luteum,* and Graminoid(s) and/or *Juncus* are not components ..... /**35a. Other Mixed Herbaceous (HOX:herb) [0]**

5'. Not as above 6

6. Graminoid(s) and/or *Juncus* present and dry conditions exist ..... /**33b. Dry Mixed Graminoid (HDG:herb) [0]**

6'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

20. *Arctostaphylos patula* Shrubland Alliance

Arctostaphylos patula is a component

20a. *Arctostaphylos patula* (AP:shrub) Sub-Alliance

1. Herbaceous cover is associated ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

1'. Not as above ..... **No Associated Herbaceous Understory [4]**

20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)* (AP-CV-(CS) or AP-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2

1'. Not as above ..... **No Associated Herbaceous Understory [13]**

2. Graminoid(s) and/or *Juncus* present and dry conditions exist ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [2]**

2'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

20c. *Arctostaphylos patula-Ceanothus cordulatus* (AP-CC or AP-Mix:shrub) Sub-Alliance

This is a sub-alliance that was never recognized in the field or in the vegetation classification.

20d. *Arctostaphylos patula-Chrysolepis sempervirens* (AP-CS or AP-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
1'. Not as above .....**No Associated Herbaceous Understory**, **[1]**

20e. *Arctostaphylos patula*-Mix (AP-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above .....**No Associated Herbaceous Understory [0]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components
...../**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [1]**
2'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

21. *Alnus incana* Shrubland Alliance

Alnus incana is a component

21a. *Alnus incana* (AI:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above .....**No Associated Herbaceous Understory [3]**

2. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components.
..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [0]**
2'. Not as above 3

3. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components..... 4
3'. Not as above. 5

4. Wet conditions exist ...../**32a. Mesic Herbaceous Meadow/Complex (HMC or HMM:herb) [0]**
4'. Not as above...../**32b. Mesic Herbaceous Meadow (HMM:herb) [1]**

5. Forb(s) and graminoid(s) are components and
wet conditions exist ...../**31d. Wet Herbaceous Meadow (HWM:herb) [2]**
5'. Not as above 6

6. Graminoid(s) and/or *Juncus* present and
dry conditions exist ...../**33b. Dry Mixed Graminoid (HDG:herb) [0]**
6'. Not as above 7

7. *Typha latifolia, Menyanthes trifoliata, Nuphar luteum,*
Achnatherum occidentale, Elymus elymoides, Lupinus obtusilobus
and/or *Polygonum davisae are not components*
..... /**35a. Other Mixed Herbaceous (HOX:herb) [1]**
7'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

21b. *Alnus incana-Salix lemmonii* (Al-SLe or Al-Sal:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. Forb(s) and graminoid(s) are components and wet conditions exist ..... /**31d. Wet Herbaceous Meadow (HWM:herb) [1]**
2'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

21c. *Alnus incana-Other Salix* (Al-Sal:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components and wet conditions do not exist ..... /**32b. Mesic Herbaceous Meadow (HMM:herb) [0]**
2'. Not as above 3

3. Forb(s) and graminoid(s) are components and dry or wet conditions exist 4
3'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

4. Wet conditions exist ..... /**31d. Wet Herbaceous Meadow (HWM:herb) [0]**
4'. Dry conditions exist ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [1]**

21d. *Alnus incana*-Mix (Al-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components. ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [0]**
2'. Not as above 3

3. Forb(s) and graminoid(s) are components and wet conditions exist ..... /**31d. Wet Herbaceous Meadow (HWM:herb) [0]**
3'. Not as above 4

4. Graminoid(s) and/or *Juncus* present and dry conditions exist ..... /**33b. Dry Mixed Graminoid (HDG:herb) [0]**
4'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

22. *Salix* Shrubland Alliances

Salix species is a component

22a. *Salix laevigata* (SLa or Sal:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. Graminoid(s) and/or *Juncus* present and wet conditions exist ..... **/35b. Wet Herbaceous Meadow (HWM:herb) [1]**
2'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

