

If members of the public wish to attend the meeting digitally the link is below in yellow. The meeting will go on in person regardless of technical difficulties with Zoom.

## WINTER PARK TOWN COUNCIL MEETING

Winter Park Town Hall – 50 Vasquez Road

Tuesday, September 3, 2024 – 5:30 p.m.

*Dinner Provided*



### AGENDA

1. Meeting Call To Order
  - a. Pledge of Allegiance
  - b. Roll Call of Council Members
  
2. Town Hall Meeting (*Public Comment*)

*Public Comment is restricted to three minutes per person, and you must state your name and physical address for the record. Please be mindful of not reiterating other people's comments.*
  
3. Consent Agenda
  - a. Approval of August 20, 2024, Regular Meeting Minutes
  
4. Action Items
  - a. Public Hearing, Special Event Permit Application for Fall Fest
  - b. Resolution 2173, A Resolution Supporting a Grant Application for Funding from Open Lands Rivers and Trails – Grand County Funds
  - c. Ordinance 622, An Ordinance of the Town Council of the Town of Winter Park, Colorado, Amending Section 7.7C(F) of the Unified Development Code, Second Reading and Public Hearing
  - d. Ordinance 623, An Ordinance of the Town Council of the Town of Winter Park Amending Title 7, Chapter 3, Article 3C of the Winter Park Unified Development Code Regarding Regulation of Wetlands, Second Reading and Public Hearing
  - e. Public Hearing, Resolution 2174, A Resolution of the Town Council of the Town of Winter Park Approving the Preliminary Plat for 185 Vasquez Road, The Landings Townhomes – Lot 2, Cullen Minor Plat
  - f. Resolution 2175, A Resolution Approving a Development Improvements Agreement Standard Form for The Landings Townhomes
  - g. Receive Petition for the Creation of an Urban Renewal Authority and Set Date for Public Hearing
  
5. Town Manager's Report



## MINUTES

**DATE:** Tuesday, August 20, 2024

**MEETING:** Winter Park Town Council

**PLACE:** Town Hall Council Chambers and Zoom Meeting Call

**PRESENT:** Mayor Nick Kutrumbos, Mayor Pro Tem Jennifer Hughes, Councilors, Jeremy Henn, Riley McDonough, and Art Ferrari and Town Manager Keith Riesberg, Assistant Town Manager Alisha Janes, and Town Clerk Danielle Jardee

**OTHERS PRESENT:** Police Chief Glen Trainor, Transit Manager Charles McCarthy, Public Works Director Jamie Wolter, Community Development Director James Shockey, Senior Planner Brian Kelly and Finance Director Craig Rutherford

---

Mayor Nick Kutrumbos called the meeting to order at 5:30 p.m.

Mayor Nick Kutrumbos led those present in reciting the Pledge of Allegiance.

2. **Town Hall Meeting**  
*No comments were made.*
3. **Consent Agenda**
  - 3.a. **Approval of August 6, 2024, Regular Meeting Minutes**
  - 3.b. **Authorization to Sign Rendezvous Arrow Metropolitan District Nos. 1-8 Intergovernmental Agreement with the Town of Winter Park**
  - 3.c. **Resolution 2167, A Resolution Approving a Development Improvements Agreement Standard Form with Roam Community Amenity Center**

Councilor Art Ferrari moved and Councilor Riley McDonough seconded the motion approving the consent agenda. Motion carried: 5-0.

4. **Action Items**
  - 4.a. **Public Hearing, Special Event Permit Application for Rocky Mountain Wine Festival**

Town Clerk Danielle Jardee stated this application is for the Rocky Mountain Wine Festival taking place at Winter Park Resort on Saturday, September 21 from 11:30 a.m. to 4 p.m. Ms. Jardee stated Staff does recommend approval. Mayor Kutrumbos opened the public hearing, hearing no comments. Mayor Kutrumbos closed the public hearing.

Mayor Pro Tem Jennifer Hughes moved and Councilor Riley McDonough seconded the motion approving Special Event Permit Application for Rocky Mountain Wine Festival. Motion carried: 5-0.

**4.b. Resolution 2168, A Resolution Authorizing the United States Geological Survey (USGS) to Use Confluence Park for Testing Along the Fraser River**

Town Manager Keith Riesberg stated USGS (United States Geological Survey) presented a proposal at your last workshop and explained the proposal to do die tracer testing of the Fraser River to locate and quantify groundwater discharge to the river. Mr. Riesberg stated this testing is being conducted as part of their next generation water observation system. Mr. Riesberg stated Town of Winter Park has a partnership with USGS for water monitoring throughout the area. Mr. Riesberg stated following the workshop presentation we have heard of no concerns with this testing. Mr. Riesberg stated because the testing is being done adjacent to the Town's Confluence Park, we are asking that Council authorize USGS to use the park for those testing purposes. Councilor Riley McDonough asked if they were going to expand the scope of the testing. Mr. Riesberg stated no, they are staying focused on the original scope of testing. Mayor Kutrubos stated the importance of making sure that USGS will do the heavy lifting of pushing the messaging out. Mr. Riesberg stated Trout Unlimited will push out communication and the Town will also share communication about the testing.

Councilor Jeremy Henn moved and Councilor Riley McDonough seconded the motion approving Resolution 2168, A Resolution Authorizing the United States Geological Survey (USGS) to Use Confluence Park for Testing Along the Fraser River. Motion carried: 5-0.

**4.c. Resolution 2169, A Resolution Authorizing the Adoption of the Town of Winter Park's Five-Year Transit Development Plan**

Transit Manager Charles McCarthy stated the five-year transit development plan was released earlier this year, we worked with several groups of stakeholders, and the plan really outlines the demand from the public as well as outlining some milestones for transit to move forward with. Mr. McCarthy stated the plan has milestones to work towards to achieve transit goals. Mr. McCarthy stated adopting this plan will let us begin working towards the transit goals outlined in the development plan.

Councilor Art Ferrari moved and Councilor Jeremy Henn seconded the motion approving Resolution 2169, A Resolution Authorizing the Adoption of the Town of Winter Park's Five-Year Transit Development Plan. Motion carried: 5-0.

**4. d. Resolution 2170, A Resolution Approving a Contract for Services with Transloc Systems for a Transit Intelligent Transportation System**

Transit Manager Charles McCarthy stated this is a new contract with our current app provider Transloc, Transloc does all the out tracking and the tracking infrastructure on the busses. Mr. McCarthy stated last season there were questions about satisfaction and 95% of the issues were on our side, drivers forgetting to turn the app on, or getting new busses and not outfitting them with the app infrastructure. Mr. McCarthy stated Transloc has been easy to work with and would like to do another four years with Transloc. Mr. McCarthy stated there is an appropriation clause and app termination language in the contract if we aren't satisfied with the app service.

Mayor Pro Tem Jennifer Hughes moved and Councilor Riley McDonough seconded the motion approving Resolution 2170, A Resolution Approving a Contract for Services with Transloc Systems for a Transit Intelligent Transportation System. Motion carried: 5-0.

**4.e. Ordinance 622, An Ordinance of the Town Council of the Town of Winter Park, Colorado, Amending Section 7.7C(F) of the Unified Development Code, First Reading**



Community Development Director James Shockey stated the request is to amend the definition of “family” as it is written in the UDC (Unified Development Code) based on the Colorado House Bill 2024-1007. Mr. Shockey stated the House Bill requires that we amend how we define “family”, we currently define it with number limits that definition has to be struck to eliminate the limit on people. Mr. Shockey stated it does allow the building department to regulate the number of people based on health and safety, there is still a limit to how many people can live in a single-family home or something similar based on square footage, it will now be regulated by the building code. Mr. Shockey stated Staff recommends approval.

Councilor Jeremy Henn moved and Councilor Art Ferrari seconded the motion approving Ordinance 622, An Ordinance of the Town Council of the Town of Winter Park, Colorado, Amending Section 7.7C(F) of the Unified Development Code, First Reading. Motion carried by following roll call vote:

Jeremy Henn	“Aye”	Jennifer Hughes	“Aye”
Riley McDonough	“Aye”	Art Ferrari	“Aye”
Nick Kutrumbos	“Aye”		

**4.f. Ordinance 623, An Ordinance of the Town Council of the Town of Winter Park Amending Title 7, Chapter 3, Article 3C of the Winter Park Unified Development Code Regarding Regulation of Wetlands, First Reading**

Community Development Director James Shockey stated earlier this year we brought forward ordinance 618 that proposed amendments to the regulation of wetlands. Mr. Shockey stated after several hearings Council voted to withdraw the consideration of ordinance 618, and requested we come back with regulations that provide the same level of protection to wetlands prior to the Sackett Supreme Court decision. Mr. Shockey stated Staff has been working with legal counsel to draft those regulations. Mr. Shockey stated essentially anything that is not regulated by the Army Corps of Engineers is regulated by the Town. Mr. Shockey stated if the wetland is considered a non-jurisdictional wetland, then the Town would regulate it through a wetland disturbance permit that would be issued by Council after a recommendation from the Planning Commission. Mr. Shockey stated the disturbance permit only kicks in if the disturbance is bigger than one tenth of an acre, if proposing to disturb an area larger than one tenth then there are two ways that mitigation can occur. Mr. Shockey stated they can pay for a wetland bank or contribute to an existing wetland project or they can do actual mitigation which is a one-to-one ratio same as the Army Corp. Mr. Shockey stated this amendment would also add two definitions of wetlands to the UDC (Unified Development Code), one of them replacing the existing definition. Mr. Shockey stated Planning Commission did review ordinance 623 and recommended approval and Staff recommends approval.

Councilor Riley McDonough moved and Councilor Art Ferrari seconded the motion approving Ordinance 623, An Ordinance of the Town Council of the Town of Winter Park Amending Title 7, Chapter 3, Article 3C of the Winter Park Unified Development Code Regarding Regulation of Wetlands, First Reading. Motion carried by following roll call vote:

Art Ferrari	“Aye”	Riley McDonough	“Aye”
Jennifer Hughes	“Aye”	Jeremy Henn	“Aye”
Nick Kutrumbos	“Aye”		

**4.g. Resolution 2171, A Resolution Approving a First Amendment to the Public Improvement Escrow Agreement Related to the Roam Development**

Community Development Director James Shockey stated this request is to allow a public improvement escrow agreement like we approved in 2021 for Roam filing one to apply for any

property in Roam that is covered under the metropolitan district. Mr. Shockey stated in 2021 we allowed the metropolitan district to fund an escrow agreement held by a title company, and as improvements were made and signed off by the Town, the title company releases it. Mr. Shockey stated it is just a different form of surety other than a bond or letter of credit. Mr. Shockey stated that agreement only applied to filing one, the request is to now allow it to apply anywhere in Roam that is covered by a metropolitan district. Mr. Shockey stated legal counsel has reviewed this and has no issues with it, Staff recommends approval.

Councilor Jeremy Henn moved and Councilor Art Ferrari seconded the motion approving Resolution 2171, A Resolution Approving a First Amendment to the Public Improvement Escrow Agreement Related to the Roam Development. Motion carried: 5-0.

**4.h. Resolution 2172, A Resolution of the Town Council of the Town of Winter Park Approving a Professional Services Agreement with Wright Water Engineers for Preparation of Stormwater Management Plan**

Community Development Director James Shockey stated we are recommending approval of a contract to Wright Water Engineers. Mr. Shockey stated we did receive seven proposals and had a selection committee that reviewed all seven proposals and interviewed three firms and are now recommending Wright Water Engineers. Mr. Shockey stated the proposal is not to exceed \$296,000 dollars which has been allocated in the 2024 budget. Mr. Shockey stated if approved tonight work will start right away, anticipating surveying in the month of September, being ready in winter months for modeling, and then come to Council with their findings. Mr. Shockey stated some of those findings would be verified during the spring when we have runoff and then have approval of a plan by next summer.

Councilor Art Ferrari moved and Mayor Pro Tem Jennifer Hughes seconded the motion approving Resolution 2172, A Resolution of the Town Council of the Town of Winter Park Approving a Professional Services Agreement with Wright Water Engineers for Preparation of Stormwater Management Plan. Motion carried: 5-0.

**4.i. Approval of Off-street Parking Requirement for Beavers Lodge Amenity Center**

Community Development Director James Shockey stated Planning Commission approved a major site plan for an amenity center as well as a minor plat that separated that lot from the filing. Mr. Shockey stated the reason Council is seeing parking is because in the FDP (Final Development Plan) that was approved for Roam it stated parking fell under the old parking regulations not the UDC (Unified Development Code). Mr. Shockey stated the old standards don't have a use that met an amenity center so there is no parking calculation, the Town Manager can make a recommendation that can be approved by Council. Mr. Shockey stated the amenity center is 5,500 square feet and the entire area with the outside amenities is 12,00 square feet. Mr. Shockey stated we did use the calculation in the UDC one parking space to every 125 square feet and the applicant provided examples of community centers, the one we felt that was closest to us was one in Silverthorne which had one parking space to every 500 square feet. Mr. Shockey stated Roam ended up providing the one parking space to every 125 square feet, there is also a transit stop and numerous trails and sidewalks that lead to amenity center, there are multiple ways of getting there. Mr. Shockey stated they do have the appropriate amount of parking which is a total of 51 spaces. Mr. Shockey stated Staff is recommending on behalf of the Town Manager the parking requirements one space per 125 square feet as set by Council's approval. Councilor Riley McDonough asked about ADA (Americans with Disabilities Act) parking. Mr. Shockey stated they are meeting the requirements which is two spaces. Roam Representative Jeff Vogel presented renderings of the proposed amenity center to Council.

Councilor Jeremy Henn moved and Councilor Art Ferrari seconded the motion approving Off-street Parking Requirement for Beavers Lodge Amenity Center. Motion carried: 5-0.

**5. Town Manager's Report**

Town Manager Keith Riesberg stated the Grand County Board of County Commissioners did reduce Grand County's fire restrictions down to stage one fire restrictions. Mr. Riesberg stated we will update our messaging to the community to reflect that change. Mr. Riesberg stated we are still working to complete a variety of improvements throughout the community. Mr. Riesberg stated repaving of chosen local streets will occur after Labor Day, we have concrete work that is being done including ADA (Americans with Disabilities Act) improvements at Wolf Park. Mr. Riesberg stated the bus stop at Arrow should be completed and operational for this coming winter. Mr. Riesberg stated Xcel has finally started gas main work on Telemark Drive, and CDOT (Colorado Department of Transportation) is doing additional work on Hwy 40. Mr. Riesberg stated Century Link is doing work on Vasquez Road as well as Mountain Parks Electric. Mr. Riesberg stated to the public to please be patient with all the projects and work and for the safety of everyone to please slowdown in construction zones.

**6. Mayor's Report**

*Nothing to report.*

**7. Town Council Items for Discussion**

*Nothing to report.*

There being no further business to discuss, upon a motion regularly adopted, the meeting was adjourned at 6:11 p.m.

---

The next scheduled meeting of the Town Council will be Tuesday, September 3, 2024, at 5:30 p.m.

---

Danielle Jardee, Town Clerk



TOWN OF WINTER PARK  
TOWN COUNCIL  
September 3, 2024

**SPECIAL EVENT PERMITS –PUBLIC HEARING**

**Applicants:** 1. Grand Kids Learning Center, Ashley Bobo

**Staff Contact:** Dani Jardee, Town Clerk

**Event Descriptions:**

The event is a fundraiser for Grand Kids Learning Center, event located at Rendezvous Event Center at Hideaway Park  
1. Fall Fest, Saturday, September 14 from 1:00 p.m. to 6:00 p.m.

**Staff Comments:** The Special Event Permit application was received, reviewed, and approved by Town staff. Notifications of the Public Hearing for Fall Fest event were published in the Sky Hi News and Middle Park Times on August 14. No comments have been received.

**Attachments:** Application, Map, Certificates of Good Standing

**Staff Recommendation**

Staff recommends the Town Council grant the Special Event Permit for Grand Kids Learning Center.



# Special Event Permit Application

Please complete each section; additional sheets may be used if necessary. If your group will be serving alcohol, please complete Form DR 8439 also. Alcohol served in bottles or cans are never permitted at events.



Name of Applicant:

Mailing Address of Applicant:

Contact Name:  Contact Number:

Contact Email:

Type of Special Event (i.e. fundraiser, concert):

Address of Special Event:

Do you have written permission to use the premises?  Yes  No

Exact dates and times of the event:

Explain the nature of your organization, its function, and who/what benefits from its operations:

Who or what organization will be the recipient of the funds derived from this event?

Number of expected attendees:

Describe the premises where the event will take place:

What type of security will be provided?

Number of security personnel:  How will they be identified?

If the event is being held outdoors, how will the exterior boundaries of the premises be marked?

What type of entertainment will be provided at the event?

How will attendees be checked for proper age (i.e. at the door, at the bar)?  
How will underage attendees be identified so they are not served alcohol (i.e. wristbands)?

Attendees will be checked for ID at the bar each time they try to purchase drinks

How will the conduct of attendees be monitored and by whom?

They will be monitored by the volunteers at the event for proper behavior.

What type of beverages and food or snacks will be available?

Colorado CornDog will serve food & drinks; the bar will have beer, wine & mixed cocktails in a can

Organization State Sales Tax Number: [REDACTED]

Organization Town Sales Tax Number: [REDACTED]

Explain how the event will be marketed; what kinds of advertising material will be distributed and who are the targeted recipients?

The event will be marketed through all Chamber avenues: online, social media, town signs, flyers.  
We aim to target families for a fun day activities

**Thereby certify, under penalty of perjury, that the information provided to the Town of Winter Park contained in this application is true and accurate to the best of my knowledge.**

Ashley Bobo  
Applicant's Signature

8/12/24  
Date

[REDACTED]  
Applicant's Email Address

P.O. Box 454, Fraser, CO 80442

Applicant's Mailing Address  
[REDACTED]

Applicant's Physical Address  
[REDACTED]

Applicant's Main Phone Number

Applicant's Alternate Phone Number

STATE OF COLORADO  
COUNTY OF GRAND  
TOWN OF WINTER PARK

Subscribed and sworn to me this \_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_  
Witness my head and official seal:

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
My commission expires



# Application for a Special Events Permit

Departmental Use Only

State Only Permit/State Property

In order to qualify for a Special Events Permit, You **Must Be a Qualifying Organization Per 44-5-102 C.R.S. and One of the Following** (See back for details.)

- |                                    |   |   |
|------------------------------------|---|---|
| <input type="checkbox"/> Social    | <input type="checkbox"/> Athletic                           | <input checked="" type="checkbox"/> Philanthropic Institution |
| <input type="checkbox"/> Fraternal | <input type="checkbox"/> Chartered Branch, Lodge or Chapter | <input type="checkbox"/> Political Candidate                  |
| <input type="checkbox"/> Patriotic | <input type="checkbox"/> National Organization or Society   | <input type="checkbox"/> Municipality Owned Arts Facilities   |
| <input type="checkbox"/> Political | <input type="checkbox"/> Religious Institution              |   |

LIAB	Type of Special Event Applicant is Applying for:	DO NOT WRITE IN THIS SPACE
2110	<input checked="" type="checkbox"/> Malt, Vinous And Spirituous Liquor \$25.00 Per Day	Liquor Permit Number
2170	<input checked="" type="checkbox"/> Fermented Malt Beverage \$10.00 Per Day	

1. Name of Applicant Organization or Political Candidate <b>Wapiti Child Care Center Parent Organization dba Grand Kids Learning Center</b>	State Sales Tax Number (Required) [REDACTED]
--	---

2. Mailing Address of Organization or Political Candidate (include street, city/town and ZIP) <b>P.O. Box 454 Fraser, CO 80442</b>	3. Address of Place to Have Special Event (include street, city/town and ZIP) <b>Rendezvous Event Center 78821 US Highway 40/ Hidaway Park Winter Park, CO 80482</b>
---	---

4. Authorized Representative of Qualifying Organization or Political Candidate <b>Lisa Havlik</b>	Date of Birth [REDACTED]	Phone Number [REDACTED]
--	-----------------------------	----------------------------

Authorized Representative's Mailing Address (if different than address provided in Question 2.)  
 [REDACTED], Fraser, CO 80442

5. Event Manager <b>Ashley Bobo</b>	Date of Birth [REDACTED]	Phone Number [REDACTED]
--	-----------------------------	----------------------------

Event Manager Home Address (Street, City, State, ZIP) [REDACTED] Tabernash, CO 80478	Email Address of Event Manager
---	--------------------------------

6. Has Applicant Organization or Political Candidate been Issued a Special Event Permit this Calendar Year? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes How many days? _____	7. Is the premises for which your event is to be held currently licensed under the Colorado Liquor or Beer codes? <input type="checkbox"/> No <input type="checkbox"/> Yes License Number _____
---	--

8. Does the Applicant Have Possession or Written Permission for the Use of The Premises to be Licensed?  Yes  No

List Below the Exact Date(s) for Which Application is Being Made for Permit

Date	Hours From	To	Date	Hours From	To	Date	Hours From	To	Date	Hours From	To
09/14/20	12p.m.	7p.m.									

**Oath of Applicant**

I declare under penalty of perjury in the second degree that I have read the foregoing application and all attachments thereto, and that all information therein is true, correct, and complete to the best of my knowledge.

Signature	Title <b>Executive Director</b>	Date
-----------	------------------------------------	------

**Report and Approval of Local Licensing Authority (City or County)**

The foregoing application has been examined and the premises, business conducted and character of the applicant is satisfactory, and we do report that such permit, if granted, will comply with the provisions of Title 44, Article 5, C.R.S., as amended.  
**THEREFORE, THIS APPLICATION IS APPROVED.**

Local Licensing Authority (City or County)	<input type="checkbox"/> City <input type="checkbox"/> County	Telephone Number of City/County Clerk
--	--	---------------------------------------

Signature	Title	Date
-----------	-------	------

**DO NOT WRITE IN THIS SPACE - FOR DEPARTMENT OF REVENUE USE ONLY**

Liability Information			Total
License Account Number	Liability Date	State	
		-750 (999)	\$ .

## Application Information and Checklist

**The following supporting documents must be attached to this application for a permit to be issued:**

- Appropriate fee.
- Diagram of the area to be licensed (not larger than 8 1/2" X 11" reflecting bars, walls, partitions, ingress, egress and dimensions. **Note:** If the event is to be held outside, please submit evidence of intended control, i.e., fencing, ropes, barriers, etc.
- Copy of deed, lease, or written permission of owner for use of the premises.
- Certificate of good corporate standing (NONPROFIT) issued by Secretary of State within last two years; **or**
- If not incorporated, a NONPROFIT charter; **or**
- If a political Candidate, attach copies of reports and statements that were filed with the Secretary of State.

- Application must first be submitted to the Local Licensing Authority (city or county) at least thirty (30) days prior to the event.
- Public notice of the proposed event and procedure for protesting issuance of the permit shall be conspicuously posted at the proposed location for at least (10) days before approval of the permit by Local Licensing Authority. (44-5-106 C.R.S.)
- State Licensing Authority must be notified of approved applications by Local Licensing Authorities within ten (10) days of approval.
- Check payable to the Colorado Department Of Revenue

### Qualifications for Special Events Permit

(44-5-102 C.R.S.)

A Special Event Permit issued under this article may be issued to an organization, whether or not presently licensed under Articles 4 and 3 of this title, which has been incorporated under the laws of this state for the purpose of a social, fraternal, patriotic, political or athletic nature, and not for pecuniary gain or which is a regularly chartered branch, lodge or chapter of a national organization or society organized for such purposes and being non profit in nature, or which is a regularly established religious or philanthropic institution, and to any political candidate who has filed the necessary reports and statements with the Secretary of State pursuant to Article 45 of Title 1, C.R.S. A Special Event permit may be issued to any municipality owning arts facilities at which productions or performances of an artistic or cultural nature are presented for use at such facilities.





- Cones
- Storage units
- Chamber tents
- Ice machine
- Volunteer
- Handicapped
- Barricade

Interactive Games

Inflatables

Face Painters  
Craft table  
Bobbing for Donuts  
Carnival Games  
Library

T-shirts & ticket sales

Kona Ice

Caramel Apple Making station  
Gringos Locos  
Silent Auction  
Bar, ID, Cider  
Silent Auction  
Bar, ID, Cider

Food Vendor

Fire Truck

Fire Truck

Harmonica  
Harmonica

Winter Park Fall Fest  
September 14, 2024

OFFICE OF THE SECRETARY OF STATE  
OF THE STATE OF COLORADO

**CERTIFICATE OF FACT OF GOOD STANDING**

I, Jena Griswold, as the Secretary of State of the State of Colorado, hereby certify that, according to the records of this office,

Wapiti Child Care Center Parent Organization

is a

Nonprofit Corporation

formed or registered on 10/22/2002 under the law of Colorado, has complied with all applicable requirements of this office, and is in good standing with this office. This entity has been assigned entity identification number 20021293957 .

This certificate reflects facts established or disclosed by documents delivered to this office on paper through 07/29/2022 that have been posted, and by documents delivered to this office electronically through 08/01/2022 @ 09:55:48 .

I have affixed hereto the Great Seal of the State of Colorado and duly generated, executed, and issued this official certificate at Denver, Colorado on 08/01/2022 @ 09:55:48 in accordance with applicable law. This certificate is assigned Confirmation Number 14202876 .



A handwritten signature in blue ink that reads "Jena Griswold".

Secretary of State of the State of Colorado

\*\*\*\*\*End of Certificate\*\*\*\*\*  
*Notice: A certificate issued electronically from the Colorado Secretary of State's Web site is fully and immediately valid and effective. However, as an option, the issuance and validity of a certificate obtained electronically may be established by visiting the Validate a Certificate page of the Secretary of State's Web site, <http://www.sos.state.co.us/biz/CertificateSearchCriteria.do> entering the certificate's confirmation number displayed on the certificate, and following the instructions displayed. Confirming the issuance of a certificate is merely optional and is not necessary to the valid and effective issuance of a certificate. For more information, visit our Web site, <http://www.sos.state.co.us/> click "Businesses, trademarks, trade names" and select "Frequently Asked Questions."*



## MEMO

**TO** Town Council

**FROM** Jamie Wolter, Public Works Director

**CC** Town Manager Keith Riesberg

**DATE** August 29, 2024

**RE** OLRT – GRANT APPLICATION – FRASER RIVER TRAIL REPAVING

To ensure that the Fraser River Trail remains accessible to all users and provides a top-notch experience, it is crucial to address its current condition, which includes large cracks, heaves, and depressions. These issues are negatively affecting the user experience. This trail sees very high use, in 2023 our trail counter tallied 57,886 users. Therefore, repaving work is needed, and it should be scheduled to take place in the fall of 2025. This timing will help minimize disruptions and ensure the trail is ready for use in the winter of 2025 - 2026.

I plan to apply for grant funding from the Open Lands, Rivers, and Trails (OLRT) fund through Grand County to offset the cost of repaving. To increase the chances of receiving this grant, it is essential to have the support of the Winter Park Town Council and a commitment to provide matching funds. The OLRT grant if awarded is expected to cover approximately 38.5% of the project cost.

The proposed project covers approximately 1.8 miles of the paved trail starting at the USFS boundary just south of the Beaver's Pond to the Northern edge of the Idlewild campground, then starting again just south of the bridge after the campground and continuing to its terminus on Telemark Drive in Old Town Winter Park.

The estimated cost of this project is \$648,457 and the OLRT grant application will be for \$250,000 which is approximately 38.5% of the total project cost. This leaves the town responsible for \$398,457 of the total project cost. Town Council's approval and support of this grant application will help ensure that the Town is awarded this grant funding.

TOWN OF WINTER PARK

RESOLUTION NO. 2173  
SERIES OF 2024

A RESOLUTION SUPPORTING A GRANT APPLICATION FOR FUNDING FROM OPEN LANDS RIVERS AND TRAILS – GRAND COUNTY FUNDS

WHEREAS, the Fraser River Trail (FRT) needs to be repaved to maintain a top notch experience for all users;

WHEREAS, FRT is used by a very large number of visitors and residents for commuting and recreation along the Fraser River and is vital infrastructure and connectivity between the Town of Winter Park (TOWP) and Winter Park Resort;

WHEREAS, the total estimated cost of this project is \$648,457. The (TOWP) specifically the Town Council supports the application for \$250,000 grant dollars from Open Lands Rivers and Trails (OLRT) fund and the TOWP commits to matching funds in the amount of \$398,457;

WHEREAS, the Town of Winter Park commits to providing required matching funds using general fund dollars on the project.

NOW, THEREFORE, BE IT RESOLVED by the Town Council of Winter Park, Colorado as follows:

1. The Town Council strongly supports the grant application to the OLRT funds from Grand County.
2. The Town Council approves the matching funds of \$398,457 for the project.
3. If the grant is awarded, the Public Works Department will expeditiously pursue completion of the project.

APPROVED AND PASSED this 3<sup>rd</sup> day of September 2024, by a vote of \_\_\_ to \_\_\_.

TOWN OF WINTER PARK

\_\_\_\_\_  
Nick Kutrumbos, Mayor

ATTEST:

\_\_\_\_\_  
Danielle Jardee, Town Clerk



## MEMO

**TO** Town Council  
**FROM** Brian P. Kelly, Senior Planner  
**THROUGH** James Shockey, Community Development Director  
**DATE** August 20, 2024  
**RE** Amendment to UDC Sec. 7.7C (F) – Definition of “Family”

### **Background**

Section 7.7C (F) of the Unified Development Code (the “UDC”) currently defines “family” as an individual or two (2) or more persons related by blood or marriage, or a group not exceeding eight (8) persons living and cooking together on the premises in a single dwelling unit.

Colorado House Bill 2024-1007 (“HB 1007”) prohibits counties, cities and counties, and municipalities from limiting the number of people who may live together in a single dwelling based on familial relationship. The act does allow for local governments to implement residential occupancy limits based only on:

- a. Demonstrated health and safety standards, such as international building code standards, fire code regulations, or Colorado department of public health and environment wastewater and water quality standards; or
- b. Local, state, federal, or political subdivision affordable housing program guidelines.

### **Analysis**

Staff has reviewed the current UDC for compliance with HB 1007 and determined that the UDC does not conform to the HB 1007 without adopting a text amendment removing the restriction on maximum occupancy limits in a single dwelling unit in the definition of “Family”

### **Planning Commission Recommendation:**

The Planning Commission reviewed the Text Amendment at a Public Hearing on August 13, 2024. The Commission recommended approval as it was drafted with amendments to the “Family” definition.

### **Staff Recommendation**

Staff recommends the Town Council approve Ordinance 622, Series 2024, an Ordinance of the Town of Winter Park Amending Title 7 of the Winter Park Town Code regarding the definition of “Family” in UDC Section 7.7C(F).



Sample Motion for Approval:

I move to approve Ordinance 622, an Ordinance of the Town of Winter Park Amending Title 7 of the Winter Park Town Code regarding the definition of “Family”.

Sample Motion for Denial:

I move to deny Ordinance 622, an Ordinance of the Town of Winter Park Amending Title 7 of the Winter Park Town Code regarding the definition of “Family”, specifically: *[articulate specific reasons for denial]*



**TOWN OF WINTER PARK  
ORDINANCE NO. 622  
SERIES OF 2024**

**AN ORDINANCE OF THE TOWN COUNCIL OF THE TOWN OF  
WINTER PARK, COLORADO, AMENDING SECTION 7.7C(F) OF THE  
UNIFIED DEVELOPMENT CODE**

WHEREAS, Colorado House Bill 2024-1007 ("HB 1007") prohibits local governments from setting a maximum occupancy limit on a single dwelling unless the limit is based on either a demonstrated health and safety standard or on governmental affordable housing program guidelines;

WHEREAS, Section 7.7C(F) of the Unified Development Code ("UDC") currently defines "family" as an individual or two (2) or more persons related by blood or marriage, or a group not exceeding eight (8) persons living and cooking together on the premises in a single dwelling unit;

WHEREAS, Town Council finds it necessary to adopt this ordinance amending Section 7.7C(F) of the UDC by removing the restriction on maximum occupancy limits in a single dwelling unit in the definition of "family" in conformance with HB 1007 and C.R.S. § 29-20-111;

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL FOR THE TOWN OF WINTER PARK, COLORADO, THAT:

Section 1. Section 7.7C(F) of the UDC is hereby repealed in its entirety and reenacted as follows:

**7.7C(F): Definitions - Family**

Family means one or more persons occupying a single dwelling unit and maintaining a common household.