22b. *Salix lemmonii* (SLe or Sal:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. Forb(s) and graminoid(s) are components and wet conditions exist ..... **/31d. Wet Herbaceous Meadow (HWM) Herbaceous Association [1]**
2'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

22c. Other *Salix* (Sal-Oth or Sal-(Mix):shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components and wet conditions do not exist ..... **/32b. Mesic Herbaceous Meadow (HMM:herb) [1]**
2'. Not as above 3

3. Forb(s) and graminoid(s) are components and wet conditions exist ..... **/31d. Wet Herbaceous Meadow (HWM:herb) [0]**
3'. Not as above 4

4. Graminoid(s) and/or *Juncus* present and dry, subalpine, and wet conditions do not exist ..... **/35b. Other Mixed Graminoid (HOG:herb) [0]**
4'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

22d. *Salix*-Mix (Sal-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components 3
2'. Not as above. 4

3. Wet conditions exist ..... /**32a. Mesic Herbaceous Meadow/Complex (HMC or HMM:herb) [0]**
3'. Not as above ..... /**32b. Mesic Herbaceous Meadow (HMM:herb) [1]**

4. *Typha latifolia* is at least 25% cover ..... /**31b. *Typha latifolia* (Tl or HWM:herb) Herbaceous [1]**
4'. Not as above 5

5. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
5'. Not as above 6

6. Forb(s) and graminoid(s) are components 7
6'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

7. Sedge and *Aster alpigenus* are components. ..... /**32c. Sedge Mixed Herbaceous Meadow (HSM:herb) [1]**
7'. Not as above 8

8. Wet conditions exist ..... /**31d. Wet Herbaceous Meadow (HWM:herb) [1]**
8'. Not as above 9

9. Dry and subalpine conditions do not exist ..... /**35a. Other Mixed Herbaceous (HOX:herb) [0]**
9'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

23. *Ericameria bloomeri* Shrubland Alliances

Ericameria bloomeri is a component

23a. *Ericameria bloomeri* (EB:shrub) Sub-Alliance

1. Herbaceous cover is a component 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Lupinus obtusilobus* and/or *Polygonum davisae* are components 3
2'. Not as above 4

3. *Achnatherum occidentale* or *Elymus elymoides* is present and *Achnatherum occidentale/Elymus elymoides* cover is greater than *Polygonum davisiae* cover ..... /**27a. *Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides*** **(LoAE:herb)Herbaceous [0]**

3'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

4. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)*** **Herbaceous [1]**

4'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

23b. *Ericameria bloomeri*–Mix (EB-Mix:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)*** **Herbaceous [3]**

2'. Not as above 3

3. Forb(s) and graminoid(s) are components and dry conditions exist ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [0]**

3'. Not as above .....Unrecognized, go to the Comprehensive Herbaceous Association Key

24. Dry Other-(Mixed) Shrubland Alliances

Dry Other or Dry Mixed Shrubs are components

24a. Dry Other (DOth:shrub) Sub-Alliance

1. Herbaceous cover is associated .....Unrecognized, go to the Comprehensive Herbaceous Association Key
1'. Not as above ..... **No Associated Herbaceous Understory [1]**

24b. Dry Mixed (DMix:shrub) Shrubland Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Lupinus obtusilobus* and/or *Polygonum davisae* are components..... 3
2'. Not as above 4

3. *Achnatherum occidentale* or *Elymus elymoides* is present and *Achnatherum occidentale/Elymus elymoides* cover is greater than *Polygonum davisiae* cover ..... /**27a. *Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides*** **(LoAE:herb) Herbaceous [0]**

3'. Not as above ..... /**27b. *Lupinus obtusilobus-Polygonum davisiae*** **(LoPd:herb) Herbaceous [0]**

4. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb)*** **Herbaceous [2]**

4'. Not as above 5

5. Forb(s) and graminoid(s) are components 6

5'. Not as above 8

6. Dry conditions exist and sedge and *Aster alpigenus* are not components ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [1]**

6'. Not as above 7

7. Subalpine and wet conditions do not exist and *Aster alpigenus* and sedge are not components ..... /**35a. Other Mixed Herbaceous (HOX:herb) [0]**

7'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

8. Graminoid(s) and/or *Juncus* present and dry conditions exist ..... /**33b. Dry Mixed Graminoid (HDG:herb) [0]**

8'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

25. Other Mixed Shrubland Alliance

A mixture of "other" shrubs are components

25a. Other Mixed (SMix:shrub) Shrub Sub-Alliance

1. Herbaceous cover is associated 2

1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components. ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata*** **(WmBs:herb) Herbaceous [0]**

2'. Not as above 3

3. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components and wet conditions exist ..... /**32a. Mesic Herbaceous Meadow/Complex (HMC or HMM:herb) [0]**

3'. Not as above 4

4. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous*** **[0]**

4'. Not as above 5

5. Forb(s) and graminoid(s) are components 6
5'. Not as above 8

6. Dry conditions exist and sedge and *Aster alpigenus* are not components ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [2]**
6'. Not as above 7

7. Subalpine and wet conditions do not exist and *Aster alpigenus* and sedge are not components ..... /**35a. Other Mixed Herbaceous (HOX:herb) [2]**
7'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

8. Graminoid(s) and/or *Juncus* present and dry conditions exist ..... /**33b. Dry Mixed Graminoid (HDG:herb) [0]**
8'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

<insert descriptions here>

26. Other Shrub Shrubland Alliance

Chrysolepis sempervirens, Holodiscus microphyllus or another shrub comprise 90% or more of the shrub cover

26a. *Chrysolepis sempervirens* (CS or SOth:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-(Mix):herb) Herbaceous* [0]**
2'. Not as above 3

3. Forb(s) and graminoid(s) are components and *Aster alpigenus* and sedge are not. Dry, subalpine, and wet conditions do not exist ..... /**35a. Other Mixed Herbaceous (HOX) [0]**
3'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

26b. *Holodiscus microphyllus* (HM or SOth:shrub) Sub-Alliance

1. Herbaceous cover is associated 2
1'. Not as above ..... **No Associated Herbaceous Understory [1]**

2. *Lupinus obtusilobus* and/or *Polygonum davisae* are components 3
2'. Not as above 4

3. *Achnatherum occidentale/Elymus elymoides* cover is not greater than *Polygonum davisiae* cover ..... /**27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [0]**

3'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

4. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components. ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous [0]**

4'. Not as above 5

5. Forb(s) and graminoid(s) are components 6

5'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

6. Dry conditions exist and sedge and *Aster alpigenus* are not components ..... /**33a. Dry Mixed Herbaceous (HDX:herb) [0]**

6'. Not as above 7

7. Sedge and *Aster alpigenus* are not components and subalpine and wet conditions do not exist ..... /**35a. Other Mix Herbaceous (HOX:herb) [0]**

7'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

26c. Other shrub (SOth:shrub) Sub-Alliance

1. Herbaceous cover is associated 2

1'. Not as above ..... **No Associated Herbaceous Understory [0]**

2. *Lupinus obtusilobus* and/or *Polygonum davisae* are components 3

2'. Not as above 4

3. *Achnatherum occidentale/Elymus elymoides* cover is not greater than *Polygonum davisiae* cover ..... /**27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous [0]**

3'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

4. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components ..... and wet conditions exist ..... /**32a. Mesic Herbaceous Mesic Meadow/Complex (HMC or HMM:herb) [0]**

4'. Not as above 5

5. Forb(s) and graminoid(s) are components and sedge and *Aster alpigenus* are components ..... /**32c Sedge Mixed Herbaceous Meadow (HSM:herb) [0]**