INTRODUCED, APPROVED ON FIRST READING, AND ORDERED PUBLISHED IN FULL this \_\_\_ day of \_\_\_\_\_, 2024. A public hearing shall be held at the regular meeting of the Winter Park Town Council on the \_\_\_ day of \_\_\_\_\_, 2024 at 5:30 p.m., or as soon thereafter as possible, at the Winter Park Town Hall.

TOWN OF WINTER PARK

\_\_\_\_\_  
Nick Kutrumbos, Mayor

ATTEST:

\_\_\_\_\_  
Danielle Jardee, Town Clerk

READ, ADOPTED AND ORDERED PUBLISHED on second and final reading by a vote of \_\_\_\_\_ to \_\_\_\_\_ on the \_\_\_ day of \_\_\_\_\_, 2024.

TOWN OF WINTER PARK

\_\_\_\_\_  
Nick Kutrumbos, Mayor

ATTEST:

\_\_\_\_\_  
Danielle Jardee, Town Clerk





## MEMO

**To:** Town Council  
**From:** James Shockey, Community Development Director  
**Date:** August 20, 2024  
**Re:** Consideration to amend UDC Sec. 3-C-3-4, *Wetlands* (PLN23-075)

### **Overview:**

The Unified Development Code (the "UDC") Sec. 5-C-1 states an amendment to the text of this UDC may be initiated by Town staff, a citizen of the Town, the Planning Commission, or by the Town Council. Town staff is requesting to amend UDC Sec. 3-C-3-4, *Wetlands* to establish wetland standards consistent with the federal standards that existed prior to *Sackett v. Environmental Protection Agency*, 598 U.S. 651 (2023).

### **Staff Analysis:**

In March 2024, Planning Commission reviewed staff recommended amendments to the UDC that would establish a required setback from wetlands, require mitigation for wetland disturbance, and mitigation procedures for developing within or adjacent to wetland areas. The Commission provided a favorable recommendation of the amendments and sent a summary of their discussion to Council so they could understand the concerns raised at the meeting. Town Council considered the amendments via Ordinance 618, Series 2024. After several hearings, the Council voted to withdraw consideration of the amendments as currently drafted and requested staff draft regulations that would provide the same level of protection to the wetlands prior *Sackett*.

Staff has been working with our legal counsel to draft language that will provide the level of protection requested by Council. Any wetland that is not under the jurisdiction of the U.S. Army Corps of Engineers of the Environmental Protection Agency will be considered wetlands of the Town and would be subject to the regulations established below.

Below is an overview of the proposed regulations, the full text can be found in the attached draft ordinance:

### **Disturbance of Wetlands**

Wetland disturbance is prohibited unless a Wetland Disturbance Permit is issued by Town Council. If disturbance is proposed, a wetlands survey shall be submitted to the Town to determine the level of anticipated disturbance. If the disturbance/fill is greater than a 1/10 of an acre of wetlands and the Town determines there is no practicable alternative to disturbing/filling the wetland, the disturbance or filling may occur but mitigation, either compensatory or actual, will be required.

### Compensatory Mitigation

Compensatory mitigation may include restoring a degraded or drained wetland, creating a new wetland, enhancing an existing wetland, or preserving an existing wetland. A permittee is responsible for mitigation and may fulfill compensatory mitigation obligations through one of the following mechanisms:

1. Wetland mitigation banking in which the permittee purchases mitigation credits from wetland banks, depending on the number of credits required for the area of impacted wetland.
2. In-lieu fee program mitigation in which a third party collects mitigation funds from a large number of permittees and pools these financial resources to create a new mitigation wetland.
3. Permittee-responsible mitigation in which the permittee maintains responsibility for achievement of compensation obligations imposed under Section 404 of the CWA or alternative regulatory regimes. Permittees may opt to complete wetland compensation on their own or may contract an authorized agent or consultant to restore, establish, enhance, and/or preserve wetlands.

### Actual Mitigation

If compensatory mitigation is not feasible, actual mitigation will be required, and a minimum acreage replacement ratio of 1:1 for actual mitigation of wetlands will be used.

### Wetland Definition

The UDC currently defines a wetland as:

**Wetland** means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Examples of different wetland types include swamps, marshes, bogs, seeps, fens, carrs, sloughs, wet meadows, and similar areas.

Staff is recommending the definition be revised to state:

**Wetland** means 1) areas including lakes, rivers, streams, intermittent streams, ponds, sloughs areas of seasonal standing water, or 2) those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions, as such areas are specifically delineated as provided for in the 1987 edition of the Corps of Engineers Wetlands Delineation Manual. Wetlands generally include fens, swamps, marshes, bogs, and similar areas. Manmade lakes or ponds built for the purpose of detaining runoff are not considered wetlands in the context of the UDC. Wetlands do not need to have a connection to waters of the United States, as defined by 33 Code of Federal Regulations (CFR) parts 328 and 329 (as amended) or U.S. Environmental Protection Agency 40 CFR part 230 (as amended) to fall under Town jurisdiction.



In addition, a new definition will be added to the UDC:

**Compensatory Mitigation** means the restoration, reestablishment, rehabilitation, establishment, creation, enhancement, or preservation of state waters for the purpose of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.

**§ 5-B-8 Public Notice Requirements:**

This Text Amendment Application has had proper public notification pursuant to § 5-B-8 of the UDC. A Newspaper Publication (PUB) was published in the Middle Park Times on July 31 providing notification of the hearing and requesting comments.

No comments have been received as of August 7.

**Planning Commission Recommendation:**

The Planning Commission reviewed the Text Amendment at a Public Hearing on August 13, 2024 and recommended approval as it was drafted.

**Staff Recommendation**

Staff recommends the Town Council approve Ordinance 623, Series 2024, an Ordinance of the Town of Winter Park Amending Title 7, Chapter 3, Article 3C of the Winter Park Unified Development Code regarding regulations of wetlands.

**Sample Motion for Approval:**

I move to approve Ordinance 623, Series 2024, an Ordinance of the Town of Winter Park Amending Title 7, Chapter 3, Article 3C of the Winter Park Unified Development Code regarding regulations of wetlands.

**Sample Motion for Denial:**

I move to deny Ordinance 623, Series 2024, an Ordinance of the Town of Winter Park Amending Title 7, Chapter 3, Article 3C of the Winter Park Unified Development Code regarding regulations of wetlands, specifically: *[articulate specific reasons for denial]*

**TOWN OF WINTER PARK  
ORDINANCE NO. 623  
SERIES OF 2024**

**AN ORDINANCE OF THE TOWN COUNCIL OF THE TOWN OF  
WINTER PARK AMENDING TITLE 7, CHAPTER 3, ARTICLE 3C OF  
THE WINTER PARK UNIFIED DEVELOPMENT CODE REGARDING  
REGULATION OF WETLANDS**

WHEREAS, the Town Council wishes to amend the Unified Development Code (the "UDC") to align the Town's wetland standards with the federal standards that existed prior to *Sackett v. Environmental Protection Agency*, 598 U.S. 651 (2023);

WHEREAS, the Planning Commission reviewed the proposed amendments and recommended approval at a public hearing on August 13, 2024; and

WHEREAS, proper notice of the amendment was given pursuant to § 5-B-8 of the UDC.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL FOR THE TOWN OF WINTER PARK, COLORADO, THAT:

Section 1. UDC, Section 3-C-3, Water Quality, is hereby amended to read as follows:

**B. Resource Mapping Criteria.**

3. *Wetlands.* Wetlands shall be delineated according to the ~~most recent version~~ 1987 edition of the U.S. Army Corps of Engineers Wetland Delineation Manual.

Section 2. UDC, Subsec. 3-C-3-4, Wetlands, is hereby repealed in its entirety and replaced to read as follows:

**A. Purpose and Intent.** This Section establishes minimum acceptable standards for wetland development. The wetland regulations set forth in this section are intended to be consistent with and operate in conjunction with the standards that existed prior to the U.S. Supreme Court's decision in *Sackett v. Environmental Protection Agency*, 598 U.S. 651 (2023). This includes wetland mitigation standards previously set forth in Section 404 of the Federal Clean Water Act (CWA) prior to the *Sackett* decision and previously administered by the U.S. Army Corps of Engineers. The wetland disturbance provisions of this Code apply to any wetlands within Town boundaries notwithstanding any Federal jurisdictional determination on waters or wetlands within Winter Park by the U.S. Army Corps of Engineers of the U.S. Environmental Protection Agency.

**B. Applicability.** This section applies to all areas within the Town containing a wetland, as defined by this UDC.

**C. Independent Survey Requirements.** In light of the purpose and intent of this section, if there is any evidence that a site subject to disturbance may contain wetlands, as defined in Article 7.C of this UDC, the Town shall require the permittee to obtain and submit a wetlands

survey by an independent third-party consultant specializing in wetlands delineations, as recognized by the U.S. Army Corps of Engineers on its "Wetlands Delineation Consultants List," as may be amended. The expense of this wetlands survey shall be borne entirely by the permittee. The Town may also seek validation of the report through an independent third-party consultant retained by the Town.

**D. Disturbance of Wetlands.** No disturbances shall occur within a wetland, unless approved by any applicable state agency regulations that may be adopted as anticipated by House Bill 24-1379, or authorized by the Town Council's issuance of a Wetland Disturbance Permit as described in below. Any disturbance of wetlands requires issuance of a Wetland Disturbance Permit upon the satisfaction of either compensatory mitigation or actual mitigation, as described below.

1. **Compensatory Mitigation.** The Planning Commission may recommend to Town Council and Town Council may issue a Wetland Disturbance Permit when compensatory mitigation is deemed sufficient. If the Planning Commission or the Town Council determines there is no practicable alternative to the filling of a wetland, a development project shall require compensatory mitigation. Compensatory mitigation is required for projects that result in unavoidable impacts on more than 1/10 of an acre of wetlands. Mitigation may include restoring a degraded or drained wetland, creating a new wetland, enhancing an existing wetland, or preserving an existing wetland. A permittee is responsible for mitigation and may fulfill compensatory mitigation obligations through one of the following mechanisms: (1) Wetland mitigation banking in which the permittee purchases mitigation credits from wetland banks, depending on the number of credits required for the area of impacted wetland; (2) In-lieu fee program mitigation in which a third party collects mitigation funds from a large number of permittees and pools these financial resources to create a new mitigation wetland; and (3) Permittee-responsible mitigation in which the permittee maintains responsibility for achievement of compensation obligations imposed under Section 404 of the CWA or alternative regulatory regimes. Permittees may opt to complete wetland compensation on their own or may contract an authorized agent or consultant to restore, establish, enhance, and/or preserve wetlands.

2. **Actual Mitigation.** If compensatory mitigation is not feasible, the Planning Commission may recommend to Town Council and Town Council may issue a Wetland Disturbance Permit requiring actual mitigation. When these compensatory mitigation methodologies are not suitable, a minimum acreage replacement ratio of 1:1 for actual mitigation shall be used.

3. **Encroachment.** All mitigation measures apply to permanent encroachments; temporary encroachments do not trigger mitigation measures.

**E. Compliance with Permit Requirements.** Prior to final approval of a subdivision, site plan, building permit or grading permit, the permittee shall submit a plan to meet the standards set forth in this Section. If the site contains areas deemed a jurisdictional wetland by the U.S. Army Corps of Engineers, the permittee shall present evidence of compliance with Section

404 of the CWA. Areas that contain wetlands that are determined to be nonjurisdictional by the U.S. Army Corps of Engineers of the Environmental Protection Agency, per the CWA, may still be considered wetlands of the Town. Moreover, if the site contains what are delineated as wetlands under the U.S. Army Corps of Engineers Wetlands Delineation Manual and the 2012 Supplement for Western Mountain and Vallets, attached hereto and incorporated herein as Appendix B, or areas that would meet the definition wetlands per these manuals, as determined by a third-party consultant specializing in wetlands, then those wetland areas are wetlands of the Town and subject to these regulations. Documentation and compliance with all potential wetland matters shall remain the sole and ongoing responsibility of the permittee, and any failure to maintain such compliance may lead to suspension or revocation of the Wetlands Disturbance Permit and any other approvals issued by the Town under this UDC.

**F. Financial Guarantee.** A development improvements agreement and associated financial guarantee to ensure the requirements of this Section are met shall be posted in accordance with Section 4-B-4, *Development Improvements Agreement* or as otherwise provided for in this UDC. The term of the financial guarantee for the period following installation shall be a minimum of two (2) growing seasons in order to ensure that successful, stable plant establishment is achieved for all wetland plantings.

**G. Penalties.** Documentation and compliance with the CWA and these UDC standards shall remain the sole and ongoing responsibility of the permittee, and any failure to maintain such compliance may lead to suspension or revocation of any approvals provided under this UDC.

Section 3. Appendix B is hereby appended to the UDC, as attached hereto, containing the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual and 2012 Supplement for Western Mountain and Valleys.

Section 4. The Wetland definition in Article 7.C of the UDC is hereby repealed and replaced with the following definition:

**Wetland** means 1) areas including lakes, rivers, streams, intermittent streams, ponds, sloughs areas of seasonal standing water, or 2) those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions, as such areas are specifically delineated as provided for in the 1987 edition of the Corps of Engineers Wetlands Delineation Manual. Wetlands generally include fens, swamps, marshes, bogs, and similar areas. Manmade lakes or ponds built for the purpose of detaining runoff are not considered wetlands in the context of the UDC. Wetlands do not need to have a connection to waters of the United States, as defined by 33 Code of Federal Regulations (CFR) parts 328 and 329 (as amended) or U.S. Environmental Protection Agency 40 CFR part 230 (as amended) to fall under Town jurisdiction.

Section 5. The definition of Compensatory Mitigation is hereby added to Article 7.C of the UDC and is defined as follows:

**Compensatory Mitigation** means the restoration, reestablishment, rehabilitation, establishment, creation, enhancement, or preservation of state waters for the purpose of offsetting unavoidable adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.

INTRODUCED, APPROVED ON FIRST READING, AND ORDERED PUBLISHED IN FULL this \_\_\_ day of \_\_\_\_\_, 2024. A public hearing shall be held at the regular meeting of the Winter Park Town Council on the \_\_\_ day of \_\_\_\_\_, 2024 at 5:30 p.m., or as soon thereafter as possible, at the Winter Park Town Hall.

TOWN OF WINTER PARK

\_\_\_\_\_  
Nick Kutrumbos, Mayor

ATTEST:

\_\_\_\_\_  
Danielle Jardee, Town Clerk

READ, ADOPTED AND ORDERED PUBLISHED on second and final reading by a vote of \_\_\_\_\_ to \_\_\_\_\_ on the \_\_\_ day of \_\_\_\_\_, 2024.

TOWN OF WINTER PARK

\_\_\_\_\_  
Nick Kutrumbos, Mayor

ATTEST:

\_\_\_\_\_  
Danielle Jardee, Town Clerk

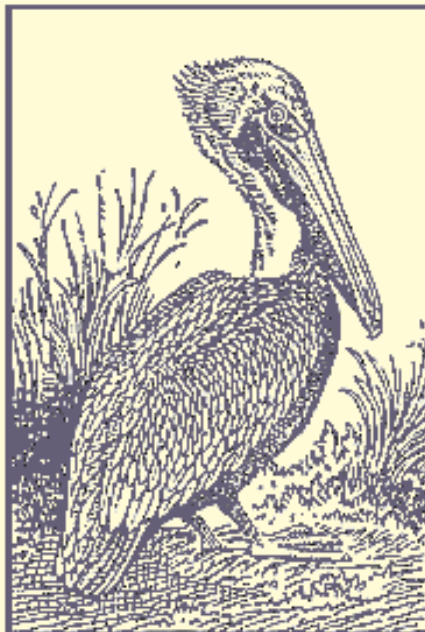


**US Army Corps  
of Engineers**  
Waterways Experiment  
Station

Wetlands Research Program Technical Report Y-87-1 (on-line edition)

# Corps of Engineers Wetlands Delineation Manual

by Environmental Laboratory



January 1987 - Final Report  
Approved For Public Release; Distribution Is Unlimited





The following two letters used as part of the number designating technical reports of research published under the Wetlands Research Program identify the area under which the report was prepared:

	<u>Task</u>		<u>Task</u>
CP	Critical Processes	RE	Restoration & Establishment
DE	Delineation & Evaluation	SM	Stewardship & Management

The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.



PRINTED ON RECYCLED PAPER

**Wetlands Research Program**

Technical Report Y-87-1  
January 1987

# **Corps of Engineers Wetlands Delineation Manual**

by Environmental Laboratory

U.S. Army Corps of Engineers  
Waterways Experiment Station  
3909 Halls Ferry Road  
Vicksburg, MS 39180-6199

Final report

Approved for public release; distribution is unlimited

Prepared for U.S. Army Corps of Engineers  
Washington, DC 20314-1000

# Contents

---

Preface to the On-Line Edition .....	v
Preface to the Original Edition .....	vii
Conversion Factors, Non-SI to SI Units of Measurement .....	ix
Part I: Introduction .....	1
Background .....	1
Purpose and Objectives .....	1
Scope .....	2
Organization .....	3
Use .....	5
Part II: Technical Guidelines .....	9
Wetlands .....	9
Deepwater Aquatic Habitats .....	10
Nonwetlands .....	11
Part III: Characteristics and Indicators of Hydrophytic Vegetation, Hydric Soils, and Wetland Hydrology .....	12
Hydrophytic Vegetation .....	12
Hydric Soils .....	20
Wetland Hydrology .....	28
Part IV: Methods .....	35
Section A. Introduction .....	35
Section B. Preliminary Data Gathering and Synthesis .....	36
Section C. Selection of Method .....	44
Section D. Routine Determinations .....	45
Subsection 1 - Onsite Inspection Unnecessary .....	45
Subsection 2 - Onsite Inspection Necessary .....	49
Areas Equal To or Less Than 5 Acres in Size .....	52
Areas Greater Than 5 Acres in Size .....	55
Subsection 3 - Combination of Levels 1 and 2 .....	60
Section E. Comprehensive Determinations .....	61
Section F. Atypical Situations .....	73
Subsection 1 - Vegetation .....	74

Subsection 2 - Soils .....	77
Subsection 3 - Hydrology .....	80
Subsection 4 - Man-Induced Wetlands .....	82
Section G. Problem Areas .....	84
References .....	87
Bibliography .....	90
Appendix A: Glossary .....	A1
Appendix B: Blank and Example Data Forms .....	B1
Appendix C: Vegetation .....	C1
Appendix D: Hydric Soils .....	D1
SF 298	

## List of Figures

---

Figure 1.	General schematic diagram of activities leading to a wetland/ nonwetland determination .....	7
Figure 2.	Generalized soil profile .....	23
Figure 3.	Organic soil .....	24
Figure 4.	Gleyed soil .....	26
Figure 5.	Soil showing matrix (brown) and mottles (reddish-brown) .....	26
Figure 6.	Iron and manganese concretions .....	27
Figure 7.	Watermark on trees .....	32
Figure 8.	Absence of leaf litter .....	33
Figure 9.	Sediment deposit on plants .....	33
Figure 10.	Encrusted detritus .....	33
Figure 11.	Drainage pattern .....	34
Figure 12.	Debris deposited in stream channel .....	34
Figure 13.	Flowchart of steps involved in making a wetland determina- tion when an onsite inspection is unnecessary .....	47
Figure 14.	Flowchart of steps involved in making a routine wetland determination when an onsite visit is necessary .....	50
Figure 15.	General orientation of baseline and transects (dotted lines) in a hypothetical project area. Alpha characters represent different plant communities. All transects start at the midpoint of a baseline segment except the first, which was repositioned to include community type A .....	56

Figure 16.	Flowchart of steps involved in making a comprehensive wetland determination (Section E) .....	63
Figure 17.	General orientation of baseline and transects in a hypothetical project area. Alpha characters represent different plant communities. Transect positions were determined using a random numbers table .....	66

## List of Tables

---

Table 1.	Plant Indicator Status Categories .....	14
Table 2.	List of CE Preliminary Wetland Guides .....	15
Table 3.	List of Ecological Profiles Produced by the FWS Biological Services Program .....	16
Table 4.	List of Some Useful Taxonomic References .....	19
Table 5.	Hydrologic Zones - Nontidal Areas .....	30

# Preface to the On-Line Edition

---

This is an electronic version of the 1987 *Corps of Engineers Wetlands Delineation Manual* (the 1987 Manual). The 1987 Manual is the current Federal delineation manual used in the Clean Water Act Section 404 regulatory program for the identification and delineation of wetlands. Except where noted in the manual, the approach requires positive evidence of hydrophytic vegetation, hydric soils, and wetland hydrology for a determination that an area is a wetland.

The original manual and this on-line edition were prepared by the Environmental Laboratory (EL) of the U.S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi. The work was sponsored by Headquarters, U.S. Army Corps of Engineers (HQUSACE), through the Wetlands Research Program.

The manual was originally published in January 1987, following several years of development and testing of draft versions. Since that time, the use and interpretation of the 1987 Manual have been clarified and updated through a series of guidance documents and memoranda from HQUSACE. This electronic edition does not change the intent or jurisdictional area of the 1987 Manual. It does, however, attempt to clarify the manual and current guidance by including a number of boxed "USER NOTES" indicating where the original manual has been augmented by more recent information or guidance. USER NOTES were written by Dr. James S. Wakeley, EL, WES. Due to re-formatting of the text and insertion of the USER NOTES, page numbers in this edition do not match those in the original edition. Some obsolete material appears in this document as struck-out text (e.g., ~~obsolete material~~), and hypertext links are provided to sources of important supplementary information (e.g., hydric soils lists, wetland plant lists). References cited in the USER NOTES refer to the following guidance documents from HQUSACE:

"Clarification of the Phrase "Normal Circumstances" as it pertains to Cropped Wetlands," Regulatory Guidance Letter (RGL) 90-7 dated 26 September 1990.

"Implementation of the 1987 Corps Wetland Delineation Manual," memorandum from John P. Elmore dated 27 August 1991.

"Questions & Answers on the 1987 Manual," memorandum from John F. Studt dated 7 October 1991.

"Clarification and Interpretation of the 1987 Manual," memorandum from Major General Arthur E. Williams dated 6 March 1992.

"Revisions to National Plant Lists," memorandum from Michael L. Davis dated 17 January 1996.

"NRCS Field Indicators of Hydric Soils," memorandum from John F. Studt dated 21 March 1997.

Copies of the original published manual are available through the National Technical Information Service (phone 703-487-4650, NTIS document number ADA 176734/2INE). The report should be cited as follows:

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Useful supplementary information for making wetland determinations can also be found at the following sites on the World Wide Web:

- [Hydric soils definition, criteria, and lists](#)
- [National list of plant species that occur in wetlands](#)
- [Analyses of normal precipitation ranges and growing season limits](#)
- [National Wetlands Inventory maps and databases](#)

# Preface to the Original Edition

---

This manual is a product of the Wetlands Research Program (WRP) of the U.S. Army Engineer Waterways Experiment Station (WES), Vicksburg, MS. The work was sponsored by the Office, Chief of Engineers (OCE), U.S. Army. OCE Technical monitors for the WRP were Drs. John R. Hall and Robert J. Pierce, and Mr. Phillip C. Pierce.

The manual has been reviewed and concurred in by the Office of the Chief of Engineers and the Office of the Assistant Secretary of the Army (Civil Works) as a method approved for voluntary use in the field for a trial period of 1 year.

~~This manual is not intended to change appreciably the jurisdiction of the Clean Water Act (CWA) as it is currently implemented. Should any District find that use of this method appreciably contracts or expands jurisdiction in their District as the District currently interprets CWA authority, the District should immediately discontinue use of this method and furnish a full report of the circumstances to the Office of the Chief of Engineers.~~

**USER NOTES:** Use of the 1987 Manual to identify and delineate wetlands potentially subject to regulation under Section 404 is now mandatory. (HQUSACE, 27 Aug 91)

This manual describes technical guidelines and methods using a multiparameter approach to identify and delineate wetlands for purposes of Section 404 of the Clean Water Act. Appendices of supporting technical information are also provided.

The manual is presented in four parts. Part II was prepared by Dr. Robert T. Huffman, formerly of the Environmental Laboratory (EL), WES, and Dr. Dana R. Sanders, Sr., of the Wetland and Terrestrial Habitat Group (WTHG), Environmental Resources Division (ERD), EL. Dr. Huffman prepared the original version of Part II in 1980, entitled "Multiple Parameter Approach to the Field Identification and Delineation of Wetlands." The original version was distributed to all Corps field elements, as well as other Federal resource and environmental regulatory agencies, for review and comments. Dr. Sanders revised the original version in 1982, incorporating review comments. Parts I, III, and IV



were prepared by Dr. Sanders, Mr. William B. Parker (formerly detailed to WES by the U.S. Department of Agriculture (USDA), Soil Conservation Service (SCS)) and Mr. Stephen W. Forsythe (formerly detailed to WES by the U.S. Department of the Interior, Fish and Wildlife Service (FWS)). Dr. Sanders also served as overall technical editor of the manual. The manual was edited by Ms. Jamie W. Leach of the WES Information Products Division.

The authors acknowledge technical assistance provided by: Mr. Russell F. Theriot, Mr. Ellis J. Clairain, Jr., and Mr. Charles J. Newling, all of WTHG, ERD; Mr. Phillip Jones, former SCS detail to WES; Mr. Porter B. Reed, FWS, National Wetland Inventory, St. Petersburg, Fla.; Dr. Dan K. Evans, Marshall University, Huntington, W. Va.; and the USDA-SCS. The authors also express gratitude to Corps personnel who assisted in developing the regional lists of species that commonly occur in wetlands, including Mr. Richard Macomber, Bureau of Rivers and Harbors; Ms. Kathy Mulder, Kansas City District; Mr. Michael Gilbert, Omaha District; Ms. Vicki Goodnight, Southwestern Division; Dr. Fred Weinmann, Seattle District; and Mr. Michael Lee, Pacific Ocean Division. Special thanks are offered to the CE personnel who reviewed and commented on the draft manual, and to those who participated in a workshop that consolidated the field comments.

The work was monitored at WES under the direct supervision of Dr. Hanley K. Smith, Chief, WTHG, and under the general supervision of Dr. Conrad J. Kirby, Jr., Chief, ERD. Dr. Smith, Dr. Sanders, and Mr. Theriot were Managers of the WRP. Dr. John Harrison was Chief, EL.

Director of WES during the preparation of this report was COL Allen F. Grum, USA. During publication, COL Dwayne G. Lee, CE, was Commander and Director. Technical Director was Dr. Robert W. Whalin.

This report should be cited as follows:

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

*The contents of this report are not to be used for advertising, publication, or promotional purposes. Citation of trade names does not constitute an official endorsement or approval of the use of such commercial products.*

# Conversion Factors, Non-SI to SI Units of Measurement

---

Non-SI units of measurement used in this report can be converted to SI (metric) units as follows:

Multiply	By	To Obtain
acres	0.4047	hectares
Fahrenheit degrees	5/9	Celsius degrees <sup>1</sup>
feet	0.3048	metres
inches	2.54	centimetres
miles (U.S. statute)	1.6093	kilometres
square inches	6.4516	square centimetres

<sup>1</sup> To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula:  $C = (5/9) (F - 32)$ .

# Part I: Introduction

---

## Background

1. Recognizing the potential for continued or accelerated degradation of the Nation's waters, the U.S. Congress enacted the Clean Water Act (hereafter referred to as the Act), formerly known as the Federal Water Pollution Control Act (33 U.S.C. 1344). The objective of the Act is to maintain and restore the chemical, physical, and biological integrity of the waters of the United States. Section 404 of the Act authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into the waters of the United States, including wetlands.

## Purpose and Objectives

### Purpose

2. The purpose of this manual is to provide users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Act.

### Objectives

3. Specific objectives of the manual are to:
- a.* Present technical guidelines for identifying wetlands and distinguishing them from aquatic habitats and other nonwetlands.<sup>1</sup>
  - b.* Provide methods for applying the technical guidelines.
  - c.* Provide supporting information useful in applying the technical guidelines.

---

<sup>1</sup> Definitions of terms used in this manual are presented in the Glossary, Appendix A.

## Scope

4. This manual is limited in scope to wetlands that are a subset of "waters of the United States" and thus subject to Section 404. The term "waters of the United States" has broad meaning and incorporates both deep-water aquatic habitats and special aquatic sites, including wetlands (*Federal Register* 1982), as follows:

- a. The territorial seas with respect to the discharge of fill material.
- b. Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands.
- c. Tributaries to navigable waters of the United States, including adjacent wetlands.
- d. Interstate waters and their tributaries, including adjacent wetlands.
- e. All others waters of the United States not identified above, such as isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not a part of a tributary system to interstate waters or navigable waters of the United States, the degradation or destruction of which could affect interstate commerce.

Determination that a water body or wetland is subject to interstate commerce and therefore is a "water of the United States" shall be made independently of procedures described in this manual.

## Special aquatic sites

5. The Environmental Protection Agency (EPA) identifies six categories of special aquatic sites in their Section 404 b.(1) guidelines (*Federal Register* 1980), including:

- a. Sanctuaries and refuges.
- b. Wetlands.
- c. Mudflats.
- d. Vegetated shallows.
- e. Coral reefs.
- f. Riffle and pool complexes.

Although all of these special aquatic sites are subject to provisions of the Clean Water Act, this manual considers only wetlands. By definition, wetlands are vegetated. Thus, unvegetated special aquatic sites (e.g., mudflats lacking macrophytic vegetation) are not covered in this manual.

## **Relationship to wetland classification systems**

6. The technical guideline for wetlands does not constitute a classification system. It only provides a basis for determining whether a given area is a wetland for purposes of Section 404, without attempting to classify it by wetland type.

7. Consideration should be given to the relationship between the technical guideline for wetlands and the classification system developed for the Fish and Wildlife Service (FWS), U.S. Department of the Interior, by Cowardin et al. (1979). The FWS classification system was developed as a basis for identifying, classifying, and mapping wetlands, other special aquatic sites, and deepwater aquatic habitats. Using this classification system, the National Wetland Inventory (NWI) is mapping the wetlands, other special aquatic sites, and deepwater aquatic habitats of the United States, and is also developing both a list of plant species that occur in wetlands and an associated plant database. These products should contribute significantly to application of the technical guideline for wetlands. The technical guideline for wetlands as presented in the manual includes most, but not all, wetlands identified in the FWS system. The difference is due to two principal factors:

- a.* The FWS system includes all categories of special aquatic sites identified in the EPA Section 404 b.(1) guidelines. All other special aquatic sites are clearly within the purview of Section 404; thus, special methods for their delineation are unnecessary.
- b.* The FWS system requires that a positive indicator of wetlands be present for any one of the three parameters, while the technical guideline for wetlands requires that a positive wetland indicator be present for each parameter (vegetation, soils, and hydrology), except in limited instances identified in the manual.

## **Organization**

8. This manual consists of four parts and four appendices. Part I presents the background, purpose and objectives, scope, organization, and use of the manual.

9. Part II focuses on the technical guideline for wetlands, and stresses the need for considering all three parameters (vegetation, soils, and hydrology) when making wetland determinations. Since wetlands occur in an intermediate posi-

tion along the hydrologic gradient, comparative technical guidelines are also presented for deepwater aquatic sites and nonwetlands.

10. Part III contains general information on hydrophytic vegetation, hydric soils, and wetland hydrology. Positive wetland indicators of each parameter are included.

11. Part IV, which presents methods for applying the technical guideline for wetlands, is arranged in a format that leads to a logical determination of whether a given area is a wetland. Section A contains general information related to application of methods. Section B outlines preliminary data-gathering efforts. Section C discusses two approaches (routine and comprehensive) for making wetland determinations and presents criteria for deciding the correct approach to use. Sections D and E describe detailed procedures for making routine and comprehensive determinations, respectively. The basic procedures are described in a series of steps that lead to a wetland determination.