5'. Not as above ..... Unrecognized, go to the Comprehensive Herbaceous Association Key

Comprehensive Associated Vegetation Keys

Comprehensive Shrublands Key

Shrub cover is associated vegetation

1. Single shrub species composition more than or equal to 90% of shrub cover 2
1'. Not as above 13

2. Single species is *Alnus incana* ..... /**21a.*Alnus incana* (Al:shrub) Shrub**
2'. Not as above 3

3. Single species is *Arctostaphylos nevadensis* ..... /**19a. *Arctostaphylos nevadensis* (AN:shrub) Shrub**
' 3'. Not as above 4

4. Single species is *Arctostaphylos patula* ..... /**20a. *Arctostaphylos patula* (AP:shrub) Shrub**
4'. Not as above 5

5. Single species is *Chrysolepis sempervirens* ..... /**26a.*Chrysolepis sempervirens* (CS:shrub) Shrub**
5'. Not as above 6

6. Single species is *Ericameria bloomeri* ..... /**23a. *Ericameria bloomeri* (EB:shrub) Shrub**
6'. Not as above 7

7. Single species is *Holodiscus microphyllus* ..... /**26b. *Holodiscus microphyllus* (HM or SOth:shrub) Shrub**
7'. Not as above 8

8. Single species is *Quercus vacciniifolia* ..... /**18a. *Quercus vacciniifolia* (QV:shrub) Shrub**
8'. Not as above 9

9. Single species is *Salix laevigata* ..... /**22a. *Salix laevigata* (SLa or Sal:shrub) Shrub**
9'. Not as above 10

10. Single species is *Salix Lemonii* ..... /**22b. *Salix lemmonii* (SLe or Sal:shrub) Shrub**
10'. Not as above 11

11. Single species is another *Salix* ..... /**22c. Other *Salix* (Sal-Oth or Sal-(Mix): shrub) Shrub**
11'. Not as above 12

12. Species is *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus,* or other *Ribes* species ..... /**24a. Dry Other (DOth:shrub) Shrub**
12'. Not as above ..... /**26c.Other (SOth:shrub) Shrub**

13. *Quercus vacciniifolia* is a component 14
13'. Not as above. 17

14. *Arctostaphylos nevadensis* is a component. 15
14'. Not as above 16

15. *Arctostaphylos patula* is a component .....
..... /**18b *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN-AP or QV-Mix:shrub) Shrub**
15'. Not as above. .....
..... /**18c. *Quercus vacciniifolia-Arctostaphylos nevadensis* (QV-AN or QV-Mix:shrub) Shrub**

16. *Arctostaphylos patula* is a component .....
..... /**18c. *Quercus vacciniifolia-Arctostaphylos patula* (QV-AP or QV-Mix:shrub) Shrub**
16'. Not as above ...../**18d. *Quercus vacciniifolia*-Mix (QV-Mix:shrub) Shrub**

17. *Arctostaphylos nevadensis* is present 18
17'. Not as above 23

18. *Arctostaphylos patula* is a component and the % of *Arctostaphylos patula*
is greater than the % of *Chrysolepis sempervirens*..... 19
18'. Not as above 21

19. The % of *Arctostaphylos nevadensis* and *Arctostaphylos patula* together
is greater than or equal to 90% of the shrub composition .....
...../**19b. *Arctostaphylos nevadensis-Arctostaphylos patula* (AN-AP or AN-Mix:shrub) Shrub**
19'. Not as above 20

20. *Ceanothus cordulatus* is a component.....
...../**19c. *Arctostaphylos nevadensis-Arctostaphylos patula-Ceanothus cordulatus***
..... **(AN-AP-CC or AP-Mix:shrub) Shrub**
20'. Not as above...../**19d. *Arctostaphylos nevadensis-Arctostaphylos patula*-Mix Shrub**
..... **(AN-AP-Mix or AP-Mix:shrub) Shrub**

21. *Chrysolepis sempervirens* is a component. 22
21'. Not as above ..... /**19e.*Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub**

22. The % of *Arctostaphylos nevadensis* and *Chrysolepis sempervirens* together
is greater than or equal to 90% of the shrub composition .....
..... /**19f. *Arctostaphylos nevadensis-Chrysolepis sempervirens-(Holodiscus microphyllus)***
.....**(AN-CS-HM or AN-Mix:shrub) Shrub**
22'. Not as above..... /**19e. *Arctostaphylos nevadensis*-Mix (AN-Mix:shrub) Shrub**

23. *Arctostaphylos patula* is a component..... 24
23'. Not as above 31

24. *Chrysolepis sempervirens* is a component or
Chrysolepis sempervirens is present and the% of *Ceanothus velutinus*
Is greater than the % of *Chrysolepis sempervirens* 25
24'. Not as above 28

25. *Ceanothus velutinus* is a component ..... /**20b. *Arctostaphylos patula-Ceanothus velutinus-(Chrysolepis sempervirens)*** **(AP-CV-(CS) or AP-Mix:shrub) Shrub**
25'. Not as above 26

26. *Ceanothus cordulatus* is a component and the % of *Ceanothus cordulatus* is greater than the % of *Chrysolepis sempervirens* ..... /**20c. *Arctostaphylos patula-Ceanothus cordulatus*** **(AP-CC or AP-Mix:shrub) Shrub**
26'. Not as above 27

27. *Chrysolepis sempervirens* is a component ..... /**20d. *Arctostaphylos patula-Chrysolepis sempervirens*** **(AP-CS or AP-Mix:shrub) Shrub**
27'. Not as above ..... **20e. *Arctostaphylos patula*-Mix (AP-Mix:shrub) Shrub**

28. *Ceanothus velutinus* is a component and the % of *Ceanothus velutinus* is greater than the % of *Ceanothus cordulatus* ..... /**20b. *Arctostaphylos patula-Ceanothus velutinus -(Chrysolepis sempervirens)*** **(AP-CV-(CS) or AP-Mix:shrub) Shrub**
28'. Not as above 29

29. *Ceanothus cordulatus* is a component ..... /**20f. *Arctostaphylos patula-Ceanothus cordulatus*** **(AP-CC or AP-Mix:shrub) Shrub**
29'. Not as above 30

30. *Arctostaphylos nevadensis* is present ..... **19b. *Arctostaphylos nevadensis-Arctostaphylos patula*** **(AN-AP or AN-Mix:shrub) Shrub**
30'. Not as above ..... /**20g.*Arctostaphylos patula*-Mixed (AP-Mix:shrub) Shrub**

31. *Alnus incana* is a component 32
31'. Not as above 34

32. *Salix lemonii* is a component ..... /**21b. *Alnus incana-Salix lemmonii*** **(Al-SLe or Al-Sal:shrub) Shrub**
32'. Not as above 33

33. Other *Salix* is a component ..... /**21c. *Alnus incana-Other Salix*** **(Al-Sal:shrub) Shrub**
33'. Not as above ..... **21d. *Alnus incana*-Mixed (Al-Mix:shrub) Shrub**

34. *Salix* is a component ..... /**22d. *Salix*-Mix (Sal-Mix:shrub) Shrub**
34'. Not as above 35

35. *Ericameria bloomeri* is a component and the % of *Ericameria bloomeri* composition is greater than or equal to 25% of the shrub composition ..... /**23b. *Ericameria bloomeri* –Mix (EB-Mix:shrub) Shrub**
35'. Not as above 36

36. *Purshia tridentata, Ribes roezlii, Chrysothamnus nauseosus* or *Ribes sp.* composition is more than or equal to 50% composition ..... /**24b. Dry Mixed (DMix:shrub) Shrub**
36'. Not as above ..... /**25a. Other Mixed (SMix:shrub) Shrub**