12. The manual also describes (Part IV, Section F) methods for delineating wetlands in which the vegetation, soils, and/or hydrology have been altered by recent human activities or natural events, as discussed below:

- a. The definition of wetlands contains the phrase "under normal circumstances," which was included because there are instances in which the vegetation in a wetland has been inadvertently or purposely removed or altered as a result of recent natural events or human activities. Other examples of human alterations that may affect wetlands are draining, ditching, levees, deposition of fill, irrigation, and impoundments. When such activities occur, an area may fail to meet the diagnostic criteria for a wetland. Likewise, positive hydric soil indicators may be absent in some recently created wetlands. In such cases, an alternative method must be employed in making wetland determinations.

USER NOTES: "Normal circumstances" has been further defined as "the soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed." The determination of whether normal circumstances exist in a disturbed area "involves an evaluation of the extent and relative permanence of the physical alteration of wetlands hydrology and hydrophytic vegetation" and consideration of the "purpose and cause of the physical alterations to hydrology and vegetation." (RGL 90-7, 26 Sep 90; HQUSACE, 7 Oct 91)

- b. Natural events may also result in sufficient modification of an area that indicators of one or more wetland parameters are absent. For example, changes in river course may significantly alter hydrology, or beaver dams may create new wetland areas that lack hydric soil conditions. Catastrophic events (e.g., fires, avalanches, mudslides,

and volcanic activities) may also alter or destroy wetland indicators on a site.

Such atypical situations occur throughout the United States, and all of these cannot be identified in this manual.

13. Certain wetland types, under the extremes of normal circumstances, may not always meet all the wetland criteria defined in the manual. Examples include prairie potholes during drought years and seasonal wetlands that may lack hydrophytic vegetation during the dry season. Such areas are discussed in Part IV, Section G, and guidance is provided for making wetland determinations in these areas. However, such wetland areas may warrant additional research to refine methods for their delineation.

14. Appendix A is a glossary of technical terms used in the manual. Definitions of some terms were taken from other technical sources, but most terms are defined according to the manner in which they are used in the manual.

15. Data forms for methods presented in Part IV are included in Appendix B. Examples of completed data forms are also provided.

16. Supporting information is presented in Appendices C and D. ~~Appendix C contains lists of plant species that occur in wetlands. Section 1 consists of regional lists developed by a Federal interagency panel. Section 2 consists of shorter lists of plant species that commonly occur in wetlands of each region.~~

USER NOTES: CE-supplied plant lists are obsolete and have been superseded by the May 1988 version of the "[National List of Plant Species that Occur in Wetlands](#)" published by the U.S. Fish and Wildlife Service and available on the World Wide Web. (HQUSACE, 27 Aug 91)

Section 3 describes morphological, physiological, and reproductive adaptations associated with hydrophytic species, as well as a list of some species exhibiting such adaptations. Appendix D discusses procedures for examining soils for hydric soil indicators, ~~and also contains a list of hydric soils of the United States.~~

USER NOTES: The hydric soil list published in the 1987 Corps Manual is obsolete. Current [hydric soil definition, criteria, and lists](#) are available over the World Wide Web from the U.S.D.A. Natural Resources Conservation Service (NRCS). (HQUSACE, 27 Aug 91, 6 Mar 92)

## Use

17. Although this manual was prepared primarily for use by Corps of Engineers (CE) field inspectors, it should be useful to anyone who makes wetland determinations for purposes of Section 404 of the Clean Water Act. The user is

directed through a series of steps that involve gathering of information and decisionmaking, ultimately leading to a wetland determination. A general flow diagram of activities leading to a determination is presented in Figure 1. However, not all activities identified in Figure 1 will be required for each wetland determination. For example, if a decision is made to use a routine determination procedure, comprehensive determination procedures will not be employed.

### **Premise for use of the manual**

18. Three key provisions of the CE/EPA definition of wetlands include:
  - a. Inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water.
  - b. A prevalence of vegetation typically adapted for life in saturated soil conditions (hydrophytic vegetation).
  - c. The presence of "normal circumstances."

19. Explicit in the definition is the consideration of three environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. Although vegetation is often the most readily observed parameter, sole reliance on vegetation or either of the other parameters as the determinant of wetlands can sometimes be misleading. Many plant species can grow successfully in both wetlands and nonwetlands, and hydrophytic vegetation and hydric soils may persist for decades following alteration of hydrology that will render an area a nonwetland. The presence of hydric soils and wetland hydrology indicators in addition to vegetation indicators will provide a logical, easily defensible, and technical basis for the presence of wetlands. The combined use of indicators for all three parameters will enhance the technical accuracy, consistency, and credibility of wetland determinations. Therefore, all three parameters were used in developing the technical guideline for wetlands and all approaches for applying the technical guideline embody the multiparameter concept.

### **Approaches**

20. The approach used for wetland delineations will vary, based primarily on the complexity of the area in question. Two basic approaches described in the manual are (a) routine and (b) comprehensive.



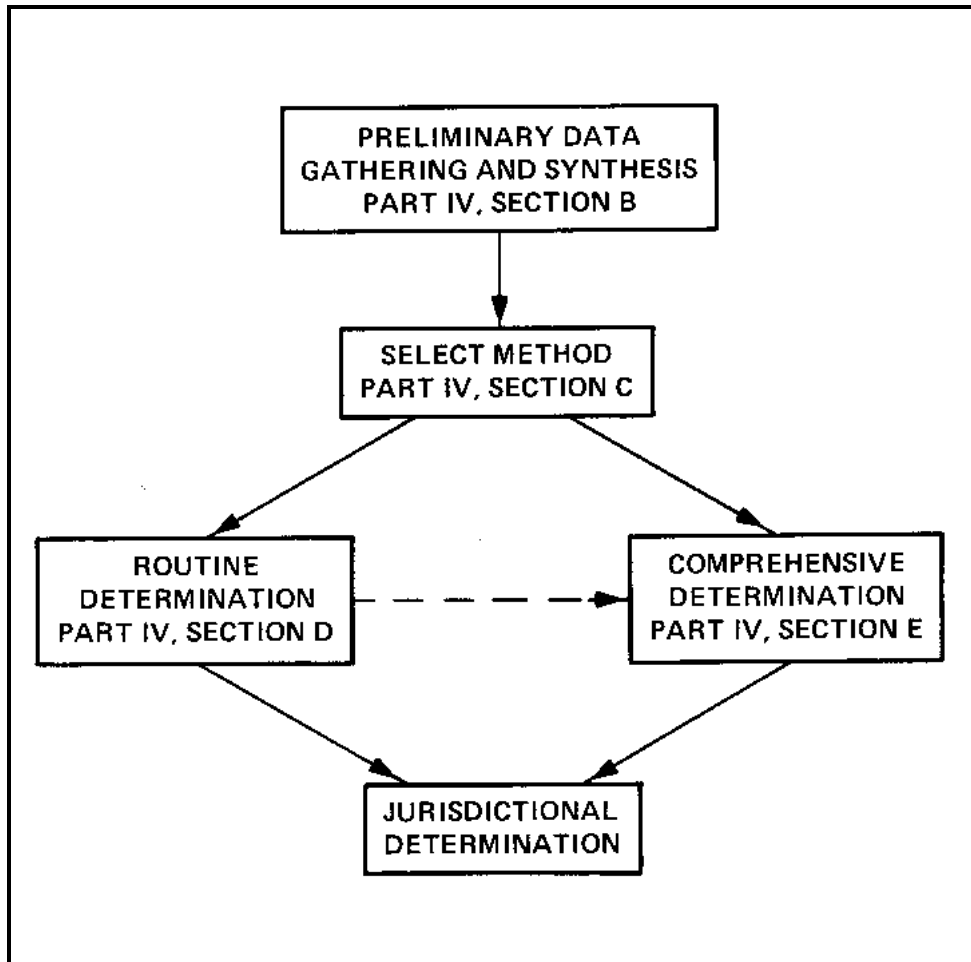


Figure 1. General schematic diagram of activities leading to a wetland/non-wetland determination

21. **Routine approach.** The routine approach normally will be used in the vast majority of determinations. The routine approach requires minimal level of effort, using primarily qualitative procedures. This approach can be further subdivided into three levels of required effort, depending on the complexity of the area and the amount and quality of preliminary data available. The following levels of effort may be used for routine determinations:

- a. *Level 1 - Onsite inspection unnecessary.* (Part IV, Section D, Subsection 1).
- b. *Level 2 - Onsite inspection necessary.* (Part IV, Section D, Subsection 2).
- c. *Level 3 - Combination of Levels 1 and 2.* (Part IV, Section D, Subsection 3).

22. **Comprehensive approach.** The comprehensive approach requires application of quantitative procedures for making wetland determinations. It should

seldom be necessary, and its use should be restricted to situations in which the wetland is very complex and/or is the subject of likely or pending litigation. Application of the comprehensive approach (Part IV, Section E) requires a greater level of expertise than application of the routine approach, and only experienced field personnel with sufficient training should use this approach.

### **Flexibility**

23. Procedures described for both routine and comprehensive wetland determinations have been tested and found to be reliable. However, site-specific conditions may require modification of field procedures. For example, slope configuration in a complex area may necessitate modification of the baseline and transect positions. Since specific characteristics (e.g., plant density) of a given plant community may necessitate the use of alternate methods for determining the dominant species, the user has the flexibility to employ sampling procedures other than those described. However, the basic approach for making wetland determinations should not be altered (i.e., the determination should be based on the dominant plant species, soil characteristics, and hydrologic characteristics of the area in question). The user should document reasons for using a different characterization procedure than described in the manual. *CAUTION: Application of methods described in the manual or the modified sampling procedures requires that the user be familiar with wetlands of the area and use his or her training, experience, and good judgment in making wetland determinations.*

# Part II: Technical Guidelines

---

24. The interaction of hydrology, vegetation, and soil results in the development of characteristics unique to wetlands. Therefore, the following technical guideline for wetlands is based on these three parameters, and diagnostic environmental characteristics used in applying the technical guideline are represented by various indicators of these parameters.

25. Because wetlands may be bordered by both wetter areas (aquatic habitats) and by drier areas (nonwetlands), guidelines are presented for wetlands, deepwater aquatic habitats, and nonwetlands. However, procedures for applying the technical guidelines for deepwater aquatic habitats and nonwetlands are not included in the manual.

## Wetlands

26. The following definition, diagnostic environmental characteristics, and technical approach comprise a guideline for the identification and delineation of wetlands:

- a. *Definition.* The CE (*Federal Register* 1982) and the EPA (*Federal Register* 1980) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
- b. *Diagnostic environmental characteristics.* Wetlands have the following general diagnostic environmental characteristics:
  - (1) *Vegetation.* The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in *a* above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic

soil conditions.<sup>1</sup> Indicators of vegetation associated with wetlands are listed in paragraph 35.

- (2) *Soil.* Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions. Indicators of soils developed under reducing conditions are listed in paragraphs 44 and 45.
- (3) *Hydrology.* The area is inundated either permanently or periodically at mean water depths  $\leq 6.6$  ft, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.<sup>2</sup> Indicators of hydrologic conditions that occur in wetlands are listed in paragraph 49.

- c. *Technical approach for the identification and delineation of wetlands.* Except in certain situations defined in this manual, evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

## Deepwater Aquatic Habitats

27. The following definition, diagnostic environmental characteristics, and technical approach comprise a guideline for deepwater aquatic habitats:

- a. *Definition.* Deepwater aquatic habitats are areas that are permanently inundated at mean annual water depths  $>6.6$  ft or permanently inundated areas  $\leq 6.6$  ft in depth that do not support rooted-emergent or woody plant species.<sup>3</sup>
- b. *Diagnostic environmental characteristics.* Deepwater aquatic habitats have the following diagnostic environmental characteristics:
  - (1) *Vegetation.* No rooted-emergent or woody plant species are present in these permanently inundated areas.
  - (2) *Soil.* The substrate technically is not defined as a soil if the mean water depth is  $>6.6$  ft or if it will not support rooted emergent or woody plants.

---

<sup>1</sup> Species (e.g., *Acer rubrum*) having broad ecological tolerances occur in both wetlands and non-wetlands.

<sup>2</sup> The period of inundation or soil saturation varies according to the hydrologic/soil moisture regime and occurs in both tidal and nontidal situations.

<sup>3</sup> Areas  $\leq 6.6$  ft mean annual depth that support only submergent aquatic plants are vegetated shallows, not wetlands.

- (3) *Hydrology*. The area is permanently inundated at mean water depths >6.6 ft.
- c. *Technical approach for the identification and delineation of deepwater aquatic habitats*. When any one of the diagnostic characteristics identified in *b* above is present, the area is a deepwater aquatic habitat.

## Nonwetlands

28. The following definition, diagnostic environmental characteristics, and technical approach comprise a guideline for the identification and delineation of nonwetlands:

- a. *Definition*. Nonwetlands include uplands and lowland areas that are neither deepwater aquatic habitats, wetlands, nor other special aquatic sites. They are seldom or never inundated, or if frequently inundated, they have saturated soils for only brief periods during the growing season, and, if vegetated, they normally support a prevalence of vegetation typically adapted for life only in aerobic soil conditions.
- b. *Diagnostic environmental characteristics*. Nonwetlands have the following general diagnostic environmental characteristics:
  - (1) *Vegetation*. The prevalent vegetation consists of plant species that are typically adapted for life only in aerobic soils. These meso-phytic and/or xerophytic macrophytes cannot persist in predominantly anaerobic soil conditions.<sup>1</sup>
  - (2) *Soil*. Soils, when present, are not classified as hydric, and possess characteristics associated with aerobic conditions.
  - (3) *Hydrology*. Although the soil may be inundated or saturated by surface water or ground water periodically during the growing season of the prevalent vegetation, the average annual duration of inundation or soil saturation does not preclude the occurrence of plant species typically adapted for life in aerobic soil conditions.
- c. *Technical approach for the identification and delineation of nonwetlands*. When any one of the diagnostic characteristics identified in *b* above is present, the area is a nonwetland.

---

<sup>1</sup> Some species, due to their broad ecological tolerances, occur in both wetlands and nonwetlands (e.g., *Acer rubrum*).

# Part III: Characteristics and Indicators of Hydrophytic Vegetation, Hydric Soils, and Wetland Hydrology

---

## Hydrophytic Vegetation

### Definition

29. **Hydrophytic vegetation.** Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. The vegetation occurring in a wetland may consist of more than one plant community (species association). The plant community concept is followed throughout the manual. Emphasis is placed on the assemblage of plant species that exert a controlling influence on the character of the plant community, rather than on indicator species. Thus, the presence of scattered individuals of an upland plant species in a community dominated by hydrophytic species is not a sufficient basis for concluding that the area is an upland community. Likewise, the presence of a few individuals of a hydrophytic species in a community dominated by upland species is not a sufficient basis for concluding that the area has hydrophytic vegetation. *CAUTION: In determining whether an area is "vegetated" for the purpose of Section 404 jurisdiction, users must consider the density of vegetation at the site being evaluated. While it is not possible to develop a numerical method to determine how many plants or how much biomass is needed to establish an area as being vegetated or unvegetated, it is intended that the predominant condition of the site be used to make that characterization. This concept applies to areas grading from wetland to upland, and from wetland to other waters. This limitation would not necessarily apply to areas which have been disturbed by man or recent natural events.*

30. **Prevalence of vegetation.** The definition of wetlands includes the phrase "prevalence of vegetation." Prevalence, as applied to vegetation, is an imprecise, seldom-used ecological term. As used in the wetlands definition, prevalence refers to the plant community or communities that occur in an area at some point in time. Prevalent vegetation is characterized by the dominant species comprising the plant community or communities. Dominant plant species are those that contribute more to the character of a plant community than other species present, as estimated or measured in terms of some ecological parameter or parameters. The two most commonly used estimates of dominance are basal area (trees) and percent areal cover (herbs). Hydrophytic vegetation is prevalent in an area when the dominant species comprising the plant community or communities are typically adapted for life in saturated soil conditions.

USER NOTES: The "50/20 rule" is the recommended method for selecting dominant species from a plant community when quantitative data are available. The rule states that for each stratum in the plant community, dominant species are the most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that immediately exceed 50% of the total dominance measure for the stratum, plus any additional species that individually comprise 20% or more of the total dominance measure for the stratum. The list of dominant species is then combined across strata. (HQUSACE, 6 Mar 92)

31. **Typically adapted.** The term "typically adapted" refers to a species being normally or commonly suited to a given set of environmental conditions, due to some morphological, physiological, or reproductive adaptation (Appendix C, Section 3). As used in the CE wetlands definition, the governing environmental conditions for hydrophytic vegetation are saturated soils resulting from periodic inundation or saturation by surface or ground water. These periodic events must occur for sufficient duration to result in anaerobic soil conditions. When the dominant species in a plant community are typically adapted for life in anaerobic soil conditions, hydrophytic vegetation is present. Species listed in Appendix C, Section 1 or 2, that have an indicator status of OBL, FACW, or FAC<sup>1</sup> (Table 1) are considered to be typically adapted for life in anaerobic soil conditions (see paragraph 35a).

### Influencing factors

32. Many factors (e.g., light, temperature, soil texture and permeability, man-induced disturbance, etc.) influence the character of hydrophytic vegetation. However, hydrologic factors exert an overriding influence on species that can occur in wetlands. Plants lacking morphological, physiological, and/or reproductive adaptations cannot grow, effectively compete, reproduce, and/or persist in areas that are subject to prolonged inundation or saturated soil conditions.

---

<sup>1</sup> Species having a FAC- indicator status are not considered to be typically adapted for life in anaerobic soil conditions.

<b>Table 1 Plant Indicator Status Categories<sup>1</sup></b>		
<b>Indicator Category</b>	<b>Indicator Symbol</b>	<b>Definition</b>
Obligate Wetland Plants	OBL	Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1 percent) in nonwetlands. Examples: <i>Spartina alterniflora</i> , <i>Taxodium distichum</i> .
Facultative Wetland Plants	FACW	Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (estimated probability 1 percent to 33 percent) in nonwetlands. Examples: <i>Fraxinus pennsylvanica</i> , <i>Cornus stolonifera</i> .
Facultative Plants	FAC	Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and nonwetlands. Examples: <i>Gleditsia triacanthos</i> , <i>Smilax rotundifolia</i> .
Facultative Upland Plants	FACU	Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands, but occur more often (estimated probability >67 percent to 99 percent) in nonwetlands. Examples: <i>Quercus rubra</i> , <i>Potentilla arguta</i> .
Obligate Upland Plants	UPL	Plants that occur rarely (estimated probability <1 percent) in wetlands, but occur almost always (estimated probability >99 percent) in nonwetlands under natural conditions. Examples: <i>Pinus echinata</i> , <i>Bromus mollis</i> .

<sup>1</sup> Categories were originally developed and defined by the USFWS National Wetlands Inventory and subsequently modified by the National Plant List Panel. The three facultative categories are subdivided by (+) and (-) modifiers (see Appendix C, Section 1).

### Geographic diversity

33. Many hydrophytic vegetation types occur in the United States due to the diversity of interactions among various factors that influence the distribution of hydrophytic species. General climate and flora contribute greatly to regional variations in hydrophytic vegetation. Consequently, the same associations of hydrophytic species occurring in the southeastern United States are not found in the Pacific Northwest. In addition, local environmental conditions (e.g., local climate, hydrologic regimes, soil series, salinity, etc.) may result in broad variations in hydrophytic associations within a given region. For example, a coastal saltwater marsh will consist of different species than an inland freshwater marsh in the same region. An overview of hydrophytic vegetation occurring in each region of the Nation has been published by the CE in a series of eight preliminary wetland guides (Table 2), and a group of wetland and estuarine ecological profiles (Table 3) has been published by FWS.

### Classification

34. Numerous efforts have been made to classify hydrophytic vegetation. Most systems are based on general characteristics of the dominant species occurring in each vegetation type. These range from the use of general physiognomic categories (e.g., overstory, subcanopy, ground cover, vines) to specific vegetation types (e.g., forest type numbers as developed by the Society of American Foresters). In other cases, vegetational characteristics are combined with hydrologic features to produce more elaborate systems. The most recent example of such a system was developed for the FWS by Cowardin et al. (1979).



**Table 2**  
**List of CE Preliminary Wetland Guides**

<b>Region</b>	<b>Publication Date</b>	<b>WES Report No.</b>
Peninsular Florida	February 1978	TR Y-78-2
Puerto Rico	April 1978	TR Y-78-3
West Coast States	April 1978	TR-Y-78-4
Gulf Coastal Plain	May 1978	TR Y-78-5
Interior	May 1982	TR Y-78-6
South Atlantic States	May 1982	TR Y-78-7
North Atlantic States	May 1982	TR Y-78-8
Alaska	February 1984	TR Y-78-9

<b>Table 3</b> <b>List of Ecological Profiles Produced by the FWS Biological Services Program</b>		
<b>Title</b>	<b>Publication Date</b>	<b>FWS Publication No.</b>
"The Ecology of Intertidal Flats of North Carolina"	1979	79/39
"The Ecology of New England Tidal Flats"	1982	81/01
"The Ecology of the Mangroves of South Florida"	1982	81/24
"The Ecology of Bottomland Hardwood Swamps of the Southeast"	1982	81/37
"The Ecology of Southern California Coastal Salt Marshes"	1982	81/54
"The Ecology of New England High Salt Marshes"	1982	81/55
"The Ecology of Southeastern Shrub Bogs (Pocosins) and Carolina Bays"	1982	82/04
"The Ecology of the Apalachicola Bay System"	1984	82/05
"The Ecology of the Pamlico River, North Carolina"	1984	82/06
"The Ecology of the South Florida Coral Reefs"	1984	82/08
"The Ecology of the Sea Grasses of South Florida"	1982	82/25
"The Ecology of Tidal Marshes of the Pacific Northwest Coast"	1983	82/32
"The Ecology of Tidal Freshwater Marshes of the U.S. East Coast"	1984	83/17
"The Ecology of San Francisco Bay Tidal Marshes"	1983	82/23
"The Ecology of Tundra Ponds of the Arctic Coastal Plain"	1984	83/25
"The Ecology of Eelgrass Meadows of the Atlantic Coast"	1984	84/02
"The Ecology of Delta Marshes of Louisiana"	1984	84/09
"The Ecology of Eelgrass Meadows in the Pacific Northwest"	1984	84/24
"The Ecology of Irregularly Flooded Marshes of North-eastern Gulf of Mexico"	(In press)	85(7.1)
"The Ecology of Giant Kelp Forests in California"	1985	85(7.2)

### Indicators of hydrophytic vegetation

35. Several indicators may be used to determine whether hydrophytic vegetation is present on a site. However, the presence of a single individual of a hydrophytic species does not mean that hydrophytic vegetation is present. The strongest case for the presence of hydrophytic vegetation can be made when

several indicators, such as those in the following list, are present. However, any one of the following is indicative that hydrophytic vegetation is present:<sup>1</sup>

- a. *More than 50 percent of the dominant species are OBL, FACW, or FAC<sup>2</sup> (Table 1) on lists of plant species that occur in wetlands.* A national interagency panel has prepared a National List of Plant Species that occur in wetlands. This list categorizes species according to their affinity for occurrence in wetlands. ~~Regional subset lists of the national list, including only species having an indicator status of OBL, FACW, or FAC, are presented in Appendix C, Section 1. The CE has also developed regional lists of plant species that commonly occur in wetlands (Appendix C, Section 2). Either list may be used.~~

USER NOTES: CE-supplied plant lists are obsolete and have been superseded by the May 1988 version of the "[National List of Plant Species that Occur in Wetlands](#)" published by the U.S. Fish and Wildlife Service and available on the World Wide Web. Subsequent changes to the May 1988 national plant list, or regional versions of the national list, should not be used until they receive official review and approval. (HQUSACE, 27 Aug 91 and 17 Jan 96)

Note: A District that, on a subregional basis, questions the indicator status of FAC species may use the following option: When FAC species occur as dominants along with other dominants that are not FAC (either wetter or drier than FAC), the FAC species can be considered as neutral, and the vegetation decision can be based on the number of dominant species wetter than FAC as compared to the number of dominant species drier than FAC. When a tie occurs or all dominant species are FAC, the nondominant species must be considered. The area has hydrophytic vegetation when more than 50 percent of all considered species are wetter than FAC. When either all considered species are FAC or the number of species wetter than FAC equals the number of species drier than FAC, the wetland determination will be based on the soil and hydrology parameters. Districts adopting this option should provide documented support to the Corps representative on the regional plant list panel, so that a change in indicator status of FAC species of concern can be pursued. Corps representatives on the regional and national plant list panels will continually strive to ensure that plant species are properly designated on both a regional and subregional basis.

---

<sup>1</sup> Indicators are listed in order of decreasing reliability. Although all are valid indicators, some are stronger than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached.

<sup>2</sup> FAC+ species are considered to be wetter (i.e., have a greater estimated probability of occurring in wetlands) than FAC species, while FAC- species are considered to be drier (i.e., have a lesser estimated probability of occurring in wetlands) than FAC species.

USER NOTES: The FAC-neutral option can not be used to exclude areas as wetlands that meet the basic vegetation rule (i.e., more than 50% of dominant species are FAC, FACW, or OBL) and meet wetland hydrology and hydric soil requirements. Presence of a plant community that satisfies the FAC-neutral option may be used as a secondary indicator of wetland hydrology. (HQUSACE, 6 Mar 92)

- b. *Other indicators.* Although there are several other indicators of hydrophytic vegetation, it will seldom be necessary to use them. However, they may provide additional useful information to strengthen a case for the presence of hydrophytic vegetation. Additional training and/or experience may be required to employ these indicators.
- (1) *Visual observation of plant species growing in areas of prolonged inundation and/or soil saturation.* This indicator can only be applied by experienced personnel who have accumulated information through several years of field experience and written documentation (field notes) that certain species commonly occur in areas of prolonged (>10 percent) inundation and/or soil saturation during the growing season. Species such as *Taxodium distichum*, *Typha latifolia*, and *Spartina alterniflora* normally occur in such areas. Thus, occurrence of species commonly observed in other wetland areas provides a strong indication that hydrophytic vegetation is present. *CAUTION: The presence of standing water or saturated soil on a site is insufficient evidence that the species present are able to tolerate long periods of inundation. The user must relate the observed species to other similar situations and determine whether they are normally found in wet areas, taking into consideration the season and immediately preceding weather conditions.*
  - (2) *Morphological adaptations.* Some hydrophytic species have easily recognized physical characteristics that indicate their ability to occur in wetlands. A given species may exhibit several of these characteristics, but not all hydrophytic species have evident morphological adaptations. A list of such morphological adaptations and a partial list of plant species with known morphological adaptations for occurrence in wetlands are provided in Appendix C, Section 3.
  - (3) *Technical literature.* The technical literature may provide a strong indication that plant species comprising the prevalent vegetation are commonly found in areas where soils are periodically saturated for long periods. Sources of available literature include:
    - (a) *Taxonomic references.* Such references usually contain at least a general description of the habitat in which a species occurs. A habitat description such as, "Occurs in water of streams and lakes and in alluvial floodplains subject to

periodic flooding," supports a conclusion that the species typically occurs in wetlands. Examples of some useful taxonomic references are provided in Table 4.

<b>Table 4 List of Some Useful Taxonomic References</b>	
<b>Title</b>	<b>Author(s)</b>
Manual of Vascular Plants of Northeastern United States and Adjacent Canada	Gleason and Cronquist (1963)
Gray's Manual of Botany, 8th edition	Fernald (1950)
Manual of the Southeastern Flora	Small (1933)
Manual of the Vascular Flora of the Carolinas	Radford, Ahles, and Bell (1968)
A Flora of Tropical Florida	Long and Lakela (1976)
Aquatic and Wetland Plants of the Southwestern United States	Correll and Correll (1972)
Arizona Flora	Kearney and Peebles (1960)
Flora of the Pacific Northwest	Hitchcock and Cronquist (1973)
A California Flora	Munz and Keck (1959)
Flora of Missouri	Steyermark (1963)
Manual of the Plants of Colorado	Harrington (1979)
Intermountain Flora - Vascular Plants of the Intermountain West, USA - Vols I and II	Cronquist et al. (1972)
Flora of Idaho	Davis (1952)
Aquatic and Wetland Plants of the Southeastern United States - Vols I and II	Godfrey and Wooten (1979)
Manual of Grasses of the U.S.	Hitchcock (1950)

- (b) *Botanical journals.* Some botanical journals contain studies that define species occurrence in various hydrologic regimes. Examples of such journals include: *Ecology*, *Ecological Monographs*, *American Journal of Botany*, *Journal of American Forestry*, and *Wetlands: The Journal of the Society of Wetland Scientists*.
- (c) *Technical reports.* Governmental agencies periodically publish reports (e.g., literature reviews) that contain information on plant species occurrence in relation to hydrologic regimes. Examples of such publications include the CE preliminary regional wetland guides (Table 2) published by the U.S. Army Engineer Waterways Experiment Station (WES) and the wetland community and estuarine profiles of various habitat types (Table 3) published by the FWS.

- (d) *Technical workshops, conferences, and symposia.* Publications resulting from periodic scientific meetings contain valuable information that can be used to support a decision regarding the presence of hydrophytic vegetation. These usually address specific regions or wetland types. For example, distribution of bottomland hardwood forest species in relation to hydrologic regimes was examined at a workshop on bottomland hardwood forest wetlands of the Southeastern United States (Clark and Benforado 1981).
  - (e) *Wetland plant database.* The NWI is producing a Plant Database that contains habitat information on approximately 5,200 plant species that occur at some estimated probability in wetlands, as compiled from the technical literature. When completed, this computerized database will be available to all governmental agencies.
- (4) *Physiological adaptations.* Physiological adaptations include any features of the metabolic processes of plants that make them particularly fitted for life in saturated soil conditions. *NOTE: It is impossible to detect the presence of physiological adaptations in plant species during onsite visits.* Physiological adaptations known for hydrophytic species and species known to exhibit these adaptations are listed and discussed in Appendix C, Section 3.
  - (5) *Reproductive adaptations.* Some plant species have reproductive features that enable them to become established and grow in saturated soil conditions. Reproductive adaptations known for hydrophytic species are presented in Appendix C, Section 3.

## Hydric Soils

### Definition

36. ~~A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) 1985, as amended by the National Technical Committee for Hydric Soils (NTCHS) in December 1986).~~

### Criteria for hydric soils

37. ~~Based on the above definition, the NTCHS developed the following criteria for hydric soils:~~

- a. ~~All Histosols<sup>1</sup> except Folists;~~
- b. ~~Soils in Aquic suborders, Aquic subgroups, Albolls suborder, Salorthids great group, or Pell great groups of Vertisols that are:~~
  - (1) ~~Somewhat poorly drained and have a water table less than 0.5 ft<sup>2</sup> from the surface for a significant period (usually a week or more) during the growing season, or~~
  - (2) ~~Poorly drained or very poorly drained and have either:~~
    - (a) ~~A water table at less than 1.0 ft from the surface for a significant period (usually a week or more) during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within 20 inches; or~~
    - (b) ~~A water table at less than 1.5 ft from the surface for a significant period (usually a week or more) during the growing season if permeability is less than 6.0 in/hr in any layer within 20 inches; or~~
- c. ~~Soils that are ponded for long or very long duration during the growing season; or~~
- d. ~~Soils that are frequently flooded for long duration or very long duration during the growing season.~~

USER NOTES: The hydric soil definition and criteria published in the 1987 Corps Manual are obsolete. Current [hydric soil definition, criteria, and lists](#) are available over the World Wide Web from the U.S.D.A. Natural Resources Conservation Service (NRCS). (HQUSACE, 27 Aug 91, 6 Mar 92)

A hydric soil may be either drained or undrained, and a drained hydric soil may not continue to support hydrophytic vegetation. Therefore, not all areas having hydric soils will qualify as wetlands. Only when a hydric soil supports hydrophytic vegetation and the area has indicators of wetland hydrology may the soil be referred to as a "wetland" soil.