Comprehensive Herbaceous Key

Herbaceous cover is associated

1. Single herbaceous species composition more than or equal to 90% of herbaceous cover 2
1'. Not as above 5

2. Single species is *Polygonum amphibium* ..... /**31a. *Polygonum amphibium* (Pam:herb) Herbaceous**
2'. Not as above 3

3. Single species is *Typha latifolia*..... /**31b. *Typha latifolia* (Tl:herb) Herbaceous**
' 3'. Not as above 4

4. Single species is *Pteridium aquilinum* ..... /**30a. *Pteridium aquilinum* (Paq:herb) Herbaceous**
4'. Not as above .....Unrecognized

5. *Lupinus obtusilobus* and/or *Polygonum davisae* are components 6
5'. Not as above 7

6. *Achnatherum occidentale* or *Elymus elymoides* is present and *Achnatherum occidentale/Elymus elymoides* cover is greater than *Polygonum davisiae* cover..... /**27a. *Lupinus obtusilobus-Achnatherum occidentale-Elymus elymoides* (LoAE:herb) Herbaceous**
6'. Not as above. ..... /**27b. *Lupinus obtusilobus-Polygonum davisiae* (LoPd:herb) Herbaceous**

7. *Wyethia mollis* and/or *Balsamorhiza sagittata* are components. ..... /**29a. *Wyethia mollis-Balsamorhiza sagittata* (WmBs:herb) Herbaceous**
7'. Not as above 8

8. *Senecio triangularis, Veratrum californicum,* and *Lupinus polyphyllus* are components..... 9
8'. Not as above. 10

9. Wet conditions exist ..... /**32a. Mesic Herbaceous Meadow/Complex (HMC or HMM:herb) Association**
9'. Not as above ..... /**32b. Mesic Herbaceous Meadow (HMM:herb) Association**

10. *Typha latifolia* is at least 25% cover ..... /**31b. *Typha latifolia* (Tl or HWM:herb) Herbaceous**
10'. Not as above 11

11. *Menyanthes trifoliata* and/or *Nuphar luteum* are present ..... /**31c. *Menyanthes trifoliata-Nuphar luteum* (MtNl or HWM:herb) Herbaceous**
11'. Not as above 12

12. *Achnatherum occidentale* and/or *Elymus elymoides* are components ..... /**28a. *Achnatherum occidentale-Elymus elymoides-(Mix) (AoEe-*(Mix):herb) Herbaceous**
12'. Not as above 13

13. Forb(s) and graminoid(s) are components 14
13'. Not as above 18

14. Sedge and *Aster alpigenus* are components. ..... /**32c. Sedge Meadow Mixed (HSM:herb)Herbaceous**
14'. Not as above 15

15. Dry conditions exist ..... /**33a. Dry Mixed (HDX:herb) Herbaceous**
15'. Not as above 16

16. Subalpine conditions exist ..... /**34a.Subalpine Mixed (HSX:herb) Herbaceous**
16'. Not as above 17

17. Wet conditions exist ..... /**31d. Wet Herbaceous Meadow (HWM:herb)**
17'. Not as above ..... /**34b. Other Mixed (HOX:herb) Herbaceous**

18. Graminoid(s) and/or *Juncus* present 19
18'. Not as above ..... /**35a. Other Mixed (HOX:herb) Herbaceous**

19. Dry conditions exist ..... /**33b. Dry Mixed Graminoid (HDG:herb)**
19'. Not as above 20

20. Subalpine conditions exist ..... /**34b.Subalpine Graminoid Meadow (HSG:herb)**
20'. Not as above. 21

21. Wet conditions exist ..... /**31d. Wet Herbaceous Meadow (HWM:herb)**
21'. Not as above ..... /**36b. Other Mixed Graminoid (HOG:herb)**