38. A drained hydric soil is one in which sufficient ground or surface water has been removed by artificial means such that the area will no longer support hydrophyte vegetation. Onsite evidence of drained soils includes:

---

<sup>1</sup> Soil nomenclature follows USDA-SCS (1975).

<sup>2</sup> A table of factors for converting Non-SI Units of Measurement to SI (metric) units is presented on page x.

- a. Presence of ditches or canals of sufficient depth to lower the water table below the major portion of the root zone of the prevalent vegetation.
- b. Presence of dikes, levees, or similar structures that obstruct normal inundation of an area.
- c. Presence of a tile system to promote subsurface drainage.
- d. Diversion of upland surface runoff from an area.

Although it is important to record such evidence of drainage of an area, a hydric soil that has been drained or partially drained still allows the soil parameter to be met. However, the area will not qualify as a wetland if the degree of drainage has been sufficient to preclude the presence of either hydrophytic vegetation or a hydrologic regime that occurs in wetlands. *NOTE: The mere presence of drainage structures in an area is not sufficient basis for concluding that a hydric soil has been drained; such areas may continue to have wetland hydrology.*

### **General information**

39. Soils consist of unconsolidated, natural material that supports, or is capable of supporting, plant life. The upper limit is air and the lower limit is either bedrock or the limit of biological activity. Some soils have very little organic matter (mineral soils), while others are composed primarily of organic matter (Histosols). The relative proportions of particles (sand, silt, clay, and organic matter) in a soil are influenced by many interacting environmental factors. As normally defined, a soil must support plant life. The concept is expanded to include substrates that could support plant life. For various reasons, plants may be absent from areas that have well-defined soils.

40. A soil profile (Figure 2) consists of various soil layers described from the surface downward. Most soils have two or more identifiable horizons. A soil horizon is a layer oriented approximately parallel to the soil surface, and usually is differentiated from contiguous horizons by characteristics that can be seen or measured in the field (e.g., color, structure, texture, etc.). Most mineral soils have A-, B-, and C-horizons, and many have surficial organic layers (O-horizon). The A-horizon, the surface soil or topsoil, is a zone in which organic matter is usually being added to the mineral soil. It is also the zone from which both mineral and organic matter are being moved slowly downward. The next major horizon is the B-horizon, often referred to as the subsoil. The B-horizon is the zone of maximum accumulation of materials. It is usually characterized by higher clay content and/or more pronounced soil structure development and lower organic matter than the A-horizon. The next major horizon is usually the C-horizon, which consists of unconsolidated parent material that has not been sufficiently weathered to exhibit characteristics of the B-horizon. Clay content and degree of soil structure development in the C-horizon are usually less than in the B-horizon. The lowest major horizon, the R-horizon, consists of consoli-



dated bedrock. In many situations, this horizon occurs at such depths that it has no significant influence on soil characteristics.

		<u>DESCRIPTION</u>
ORGANIC HORIZONS	O1	ORGANIC MATTER CONSISTING OF VISIBLE VEGETATIVE MATTER.
	O2	ORGANIC MATTER IN A FORM WHERE INDIVIDUAL COMPONENTS ARE UNRECOGNIZABLE TO THE NAKED EYE.
MINERAL HORIZONS	A1	DECOMPOSED ORGANIC MATTER MIXED WITH MINERAL MATTER AND COATING MINERAL PARTICLES, RESULTING IN DARKER COLOR OF THE SOIL MASS. USUALLY THIN IN FOREST SOILS AND THICK IN GRASSLAND SOILS.
	A2	ZONE WHERE CLAY, IRON, OR ALUMINUM IS LOST. GENERALLY LIGHTER IN COLOR AND LOWER IN ORGANIC MATTER CONTENT THAN THE A1 HORIZON.
	A3	THESE HORIZONS ARE TRANSITIONAL BETWEEN THE A AND B HORIZONS. THE A3 HORIZON HAS PROPERTIES MORE LIKE A THAN B. THE B1 HORIZON HAS PROPERTIES MORE LIKE B THAN A.
	B1	
	B2	ZONE WHERE THE SOIL LACKS PROPERTIES OF THE OVERLYING A AND UNDERLYING C HORIZONS. GENERALLY THE ZONE OF MAXIMUM CLAY CONTENT AND SOIL STRUCTURE DEVELOPMENT.
	B3	ZONE OF TRANSITION BETWEEN THE B AND C OR R HORIZONS, BUT WITH PREDOMINANT CHARACTERISTICS OF THE B HORIZON.
	C	A MINERAL LAYER, EXCLUSIVE OF BEDROCK, THAT HAS BEEN RELATIVELY LITTLE AFFECTED BY SOIL-FORMING PROCESSES AND LACKS PROPERTIES OF EITHER THE A OR B HORIZONS, BUT WHICH CONSISTS OF MATERIALS WEATHERED BELOW THE ZONE OF BIOLOGICAL ACTIVITY.
	R	CONSOLIDATED BEDROCK, WHICH IS NOT NECESSARILY THE SOURCE OF MINERAL MATTER FROM WHICH THE SOIL FORMED.

Figure 2. Generalized soil profile

### Influencing factors

41. Although all soil-forming factors (climate, parent material, relief, organisms, and time) affect the characteristics of a hydric soil, the overriding influence is the hydrologic regime. The unique characteristics of hydric soils result from the influence of periodic or permanent inundation or soil saturation for sufficient duration to effect anaerobic conditions. Prolonged anaerobic soil conditions lead to a reducing environment, thereby lowering the soil redox potential. This results in chemical reduction of some soil components (e.g., iron and manganese oxides), which leads to development of soil colors and other physical characteristics that usually are indicative of hydric soils.

## Classification

42. Hydric soils occur in several categories of the current soil classification system, which is published in *Soil Taxonomy* (USDA-SCS 1975). This classification system is based on physical and chemical properties of soils that can be seen, felt, or measured. Lower taxonomic categories of the system (e.g., soil series and soil phases) remain relatively unchanged from earlier classification systems.

43. Hydric soils may be classified into two broad categories: organic and mineral. Organic soils (Histosols) develop under conditions of nearly continuous saturation and/or inundation. All organic soils are hydric soils except Folists, which are freely drained soils occurring on dry slopes where excess litter accumulates over bedrock. Organic hydric soils are commonly known as peats and mucks. All other hydric soils are mineral soils. Mineral soils have a wide range of textures (sandy to clayey) and colors (red to gray). Mineral hydric soils are those periodically saturated for sufficient duration to produce chemical and physical soil properties associated with a reducing environment. They are usually gray and/or mottled immediately below the surface horizon (see paragraph 44*d*), or they have thick, dark-colored surface layers overlying gray or mottled subsurface horizons.

## Wetland indicators (nonsandy soils)

44. Several indicators are available for determining whether a given soil meets the definition and criteria for hydric soils. Any one of the following indicates that hydric soils are present:<sup>1</sup>



Figure 3. Organic soil

- a. *Organic soils (Histosols)*. A soil is an organic soil when: (1) more than 50 percent (by volume) of the upper 32 inches of soil is composed of organic soil material;<sup>2</sup> or (2) organic soil material of any thickness rests on bedrock. Organic soils (Figure 3) are saturated for long periods and are commonly called peats or mucks.
- b. *Histic epipedons*. A histic epipedon is an 8- to 16-inch layer at or near the surface of a mineral hydric soil that is saturated with

---

<sup>1</sup> Indicators are listed in order of decreasing reliability. Although all are valid indicators, some are stronger indicators than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached.

<sup>2</sup> A detailed definition of organic soil material is available in USDA-SCS (1975).

water for 30 consecutive days or more in most years and contains a minimum of 20 percent organic matter when no clay is present or a minimum of 30 percent organic matter when clay content is 60 percent or greater. Soils with histic epipedons are inundated or saturated for sufficient periods to greatly retard aerobic decomposition of the organic surface, and are considered to be hydric soils.

- c. *Sulfidic material.* When mineral soils emit an odor of rotten eggs, hydrogen sulfide is present. Such odors are only detected in waterlogged soils that are permanently saturated and have sulfidic material within a few centimeters of the soil surface. Sulfides are produced only in a reducing environment.
- d. *Aquic or peraquic moisture regime.* An aquic moisture regime is a reducing one; i.e., it is virtually free of dissolved oxygen because the soil is saturated by ground water or by water of the capillary fringe (USDA-SCS 1975). Because dissolved oxygen is removed from ground water by respiration of microorganisms, roots, and soil fauna, it is also implicit that the soil temperature is above biologic zero (5° C) at some time while the soil is saturated. Soils with *peraquic* moisture regimes are characterized by the presence of ground water always at or near the soil surface. Examples include soils of tidal marshes and soils of closed, landlocked depressions that are fed by permanent streams.
- e. *Reducing soil conditions.* Soils saturated for long or very long duration will usually exhibit reducing conditions. Under such conditions, ions of iron are transformed from a ferric valence state to a ferrous valence state. This condition can often be detected in the field by a ferrous iron test. A simple colorimetric field test kit has been developed for this purpose. When a soil extract changes to a pink color upon addition of  $\alpha, \alpha'$ -dipyridyl, ferrous iron is present, which indicates a reducing soil environment. *NOTE: This test cannot be used in mineral hydric soils having low iron content, organic soils, and soils that have been desaturated for significant periods of the growing season.*
- f. *Soil colors.* The colors of various soil components are often the most diagnostic indicator of hydric soils. Colors of these components are strongly influenced by the frequency and duration of soil saturation, which leads to reducing soil conditions. Mineral hydric soils will be either gleyed or will have bright mottles and/or low matrix chroma. These are discussed below:
  - (1) *Gleyed soils (gray colors).* Gleyed soils develop when anaerobic soil conditions result in pronounced chemical reduction of iron, manganese, and other elements, thereby producing gray soil colors. Anaerobic conditions that occur in waterlogged soils result in the predominance of reduction processes, and such soils are greatly reduced. Iron is one of the most abundant elements in soils. Under anaerobic conditions, iron is converted from the oxidized (ferric)



Figure 4. Gleyed soil



Figure 5. Soil showing matrix (brown) and mottles (reddish-brown)

state to the reduced (ferrous) state, which results in the bluish, greenish, or grayish colors associated with the gleying effect (Figure 4). Gleying immediately below the A-horizon or 10 inches (whichever is shallower) is an indication of a markedly reduced soil, and gleyed soils are hydric soils. Gleyed soil conditions can be determined by using the gley page of the Munsell Color Book (Munsell Color 1975).

- (2) *Soils with bright mottles and/or low matrix chroma.* Mineral hydric soils that are saturated for substantial periods of the growing season (but not long enough to produce gleyed soils) will either have bright mottles and a low matrix chroma or will lack mottles but have a low matrix chroma (see Appendix D, Section 1, for a definition and discussion of "chroma" and other components of soil color). *Mottled* means "marked with spots of contrasting color." Soils that have brightly colored mottles and a low matrix chroma are indicative of a fluctuating water

table. The soil *matrix* is the portion (usually more than 50 percent) of a given soil layer that has the predominant color (Figure 5). Mineral hydric soils usually have one of the following color features in the horizon immediately below the A-horizon or 10 inches (whichever is shallower):

- (a) Matrix chroma of 2 or less<sup>1</sup> in mottled soils.
- (b) Matrix chroma of 1 or less<sup>1</sup> in unmottled soils.

*NOTE: The matrix chroma of some dark (black) mineral hydric soils will not conform to the criteria described in (a) and (b) above; in such soils, gray mottles occurring at 10 inches or less are indicative of hydric conditions.*

---

<sup>1</sup> Colors should be determined in soils that have been moistened; otherwise, state that colors are for dry soils.

*CAUTION: Soils with significant coloration due to the nature of the parent material (e.g., red soils of the Red River Valley) may not exhibit the above characteristics. In such cases, this indicator cannot be used.*

- g. *Soil appearing on hydric soils list.* Using the criteria for hydric soils (paragraph 37), the NTCHS has developed a list of hydric soils.

**USER NOTES:** The NRCS has developed local lists of hydric soil mapping units that are available from NRCS county and area offices. These local lists are the preferred hydric soil lists to use in making wetland determinations. (HQUSACE, 6 Mar 92)

Listed soils have reducing conditions for a significant portion of the growing season in a major portion of the root zone and are frequently saturated within 12 inches of the soil surface. ~~The NTCHS list of hydric soils is presented in Appendix D, Section 2.~~ *CAUTION: Be sure that the profile description of the mapping unit conforms to that of the sampled soil.*

- h. *Iron and manganese concretions.* During the oxidation-reduction process, iron and manganese in suspension are sometimes segregated as oxides into concretions or soft masses (Figure 6). These accumulations are usually black or dark brown. Concretions >2 mm in diameter occurring within 7.5 cm of the surface are evidence that the soil is saturated for long periods near the surface.



Figure 6. Iron and manganese concretions

### **Wetland indicators (sandy soils)**

45. Not all indicators listed in paragraph 44 can be applied to sandy soils. *In particular, soil color should not be used as an indicator in most sandy soils.* However, three additional soil features may be used as indicators of sandy hydric soils, including:

- a. *High organic matter content in the surface horizon.* Organic matter tends to accumulate above or in the surface horizon of sandy soils that

are inundated or saturated to the surface for a significant portion of the growing season. Prolonged inundation or saturation creates anaerobic conditions that greatly reduce oxidation of organic matter.

- b. *Streaking of subsurface horizons by organic matter.* Organic matter is moved downward through sand as the water table fluctuates. This often occurs more rapidly and to a greater degree in some vertical sections of a sandy soil containing high content of organic matter than in others. Thus, the sandy soil appears vertically streaked with darker areas. When soil from a darker area is rubbed between the fingers, the organic matter stains the fingers.
- c. *Organic pans.* As organic matter is moved downward through sandy soils, it tends to accumulate at the point representing the most commonly occurring depth to the water table. This organic matter tends to become slightly cemented with aluminum, forming a thin layer of hardened soil (spodic horizon). These horizons often occur at depths of 12 to 30 inches below the mineral surface. Wet spodic soils usually have thick dark surface horizons that are high in organic matter with dull, gray horizons above the spodic horizon.

USER NOTES: The NRCS has developed regional lists of "[Field Indicators of Hydric Soils in the United States](#)" (Version 3.2, July 1996, or later). Until approved, these indicators do not supersede those given in the 1987 Corps Manual and supplemental guidance but may be used as supplementary information. Several of the NRCS indicators were developed specifically to help in identifying hydric soils in certain problem soil types (e.g., sandy soils, soils derived from red parent materials, soils with thick, dark surfaces). These indicators may be used under procedures given in the Problem Area section of the 1987 Manual. (HQUSACE, 21 Mar 97)

*CAUTION: In recently deposited sandy material (e.g., accreting sandbars), it may be impossible to find any of these indicators. In such cases, consider this as a natural atypical situation.*

## Wetland Hydrology

### Definition

46. The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Such characteristics are usually present in areas that



are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions. Hydrology is often the least exact of the parameters, and indicators of wetland hydrology are sometimes difficult to find in the field. However, it is essential to establish that a wetland area is periodically inundated or has saturated soils during the growing season.

**USER NOTES:** The 1987 Manual (see glossary, Appendix A) defines "growing season" as the portion of the year when soil temperature (measured 20 inches below the surface) is above biological zero (5° C or 41° F). This period "can be approximated by the number of frost-free days." Estimated starting and ending dates for the growing season are based on 28° F air temperature thresholds at a frequency of 5 years in 10 (HQUSACE, 6 Mar 92). This information is available in NRCS county soil survey reports or from the [NRCS Water and Climate Center in Portland, Oregon](#), for most weather stations in the country.

### **Influencing factors**

47. Numerous factors (e.g., precipitation, stratigraphy, topography, soil permeability, and plant cover) influence the wetness of an area. Regardless, the characteristic common to all wetlands is the presence of an abundant supply of water. The water source may be runoff from direct precipitation, headwater or backwater flooding, tidal influence, ground water, or some combination of these sources. The frequency and duration of inundation or soil saturation varies from nearly permanently inundated or saturated to irregularly inundated or saturated. Topographic position, stratigraphy, and soil permeability influence both the frequency and duration of inundation and soil saturation. Areas of lower elevation in a floodplain or marsh have more frequent periods of inundation and/or greater duration than most areas at higher elevations. Floodplain configuration may significantly affect duration of inundation. When the floodplain configuration is conducive to rapid runoff, the influence of frequent periods of inundation on vegetation and soils may be reduced. Soil permeability also influences duration of inundation and soil saturation. For example, clayey soils absorb water more slowly than sandy or loamy soils, and therefore have slower permeability and remain saturated much longer. Type and amount of plant cover affect both degree of inundation and duration of saturated soil conditions. Excess water drains more slowly in areas of abundant plant cover, thereby increasing frequency and duration of inundation and/or soil saturation. On the other hand, transpiration rates are higher in areas of abundant plant cover, which may reduce the duration of soil saturation.

### **Classification**

48. Although the interactive effects of all hydrologic factors produce a continuum of wetland hydrologic regimes, efforts have been made to classify wet-

land hydrologic regimes into functional categories. These efforts have focused on the use of frequency, timing, and duration of inundation or soil saturation as a basis for classification. A classification system developed for nontidal areas is presented in Table 5. This classification system was slightly modified from the system developed by the Workshop on Bottomland Hardwood Forest Wetlands of the Southeastern United States (Clark and Benforado 1981). Recent research indicates that duration of inundation and/or soil saturation during the growing season is more influential on the plant community than frequency of inundation/saturation during the growing season (Theriot, in press). Thus, frequency of inundation and soil saturation are not included in Table 5. ~~The WES has developed a computer program that can be used to transform stream gage data to mean sea level elevations representing the upper limit of each hydrologic zone shown in Table 5. This program is available upon request.~~<sup>1</sup>

**USER NOTES:** Based on Table 5 and on paragraph 55, Step 8.i., an area has wetland hydrology if it is inundated or saturated to the surface continuously for at least 5% of the growing season in most years (50% probability of recurrence). These areas are wetlands if they also meet hydrophytic vegetation and hydric soil requirements. (HQUSACE, 7 Oct 91 and 6 Mar 92)

<b>Table 5</b>			
<b>Hydrologic Zones<sup>1</sup> - Nontidal Areas</b>			
<b>Zone</b>	<b>Name</b>	<b>Duration<sup>2</sup></b>	<b>Comments</b>
I <sup>3</sup>	Permanently inundated	100 percent	Inundation >6.6 ft mean water depth
II	Semipermanently to nearly permanently inundated or saturated	>75 - <100 percent	Inundation defined as $\pm$ 6.6 ft mean water depth
III	Regularly inundated or saturated	>25 - 75 percent	
IV	Seasonally inundated or saturated	>12.5 - 25 percent	
V	Irregularly inundated or saturated	$\geq$ 5 - 12.5 percent	Many areas having these hydrologic characteristics are not wetlands
VI	Intermittently or never inundated or saturated	<5 percent	Areas with these hydrologic characteristics are not wetlands

<sup>1</sup> Zones adapted from Clark and Benforado (1981).  
<sup>2</sup> Refers to duration of inundation and/or soil saturation during the growing season.  
<sup>3</sup> This defines an aquatic habitat zone.

### Wetland indicators

49. Indicators of wetland hydrology may include, but are not necessarily limited to: drainage patterns, drift lines, sediment deposition, watermarks,

---

<sup>1</sup> R. F. Theriot, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, P.O. Box 631, Vicksburg, MS 39180.



stream gage data and flood predictions, historic records, visual observation of saturated soils, and visual observation of inundation. Any of these indicators may be evidence of wetland hydrologic characteristics. Methods for determining hydrologic indicators can be categorized according to the type of indicator. Recorded data include stream gage data, lake gage data, tidal gage data, flood predictions, and historical records. Use of these data is commonly limited to areas adjacent to streams or other similar areas. Recorded data usually provide both short- and long-term information about frequency and duration of inundation, but contain little or no information about soil saturation, which must be gained from soil surveys or other similar sources. The remaining indicators require field observations. Field indicators are evidence of present or past hydrologic events (e.g., location and height of flooding). Indicators for recorded data and field observations include:<sup>1</sup>

- a. *Recorded data.* Stream gage data, lake gage data, tidal gage data, flood predictions, and historical data may be available from the following sources:
  - (1) *CE District Offices.* Most CE Districts maintain stream, lake, and tidal gage records for major water bodies in their area. In addition, CE planning and design documents often contain valuable hydrologic information. For example, a General Design Memorandum (GDM) usually describes flooding frequencies and durations for a project area. Furthermore, the extent of flooding within a project area is sometimes indicated in the GDM according to elevation (height) of certain flood frequencies (1-, 2-, 5-, 10-year, etc.).
  - (2) *U.S. Geological Survey (USGS).* Stream and tidal gage data are available from the USGS offices throughout the Nation, and the latter are also available from the National Oceanic and Atmospheric Administration. CE Districts often have such records.
  - (3) *State, county, and local agencies.* These agencies often have responsibility for flood control/relief and flood insurance.
  - (4) *Soil Conservation Service Small Watershed Projects.* Planning documents from this agency are often helpful, and can be obtained from the SCS district office in the county.
  - (5) *Planning documents of developers.*
- b. *Field data.* The following field hydrologic indicators can be assessed quickly, and although some of them are not necessarily indicative of hydrologic events that occur only during the growing season, they do provide evidence that inundation and/or soil saturation has occurred:

---

<sup>1</sup> Indicators are listed in order of decreasing reliability. Although all are valid indicators, some are stronger indicators than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached.

- (1) *Visual observation of inundation.* The most obvious and revealing hydrologic indicator may be simply observing the areal extent of inundation. However, because seasonal conditions and recent weather conditions can contribute to surface water being present on a nonwetland site, both should be considered when applying this indicator.
- (2) *Visual observation of soil saturation.* Examination of this indicator requires digging a soil pit (Appendix D, Section 1) to a depth of 16 inches and observing the level at which water stands in the hole after sufficient time has been allowed for water to drain into the hole. The required time will vary depending on soil texture. In some cases, the upper level at which water is flowing into the pit can be observed by examining the wall of the hole. This level represents the depth to the water table. The depth to saturated soils will always be nearer the surface due to the capillary fringe.

For soil saturation to impact vegetation, it must occur within a *major portion of the root zone* (usually within 12 inches of the surface) of the prevalent vegetation. The major portion of the root zone is that portion of the soil profile in which more than one half of the plant roots occur. *CAUTION: In some heavy clay soils, water may not rapidly accumulate in the hole even when the soil is saturated. If water is observed at the bottom of the hole but has not filled to the 12-inch depth, examine the sides of the hole and determine the shallowest depth at which water is entering the hole. When applying this indicator, both the season of the year and preceding weather conditions must be considered.*



Figure 7. Watermark on trees

- (3) *Watermarks.* Watermarks are most common on woody vegetation. They occur as stains on bark (Figure 7) or other fixed objects (e.g., bridge pillars, buildings, fences, etc.). When several watermarks are present, the highest reflects the maximum extent of recent inundation.
- (4) *Drift lines.* This indicator is most likely to be found adjacent to streams or other

sources of water flow in wetlands, but also often occurs in tidal marshes. Evidence consists of deposition of debris in a line on the surface (Figure 8) or debris entangled in aboveground vegetation or other fixed objects. Debris usually consists of remnants of vegetation (branches, stems, and leaves), sediment, litter, and other waterborne materials deposited parallel to the direction of water flow. Drift lines provide an indication of the minimum portion of the area inundated during a flooding event; the maximum level of inundation is generally at a higher elevation than that indicated by a drift line.



Figure 8. Absence of leaf litter

- (5) *Sediment deposits.* Plants and other vertical objects often have thin layers, coatings, or depositions of mineral or organic matter on them after inundation (Figure 9). This evidence may remain for a considerable period before it is removed by precipitation or subsequent inundation. Sediment deposition on vegetation and other objects provides an indication of the minimum inundation level. When sediments are primarily organic (e.g., fine organic material, algae), the detritus may become encrusted on or slightly above the soil surface after dewatering occurs (Figure 10).



Figure 9. Sediment deposit on plants

- (6) *Drainage patterns within wetlands.* This indicator, which occurs primarily in wetlands



Figure 10. Encrusted detritus

adjacent to streams, consists of surface evidence of drainage flow into or through an area (Figure 11). In some wetlands, this evidence may exist as a drainage pattern eroded into the soil, vegetative matter (debris) piled against thick vegetation or woody stems oriented perpendicular to the direction of water flow, or the absence of leaf litter (Figure 8). Scouring is often evident around roots of persistent vegetation. Debris may be deposited in or along the drainage pattern (Figure 12).



Figure 11. Drainage pattern



Figure 12. Debris deposited in stream channel

*CAUTION: Drainage patterns also occur in upland areas after periods of considerable precipitation; therefore, topographic position must also be considered when applying this indicator.*

**USER NOTES:** The hydrology indicators described above are considered to be "primary indicators", any one of which is sufficient evidence that wetland hydrology is present when combined with a hydrophytic plant community and hydric soils. In addition, the following "secondary indicators" may also be used to determine whether wetland hydrology is present. In the absence of a primary indicator, any two secondary indicators must be present to conclude that wetland hydrology is present. Secondary indicators are: presence of oxidized rhizospheres associated with living plant roots in the upper 12 inches of the soil, presence of water-stained leaves, local soil survey hydrology data for identified soils, and the FAC-neutral test of the vegetation. (HQUSACE, 6 Mar 92)

# Part IV: Methods

---

## Section A. Introduction

50. Part IV contains sections on preliminary data gathering, method selection, routine determination procedures, comprehensive determination procedures, methods for determinations in atypical situations, and guidance for wetland determinations in natural situations where the three-parameter approach may not always apply.

51. Significant flexibility has been incorporated into Part IV. The user is presented in Section B with various potential sources of information that may be helpful in making a determination, but not all identified sources of information may be applicable to a given situation. *NOTE: The user is not required to obtain information from all identified sources.* Flexibility is also provided in method selection (Section C). Three levels of routine determinations are available, depending on the complexity of the required determination and the quantity and quality of existing information. Application of methods presented in both Section D (routine determinations) and Section E (comprehensive determinations) may be tailored to meet site-specific requirements, especially with respect to sampling design.

52. Methods presented in Sections D and E vary with respect to the required level of technical knowledge and experience of the user. Application of the qualitative methods presented in Section D (routine determinations) requires considerably less technical knowledge and experience than does application of the quantitative methods presented in Section E (comprehensive determinations). The user must at least be able to identify the dominant plant species in the project area when making a routine determination (Section D), and should have some basic knowledge of hydric soils when employing routine methods that require soils examination. Comprehensive determinations require a basic understanding of sampling principles and the ability to identify all commonly occurring plant species in a project area, as well as a good understanding of indicators of hydric soils and wetland hydrology. The comprehensive method should only be employed by experienced field inspectors.

## Section B. Preliminary Data Gathering and Synthesis

53. This section discusses potential sources of information that may be helpful in making a wetland determination. When the routine approach is used, it may often be possible to make a wetland determination based on available vegetation, soils, and hydrology data for the area. However, this section deals only with identifying potential information sources, extracting pertinent data, and synthesizing the data for use in making a determination. Based on the quantity and quality of available information and the approach selected for use (Section C), the user is referred to either Section D or Section E for the actual determination. Completion of Section B is not required, but is recommended because the available information may reduce or eliminate the need for field effort and decrease the time and cost of making a determination. However, there are instances in small project areas in which the time required to obtain the information may be prohibitive. In such cases PROCEED to paragraph 55, complete STEPS 1 through 3, and PROCEED to Section D or E.

### Data sources

54. Obtain the following information, when available and applicable:

- a. *USGS quadrangle maps.* USGS quadrangle maps are available at different scales. When possible, obtain maps at a scale of 1:24,000; otherwise, use maps at a scale of 1:62,500. Such maps are available from USGS in Reston, VA, and Menlo Park, CA, but they may already be available in the CE District Office. These maps provide several types of information:
  - (1) Assistance in locating field sites. Towns, minor roads, bridges, streams, and other landmark features (e.g., buildings, cemeteries, water bodies, etc.) not commonly found on road maps are shown on these maps.
  - (2) Topographic details, including contour lines (usually at 5- or 10-ft contour intervals).
  - (3) General delineation of wet areas (swamps and marshes). *NOTE: The actual wet area may be greater than that shown on the map because USGS generally maps these areas based on the driest season of the year.*
  - (4) Latitude, longitude, townships, ranges, and sections. These provide legal descriptions of the area.
  - (5) Directions, including both true and magnetic north.



- (6) Drainage patterns.
- (7) General land uses, such as cleared (agriculture or pasture), forested, or urban.

*CAUTION: Obtain the most recent USGS maps. Older maps may show features that no longer exist and will not show new features that have developed since the map was constructed. Also, USGS is currently changing the mapping scale from 1:24,000 to 1:25,000.*

b. *National Wetlands Inventory products.*

- (1) *Wetland maps.* The standard NWI maps are at a scale of 1:24,000 or, where USGS base maps at this scale are not available, they are at 1:62,500 (1:63,350 in Alaska). Smaller scale maps ranging from 1:100,000 to 1:500,000 are also available for certain areas. Wetlands on NWI maps are classified in accordance with Cowardin et al. (1979). *CAUTION: Since not all delineated areas on NWI maps are wetlands under Department of Army jurisdiction, NWI maps should not be used as the sole basis for determining whether wetland vegetation is present.* NWI "User Notes" are available that correlate the classification system with local wetland community types. An important feature of this classification system is the water regime modifier, which describes the flooding or soil saturation characteristics. Wetlands classified as having a temporarily flooded or intermittently flooded water regime should be viewed with particular caution since this designation is indicative of plant communities that are transitional between wetland and nonwetland. These are among the most difficult plant communities to map accurately from aerial photography. For wetlands "wetter" than temporarily flooded and intermittently flooded, the probability of a designated map unit on recent NWI maps being a wetland (according to Cowardin et al. 1979) at the time of the photography is in excess of 90 percent. *CAUTION: Due to the scale of aerial photography used and other factors, all NWI map boundaries are approximate.* The optimum use of NWI maps is to plan field review (i.e., how wet, big, or diverse is the area?) and to assist during field review, particularly by showing the approximate areal extent of the wetland and its association with other communities. NWI maps are available either as a composite with, or an overlay for, USGS base maps and may be obtained from the NWI Central Office in St. Petersburg, FL, the Wetland Coordinator at each FWS regional office, or the USGS.

**USER NOTES:** [NWI products and information](#) are available over the World Wide Web.

- (2) *Plant database.* This database of approximately 5,200 plant species that occur in wetlands provides information (e.g., ranges, habitat, etc.) about each plant species from the technical literature. The database served as a focal point for development of a national list of plants that occur in wetlands (~~Appendix C, Section 1~~).
- c. *Soil Surveys.* Soil surveys are prepared by the SCS for political units (county, parish, etc.) in a state. Soil surveys contain several types of information:
    - (1) General information (e.g., climate, settlement, natural resources, farming, geology, general vegetation types).
    - (2) Soil maps for general and detailed planning purposes. These maps are usually generated from fairly recent aerial photography. *CAUTION: The smallest mapping unit is 3 acres, and a given soil series as mapped may contain small inclusions of other series.*
    - (3) Uses and management of soils. Any wetness characteristics of soils will be mentioned here.
    - (4) Soil properties. Soil and water features are provided that may be very helpful for wetland investigations. Frequency, duration, and timing of inundation (when present) are described for each soil type. Water table characteristics that provide valuable information about soil saturation are also described. Soil permeability coefficients may also be available.
    - (5) Soil classification. Soil series and phases are usually provided. Published soil surveys will not always be available for the area. If not, contact the county SCS office and determine whether the soils have been mapped.
  - d. *Stream and tidal gage data.* These documents provide records of tidal and stream flow events. They are available from either the USGS or CE District office.
  - e. *Environmental impact assessments (EIAs), environmental impact statements (EISs), general design memoranda (GDM), and other similar publications.* These documents may be available from Federal agencies for an area that includes the project area. They may contain some indication of the location and characteristics of wetlands consistent with the required criteria (vegetation, soils, and hydrology), and often contain flood frequency and duration data.
  - f. *Documents and maps from State, county, or local governments.* Regional maps that characterize certain areas (e.g., potholes, coastal areas, or basins) may be helpful because they indicate the type and character of wetlands.



- g. *Remote sensing.* Remote sensing is one of the most useful information sources available for wetland identification and delineation. Recent aerial photography, particularly color infrared, provides a detailed view of an area; thus, recent land use and other features (e.g., general type and areal extent of plant communities and degree of inundation of the area when the photography was taken) can be determined. The multiagency cooperative National High Altitude Aerial Photography Program (HAP) has 1:59,000-scale color infrared photography for approximately 85 percent (December 1985) of the coterminous United States from 1980 to 1985. This photography has excellent resolution and can be ordered enlarged to 1:24,000 scale from USGS. Satellite images provide similar information as aerial photography, although the much smaller scale makes observation of detail more difficult without sophisticated equipment and extensive training. Satellite images provide more recent coverage than aerial photography (usually at 18-day intervals). Individual satellite images are more expensive than aerial photography, but are not as expensive as having an area flown and photographed at low altitudes. However, better resolution imagery is now available with remote sensing equipment mounted on fixed-wing aircraft.
- h. *Local individuals and experts.* Individuals having personal knowledge of an area may sometimes provide a reliable and readily available source of information about the area, particularly information on the wetness of the area.
- i. *USGS land use and land cover maps.* Maps created by USGS using remotely sensed data and a geographical information system provide a systematic and comprehensive collection and analysis of land use and land cover on a national basis. Maps at a scale of 1:250,000 are available as overlays that show land use and land cover according to nine basic levels. One level is wetlands (as determined by the FWS), which is further subdivided into forested and nonforested areas. Five other sets of maps show political units, hydrologic units, census subdivisions of counties, Federal land ownership, and State land ownership. These maps can be obtained from any USGS mapping center.
- j. *Applicant's survey plans and engineering designs.* In many cases, the permit applicant will already have had the area surveyed (often at 1-ft contours or less) and will also have engineering designs for the proposed activity.

## Data synthesis

55. When employing Section B procedures, use the above sources of information to complete the following steps:

- *STEP 1 - Identify the project area on a map.* Obtain a USGS quadrangle map (1:24,000) or other appropriate map, and locate the area identified in the permit application. PROCEED TO STEP 2.
- *STEP 2 - Prepare a base map.* Mark the project area boundaries on the map. Either use the selected map as the base map or trace the area on a mylar overlay, including prominent landscape features (e.g., roads, buildings, drainage patterns, etc.). If possible, obtain diazo copies of the resulting base map. PROCEED TO STEP 3.
- *STEP 3 - Determine size of the project area.* Measure the area boundaries and calculate the size of the area. PROCEED TO STEP 4 OR TO SECTION D OR E IF SECTION B IS NOT USED.
- *STEP 4 - Summarize available information on vegetation.* Examine available sources that contain information about the area vegetation. Consider the following:
  - a. USGS quadrangle maps. Is the area shown as a marsh or swamp? *CAUTION: Do not use this as the sole basis for determining that hydrophytic vegetation is present.*
  - b. NWI overlays or maps. Do the overlays or maps indicate that hydrophytic vegetation occurs in the area? If so, identify the vegetation type(s).
  - c. EIAs, EISs, or GDMs that include the project area. Extract any vegetation data that pertain to the area.
  - d. Federal, State, or local government documents that contain information about the area vegetation. Extract appropriate data.
  - e. Recent (within last 5 years) aerial photography of the area. Can the area plant community type(s) be determined from the photography? Extract appropriate data.
  - f. Individuals or experts having knowledge of the area vegetation. Contact them and obtain any appropriate information. *CAUTION: Ensure that the individual providing the information has firsthand knowledge of the area.*
  - g. Any published scientific studies of the area plant communities. Extract any appropriate data.
  - h. Previous wetland determinations made for the area. Extract any pertinent vegetation data.

When the above have been considered, PROCEED TO STEP 5.

- *STEP 5 - Determine whether the vegetation in the project area is adequately characterized.* Examine the summarized data (STEP 4) and determine whether the area plant communities are adequately characterized. For routine determinations, the plant community type(s) and the dominant species in each vegetation layer of each community type must be known. Dominant species are those that have the largest relative basal area (overstory),<sup>1</sup> height (woody understory), number of stems (woody vines), or greatest areal cover (herbaceous understory). For comprehensive determinations, each plant community type present in the project area must have been quantitatively described within the past 5 years using accepted sampling and analytical procedures, and boundaries between community types must be known. Record information on DATA FORM 1.<sup>2</sup> In either case, PROCEED TO Section F if there is evidence of recent significant vegetation alteration due to human activities or natural events. Otherwise, PROCEED TO STEP 6.
- *STEP 6 - Summarize available information on area soils.* Examine available information and describe the area soils. Consider the following:
  - a. County soil surveys. Determine the soil series present and extract characteristics for each. *CAUTION: Soil mapping units sometimes include more than one soil series.*
  - b. Unpublished county soil maps. Contact the local SCS office and determine whether soil maps are available for the area. Determine the soil series of the area, and obtain any available information about possible hydric soil indicators (paragraph 44 or 45) for each soil series.
  - c. Published EIAs, EISs, or GDMs that include soils information. Extract any pertinent information.
  - d. Federal, State, and/or local government documents that contain descriptions of the area soils. Summarize these data.
  - e. Published scientific studies that include area soils data. Summarize these data.
  - f. Previous wetland determinations for the area. Extract any pertinent soils data.

When the above have been considered, PROCEED TO STEP 7.

---

<sup>1</sup> This term is used because species having the largest individuals may not be dominant when only a few are present. To use relative basal area, consider both the size and number of individuals of a species and subjectively compare with other species present.

<sup>2</sup> A separate DATA FORM 1 must be used for each plant community type.

- *STEP 7 - Determine whether soils of the project area have been adequately characterized.* Examine the summarized soils data and determine whether the soils have been adequately characterized. For routine determinations, the soil series must be known. For comprehensive determinations, both the soil series and the boundary of each soil series must be known. Record information on DATA FORM 1. In either case, if there is evidence of recent significant soils alteration due to human activities or natural events, PROCEED TO Section F. Otherwise, PROCEED TO STEP 8.
  
- *STEP 8 - Summarize available hydrology data.* Examine available information and describe the area hydrology. Consider the following:
  - a. USGS quadrangle maps. Is there a significant, well-defined drainage through the area? Is the area within a major floodplain or tidal area? What range of elevations occur in the area, especially in relation to the elevation of the nearest perennial watercourse?
  - b. NWI overlays or maps. Is the area shown as a wetland or deepwater aquatic habitat? What is the water regime modifier?
  - c. EIAs, EISs, or GDMs that describe the project area. Extract any pertinent hydrologic data.
  - d. Floodplain management maps. These maps may be used to extrapolate elevations that can be expected to be inundated on a 1-, 2-, 3-year, etc., basis. Compare the elevations of these features with the elevation range of the project area to determine the frequency of inundation.
  - e. Federal, State, and local government documents (e.g., CE floodplain management maps and profiles) that contain hydrologic data. Summarize these data.
  - f. Recent (within past 5 years) aerial photography that shows the area to be inundated. Record the date of the photographic mission.
  - g. Newspaper accounts of flooding events that indicate periodic inundation of the area.
  - h. SCS County Soil Surveys that indicate the frequency and duration of inundation and soil saturation for area soils.  
*CAUTION: Data provided only represent average conditions for a particular soil series in its natural undrained state, and cannot be used as a positive hydrologic indicator in areas that have significantly altered hydrology.*

- i. Tidal or stream gage data for a nearby water body that apparently influences the area. Obtain the gage data and complete (1) below if the routine approach is used, or (2) below if the comprehensive approach is used (OMIT IF GAGING STATION DATA ARE UNAVAILABLE):
- (1) *Routine approach.* Determine the highest water level elevation reached during the growing season for each of the most recent 10 years of gage data. Rank these elevations in descending order and select the fifth highest elevation. Combine this elevation with the mean sea level elevation of the gaging station to produce a mean sea level elevation for the highest water level reached every other year. *NOTE: Stream gage data are often presented as flow rates in cubic feet per second. In these cases, ask the CE District's Hydrology Branch to convert flow rates to corresponding mean sea level elevations and adjust gage data to the site.* Compare the resulting elevations reached biennially with the project area elevations. If the water level elevation exceeds the area elevation, the area is inundated during the growing season on average at least biennially.
  - (2) *Comprehensive approach.* Complete the following:
    - (a) *Decide whether hydrologic data reflect the apparent hydrology.* Data available from the gaging station may or may not accurately reflect the area hydrology. Answer the following questions:
      - Does the water level of the area appear to fluctuate in a manner that differs from that of the water body on which the gaging station is located? (In ponded situations, the water level of the area is usually higher than the water level at the gaging station.)
      - Are less than 10 years of daily readings available for the gaging station?
      - Do other water sources that would not be reflected by readings at the gaging station appear to significantly affect the area? For example, do major tributaries enter the stream or tidal area between the area and gaging station?

If the answer to any of the above questions is YES, the area hydrology cannot be determined from the

gaging station data. If the answer to all of the above questions is NO, PROCEED TO (b).

- (b) *Analyze hydrologic data.* Subject the hydrologic data to appropriate analytical procedures. Either use duration curves or a computer program developed by WES (available from the Environmental Laboratory upon request) for determining the mean sea level elevation representing the upper limits of wetland hydrology. In the latter case, when the site elevation is lower than the mean sea level elevation representing a 5-percent duration of inundation and saturation during the growing season, the area has a hydrologic regime that may occur in wetlands. *NOTE: Duration curves do not reflect the period of soil saturation following dewatering.*

When all of the above have been considered, PROCEED TO STEP 9.

- *STEP 9 - Determine whether hydrology is adequately characterized.* Examine the summarized data and determine whether the hydrology of the project area is adequately characterized. For routine determinations, there must be documented evidence of frequent inundation or soil saturation during the growing season. For comprehensive determinations, there must be documented quantitative evidence of frequent inundation or soil saturation during the growing season, based on at least 10 years of stream or tidal gage data. Record information on DATA FORM 1. In either case, if there is evidence of recent significant hydrologic alteration due to human activities or natural events, PROCEED TO Section F. Otherwise, PROCEED TO Section C.

## **Section C. Selection of Method**

56. All wetland delineation methods described in this manual can be grouped into two general types: routine and comprehensive. Routine determinations (Section D) involve simple, rapidly applied methods that result in sufficient qualitative data for making a determination. Comprehensive methods (Section E) usually require significant time and effort to obtain the needed quantitative data. The primary factor influencing method selection will usually be the complexity of the required determination. However, comprehensive methods may sometimes be selected for use in relatively simple determinations when rigorous documentation is required.

57. Three levels of routine wetland determinations are described below. Complexity of the project area and the quality and quantity of available information will influence the level selected for use.

- a. *Level 1 - Onsite Inspection Unnecessary.* This level may be employed when the information already obtained (Section B) is sufficient for making a determination for the entire project area (see Section D, Subsection 1).
- b. *Level 2 - Onsite Inspection Necessary.* This level must be employed when there is insufficient information already available to characterize the vegetation, soils, and hydrology of the entire project area (see Section D, Subsection 2).
- c. *Level 3 - Combination of Levels 1 and 2.* This level should be used when there is sufficient information already available to characterize the vegetation, soils, and hydrology of a portion, but not all, of the project area. Methods described for Level 1 may be applied to portions of the area for which adequate information already exists, and onsite methods (Level 2) must be applied to the remainder of the area (see Section D, Subsection 3).

58. After considering all available information, select a tentative method (see above) for use, and PROCEED TO EITHER Section D or E, as appropriate. *NOTE: Sometimes it may be necessary to change to another method described in the manual, depending on the quality of available information and/or recent changes in the project area.*

## **Section D. Routine Determinations**

59. This section describes general procedures for making routine wetland determinations. It is assumed that the user has already completed all applicable steps in Section B,<sup>1</sup> and a routine method has been tentatively selected for use (Section C). Subsections 1 through 3 describe steps to be followed when making a routine determination using one of the three levels described in Section C. Each subsection contains a flowchart that defines the relationship of steps to be used for that level of routine determinations. *NOTE: The selected method must be considered tentative because the user may be required to change methods during the determination.*

### **Subsection 1 - Onsite Inspection Unnecessary**

60. This subsection describes procedures for making wetland determinations when sufficient information is already available (Section B) on which to base

---

<sup>1</sup> If it has been determined that it is more expedient to conduct an onsite inspection than to search for available information, complete STEPS 1 through 3 of Section B, and PROCEED TO Subsection 2.

the determination. A flowchart of required steps to be completed is presented in Figure 13, and each step is described below.

### Equipment and materials

61. No special equipment is needed for applying this method. The following materials will be needed:

- a. Map of project area (Section B, STEP 2).
- b. Copies of DATA FORM 1 (Appendix B).
- c. Appendices C and D to this manual.

### Procedure

62. Complete the following steps, as necessary:

- *STEP 1 - Determine whether available data are sufficient for entire project area.* Examine the summarized data (Section B, STEPS 5, 7, and 9) and determine whether the vegetation, soils, and hydrology of the entire project area are adequately characterized. If so, PROCEED TO STEP 2. If all three parameters are adequately characterized for a portion, but not all, of the project area, PROCEED TO Subsection 3. If the vegetation, soils, and hydrology are not adequately characterized for any portion of the area, PROCEED TO Subsection 2.
- *STEP 2 - Determine whether hydrophytic vegetation is present.* Examine the vegetation data and list on DATA FORM 1 the dominant plant species found in each vegetation layer of each community type. *NOTE: A separate DATA FORM 1 will be required for each community type.* Record the indicator status for each dominant species (~~Appendix C, Section 1 or 2~~). When more than 50 percent of the dominant species in a plant community have an indicator status of OBL, FACW, and/or FAC,<sup>1</sup> hydrophytic vegetation is present. If one or more plant communities comprise hydrophytic vegetation, PROCEED TO STEP 3. If none of the plant communities comprise hydrophytic vegetation, none of the area is a wetland. Complete the vegetation section for each DATA FORM 1.

---

<sup>1</sup> For the FAC-neutral option, see paragraph 35a.



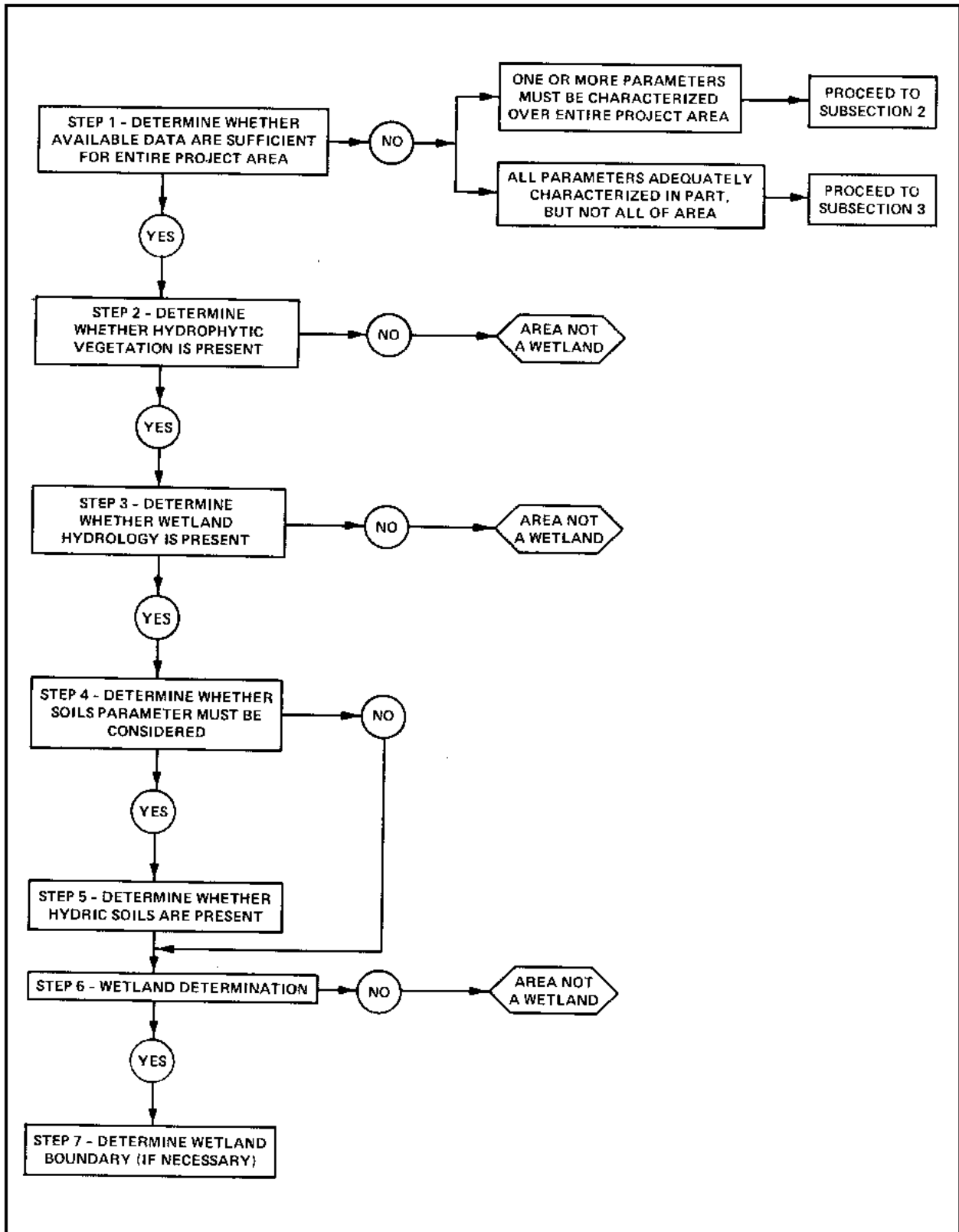


Figure 13. Flowchart of steps involved in making a wetland determination when an onsite inspection is unnecessary

- *STEP 3 - Determine whether wetland hydrology is present.* When one of the following conditions applies (STEP 2), it is only necessary to confirm that there has been no recent hydrologic alteration of the area:
  - a. The entire project area is occupied by a plant community or communities in which all dominant species are OBL (~~Appendix C, Section 1 or 2~~).
  - b. The project area contains two or more plant communities, all of which are dominated by OBL and/or FACW species, and the wetland-nonwetland boundary is abrupt<sup>1</sup> (e.g., a *Spartina alterniflora* marsh bordered by a road embankment).

If either *a* or *b* applies, look for recorded evidence of recently constructed dikes, levees, impoundments, and drainage systems, or recent avalanches, mudslides, beaver dams, etc., that have significantly altered the area hydrology. If any significant hydrologic alteration is found, determine whether the area is still periodically inundated or has saturated soils for sufficient duration to support the documented vegetation (*a* or *b* above). When *a* or *b* applies and there is no evidence of recent hydrologic alteration, or when *a* or *b* do not apply and there is documented evidence that the area is periodically inundated or has saturated soils, wetland hydrology is present. Otherwise, wetland hydrology does not occur on the area. Complete the hydrology section of DATA FORM 1 and PROCEED TO STEP 4.

- *STEP 4 - Determine whether the soils parameter must be considered.* When either *a* or *b* of STEP 3 applies *and* there is either no evidence of recent hydrologic alteration of the project area or if wetland hydrology presently occurs on the area, hydric soils can be assumed to be present. If so, PROCEED TO STEP 6. Otherwise PROCEED TO STEP 5.
- *STEP 5 - Determine whether hydric soils are present.* Examine the soils data (Section B, STEP 7) and record the soil series or soil phase on DATA FORM 1 for each community type. Determine whether the soil is listed as a hydric soil (~~Appendix D, Section 2~~). If all community types have hydric soils, the entire project area has hydric soils. (*CAUTION: If the soil series description makes reference to inclusions of other soil types, data must be field verified*). Any portion of the area that lacks hydric soils is a nonwetland. Complete the soils section of each DATA FORM 1 and PROCEED TO STEP 6.

---

<sup>1</sup> There must be documented evidence of periodic inundation or saturated soils when the project area: (a) has plant communities dominated by one or more FAC species; (b) has vegetation dominated by FACW species but no adjacent community dominated by OBL species; (c) has a gradual, nondistinct boundary between wetlands and nonwetlands; and/or (d) is known to have or is suspected of having significantly altered hydrology.

- *STEP 6 - Wetland determination.* Examine the DATA FORM 1 for each community type. Any portion of the project area is a wetland that has:
  - a. Hydrophytic vegetation that conforms to one of the conditions identified in STEP 3a or 3b and has either no evidence of altered hydrology or confirmed wetland hydrology.
  - b. Hydrophytic vegetation that does not conform to STEP 3a or 3b, has hydric soils, and has confirmed wetland hydrology.

If STEP 6a or 6b applies to the entire project area, the entire area is a wetland. Complete a DATA FORM 1 for all plant community types. Portions of the area not qualifying as a wetland based on an office determination might or might not be wetlands. If the data used for the determination are considered to be highly reliable, portions of the area not qualifying as wetlands may properly be considered nonwetlands. PROCEED TO STEP 7. If the available data are incomplete or questionable, an onsite inspection (Subsection 2) will be required.

- *STEP 7 - Determine wetland boundary.* Mark on the base map all community types determined to be wetlands with a W and those determined to be nonwetlands with an N. Combine all wetland community types into a single mapping unit. The boundary of these community types is the interface between wetlands and nonwetlands.

## Subsection 2 - Onsite Inspection Necessary

63. This subsection describes procedures for routine determinations in which the available information (Section B) is insufficient for one or more parameters. If only one or two parameters must be characterized, apply the appropriate steps and return to Subsection 1 and complete the determination. A flowchart of steps required for using this method is presented in Figure 14, and each step is described below.

### Equipment and materials

64. The following equipment and materials will be needed:
- a. Base map (Section B, STEP 2).
  - b. Copies of DATA FORM 1 (one for each community type and additional copies for boundary determinations).
  - c. Appendices C and D.
  - d. Compass.

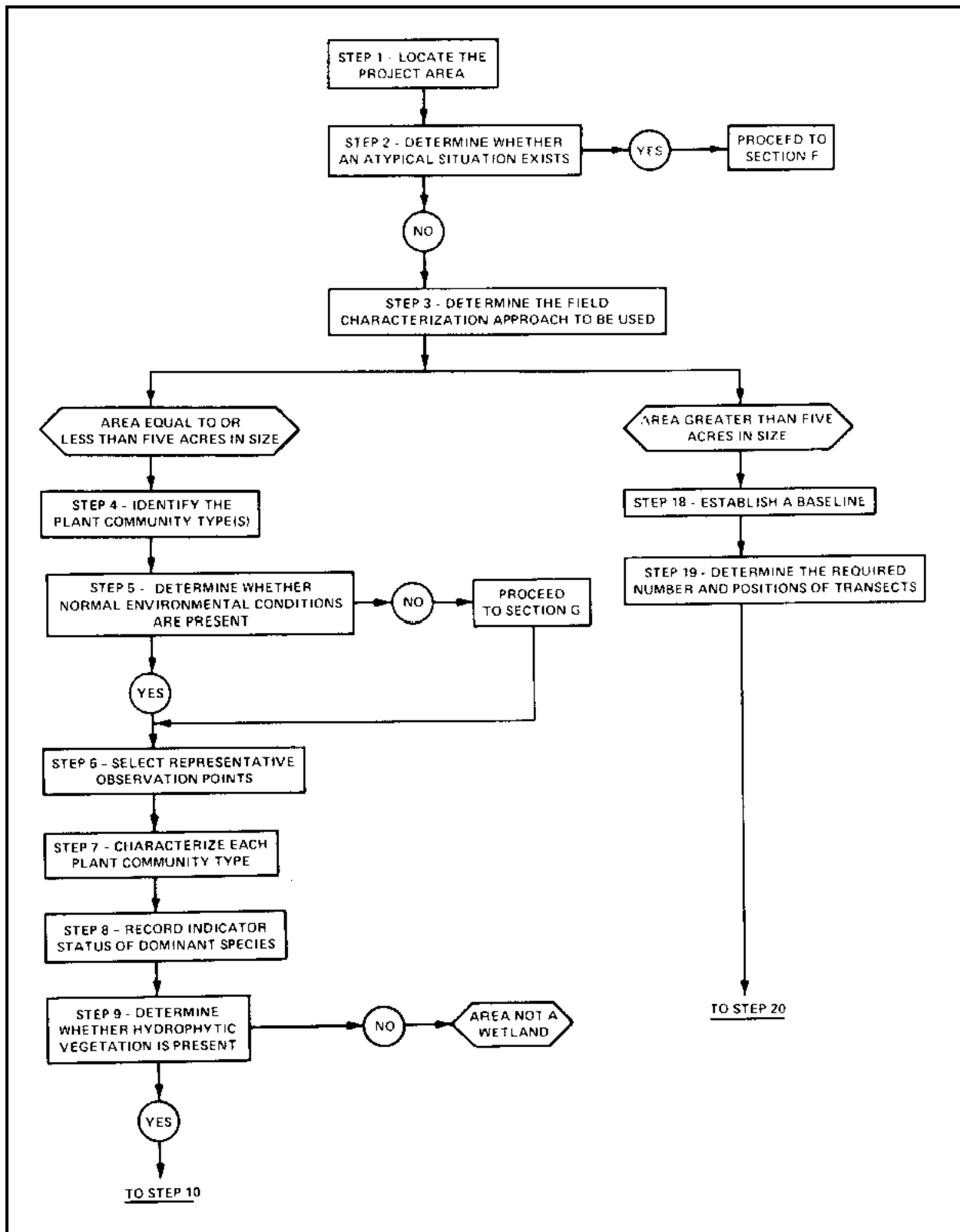


Figure 14. Flowchart of steps involved in making a routine wetland determination when an onsite visit is necessary (Continued)

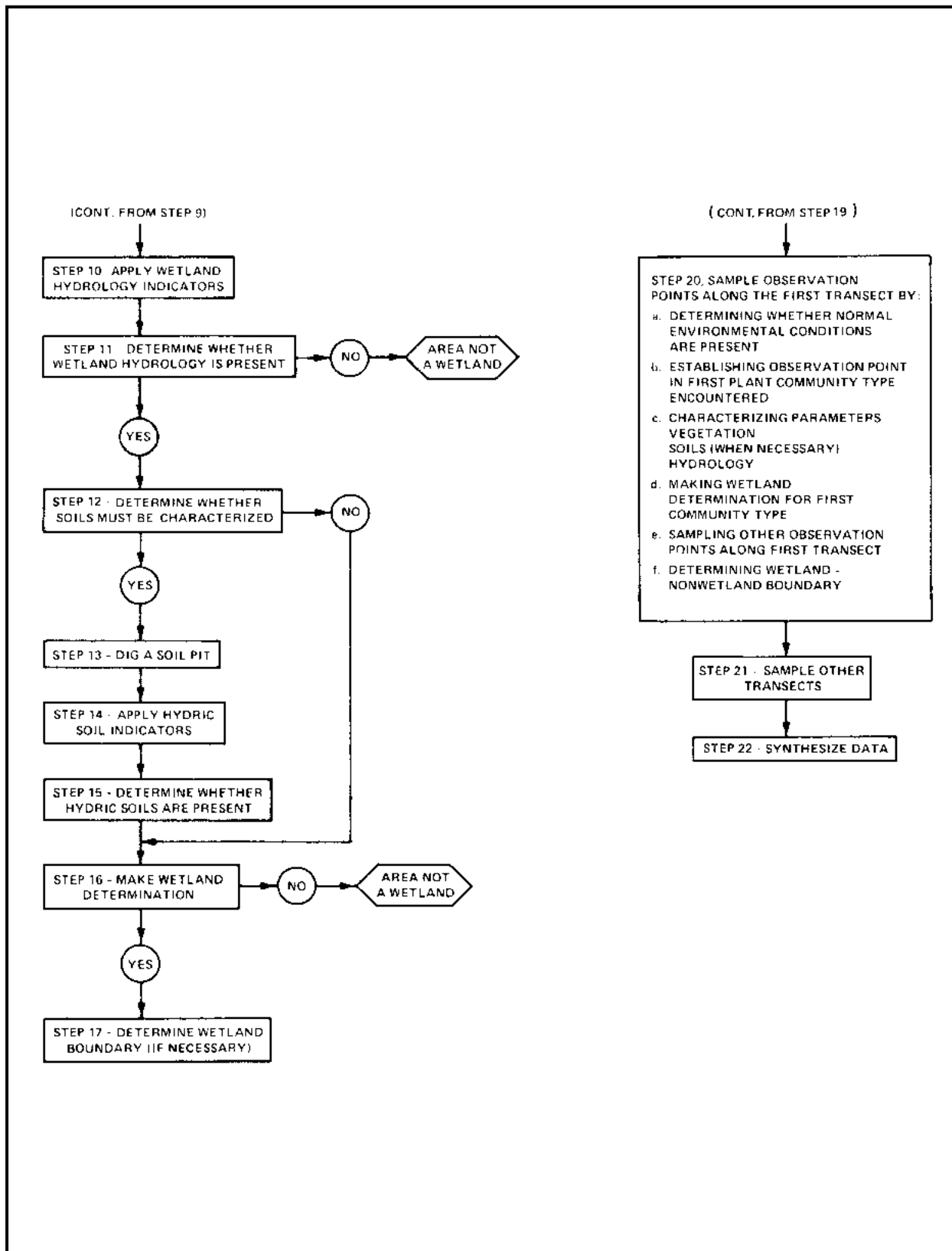


Figure 14. (Concluded)

- e. Soil auger or spade (soils only).
- f. Tape (300 ft).
- g. Munsell Color Charts (Munsell Color 1975) (soils only).

## Procedure

65. Complete the following steps, as necessary:

- *STEP 1 - Locate the project area.* Determine the spatial boundaries of the project area using information from a USGS quadrangle map or other appropriate map, aerial photography, and/or the project survey plan (when available). PROCEED TO STEP 2.
- *STEP 2 - Determine whether an atypical situation exists.* Examine the area and determine whether there is evidence of sufficient natural or human-induced alteration to significantly alter the area vegetation, soils, and/or hydrology. *NOTE: Include possible offsite modifications that may affect the area hydrology.* If not, PROCEED TO STEP 3.

If one or more parameters have been significantly altered by an activity that would normally require a permit, PROCEED TO Section F and determine whether there is sufficient evidence that hydrophytic vegetation, hydric soils, and/or wetland hydrology were present prior to this alteration. Then, return to this subsection and characterize parameters not significantly influenced by human activities. PROCEED TO STEP 3.

- *STEP 3 - Determine the field characterization approach to be used.* Considering the size and complexity of the area, determine the field characterization approach to be used. When the area is equal to or less than 5 acres in size (Section B, STEP 3) and the area is thought to be relatively homogeneous with respect to vegetation, soils, and/or hydrologic regime, PROCEED TO STEP 4. When the area is greater than 5 acres in size (Section B, STEP 3) or appears to be highly diverse with respect to vegetation, PROCEED TO STEP 18.

## Areas Equal To or Less Than 5 Acres in Size

- *STEP 4 - Identify the plant community type(s).* Traverse the area and determine the number and locations of plant community types. Sketch the location of each on the base map (Section B, STEP 2), and give each community type a name. PROCEED TO STEP 5.

- *STEP 5 - Determine whether normal environmental conditions are present.* Determine whether normal environmental conditions are present by considering the following:
  - a. Is the area presently lacking hydrophytic vegetation or hydrologic indicators due to annual or seasonal fluctuations in precipitation or ground-water levels?
  - b. Are hydrophytic vegetation indicators lacking due to seasonal fluctuations in temperature?

If the answer to either of these questions is thought to be YES, PROCEED TO Section G. If the answer to both questions is NO, PROCEED TO STEP 6.

- *STEP 6 - Select representative observation points.* Select a representative observation point in each community type. A representative observation point is one in which the apparent characteristics (determine visually) best represent characteristics of the entire community. Mark on the base map the approximate location of the observation point. PROCEED TO STEP 7.
- *STEP 7 - Characterize each plant community type.* Visually determine the dominant plant species in each vegetation layer of each community type and record them on DATA FORM 1 (use a separate DATA FORM 1 for each community type). Dominant species are those having the greatest relative basal area (woody overstory),<sup>1</sup> greatest height (woody understory), greatest percentage of areal cover (herbaceous understory), and/or greatest number of stems (woody vines). PROCEED TO STEP 8.
- *STEP 8 - Record indicator status of dominant species.* Record on DATA FORM 1 the indicator status (~~Appendix C, Section 1 or 2~~) of each dominant species in each community type. PROCEED TO STEP 9.
- *STEP 9 - Determine whether hydrophytic vegetation is present.* Examine each DATA FORM 1. When more than 50 percent of the dominant species in a community type have an indicator status (STEP 8) of OBL, FACW, and/or FAC,<sup>2</sup> hydrophytic vegetation is present. Complete the vegetation section of each DATA FORM 1. Portions of the area failing this test are not wetlands. PROCEED TO STEP 10.
- *STEP 10 - Apply wetland hydrologic indicators.* Examine the portion of the area occupied by each plant community type for positive indicators

---

<sup>1</sup> This term is used because species having the largest individuals may not be dominant when only a few are present. To determine relative basal area, consider both the size and number of individuals of a species and subjectively compare with other species present.

<sup>2</sup> For the FAC-neutral option, see paragraph 35a.

of wetland hydrology (Part III, paragraph 49). Record findings on the appropriate DATA FORM 1. PROCEED TO STEP 11.

- *STEP 11 - Determine whether wetland hydrology is present.* Examine the hydrologic information on DATA FORM 1 for each plant community type. Any portion of the area having a positive wetland hydrology indicator has wetland hydrology. If positive wetland hydrology indicators are present in all community types, the entire area has wetland hydrology. If no plant community type has a wetland hydrology indicator, none of the area has wetland hydrology. Complete the hydrology portion of each DATA FORM 1. PROCEED TO STEP 12.
- *STEP 12 - Determine whether soils must be characterized.* Examine the vegetation section of each DATA FORM 1. Hydric soils are assumed to be present in any plant community type in which:
  - a. All dominant species have an indicator status of OBL.
  - b. All dominant species have an indicator status of OBL or FACW, and the wetland boundary (when present) is abrupt.<sup>1</sup>

When either *a* or *b* occurs and wetland hydrology is present, check the hydric soils blank as positive on DATA FORM 1 and PROCEED TO STEP 16. If neither *a* nor *b* applies, PROCEED TO STEP 13.

- *STEP 13 - Dig a soil pit.* Using a soil auger or spade, dig a soil pit at the representative location in each community type. The procedure for digging a soil pit is described in Appendix D, Section 1. When completed, approximately 16 inches of the soil profile will be available for examination. PROCEED TO STEP 14.
- *STEP 14 - Apply hydric soil indicators.* Examine the soil at each location and compare its characteristics immediately below the A-horizon or 10 inches (whichever is shallower) with the hydric soil indicators described in Part III, paragraph 44 and/or 45. Record findings on the appropriate DATA FORM 1's. PROCEED TO STEP 15.
- *STEP 15 - Determine whether hydric soils are present.* Examine each DATA FORM 1 and determine whether a positive hydric soil indicator was found. If so, the area at that location has hydric soil. If soils at all sampling locations have positive hydric soil indicators, the entire area has hydric soils. If soils at all sampling locations lack positive hydric soil indicators, none of the area is a wetland. Complete the soil section of each DATA FORM 1. PROCEED TO STEP 16.

---

<sup>1</sup> The soils parameter must be considered in any plant community in which: (a) the community is dominated by one or more FAC species; (b) no community type dominated by OBL species is present; (c) the boundary between wetlands and nonwetlands is gradual or nondistinct; (d) the area is known to or is suspected of having significantly altered hydrology.



- *STEP 16 - Make wetland determination.* Examine DATA FORM 1. If the entire area presently or normally has wetland indicators of all three parameters (STEPS 9, 11, and 15), the entire area is a wetland. If the entire area presently or normally lacks wetland indicators of one or more parameters, the entire area is a nonwetland. If only a portion of the area presently or normally has wetland indicators for all three parameters, PROCEED TO STEP 17.
- *STEP 17 - Determine wetland-nonwetland boundary.* Mark each plant community type on the base map with a W if wetland or an N if non-wetland. Combine all wetland plant communities into one mapping unit and all nonwetland plant communities into another mapping unit. The wetland-nonwetland boundary will be represented by the interface of these two mapping units.

## Areas Greater Than 5 Acres in Size

- *STEP 18 - Establish a baseline.* Select one project boundary as a baseline. The baseline should parallel the major watercourse through the area or should be perpendicular to the hydrologic gradient (Figure 15). Determine the approximate baseline length. PROCEED TO STEP 19.
- *STEP 19 - Determine the required number and position of transects.* Use the following to determine the required number and position of transects (specific site conditions may necessitate changes in intervals):

Baseline Length, Miles	Number of Required Transects
≤0.25	3
>0.25 - 0.50	3
>0.50 - 0.75	3
>0.75 - 1.00	3
>1.00 - 2.00	3-5
>2.00 - 4.00	5-8
>4.00	8 or more <sup>1</sup>
<sup>1</sup> Transect intervals should not exceed 0.5 mile.	

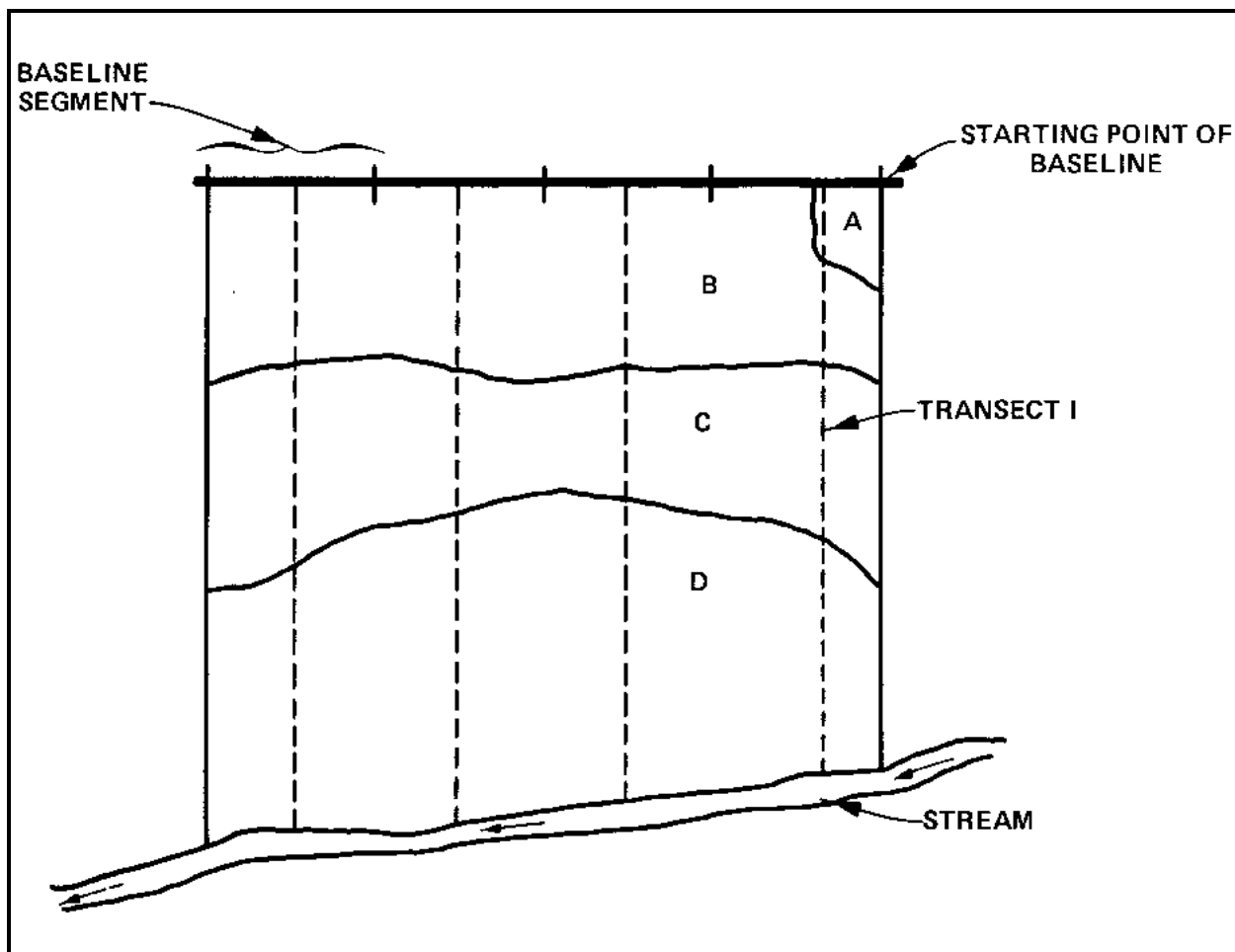


Figure 15. General orientation of baseline and transects (dotted lines) in a hypothetical project area. Alpha characters represent different plant communities. All transects start at the midpoint of a baseline segment except the first, which was repositioned to include community type A

Divide the baseline length by the number of required transects. Establish one transect in each resulting baseline increment. Use the midpoint of each baseline increment as a transect starting point. For example, if the baseline is 1,200 ft in length, three transects would be established—one at 200 ft, one at 600 ft, and one at 1,000 ft from the baseline starting point. *CAUTION: All plant community types must be included. This may necessitate relocation of one or more transect lines. PROCEED TO STEP 20.*

- *STEP 20 - Sample observation points along the first transect.* Beginning at the starting point of the first transect, extend the transect at a 90-degree angle to the baseline. Use the following procedure as appropriate to simultaneously characterize the parameters at each observation point. Combine field-collected data with information already available and make a wetland determination at each observation point. A DATA FORM 1 must be completed for each observation point.

- a. *Determine whether normal environmental conditions are present.* Determine whether normal environmental conditions are present by considering the following:
- (1) Is the area presently lacking hydrophytic vegetation and/or hydrologic indicators due to annual or seasonal fluctuations in precipitation or ground-water levels?
  - (2) Are hydrophytic vegetation indicators lacking due to seasonal fluctuations in temperature?

If the answer to either of these questions is thought to be YES, PROCEED TO Section G. If the answer to both questions is NO, PROCEED TO STEP 20b.

- b. *Establish an observation point in the first plant community type encountered.* Select a representative location along the transect in the first plant community type encountered. When the first plant community type is large and covers a significant distance along the transect, select an area that is no closer than 300 ft to a perceptible change in plant community type. PROCEED TO STEP 20c.
- c. *Characterize parameters.* Characterize the parameters at the observation point by completing (1), (2), and (3) below:
- (1) *Vegetation.* Record on DATA FORM 1 the dominant plant species in each vegetation layer occurring in the immediate vicinity of the observation point. Use a 5-ft radius for herbs and saplings/shrubs, and a 30-ft radius for trees and woody vines (when present). Subjectively determine the dominant species by estimating those having the largest relative basal area<sup>1</sup> (woody overstory), greatest height (woody understory), greatest percentage of areal cover (herbaceous understory), and/or greatest number of stems (woody vines). *NOTE: Plot size may be estimated, and plot size may also be varied when site conditions warrant.* Record on DATA FORM 1 any dominant species observed to have morphological adaptations (Appendix C, Section 3) for occurrence in wetlands, and determine and record dominant species that have known physiological adaptations for occurrence in wetlands (Appendix C, Section 3). Record on DATA FORM 1 the indicator status (~~Appendix C, Section 1 or 2~~) of each dominant species. Hydrophytic

---

<sup>1</sup> This term is used because species having the largest individuals may not be dominant when only a few are present. To use relative basal area, consider both the size and number of individuals of a species and subjectively compare with other species present.

vegetation is present at the observation point when more than 50 percent of the dominant species have an indicator status of OBL, FACW, and/or FAC;<sup>1</sup> when two or more dominant species have observed morphological or known physiological adaptations for occurrence in wetlands; or when other indicators of hydrophytic vegetation (Part III, paragraph 35) are present. Complete the vegetation section of DATA FORM 1. PROCEED TO (2).

- (2) *Soils.* In some cases, it is not necessary to characterize the soils. Examine the vegetation of DATA FORM 1. Hydric soils can be assumed to be present when:
  - (a) All dominant plant species have an indicator status of OBL.
  - (b) All dominant plant species have an indicator status of OBL and/or FACW (at least one dominant species must be OBL).<sup>2</sup>

When either (a) or (b) applies, check the hydric soils blank as positive and PROCEED TO (3). If neither (a) nor (b) applies but the vegetation qualifies as hydrophytic, dig a soil pit at the observation point using the procedure described in Appendix D, Section 1. Examine the soil immediately below the A-horizon or 10-inches (whichever is shallower) and compare its characteristics (Appendix D, Section 1) with the hydric soil indicators described in Part III, paragraph 44 and/or 45. Record findings on DATA FORM 1. If a positive hydric soil indicator is present, the soil at the observation point is a hydric soil. If no positive hydric soil indicator is found, the area at the observation point does not have hydric soils and the area at the observation point is not a wetland. Complete the soils section of DATA FORM 1 for the observation point. PROCEED TO (3) if hydrophytic vegetation (1) and hydric soils (2) are present. Otherwise, PROCEED TO STEP 20d.

- (3) *Hydrology.* Examine the observation point for indicators of wetland hydrology (Part III, paragraph 49) and record observations on DATA FORM 1. Consider the indicators in the same sequence as presented in Part III, paragraph 49. If a positive wetland hydrology indicator

---

<sup>1</sup> For the FAC-neutral option, see paragraph 35a.

<sup>2</sup> Soils must be characterized when any dominant species has an indicator status of FAC.

is present, the area at the observation point has wetland hydrology. If no positive wetland hydrologic indicator is present, the area at the observation point is not a wetland. Complete the hydrology section of DATA FORM 1 for the observation point. PROCEED TO STEP 20d.

- d. *Wetland determination.* Examine DATA FORM 1 for the observation point. Determine whether wetland indicators of all three parameters are or would normally be present during a significant portion of the growing season. If so, the area at the observation point is a wetland. If no evidence can be found that the area at the observation point normally has wetland indicators for all three parameters, the area is a nonwetland. PROCEED TO STEP 20e.
- e. *Sample other observation points along the first transect.* Continue along the first transect until a different community type is encountered. Establish a representative observation point within this community type and repeat STEP 20c and 20d. If the areas at both observation points are either wetlands or nonwetlands, continue along the transect and repeat STEP 20c and 20d for the next community type encountered. Repeat for all other community types along the first transect. If the area at one observation point is wetlands and the next observation point is nonwetlands (or vice versa), PROCEED TO STEP 20f.
- f. *Determine wetland-nonwetland boundary.* Proceed along the transect from the wetland observation point toward the nonwetland observation point. Look for subtle changes in the plant community (e.g., the first appearance of upland species, disappearance of apparent hydrology indicators, or slight changes in topography). When such features are noted, establish an observation point and repeat the procedures described in STEP 20c through 20d. *NOTE: A new DATA FORM 1 must be completed for this observation point, and all three parameters must be characterized by field observation.* If the area at this observation point is a wetland, proceed along the transect toward the nonwetland observation point until upland indicators are more apparent. Repeat the procedures described in STEP 20c through 20d. If the area at this observation point is a nonwetland, move halfway back along the transect toward the last documented wetland observation point and repeat the procedure described in STEP 20c through 20d. Continue this procedure until the wetland-nonwetland boundary is found. It is not necessary to complete a DATA FORM 1 for all intermediate points, but a DATA FORM 1 should be completed for the wetland-nonwetland boundary. Mark the position of the wetland boundary on the base map, and continue along the first transect until all community types have been sampled and

all wetland boundaries located. *CAUTION: In areas where wetlands are interspersed among nonwetlands (or vice versa), several boundary determinations will be required.* When all necessary wetland determinations have been completed for the first transect, PROCEED TO STEP 21.

- *STEP 21 - Sample other transects.* Repeat procedures described in STEP 21 for all other transects. When completed, a wetland determination will have been made for one observation point in each community type along each transect, and all wetland-nonwetland boundaries along each transect will have been determined. PROCEED TO STEP 22.
- *STEP 22 - Synthesize data.* Examine all completed copies of DATA FORM 1, and mark each plant community type on the base map. Identify each plant community type as either a wetland (W) or nonwetland (N). If all plant community types are identified as wetlands, the entire area is wetlands. If all plant community types are identified as nonwetlands, the entire area is nonwetlands. If both wetlands and nonwetlands are present, identify observation points that represent wetland boundaries on the base map. Connect these points on the map by generally following contour lines to separate wetlands from nonwetlands. Walk the contour line between transects to confirm the wetland boundary. Should anomalies be encountered, it will be necessary to establish short transects in these areas, apply the procedures described in STEP 20f, and make any necessary adjustments on the base map.

### **Subsection 3 - Combination of Levels 1 and 2**

66. In some cases, especially for large projects, adequate information may already be available (Section B) to enable a wetland determination for a portion of the project area, while an onsite visit will be required for the remainder of the area. Since procedures for each situation have already been described in Subsections 1 and 2, they will not be repeated. Apply the following steps:

- *STEP 1 - Make wetland determination for portions of the project area that are already adequately characterized.* Apply procedures described in Subsection 1. When completed, a DATA FORM 1 will have been completed for each community type, and a map will have been prepared identifying each community type as wetland or nonwetland and showing any wetland boundary occurring in this portion of the project area. PROCEED TO STEP 2.
- *STEP 2 - Make wetland determination for portions of the project area that require an onsite visit.* Apply procedures described in Subsection 2. When completed, a DATA FORM 1 will have been completed for each plant community type or for a number of observation points (including

wetland boundary determinations). A map of the wetland (if present) will also be available. PROCEED TO STEP 3.

- *STEP 3 - Synthesize data.* Using the maps resulting from STEPS 1 and 2, prepare a summary map that shows the wetlands of the entire project area. *CAUTION: Wetland boundaries for the two maps will not always match exactly. When this occurs, an additional site visit will be required to refine the wetland boundaries. Since the degree of resolution of wetland boundaries will be greater when determined onsite, it may be necessary to employ procedures described in Subsection 2 in the vicinity of the boundaries determined from Subsection 1 to refine these boundaries.*

## Section E. Comprehensive Determinations

67. This section describes procedures for making comprehensive wetland determinations. Unlike procedures for making routine determinations (Section D), application of procedures described in this section will result in maximum information for use in making determinations, and the information usually will be quantitatively expressed. Comprehensive determinations should only be used when the project area is very complex and/or when the determination requires rigorous documentation. This type of determination may be required in areas of any size, but will be especially useful in large areas. There may be instances in which only one parameter (vegetation, soil, or hydrology) is disputed. In such cases, only procedures described in this section that pertain to the disputed parameter need be completed. It is assumed that the user has already completed all applicable steps in Section B. *NOTE: Depending on site characteristics, it may be necessary to alter the sampling design and/or data collection procedures.*

68. This section is divided into five basic types of activities. The first consists of preliminary field activities that must be completed prior to making a determination (STEPS 1 through 5). The second outlines procedures for determining the number and locations of required determinations (STEPS 6 through 8). The third describes the basic procedure for making a comprehensive wetland determination at any given point (STEPS 9 through 17). The fourth describes a procedure for determining wetland boundaries (STEP 18). The fifth describes a procedure for synthesizing the collected data to determine the extent of wetlands in the area (STEPS 20 and 21). A flowchart showing the relationship of various steps required for making a comprehensive determination is presented in Figure 16.

### Equipment and materials

69. Equipment and materials needed for making a comprehensive determination include:

- a. Base map (Section B, STEP 2).
- b. Copies of DATA FORMS 1 and 2.
- c. Appendices C and D.
- d. Compass.
- e. Tape (300 ft).
- f. Soil auger or spade.
- g. Munsell Color Charts (Munsell Color 1975).
- h. Quadrat (3.28 ft by 3.28 ft).
- i. Diameter or basal area tape (for woody overstory).

### **Field procedures**

70. Complete the following steps:
  - *STEP 1 - Identify the project area.* Using information from the USGS quadrangle or other appropriate map (Section B), locate and measure the spatial boundaries of the project area. Determine the compass heading of each boundary and record on the base map (Section B, STEP 2). The applicant's survey plan may be helpful in locating the project boundaries. PROCEED TO STEP 2.
  - *STEP 2 - Determine whether an atypical situation exists.* Examine the area and determine whether there is sufficient natural or human-induced alteration to significantly change the area vegetation, soils, and/or hydrology. If not, PROCEED TO STEP 3. If one or more parameters have been recently altered significantly, PROCEED TO Section F and determine whether there is sufficient evidence that hydrophytic vegetation, hydric soils, and/or wetland hydrology were present on the area prior to alteration. Then return to this section and characterize parameters not significantly influenced by human activities. PROCEED TO STEP 3.



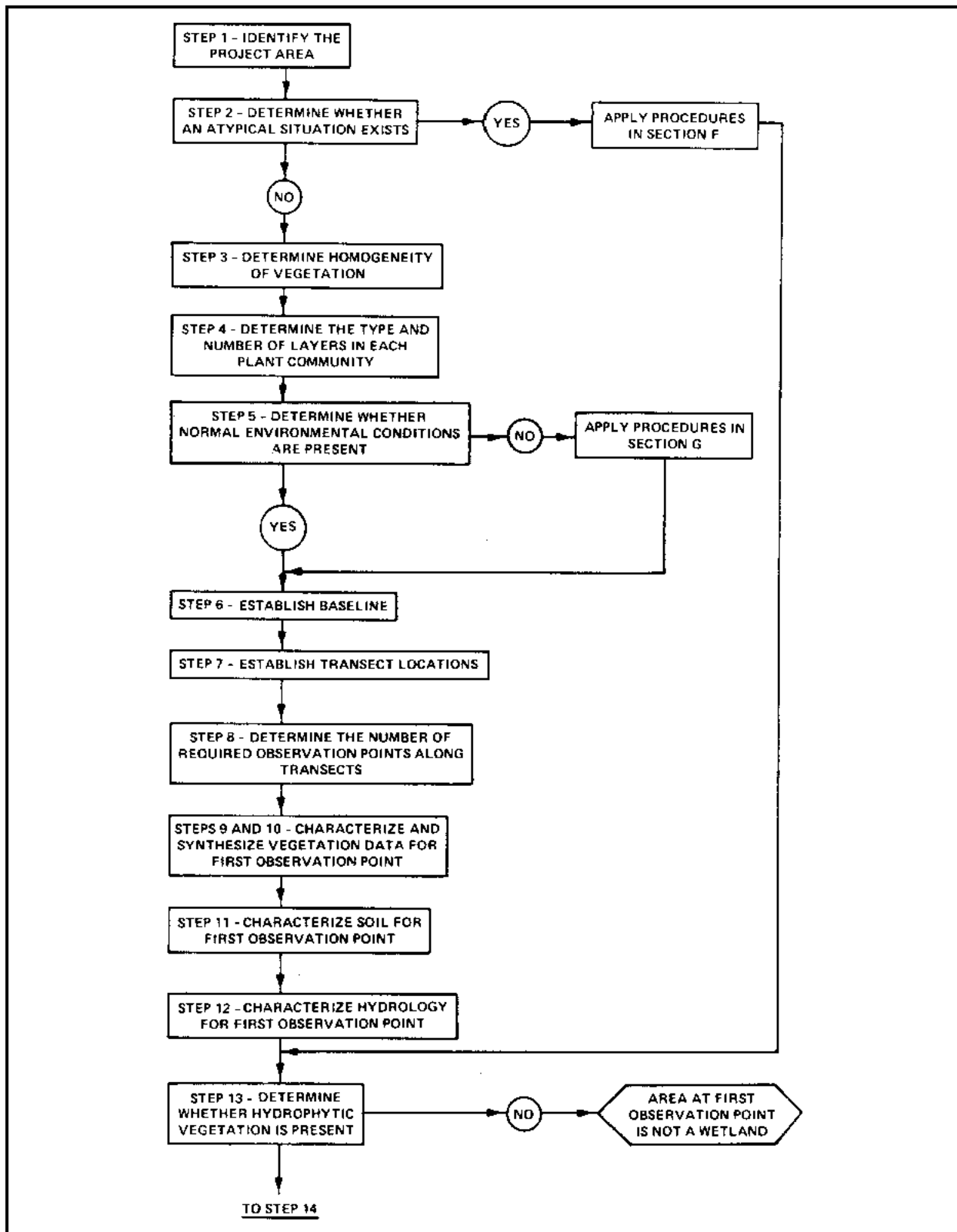


Figure 16. Flowchart of steps involved in making a comprehensive wetland determination (Section E) (Continued)

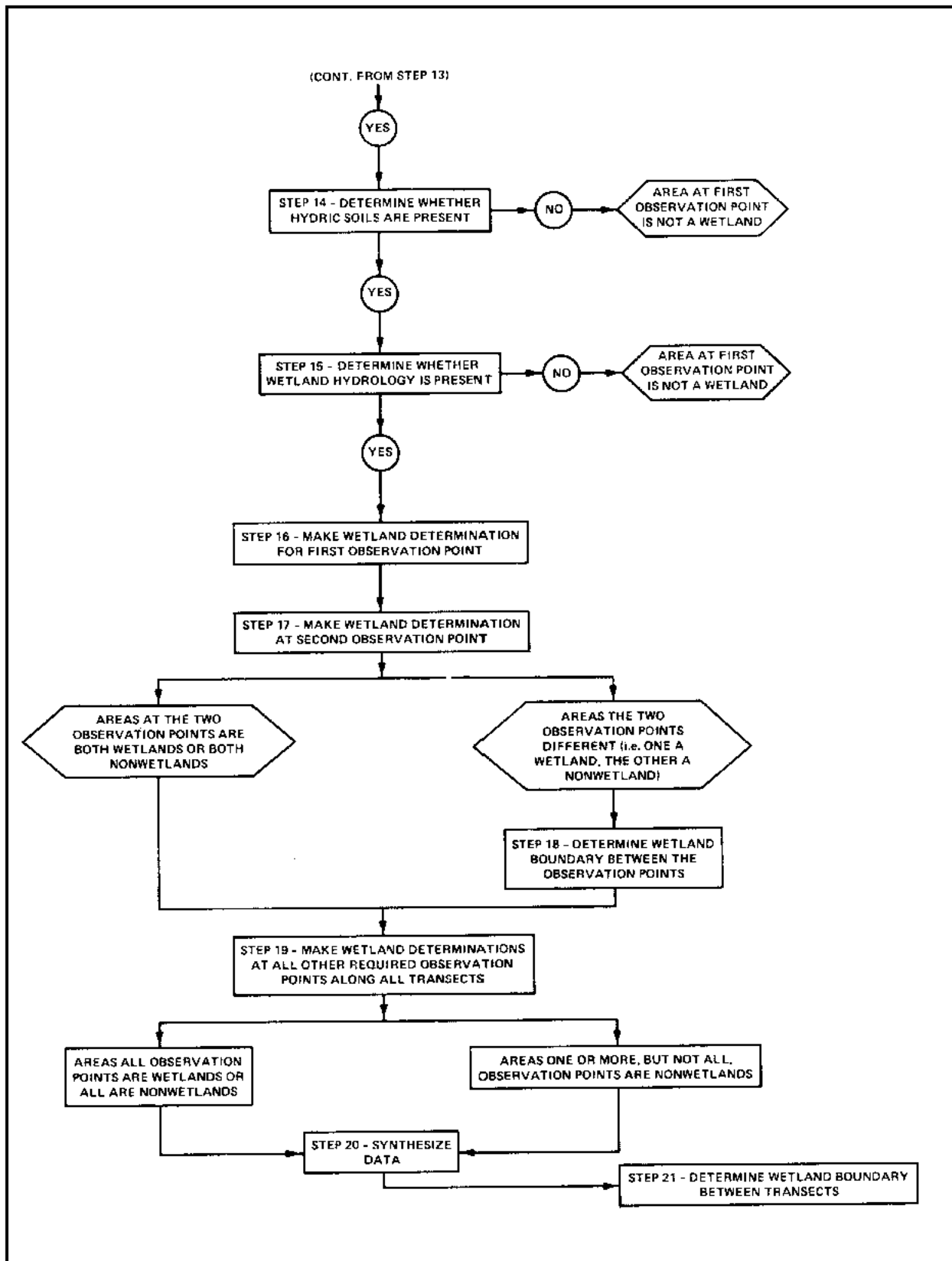


Figure 16. (Concluded)

- *STEP 3 - Determine homogeneity of vegetation.* While completing STEP 2, determine the number of plant community types present. Mark the approximate location of each community type on the base map. The number and locations of required wetland determinations will be strongly influenced by both the size of the area and the number and distribution of plant community types; the larger the area and greater the number of plant community types, the greater the number of required wetland determinations. It is imperative that all plant community types occurring in all portions of the area be included in the investigation. PROCEED TO STEP 4.
- *STEP 4 - Determine the type and number of layers in each plant community.* Examine each identified plant community type and determine the type(s) and number of layers in each community. Potential layers include trees (woody overstory), saplings/shrubs (woody understory), herbs (herbaceous understory), and/or woody vines. PROCEED TO STEP 5.
- *STEP 5 - Determine whether normal environmental conditions are present.* Determine whether normal environmental conditions are present at the observation point by considering the following:
  - a. Is the area at the observation point presently lacking hydrophytic vegetation and/or hydrologic indicators due to annual or seasonal fluctuations in precipitation or groundwater levels?
  - b. Are hydrophytic vegetation indicators lacking due to seasonal fluctuations in temperature?

If the answer to either of these questions is thought to be YES, PROCEED TO Section G. If the answer to both questions is NO, PROCEED TO STEP 6.

- *STEP 6 - Establish a baseline.* Select one project boundary area as a baseline. The baseline should extend parallel to any major watercourse and/or perpendicular to a topographic gradient (see Figure 17). Determine the baseline length and record on the base map both the baseline length and its compass heading. PROCEED TO STEP 7.
- *STEP 7 - Establish transect locations.* Divide the baseline into a number of equal segments (Figure 17). Use the following as a guide to determine the appropriate number of baseline segments:

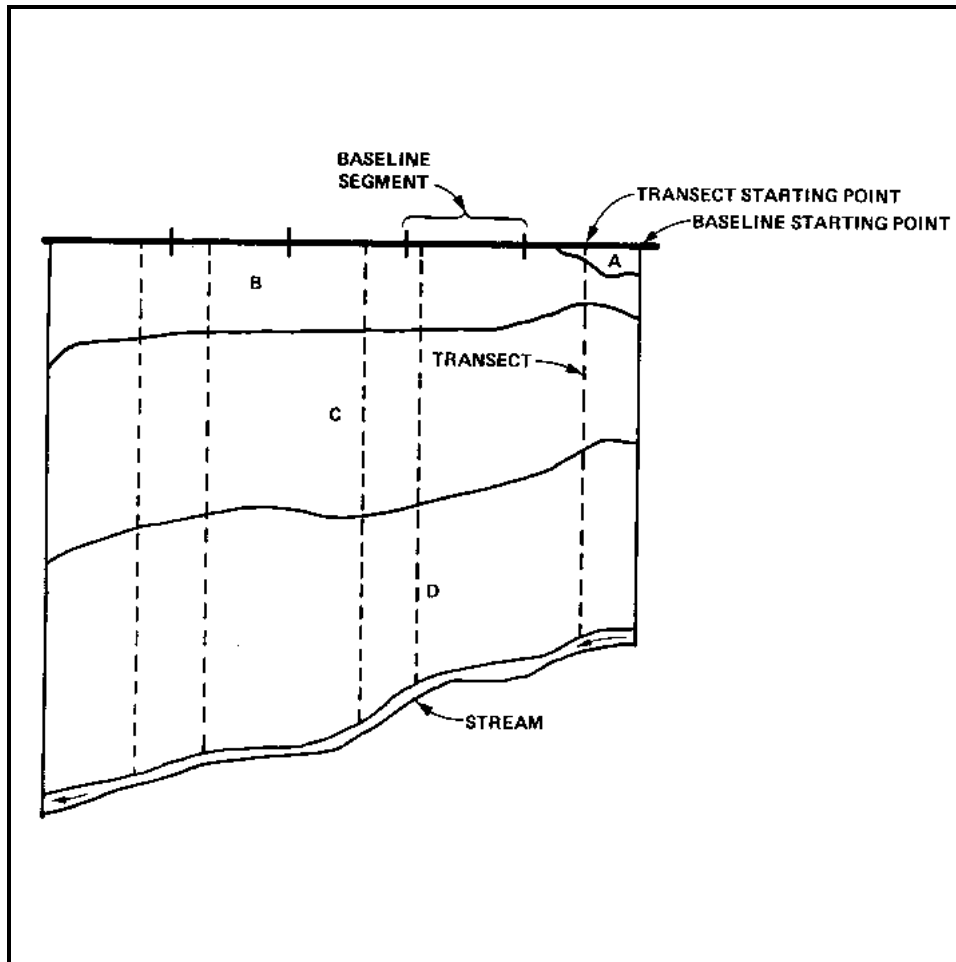


Figure 17. General orientation of baseline and transects in a hypothetical project area. Alpha characters represent different plant communities. Transect positions were determined using a random numbers table

Baseline Length, ft	Number of Segments	Length of Baseline Segment, ft
>50 - 500	3	18 - 167
>500 - 1,000	3	167 - 333
>1,000 - 5,000	5	200 - 1,000
>5,000 - 10,000	7	700 - 1,400
>10,000 <sup>1</sup>	Variable	2,000

<sup>1</sup> If the baseline exceeds 5 miles, baseline segments should be 0.5 mile in length.

Use a random numbers table or a calculator with a random numbers generation feature to determine the position of a transect starting point within each baseline segment. For example, when the baseline is 4,000 ft, the number of baseline segments will be five, and the baseline segment length will be  $4,000/5 = 800$  ft. Locate the first transect within the first 800 ft of the baseline. If the random numbers table yields 264 as the

distance from the baseline starting point, measure 264 ft from the baseline starting point and establish the starting point of the first transect. If the second random number selected is 530, the starting point of the second transect will be located at a distance of 1,330 ft (800 + 530 ft) from the baseline starting point. *CAUTION: Make sure that each plant community type is included in at least one transect. If not, modify the sampling design accordingly.* When the starting point locations for all required transects have been determined, **PROCEED TO STEP 8.**

- *STEP 8 - Determine the number of required observation points along transects.* The number of required observation points along each transect will be largely dependent on transect length. Establish observation points along each transect using the following as a guide:

Transect Length, ft	Number of Observation Points	Interval Between Observation Points, ft
<1,000	2-10	100
1,000 - <5,000	10	100 - 500
5,000 - <10,000	10	500 - 1,000
10,000	>10	1,000

Establish the first observation point at a distance of 50 ft from the baseline (Figure 17). When obvious nonwetlands occupy a long portion of the transect from the baseline starting point, establish the first observation point in the obvious nonwetland at a distance of approximately 300 ft from the point that the obvious nonwetland begins to intergrade into a potential wetland community type. Additional observation points must also be established to determine the wetland boundary between successive regular observation points when one of the points is a wetland and the other is a nonwetland. *CAUTION: In large areas having a mosaic of plant community types, several wetland boundaries may occur along the same transect.* **PROCEED TO STEP 9** and apply the comprehensive wetland determination procedure at each required observation point. Use the described procedure to simultaneously characterize the vegetation, soil, and hydrology at each required observation point along each transect, and use the resulting characterization to make a wetland determination at each point. *NOTE: ALL required wetland boundary determinations should be made while proceeding along a transect.*

- *STEP 9 - Characterize the vegetation at the first observation point along the first transect.*<sup>1</sup> Record on DATA FORM 2 the vegetation occurring

---

<sup>1</sup> There is no single best procedure for characterizing vegetation. Methods described in STEP 9 afford standardization of the procedure. However, plot size and descriptors for determining dominance may vary.

at the first observation point along the first transect by completing the following (as appropriate):

- a. *Trees.* Identify each tree occurring within a 30-ft radius<sup>1</sup> of the observation point, measure its basal area (square inches) or diameter at breast height (DBH) using a basal area tape or diameter tape, respectively, and record. *NOTE: If DBH is measured, convert values to basal area by applying the formula  $A = \pi r^2$ . This must be done on an individual basis. A tree is any nonclimbing, woody plant that has a DBH of  $\geq 3.0$  in., regardless of height.*
  
- b. *Saplings/shrubs.* Identify each sapling/shrub occurring within a 10-ft radius of the observation point, estimate its height, and record the midpoint of its class range using the following height classes (height is used as an indication of dominance; taller individuals exert a greater influence on the plant community):

Height Class	Height Class Range, ft	Midpoint of Range, ft
1	1-3	2
2	3-5	4
3	5-7	6
4	7-9	8
5	9-11	10
6	>11	12

A sapling/shrub is any woody plant having a height  $>3.2$  ft but a stem diameter of  $<3.0$  in., exclusive of woody vines.

- c. *Herbs.* Place a 3.28- by 3.28-ft quadrat with one corner touching the observation point and one edge adjacent to the transect line. As an alternative, a 1.64-ft-radius plot with the center of the plot representing the observation point position may be used. Identify each plant species with foliage extending into the quadrat and estimate its percent cover by applying the following cover classes:

---

<sup>1</sup> A larger sampling plot may be necessary when trees are large and widely spaced.

Cover Class	Class Range, Percent	Midpoint of Class Range, Percent
1	0-5	2.5
2	>5-25	15.0
3	>25-50	37.5
4	>50-75	62.5
5	>75-95	85.0
6	>95-100	97.5

Include all nonwoody plants and woody plants <3.2 ft in height. *NOTE: Total percent cover for all species will often exceed 100 percent.*

- d. *Woody vines (lianas).* Identify species of woody vines climbing each tree and sapling/shrub sampled in STEPS 9a and 9b above, and record the number of stems of each. Since many woody vines branch profusely, count or estimate the number of stems at the ground surface. Include only individuals rooted in the 10-ft radius plot. Do not include individuals <3.2 ft in height. PROCEED TO STEP 10.
- *STEP 10 - Analyze field vegetation data.* Examine the vegetation data (STEP 9) and determine the dominant species in each vegetation layer<sup>1</sup> by completing the following:
    - a. *Trees.* Obtain the total basal area (square inches) for each tree species identified in STEP 9a by summing the basal area of all individuals of a species found in the sample plot. Rank the species in descending order of dominance based on total basal area. Complete DATA FORM 2 for the tree layer.
    - b. *Saplings/shrubs.* Obtain the total height for each sapling/shrub species identified in STEP 9b. Total height, which is an estimate of dominance, is obtained by summing the midpoints of height classes for all individuals of a species found in the sample plot. Rank the species in descending order of dominance based on sums of midpoints of height class ranges. Complete DATA FORM 2 for the sapling/shrub layer.
    - c. *Herbs.* Obtain the total cover for each herbaceous and woody seedling species identified in STEP 9c. Total cover is obtained by using the midpoints of the cover class range as-

---

<sup>1</sup> The same species may occur as a dominant in more than one vegetation layer.

signed to each species (only one estimate of cover is made for a species in a given plot). Rank herbs and woody seedlings in descending order of dominance based on percent cover. Complete DATA FORM 2 for the herbaceous layer.

- d. *Woody vines (lianas)*. Obtain the total number of individuals of each species of woody vine identified in STEP 9d. Rank the species in descending order of dominance based on number of stems. Complete DATA FORM 2 for the woody vine layer. PROCEED TO STEP 11.
- *STEP 11 - Characterize soil*. If a soil survey is available (Section B), the soil type may already be known. Have a soil scientist confirm that the soil type is correct, and determine whether the soil series is a hydric soil (~~Appendix D, Section 2~~). *CAUTION: Mapping units on soil surveys sometimes have inclusions of soil series or phases not shown on the soil survey map*. If a hydric soil type is confirmed, record on DATA FORM 1 and PROCEED TO STEP 12. If not, dig a soil pit using a soil auger or spade (See Appendix D, Section 1) and look for indicators of hydric soils immediately below the A-horizon or 10 inches (whichever is shallower) (Part III, paragraphs 44 and/or 45). Record findings on DATA FORM 1. PROCEED TO STEP 12.
  - *STEP 12 - Characterize hydrology*. Examine the observation point for indicators of wetland hydrology (Part III, paragraph 49) and record observations on DATA FORM 1. Consider indicators in the same sequence as listed in paragraph 49. PROCEED TO STEP 13.
  - *STEP 13 - Determine whether hydrophytic vegetation is present*. Record the three dominant species from each vegetation layer (five species if only one or two layers are present) on DATA FORM 1.<sup>1</sup> Determine whether these species occur in wetlands by considering the following:
    - a. *More than 50 percent of the dominant plant species are OBL, FACW, and/or FAC<sup>2</sup> on lists of plant species that occur in wetlands*. Record the indicator status of all dominant species (~~Appendix C, Section 1 or 2~~) on DATA FORM 1. Hydrophytic vegetation is present when the majority of the dominant species have an indicator status of OBL, FACW, or FAC. *CAUTION: Not necessarily all plant communities composed of only FAC species are hydrophytic communities. They are hydrophytic communities only when positive indicators of hydric soils and wetland hydrology are also found*. If this indicator is satisfied, complete the vegetation portion of

---

<sup>1</sup> Record all dominant species when less than three are present in a vegetation layer.

<sup>2</sup> For the FAC-neutral option, see paragraph 35a.



DATA FORM 1 and PROCEED TO STEP 14. If not, consider other indicators of hydrophytic vegetation.

- b. Presence of adaptations for occurrence in wetlands.* Do any of the species listed on DATA FORM 1 have observed morphological or known physiological adaptations (Appendix C, Section 3) for occurrence in wetlands? If so, record species having such adaptations on DATA FORM 1. When two or more dominant species have observed morphological adaptations or known physiological adaptations for occurrence in wetlands, hydrophytic vegetation is present. If so, complete the vegetation portion of DATA FORM 1 and PROCEED TO STEP 14. If not, consider other indicators of hydrophytic vegetation.
  - c. Other indicators of hydrophytic vegetation.* Consider other indicators (see Part III, paragraph 35) that the species listed on DATA FORM 1 are commonly found in wetlands. If so, complete the vegetation portion of DATA FORM 1 by recording sources of supporting information, and PROCEED TO STEP 14. If no indicator of hydrophytic vegetation is present, the area at the observation point is not a wetland. In such cases, it is unnecessary to consider soil and hydrology at that observation point. PROCEED TO STEP 17.
- *STEP 14 - Determine whether hydric soils are present.* Examine DATA FORM 1 and determine whether any indicator of hydric soils is present. If so, complete the soils portion of DATA FORM 1 and PROCEED TO STEP 15. If not, the area at the observation point is not a wetland. PROCEED TO STEP 17.
  - *STEP 15 - Determine whether wetland hydrology is present.* Examine DATA FORM 1 and determine whether any indicator of wetland hydrology is present. Complete the hydrology portion of DATA FORM 1 and PROCEED TO STEP 16.
  - *STEP 16 - Make wetland determination.* When the area at the observation point presently or normally has wetland indicators of all three parameters, it is a wetland. When the area at the observation point presently or normally lacks wetland indicators of one or more parameters, it is a nonwetland. PROCEED TO STEP 17.
  - *STEP 17 - Make wetland determination at second observation point.* Locate the second observation point along the first transect and make a wetland determination by repeating procedures described in STEPS 9 through 16. When the area at the second observation point is the same as the area at the first observation point (i.e., both wetlands or both nonwetlands), PROCEED TO STEP 19. When the areas at the two ob-

ervation points are different (i.e., one wetlands, the other nonwetlands), PROCEED TO STEP 18.

- *STEP 18 - Determine the wetland boundary between observation points.* Determine the position of the wetland boundary by applying the following procedure:
  - a. Look for a change in vegetation or topography. *NOTE: The changes may sometimes be very subtle.* If a change is noted, establish an observation point and repeat STEPS 9 through 16. Complete a DATA FORM 1. If the area at this point is a wetland, proceed toward the nonwetland observation point until a more obvious change in vegetation or topography is noted and repeat the procedure. If there is no obvious change, establish the next observation point approximately halfway between the last observation point and the nonwetland observation point and repeat STEPS 9 through 16.
  - b. Make as many additional wetland determinations as necessary to find the wetland boundary. *NOTE: The completed DATA FORM 1's for the original two observation points often will provide a clue as to the parameters that change between the two points.*
  - c. When the wetland boundary is found, mark the boundary location on the base map and indicate on the DATA FORM 1 that this represents a wetland boundary. Record the distance of the boundary from one of the two regular observation points. Since the regular observation points represent known distances from the baseline, it will be possible to accurately pinpoint the boundary location on the base map. PROCEED TO STEP 19.
- *STEP 19 - Make wetland determinations at all other required observation points along all transects.* Continue to locate and sample all required observation points along all transects. *NOTE: The procedure described in STEP 18 must be applied at every position where a wetland boundary occurs between successive observation points.* Complete a DATA FORM 1 for each observation point and PROCEED TO STEP 20.
- *STEP 20 - Synthesize data to determine the portion of the area containing wetlands.* Examine all completed copies of DATA FORM 1 (STEP 19), and mark on a copy of the base map the locations of all observation points that are wetlands with a W and all observation points that are nonwetlands with an N. Also, mark all wetland boundaries occurring along transects with an X. If all the observation points are wetlands, the entire area is wetlands. If all observation points are nonwetlands, none of the area is wetlands. If some wetlands and some nonwetlands are present, connect the wetland boundaries (X) by following contour lines between transects. *CAUTION: If the determination is considered to be*

*highly controversial, it may be necessary to be more precise in determining the wetland boundary between transects. This is also true for very large areas where the distance between transects is greater. If this is necessary, PROCEED TO STEP 21.*

- *STEP 21 - Determine wetland boundary between transects.* Two procedures may be used to determine the wetland boundary between transects, both of which involve surveying:
  - a. *Survey contour from wetland boundary along transects.* The first method involves surveying the elevation of the wetland boundaries along transects and then extending the survey to determine the same contour between transects. This procedure will be adequate in areas where there is no significant elevational change between transects. However, if a significant elevational change occurs between transects, either the surveyor must adjust elevational readings to accommodate such changes or the second method must be used. *NOTE: The surveyed wetland boundary must be examined to ensure that no anomalies exist. If these occur, additional wetland determinations will be required in the portion of the area where the anomalies occur, and the wetland boundary must be adjusted accordingly.*
  - b. *Additional wetland determinations between transects.* This procedure consists of traversing the area between transects and making additional wetland determinations to locate the wetland boundary at sufficiently close intervals (not necessarily standard intervals) so that the area can be surveyed. Place surveyor flags at each wetland boundary location. Enlist a surveyor to survey the points between transects. From the resulting survey data, produce a map that separates wetlands from nonwetlands.

## **Section F. Atypical Situations**

71. Methods described in this section should be used only when a determination has already been made in Section D or E that positive indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology could not be found due to effects of recent human activities or natural events. This section is applicable to delineations made in the following types of situations:

- a. *Unauthorized activities.* Unauthorized discharges requiring enforcement actions may result in removal or covering of indicators of one or more wetland parameters. Examples include, but are not limited to: (1) alteration or removal of vegetation; (2) placement of dredged or fill material over hydric soils; and/or (3) construction of levees, drainage systems, or

dams that significantly alter the area hydrology. NOTE: This section should not be used for activities that have been previously authorized or those that are exempted from CE regulation. For example, this section is not applicable to areas that have been drained under CE authorization or that did not require CE authorization. Some of these areas may still be wetlands, but procedures described in Section D or E must be used in these cases.

- b. *Natural events.* Naturally occurring events may result in either creation or alteration of wetlands. For example, recent beaver dams may impound water, thereby resulting in a shift of hydrology and vegetation to wetlands. However, hydric soil indicators may not have developed due to insufficient time having passed to allow their development. Fire, avalanches, volcanic activity, and changing river courses are other examples. NOTE: It is necessary to determine whether alterations to an area have resulted in changes that are now the "normal circumstances." The relative permanence of the change and whether the area is now functioning as a wetland must be considered.
- c. *Man-induced wetlands.* Procedures described in Subsection 4 are for use in delineating wetlands that have been purposely or incidentally created by human activities, but in which wetland indicators of one or more parameters are absent. For example, road construction may have resulted in impoundment of water in an area that previously was nonwetland, thereby effecting hydrophytic vegetation and wetland hydrology in the area. However, the area may lack hydric soil indicators. NOTE: Subsection D is not intended to bring into CE jurisdiction those manmade wetlands that are exempted under CE regulations or policy. It is also important to consider whether the man-induced changes are now the "normal circumstances" for the area. Both the relative permanence of the change and the functioning of the area as a wetland are implied.

72. When any of the three types of situations described in paragraph 71 occurs, application of methods described in Sections D and/or E will lead to the conclusion that the area is not a wetland because positive wetland indicators for at least one of the three parameters will be absent. Therefore, apply procedures described in one of the following subsections (as appropriate) to determine whether positive indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology existed prior to alteration of the area. Once these procedures have been employed, RETURN TO Section D or E to make a wetland determination. PROCEED TO the appropriate subsection.

## **Subsection 1 - Vegetation**

73. Employ the following steps to determine whether hydrophytic vegetation previously occurred:

- *STEP 1 - Describe the type of alteration.* Examine the area and describe the type of alteration that occurred. Look for evidence of selective harvesting, clear cutting, bulldozing, recent conversion to agriculture, or other activities (e.g., burning, discing, or presence of buildings, dams, levees, roads, parking lots, etc.). Determine the approximate date<sup>1</sup> when the alteration occurred. Record observations on DATA FORM 3, and PROCEED TO STEP 2.
- *STEP 2 - Describe effects on vegetation.* Record on DATA FORM 3 a general description of how the activities (STEP 1) have affected the plant communities. Consider the following:
  - a. Has all or a portion of the area been cleared of vegetation?
  - b. Has only one layer of the plant community (e.g., trees) been removed?
  - c. Has selective harvesting resulted in removal of some species?
  - d. Has all vegetation been covered by fill, dredged material, or structures?
  - e. Have increased water levels resulted in the death of some individuals?

PROCEED TO STEP 3.

- *STEP 3 - Determine the type of vegetation that previously occurred.* Obtain all possible evidence of the type of plant communities that occurred in the area prior to alteration. Potential sources of such evidence include:
  - a. *Aerial photography.* Recent (within 5 years) aerial photography can often be used to document the type of previous vegetation. The general type of plant communities formerly present can usually be determined, and species identification is sometimes possible.
  - b. *Onsite inspection.* Many types of activities result in only partial removal of the previous plant communities, and remaining species may be indicative of hydrophytic vegetation. In other cases, plant fragments (e.g., stumps, roots) may be used to reconstruct the plant community types that occurred prior to site alteration. Sometimes, this can be determined by examining piles of debris resulting from land-clearing opera-

---

<sup>1</sup> It is especially important to determine whether the alteration occurred prior to implementation of Section 404.

tions or excavation to uncover identifiable remains of the previous plant community.

- c. *Previous site inspections.* Documented evidence from previous inspections of the area may describe the previous plant communities, particularly in cases where the area was altered after a permit application was denied.
- d. *Adjacent vegetation.* Circumstantial evidence of the type of plant communities that previously occurred may sometimes be obtained by examining the vegetation in adjacent areas. If adjacent areas have the same topographic position, soils, and hydrology as the altered area, the plant community types on the altered area were probably similar to those of the adjacent areas.
- e. *SCS records.* Most SCS soil surveys include a description of the plant community types associated with each soil type. If the soil type on the altered area can be determined, it may be possible to generally determine the type of plant communities that previously occurred.
- f. *Permit applicant.* In some cases, the permit applicant may provide important information about the type of plant communities that occurred prior to alteration.
- g. *Public.* Individuals familiar with the area may provide a good general description of the previously occurring plant communities.
- h. *NWI wetland maps.* The NWI has developed wetland type maps for many areas. These may be useful in determining the type of plant communities that occurred prior to alteration.

To develop the strongest possible record, all of the above sources should be considered. If the plant community types that occurred prior to alteration can be determined, record them on DATA FORM 3 and also record the basis used for the determination. PROCEED TO STEP 4. If it is impossible to determine the plant community types that occurred on the area prior to alteration, a determination cannot be made using all three parameters. In such cases, the determination must be based on the other two parameters. PROCEED TO Subsection 2 or 3 if one of the other parameters has been altered, or return to the appropriate Subsection of Section D or to Section E, as appropriate.

- *STEP 4 - Determine whether plant community types constitute hydrophytic vegetation.* Develop a list of species that previously occurred on the site (DATA FORM 3). Subject the species list to applicable indicators of hydrophytic vegetation (Part III, paragraph 35). If none of the

indicators are met, the plant communities that previously occurred did not constitute hydrophytic vegetation. If hydrophytic vegetation was present and no other parameter was in question, record appropriate data on the vegetation portion of DATA FORM 3, and return to either the appropriate subsection of Section D or to Section E. If either of the other parameters was also in question, PROCEED TO Subsection 2 or 3.

## Subsection 2 - Soils

74. Employ the following steps to determine whether hydric soils previously occurred:

- *STEP 1 - Describe the type of alteration.* Examine the area and describe the type of alteration that occurred. Look for evidence of:
  - a. *Deposition of dredged or fill material or natural sedimentation.* In many cases the presence of fill material will be obvious. If so, it will be necessary to dig a hole to reach the original soil (sometimes several feet deep). Fill material will usually be a different color or texture than the original soil (except when fill material has been obtained from like areas onsite). Look for decomposing vegetation between soil layers and the presence of buried organic or hydric soil layers. In accreting or recently formed sandbars in riverine situations, the soils may support hydrophytic vegetation but lack hydric soil characteristics.
  - b. *Presence of nonwoody debris at the surface.* This can only be applied in areas where the original soils do not contain rocks. Nonwoody debris includes items such as rocks, bricks, and concrete fragments.
  - c. *Subsurface plowing.* Has the area recently been plowed below the A-horizon or to depths of greater than 10 in.?
  - d. *Removal of surface layers.* Has the surface soil layer been removed by scraping or natural landslides? Look for bare soil surfaces with exposed plant roots or scrape scars on the surface.
  - e. *Presence of man-made structures.* Are buildings, dams, levees, roads, or parking lots present?

Determine the approximate date<sup>1</sup> when the alteration occurred. This may require checking aerial photography, examining building permits, etc. Record on DATA FORM 3, and PROCEED TO STEP 2.

- *STEP 2 - Describe effects on soils.* Record on DATA FORM 3 a general description of how identified activities in STEP 1 have affected the soils. Consider the following:
  - a. Has the soil been buried? If so, record the depth of fill and determine whether the original soil is intact.
  - b. Has the soil been mixed at a depth below the A-horizon or 10 inches? If so, it will be necessary to examine soil at a depth immediately below the plowed zone. Record supporting evidence.
  - c. Has the soil been sufficiently altered to change the soil phase? Describe these changes.

PROCEED TO STEP 3.

- *STEP 3 - Characterize soils that previously occurred.* Obtain all possible evidence that may be used to characterize soils that previously occurred on the area. Consider the following potential sources of information:
  - a. *Soil surveys.* In many cases, recent soil surveys will be available. If so, determine the soil series that were mapped for the area, and compare these soil series with the list of hydric soils (~~Appendix D, Section 2~~). If all soil series are listed as hydric soils, the entire area had hydric soils prior to alteration.
  - b. *Characterization of buried soils.* When fill material has been placed over the original soil without physically disturbing the soil, examine and characterize the buried soils. To accomplish this, dig a hole through the fill material until the original soil is encountered. Determine the point at which the original soil material begins. Remove 12 inches of the original soil from the hole and look for indicators of hydric soils (Part III, paragraphs 44 and/or 45) immediately below the A-horizon or 10 inches (whichever is shallower). Record on DATA FORM 3 the color of the soil matrix, presence of an organic layer, presence of mottles or gleying, and/or presence of iron and manganese concretions. If the original soil is mottled and the

---

<sup>1</sup> It is especially important to determine whether the alteration occurred prior to implementation of Section 404.



chroma of the soil matrix is 2 or less,<sup>1</sup> a hydric soil was formerly present on the site. If any of these indicators are found, the original soil was a hydric soil. (*NOTE: When the fill material is a thick layer, it might be necessary to use a backhoe or posthole digger to excavate the soil pit.*) If USGS quadrangle maps indicate distinct variation in area topography, this procedure must be applied in each portion of the area that originally had a different surface elevation. Record findings on DATA FORM 3.

- c. *Characterization of plowed soils.* Determine the depth to which the soil has been disturbed by plowing. Look for hydric soil characteristics (Part III, paragraphs 44 and/or 45) immediately below this depth. Record findings on DATA FORM 3.
- d. *Removal of surface layers.* Dig a hole (Appendix D, Section 1) and determine whether the entire surface layer (A-horizon) has been removed. If so, examine the soil immediately below the top of the subsurface layer (B-horizon) for hydric soil characteristics. As an alternative, examine an undisturbed soil of the same soil series occurring in the same topographic position in an immediately adjacent area that has not been altered. Look for hydric soil indicators immediately below the A-horizon or 10 inches (whichever is shallower), and record findings on DATA FORM 3.

If sufficient data on soils that existed prior to alteration can be obtained to determine whether a hydric soil was present, PROCEED TO STEP 4. If not, a determination cannot be made using soils. Use the other parameters (Subsections 1 and 3) for the determination.

- *STEP 4 - Determine whether hydric soils were formerly present.* Examine the available data and determine whether indicators of hydric soils (Part III, paragraphs 44 and/or 45) were formerly present. If no indicators of hydric soils were found, the original soils were not hydric soils. If indicators of hydric soils were found, record the appropriate indicators on DATA FORM 3 and PROCEED TO Subsection 3 if the hydrology of the area has been significantly altered or return either to the appropriate subsection of Section D or to Section E and characterize the area hydrology.

---

<sup>1</sup> The matrix chroma must be 1 or less if no mottles are present. The soil must be moist when colors are determined.

## Subsection 3 - Hydrology

75. Apply the following steps to determine whether wetland hydrology previously occurred:

- *STEP 1 - Describe the type of alteration.* Examine the area and describe the type of alteration that occurred. Look for evidence of:
  - a. *Dams.* Has recent construction of a dam or some natural event (e.g., beaver activity or landslide) caused the area to become increasingly wetter or drier? *NOTE: This activity could have occurred a considerable distance away from the site in question.*
  - b. *Levees, dikes, and similar structures.* Have levees or dikes recently been constructed that prevent the area from becoming periodically inundated by overbank flooding?
  - c. *Ditching.* Have ditches been constructed recently that cause the area to drain more rapidly following inundation?
  - d. *Filling of channels or depressions (land-leveling).* Have natural channels or depressions been recently filled?
  - e. *Diversion of water.* Has an upstream drainage pattern been altered that results in water being diverted from the area?
  - f. *Ground-water extraction.* Has prolonged and intensive pumping of ground water for irrigation or other purposes significantly lowered the water table and/or altered drainage patterns?
  - g. *Channelization.* Have feeder streams recently been channelized sufficiently to alter the frequency and/or duration of inundation?

Determine the approximate date<sup>1</sup> when the alteration occurred. Record observations on DATA FORM 3 and PROCEED TO STEP 2.

- *STEP 2 - Describe effects of alteration on area hydrology.* Record on DATA FORM 3 a general description of how the observed alteration (STEP 1) has affected the area. Consider the following:
  - a. Is the area more frequently or less frequently inundated than prior to alteration? To what degree and why?

---

<sup>1</sup> It is especially important to determine whether the alteration occurred prior to implementation of Section 404.

- b. Is the duration of inundation and soil saturation different than prior to alteration? How much different and why?

PROCEED TO STEP 3.

- *STEP 3 - Characterize the hydrology that previously existed in the area.* Obtain all possible evidence that may be used to characterize the hydrology that previously occurred. Potential sources of information include:
  - a. *Stream or tidal gage data.* If a stream or tidal gaging station is located near the area, it may be possible to calculate elevations representing the upper limit of wetlands hydrology based on duration of inundation. Consult hydrologists from the local CE District Office for assistance. The resulting mean sea level elevation will represent the upper limit of inundation for the area in the absence of any alteration. If fill material has not been placed on the area, survey this elevation from the nearest USGS benchmark. Record elevations representing zone boundaries on DATA FORM 3. If fill material has been placed on the area, compare the calculated elevation with elevations shown on a USGS quadrangle or any other survey map that predated site alteration.
  - b. *Field hydrologic indicators.* Certain field indicators of wetland hydrology (Part III, paragraph 49) may still be present. Look for watermarks on trees or other structures, drift lines, and debris deposits. Record these on DATA FORM 3. If adjacent undisturbed areas are in the same topographic position and are similarly influenced by the same sources of inundation, look for wetland indicators in these areas.
  - c. *Aerial photography.* Examine any available aerial photography and determine whether the area was inundated at the time of the photographic mission. Consider the time of the year that the aerial photography was taken and use only photography taken during the growing season and prior to site alteration.
  - d. *Historical records.* Examine any available historical records for evidence that the area has been periodically inundated. Obtain copies of any such information and record findings on DATA FORM 3.
  - e. *Floodplain management maps.* Determine the previous frequency of inundation of the area from Floodplain Management Maps (if available). Record flood frequency on DATA FORM 3.

- f. *Public or local government officials.* Contact individuals who might have knowledge that the area was periodically inundated.

If sufficient data on hydrology that existed prior to site alteration can be obtained to determine whether wetland hydrology was previously present, PROCEED TO STEP 4. If not, a determination involving hydrology cannot be made. Use other parameters (Subsections 1 and 2) for the wetland determination. Return to either the appropriate subsection of Section D or to Section E and complete the necessary data forms. PROCEED TO STEP 4 if the previous hydrology can be characterized.

- *STEP 4 - Determine whether wetland hydrology previously occurred.* Examine the available data and determine whether indicators of wetland hydrology (Part III, paragraph 49) were present prior to site alteration. If no indicators of wetland hydrology were found, the original hydrology of the area was not wetland hydrology. If indicators of wetland hydrology were found, record the appropriate indicators on DATA FORM 3 and return either to the appropriate subsection of Section D or to Section E and complete the wetland determination.

## Subsection 4 - Man-Induced Wetlands

76. A man-induced wetland is an area that has developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities. Examples of man-induced wetlands include irrigated wetlands, wetlands resulting from impoundment (e.g., reservoir shorelines), wetlands resulting from filling of formerly deepwater habitats, dredged material disposal areas, and wetlands resulting from stream channel realignment. Some man-induced wetlands may be subject to Section 404. In virtually all cases, man-induced wetlands involve a significant change in the hydrologic regime, which may either increase or decrease the wetness of the area. Although wetland indicators of all three parameters (i.e., vegetation, soils, and hydrology) may be found in some man-induced wetlands, indicators of hydric soils are usually absent. Hydric soils require long periods (hundreds of years) for development of wetness characteristics, and most man-induced wetlands have not been in existence for a sufficient period to allow development of hydric soil characteristics. Therefore, application of the multiparameter approach in making wetland determinations in man-induced wetlands must be based on the presence of hydrophytic vegetation and wetland hydrology.<sup>1</sup> There must also be documented evidence that the wetland resulted from human activities. Employ the following steps to determine whether an area consists of wetlands resulting from human activities:

---

<sup>1</sup> Uplands that support hydrophytic vegetation due to agricultural irrigation and that have an obvious hydrologic connection to other "waters of the United States" should not be delineated as wetlands under this subsection.

- *STEP 1 - Determine whether the area represents a potential man-induced wetland.* Consider the following questions:
  - a. Has a recent man-induced change in hydrology occurred that caused the area to become significantly wetter?
  - b. Has a major man-induced change in hydrology that occurred in the past caused a former deepwater aquatic habitat to become significantly drier?
  - c. Has man-induced stream channel realignment significantly altered the area hydrology?
  - d. Has the area been subjected to long-term irrigation practices?

If the answer to any of the above questions is YES, document the approximate time during which the change in hydrology occurred, and PROCEED TO STEP 2. If the answer to all of the questions is NO, procedures described in Section D or E must be used.

- *STEP 2 - Determine whether a permit will be needed if the area is found to be a wetland.* Consider the current CE regulations and policy regarding man-induced wetlands. If the type of activity resulting in the area being a potential man-induced wetland is exempted by regulation or policy, no further action is needed. If not exempt, PROCEED TO STEP 3.
- *STEP 3 - Characterize the area vegetation, soils, and hydrology.* Apply procedures described in Section D (routine determinations) or Section E (comprehensive determinations) to the area. Complete the appropriate data forms and PROCEED TO STEP 4.
- *STEP 4 - Wetland determination.* Based on information resulting from STEP 3, determine whether the area is a wetland. When wetland indicators of all three parameters are found, the area is a wetland. When indicators of hydrophytic vegetation and wetland hydrology are found *and* there is documented evidence that the change in hydrology occurred so recently that soils could not have developed hydric characteristics, the area is a wetland. In such cases, it is assumed that the soils are functioning as hydric soils. *CAUTION: If hydrophytic vegetation is being maintained only because of man-induced wetland hydrology that would no longer exist if the activity (e.g., irrigation) were to be terminated, the area should not be considered a wetland.*

## Section G - Problem Areas

77. There are certain wetland types and/or conditions that may make application of indicators of one or more parameters difficult, at least at certain times of the year. These are not considered to be atypical situations. Instead, they are wetland types in which wetland indicators of one or more parameters may be periodically lacking due to *normal* seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events.

### Types of problem areas

78. Representative examples of potential problem areas, types of variations that occur, and their effects on wetland indicators are presented in the following subparagraphs. Similar situations may sometimes occur in other wetland types. *NOTE: This section is not intended to bring nonwetland areas having wetland indicators of two, but not all three, parameters into Section 404 jurisdiction.*

- a. *Wetlands on drumlins.* Slope wetlands occur in glaciated areas in which thin soils cover relatively impermeable glacial till or in which layers of glacial till have different hydraulic conditions that produce a broad zone of ground-water seepage. Such areas are seldom, if ever, flooded, but downslope groundwater movement keeps the soils saturated for a sufficient portion of the growing season to produce anaerobic and reducing soil conditions. This fosters development of hydric soil characteristics and selects for hydrophytic vegetation. Indicators of wetland hydrology may be lacking during the drier portion of the growing season.
- b. *Seasonal wetlands.* In many regions (especially in western states), depressional areas occur that have wetland indicators of all three parameters during the wetter portion of the growing season, but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetland plant species (~~Appendix C, Section 1 or 2~~) normally are dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. These areas may be inundated during the wetter portion of the growing season, but wetland hydrology indicators may be totally lacking during the drier portion of the growing season. It is important to establish that an area truly is a water body. Water in a depression normally must be sufficiently persistent to exhibit an ordinary high-water mark or the presence of wetland characteristics before it can be considered as a water body potentially subject to Clean Water Act jurisdiction. The determination that an area exhibits wetland characteristics for a sufficient portion of the growing season to qualify as a wetland under the Clean Water Act must be made on a case-by-case basis. Such determinations should consider the respective length of time that the area exhibits upland and wetland characteristics, and the manner in which the area fits

into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soil, drainage characteristics, uses to which it has been subjected, and weather or hydrologic records.

- c. *Prairie potholes.* Prairie potholes normally occur as shallow depressions in glaciated portions of the north-central United States. Many are land-locked, while others have a drainage outlet to streams or other potholes. Most have standing water for much of the growing season in years of normal or above normal precipitation, but are neither inundated nor have saturated soils during most of the growing season in years of below normal precipitation. During dry years, potholes often become incorporated into farming plans, and are either planted to row crops (e.g., soybeans) or are mowed as part of a haying operation. When this occurs, wetland indicators of one or more parameters may be lacking. For example, tillage would eliminate any onsite hydrologic indicator, and would make detection of soil and vegetation indicators much more difficult.
- d. *Vegetated flats.* In both coastal and interior areas throughout the Nation, vegetated flats are often dominated by annual species that are categorized as OBL. Application of procedures described in Sections D and E during the growing season will clearly result in a positive wetland determination. However, these areas will appear to be unvegetated mudflats when examined during the nongrowing season, and the area would not qualify at that time as a wetland due to an apparent lack of vegetation.

### **Wetland determinations in problem areas**

79. Procedures for making wetland determinations in problem areas are presented below. Application of these procedures is appropriate only when a decision has been made in Section D or E that wetland indicators of one or more parameters were lacking, probably due to normal seasonal or annual variations in environmental conditions. Specific procedures to be used will vary according to the nature of the area, site conditions, and parameter(s) affected by the variations in environmental conditions. A determination must be based on the best evidence available to the field inspector, including:

- a. Available information (Section B).
- b. Field data resulting from an onsite inspection.
- c. Basic knowledge of the ecology of the particular community type(s) and environmental conditions associated with the community type.

*NOTE: The procedures described below should only be applied to parameters not adequately characterized in Section D or E. Complete the following steps:*

- *STEP 1 - Identify the parameter(s) to be considered.* Examine the DATA FORM 1 (Section D or E) and identify the parameter(s) that must be given additional consideration. PROCEED TO STEP 2.
- *STEP 2 - Determine the reason for further consideration.* Determine the reason why the parameter(s) identified in STEP 1 should be given further consideration. This will require a consideration and documentation of:
  - a. Environmental condition(s) that have impacted the parameter(s).
  - b. Impacts of the identified environmental condition(s) on the parameter(s) in question.

Record findings in the comments section of DATA FORM 1. PROCEED TO STEP 3.

- *STEP 3 - Document available information for parameter(s) in question.* Examine the available information and consider personal ecological knowledge of the range of normal environmental conditions of the area. Local experts (e.g., university personnel) may provide additional information. Record information on DATA FORM 1. PROCEED TO STEP 4.
- *STEP 4 - Determine whether wetland indicators are normally present during a portion of the growing season.* Examine the information resulting from STEP 3 and determine whether wetland indicators are *normally* present during part of the growing season. If so, record on DATA FORM 1 the indicators normally present and return to Section D or Section E and make a wetland determination. If no information can be found that wetland indicators of all three parameters are normally present during part of the growing season, the determination must be made using procedures described in Section D or Section E.



# References

---

- Clark, J. R., and Benforado, J., eds. (1981). *Wetlands of Bottomland Hardwood Forests, Proceedings of a Workshop on Bottomland Hardwood Forest Wetlands of the Southeastern United States*, Elsevier Scientific Publishing Company, New York.
- Correll, D. S., and Correll, H. B. (1972). *Aquatic and Wetland Plants of the Southwestern United States*, Publ. No. 16030 DNL 01/72, Environmental Protection Agency, Washington, DC.
- Cowardin, L. M., Carter, V., Golet, F. C., and LaRoe, E. T. (1979). "Classification of Wetlands and Deepwater Habitats of the United States," FWS/OBS-79/31, U.S. Fish and Wildlife Service, Office of Biological Services, Washington, DC.
- Cronquist, A., Holmgren, A. H., Holmgren, N. H., and Reveal, J. L. (1972). *Intermountain Flora - Vascular Plants of the Intermountain West, USA*, Vol. I and II, Hefner Publishing Company, New York.
- Davis, R. J. (1952). *Flora of Idaho*, William C. Brown Company, Dubuque, IA.
- Federal Register. (1980). "40 CFR Part 230: Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material," U.S. Government Printing Office, Washington, DC, 45(249), 85,352-85,353.
- \_\_\_\_\_. (1982). "Title 33: Navigation and Navigable Waters; Chapter 2. Regulatory Programs of the Corps of Engineers," U.S. Government Printing Office, Washington, DC, 47(138), 31,810.
- Fernald, M. L. (1950). *Gray's Manual of Botany*, 8th ed., American Book Company, New York.
- Gleason, H. A., and Cronquist, A. (1963). *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*, Van Nostrand, Princeton, NJ.

- Godfrey, R. K., and Wooten, J. W. (1979). *Aquatic and Wetland Plants of the Southeastern United States*, Vol. I and II, University of Georgia Press, Athens, GA.
- Harrington, H. D. (1979). *Manual of the Plants of Colorado*, 2nd ed., Sage Books, Denver, CO.
- Hitchcock, A. S. (1950). *Manual of Grasses of the United States*, U.S. Department of Agriculture Miscellaneous Publication No. 200, U.S. Government Printing Office, Washington, DC.
- Hitchcock, C. L., and Cronquist, A. (1973). *Flora of the Pacific Northwest*, University of Washington Press, Seattle, WA.
- Kearney, T. H., and Peebles, R. H. (1960). *Arizona Flora*, 2nd ed., University of California Press, Berkeley, CA.
- Long, R. W., and Lakela, O. (1976). *A Flora of Tropical Florida*, Banyan Books, Miami, FL.
- Munsell Color. (1975). *Munsell Soil Color Charts*, Kollmorgen Corporation, Baltimore, MD.
- Munz, P. A., and Keck, D. D. (1959). *A California Flora*, University of California Press, Berkeley, CA.
- Radford, A. E., Ahles, H. E., and Bell, C. R. (1968). *Manual of the Vascular Flora of the Carolinas*, The University of North Carolina Press, Chapel Hill, NC.
- Small, J. K. (1933). *Manual of the Southeastern Flora*, The University of North Carolina Press, Chapel Hill, NC.
- Steyermark, J. A. (1963). *Flora of Missouri*, The Iowa State University Press, Ames, IA.
- Theriot, R. F. (In Review). "Flood Tolerance Indices of Plant Species of Southeastern Bottomland Forests," Technical Report, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- U.S. Department of Agriculture - Soil Conservation Service. (1975). *Soil Taxonomy*, Agriculture Handbook No. 436, U.S. Government Printing Office, Washington, DC.
- \_\_\_\_\_. (1983). "List of Soils with Actual or High Potential for Hydric Conditions," USDA-SCS National Bulletin No. 430-3-10, Washington, DC.

U.S. Department of Agriculture - Soil Conservation Service. (1985). "Hydric Soils of the United States," USDA-SCS National Bulletin No. 430-5-9, Washington, DC.

U.S. Department of the Interior. (1970). *National Atlas of the United States*, U.S. Geological Survey, US Government Printing Office, Washington, DC, 110-111.

# Bibliography

---

- Copeland, B. J., Hodson, R. G., and Riggs, S. R. (1984). "The Ecology of the Pamlico River, North Carolina: An Estuarine Profile," FWS/OBS-82/06, U.S. Fish and Wildlife Service, Washington, DC.
- Foster, M. S., and Schiel, D. R. (1985). "The Ecology of Giant Kelp Forests in California: A Community Profile," FWS/OBS-85(7.2), U.S. Fish and Wildlife Service, Washington, DC.
- Gosselink, J. G. (1984). "The Ecology of Delta Marshes of Coastal Louisiana: A Community Profile," FWS/OBS-84/09, U.S. Fish and Wildlife Service, Washington, DC.
- Hobbie, J. E. (1984). "The Ecology of Tundra Ponds of the Arctic Coastal Plain: A Community Profile," FWS/OBS-83/25, U.S. Fish and Wildlife Service, Washington, DC.
- Huffman, R. T., and Tucker, G. E. (1984). "Preliminary Guide to the Onsite Identification and Delineation of the Wetlands of Alaska," Technical Report Y-78-9, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Huffman, R. T., Tucker, G. E., Wooten, J. W., Limas, C. V., Feel, M. W., Forsythe, S. W., and Wilson, J. S. (1982). "Preliminary Guide to the Onsite Identification and Delineation of the Wetlands of the South Atlantic United States," Technical Report Y-78-7, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- \_\_\_\_\_. (1982). "Preliminary Guide to the Onsite Identification and Delineation of the Wetlands of the North Atlantic United States," Technical Report Y-78-8, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Japp, W. C. (1984). "The Ecology of the South Florida Coral Reefs: A Community Profile," FWS/OBS-82/08, U.S. Fish and Wildlife Service, Washington, DC.

- Gasolene, M. (1983). "The Ecology of San Francisco Bay Tidal Marshes: A Community Profile," FWS/OBS-83/23, U.S. Fish and Wildlife Service, Washington, DC.
- Livingston, R. J. (1984). "The Ecology of the Apalachicola Bay System: An Estuarine Profile," FWS/OBS-82/05, U.S. Fish and Wildlife Service, Washington, DC.
- Nixon, S. W. (1982). "The Ecology of New England High Salt Marshes: A Community Profile," FWS/OBS-81/55, U.S. Fish and Wildlife Service, Washington, DC.
- Odum, W. E., McIvor, C. C., and Smith, T. J., III. (1982). "The Ecology of the Mangroves of South Florida: A Community Profile," FWS/OBS-81/24, U.S. Fish and Wildlife Service, Washington, DC.
- Odum, W. E., Smith, T. J., III, Hoover, J. K., and McIvor, C. C. (1984). "The Ecology of Tidal Freshwater Marshes of the United States East Coast: A Community Profile," FWS/OBS-83/17, U.S. Fish and Wildlife Service, Washington, DC.
- Peterson, C. H., and Peterson, N. M. (1979). "The Ecology of Intertidal Flats of North Carolina: A Community Profile," FWS/OBS-79/39, U.S. Fish and Wildlife Service, Washington, DC.
- Phillips, R. C. (1984). "The Ecology of Eelgrass Meadows in the Pacific Northwest: A Community Profile," FWS/OBS-84/24, U.S. Fish and Wildlife Service, Washington, DC.
- Seliskar, D. M., and Gallagher, J. L. (1983). "The Ecology of Tidal Marshes of the Pacific Northwest Coast: A Community Profile," FWS/OBS-82/32, U.S. Fish and Wildlife Service, Washington, DC.
- Sharitz, R. R., and Gibbons, J. W. (1982). "The Ecology of Southeastern Shrub Bogs (Pocosins) and Carolina Bays: A Community Profile," FWS/OBS-82/04, U.S. Fish and Wildlife Service, Washington, DC.
- Thayer, G. W., Kenworthy, W. J., and Fonseca, M. S. (1984). "The Ecology of Eelgrass Meadows of the Atlantic Coast: A Community Profile," FWS/OBS-84/02, U.S. Fish and Wildlife Service, Washington, DC.
- U.S. Army Corps of Engineers. (1978). "Preliminary Guide to Wetlands of Peninsular Florida," Technical Report Y-78-2, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- \_\_\_\_\_. (1978). "Preliminary Guide to Wetlands of Puerto Rico," Technical Report Y-78-3, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

- U.S. Army Corps of Engineers. (1978). "Preliminary Guide to Wetlands of the West Coast States," Technical Report Y-78-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- \_\_\_\_\_. (1978). "Preliminary Guide to Wetlands of the Gulf Coastal Plain," Technical Report Y-78-5, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- \_\_\_\_\_. (1982). "Preliminary Guide to the Onsite Identification and Delineation of the Wetlands of the Interior United States," Technical Report Y-78-6, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Witlatch, R. B. (1982). "The Ecology of New England Tidal Flats: A Community Profile," FWS/OBS-81/01, U.S. Fish and Wildlife Service, Washington, DC.
- Wharton, C. H., Kitchens, W. M., and Sipe, T. W. (1982). "The Ecology of Bottomland Hardwood Swamps of the Southeast: A Community Profile," FWS/OBS-81/37, U.S. Fish and Wildlife Service, Washington, DC.
- Zedler, J. B. (1984). "The Ecology of Southern California Coastal Salt Marshes: A Community Profile," FWS/OBS-81/54, U.S. Fish and Wildlife Service, Washington, DC.
- Zieman, J. C. (1982). "The Ecology of the Seagrasses of South Florida: A Community Profile," FWS/OBS-82/25, U.S. Fish and Wildlife Service, Washington, DC.

# Appendix A

## Glossary

---

*Active water table.* A condition in which the zone of soil saturation fluctuates, resulting in periodic anaerobic soil conditions. Soils with an active water table often contain bright mottles and matrix chromas of 2 or less.

*Adaptation.* A modification of a species that makes it more fit for existence under the conditions of its environment. These modifications are the result of genetic selection processes.

*Adventitious roots.* Roots found on plant stems in positions where they normally do not occur.

*Aerenchymous tissue.* A type of plant tissue in which cells are unusually large and arranged in a manner that results in air spaces in the plant organ. Such tissues are often referred to as spongy and usually provide increased buoyancy.

*Aerobic.* A situation in which molecular oxygen is a part of the environment.

*Anaerobic.* A situation in which molecular oxygen is absent (or effectively so) from the environment.

*Aquatic roots.* Roots that develop on stems above the normal position occupied by roots in response to prolonged inundation.

*Aquic moisture regime.* A mostly reducing soil moisture regime nearly free of dissolved oxygen due to saturation by ground water or its capillary fringe and occurring at periods when the soil temperature at 19.7 in. is greater than 5 °C.

*Arched roots.* Roots produced on plant stems in a position above the normal position of roots, which serve to brace the plant during and following periods of prolonged inundation.

*Areal cover.* A measure of dominance that defines the degree to which above-ground portions of plants (not limited to those rooted in a sample plot) cover the ground surface. It is possible for the total areal cover in a community to exceed 100 percent because (a) most plant communities consist of two or more vegetative strata; (b) areal cover is estimated by vegetative layer; and (c) foliage within a single layer may overlap.

*Atypical situation.* As used herein, this term refers to areas in which one or more parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter.

*Backwater flooding.* Situations in which the source of inundation is overbank flooding from a nearby stream.

*Basal area.* The cross-sectional area of a tree trunk measured in square inches, square centimeters, etc. Basal area is normally measured at 4.5 ft above the ground level and is used as a measure of dominance. The most easily used tool for measuring basal area is a tape marked in square inches. When plotless methods are used, an angle gauge or prism will provide a means for rapidly determining basal area. This term is also applicable to the cross-sectional area of a clumped herbaceous plant, measured at 1.0 in. above the soil surface.

*Bench mark.* A fixed, more or less permanent reference point or object, the elevation of which is known. The U.S. Geological Survey (USGS) installs brass caps in bridge abutments or otherwise permanently sets bench marks at convenient locations nationwide. The elevations on these marks are referenced to the National Geodetic Vertical Datum (NGVD), also commonly known as mean sea level (MSL). Locations of these bench marks on USGS quadrangle maps are shown as small triangles. However, the marks are sometimes destroyed by construction or vandalism. The existence of any bench mark should be field verified before planning work that relies on a particular reference point. The USGS and/or local state surveyor's office can provide information on the existence, exact location, and exact elevation of bench marks.

*Biennial.* An event that occurs at 2-year intervals.

*Buried soil.* A once-exposed soil now covered by an alluvial, loessal, or other deposit (including man-made).

*Canopy layer.* The uppermost layer of vegetation in a plant community. In forested areas, mature trees comprise the canopy layer, while the tallest herbaceous species constitute the canopy layer in a marsh.

*Capillary fringe.* A zone immediately above the water table (zero gauge pressure) in which water is drawn upward from the water table by capillary action.



- Chemical reduction.* Any process by which one compound or ion acts as an electron donor. In such cases, the valence state of the electron donor is decreased.
- Chroma.* The relative purity or saturation of a color; intensity of distinctive hue as related to grayness; one of the three variables of color.
- Comprehensive wetland determination.* A type of wetland determination that is based on the strongest possible evidence, requiring the collection of quantitative data.
- Concretion.* A local concentration of chemical compounds (e.g., calcium carbonate, iron oxide) in the form of a grain or nodule of varying size, shape, hardness, and color. Concretions of significance in hydric soils are usually iron and/or manganese oxides occurring at or near the soil surface, which develop under conditions of prolonged soil saturation.
- Contour.* An imaginary line of constant elevation on the ground surface. The corresponding line on a map is called a "contour line."
- Criteria.* Standards, rules, or tests on which a judgment or decision may be based.
- Deepwater aquatic habitat.* Any open water area that has a mean annual water depth >6.6 ft, lacks soil, and/or is either unvegetated or supports only floating or submersed macrophytes.
- Density.* The number of individuals of a species per unit area.
- Detritus.* Minute fragments of plant parts found on the soil surface. When fused together by algae or soil particles, this is an indicator that surface water was recently present.
- Diameter at breast height (DBH).* The width of a plant stem as measured at 4.5 ft above the ground surface.
- Dike.* A bank (usually earthen) constructed to control or confine water.
- Dominance.* As used herein, a descriptor of vegetation that is related to the standing crop of a species in an area, usually measured by height, areal cover, or basal area (for trees).
- Dominant species.* As used herein, a plant species that exerts a controlling influence on or defines the character of a community.
- Drained.* A condition in which ground or surface water has been reduced or eliminated from an area by artificial means.

*Drift line.* An accumulation of debris along a contour (parallel to the water flow) that represents the height of an inundation event.

*Duration (inundation/soil saturation).* The length of time during which water stands at or above the soil surface (inundation), or during which the soil is saturated. As used herein, duration refers to a period during the growing season.

*Ecological tolerance.* The range of environmental conditions in which a plant species can grow.

*Emergent plant.* A rooted herbaceous plant species that has parts extending above a water surface.

*Field capacity.* The percentage of water remaining in a soil after it has been saturated and after free drainage is negligible.

*Fill material.* Any material placed in an area to increase surface elevation.

*Flooded.* A condition in which the soil surface is temporarily covered with flowing water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, inflow from high tides, or any combination of sources.

*Flora.* A list of all plant species that occur in an area.

*Frequency (inundation or soil saturation).* The periodicity of coverage of an area by surface water or soil saturation. It is usually expressed as the number of years (e.g., 50 years) the soil is inundated or saturated at least once each year during part of the growing season per 100 years or as a 1-, 2-, 5-year, etc., inundation frequency.

*Frequency (vegetation).* The distribution of individuals of a species in an area. It is quantitatively expressed as

$$\frac{\text{Number of samples containing species A}}{\text{Total number of samples}} \times 100$$

More than one species may have a frequency of 100 percent within the same area.

*Frequently flooded.* A flooding class in which flooding is likely to occur often under normal weather conditions (more than 50-percent chance of flooding in any year or more than 50 times in 100 years).

*Gleyed.* A soil condition resulting from prolonged soil saturation, which is manifested by the presence of bluish or greenish colors through the soil mass or in mottles (spots or streaks) among other colors. Gleying occurs under re-

ducing soil conditions resulting from soil saturation, by which iron is reduced predominantly to the ferrous state.

*Ground water.* That portion of the water below the ground surface that is under greater pressure than atmospheric pressure.

*Growing season.* The portion of the year when soil temperatures at 19.7 in. below the soil surface are higher than biologic zero (5 °C) (U.S. Department of Agriculture—Soil Conservation Service 1985). For ease of determination this period can be approximated by the number of frost-free days (U.S. Department of the Interior 1970).

*Habitat.* The environment occupied by individuals of a particular species, population, or community.

*Headwater flooding.* A situation in which an area becomes inundated directly by surface runoff from upland areas.

*Herb.* A nonwoody individual of a macrophytic species. In this manual, seedlings of woody plants (including vines) that are less than 3.2 ft in height are considered to be herbs.

*Herbaceous layer.* Any vegetative stratum of a plant community that is composed predominantly of herbs.

*Histic epipedon.* An 8- to 16-in. soil layer at or near the surface that is saturated for 30 consecutive days or more during the growing season in most years and contains a minimum of 20 percent organic matter when no clay is present or a minimum of 30 percent organic matter when 60 percent or greater clay is present.

*Histosols.* An order in soil taxonomy composed of organic soils that have organic soil materials in more than half of the upper 80 cm or that are of any thickness if directly overlying bedrock.

*Homogeneous vegetation.* A situation in which the same plant species association occurs throughout an area.

*Hue.* A characteristic of color that denotes a color in relation to red, yellow, blue, etc; one of the three variables of color. Each color chart in the Munsell Color Book (Munsell Color 1975) consists of a specific hue.

*Hydric soil.* A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (U.S. Department of Agriculture—Soil Conservation Service 1985). Hydric soils that occur in areas having positive indicators of hydrophytic vegetation and wetland hydrology are wetland soils.

- Hydric soil condition.* A situation in which characteristics exist that are associated with soil development under reducing conditions.
- Hydrologic regime.* The sum total of water that occurs in an area on average during a given period.
- Hydrologic zone.* An area that is inundated or has saturated soils within a specified range of frequency and duration of inundation and soil saturation.
- Hydrology.* The science dealing with the properties, distribution, and circulation of water.
- Hydrophyte.* Any macrophyte that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats.
- Hydrophytic vegetation.* The sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. When hydrophytic vegetation comprises a community where indicators of hydric soils and wetland hydrology also occur, the area has wetland vegetation.
- Hypertrophied lenticels.* An exaggerated (oversized) pore on the surface of stems of woody plants through which gases are exchanged between the plant and the atmosphere. The enlarged lenticels serve as a mechanism for increasing oxygen to plant roots during periods of inundation and/or saturated soils.
- Importance value.* A quantitative term describing the relative influence of a plant species in a plant community, obtained by summing any combination of relative frequency, relative density, and relative dominance.
- Indicator.* As used in this manual, an event, entity, or condition that typically characterizes a prescribed environment or situation; indicators determine or aid in determining whether or not certain stated circumstances exist.
- Indicator status.* One of the categories (e.g., OBL) that describes the estimated probability of a plant species occurring in wetlands.
- Intercellular air space.* A cavity between cells in plant tissues, resulting from variations in cell shape and configuration. Aerenchymous tissue (a morphological adaptation found in many hydrophytes) often has large intercellular air spaces.
- Inundation.* A condition in which water from any source temporarily or permanently covers a land surface.
- Levee.* A natural or man-made feature of the landscape that restricts movement of water into or through an area.

- Liana.* As used in this manual, a layer of vegetation in forested plant communities that consists of woody vines. The term may also be applied to a given species.
- Limit of biological activity.* With reference to soils, the zone below which conditions preclude normal growth of soil organisms. This term often is used to refer to the temperature (5 °C) in a soil below which metabolic processes of soil microorganisms, plant roots, and animals are negligible.
- Long duration (flooding).* A flooding class in which the period of inundation for a single event ranges from 7 days to 1 month.
- Macrophyte.* Any plant species that can be readily observed without the aid of optical magnification. This includes all vascular plant species and mosses (e.g., *Sphagnum* spp.), as well as large algae (e.g., *Cara* spp., kelp).
- Macrophytic.* A term referring to a plant species that is a macrophyte.
- Major portion of the root zone.* The portion of the soil profile in which more than 50 percent of plant roots occur. In wetlands, this usually constitutes the upper 12 in. of the profile.
- Man-induced wetland.* Any area that develops wetland characteristics due to some activity (e.g., irrigation) of man.
- Mapping unit.* As used in this manual, some common characteristic of soil, vegetation, and/or hydrology that can be shown at the scale of mapping for the defined purpose and objectives of a survey.
- Mean sea level.* A datum, or "plane of zero elevation," established by averaging all stages of oceanic tides over a 19-year tidal cycle or "epoch." This plane is corrected for curvature of the earth and is the standard reference for elevations on the earth's surface. The correct term for mean sea level is the National Geodetic Vertical Datum (NGVD).
- Mesophytic.* Any plant species growing where soil moisture and aeration conditions lie between extremes. These species are typically found in habitats with average moisture conditions, neither very dry nor very wet.
- Metabolic processes.* The complex of internal chemical reactions associated with life-sustaining functions of an organism.
- Method.* A particular procedure or set of procedures to be followed.
- Mineral soil.* A soil consisting predominantly of, and having its properties determined predominantly by, mineral matter usually containing less than 20 percent organic matter.

*Morphological adaptation.* A feature of structure and form that aids in fitting a species to its particular environment (e.g., buttressed base, adventitious roots, aerenchymous tissue).

*Mottles.* Spots or blotches of different color or shades of color interspersed within the dominant color in a soil layer, usually resulting from the presence of periodic reducing soil conditions.

*Muck.* Highly decomposed organic material in which the original plant parts are not recognizable.

*Multitrunk.* A situation in which a single individual of a woody plant species has several stems.

*Nonhydric soil.* A soil that has developed under predominantly aerobic soil conditions. These soils normally support mesophytic or xerophytic species.

*Nonwetland.* Any area that has sufficiently dry conditions that indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology are lacking. As used in this manual, any area that is neither a wetland, a deepwater aquatic habitat, nor other special aquatic site.

*Organic pan.* A layer usually occurring at 12 to 30 in. below the soil surface in coarse-textured soils, in which organic matter and aluminum (with or without iron) accumulate at the point where the top of the water table most often occurs. Cementing of the organic matter slightly reduces permeability of this layer.

*Organic soil.* A soil is classified as an organic soil when it is: (1) saturated for prolonged periods (unless artificially drained) and has more than 30 percent organic matter if the mineral fraction is more than 50 percent clay, or more than 20 percent organic matter if the mineral fraction has no clay; or (2) never saturated with water for more than a few days and having more than 34 percent organic matter.

*Overbank flooding.* Any situation in which inundation occurs as a result of the water level of a stream rising above bank level.

*Oxidation-reduction process.* A complex of biochemical reactions in soil that influences the valence state of component elements and their ions. Prolonged soil saturation during the growing season elicits anaerobic conditions that shift the overall process to a reducing condition.

*Oxygen pathway.* The sequence of cells, intercellular spaces, tissues, and organs, through which molecular oxygen is transported in plants. Plant species having pathways for oxygen transport to the root system are often adapted for life in saturated soils.

*Parameter.* A characteristic component of a unit that can be defined. Vegetation, soil, and hydrology are three parameters that may be used to define wetlands.

*Parent material.* The unconsolidated and more or less weathered mineral or organic matter from which a soil profile develops.

*Ped.* A unit of soil structure (e.g., aggregate, crumb, prism, block, or granule) formed by natural processes.

*Peraquic moisture regime.* A soil condition in which a reducing environment always occurs due to the presence of ground water at or near the soil surface.

*Periodically.* Used herein to define detectable regular or irregular saturated soil conditions or inundation, resulting from ponding of ground water, precipitation, overland flow, stream flooding, or tidal influences that occur(s) with hours, days, weeks, months, or even years between events.

*Permeability.* A soil characteristic that enables water or air to move through the profile, measured as the number of inches per hour that water moves downward through the saturated soil. The rate at which water moves through the least permeable layer governs soil permeability.

*Physiognomy.* A term used to describe a plant community based on the growth habit (e.g., trees, herbs, lianas) of the dominant species.

*Physiological adaptation.* A feature of the basic physical and chemical activities that occurs in cells and tissues of a species, which results in it being better fitted to its environment (e.g., ability to absorb nutrients under low oxygen tensions).

*Plant community.* All of the plant populations occurring in a shared habitat or environment.

*Plant cover.* See areal cover.

*Pneumatophore.* Modified roots that may function as a respiratory organ in species subjected to frequent inundation or soil saturation (e.g., cypress knees).

*Ponded.* A condition in which water stands in a closed depression. Water may be removed only by percolation, evaporation, and/or transpiration.

*Poorly drained.* Soils that commonly are wet at or near the surface during a sufficient part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these conditions.

*Population.* A group of individuals of the same species that occurs in a given area.

*Positive wetland indicator.* Any evidence of the presence of hydrophytic vegetation, hydric soil, and/or wetland hydrology in an area.

*Prevalent vegetation.* The plant community or communities that occur in an area during a given period. The prevalent vegetation is characterized by the dominant macrophytic species that comprise the plant community.

*Quantitative.* A precise measurement or determination expressed numerically.

*Range.* As used herein, the geographical area in which a plant species is known to occur.

*Redox potential.* A measure of the tendency of a system to donate or accept electrons, which is governed by the nature and proportions of the oxidizing and reducing substances contained in the system.

*Reducing environment.* An environment conducive to the removal of oxygen and chemical reduction of ions in the soils.

*Relative density.* A quantitative descriptor, expressed as a percent, of the relative number of individuals of a species in an area; it is calculated by

$$\frac{\text{Number of individuals of species A}}{\text{Total number of individuals of all species}} \times 100$$

*Relative dominance.* A quantitative descriptor, expressed as a percent, of the relative size or cover of individuals of a species in an area; it is calculated by

$$\frac{\text{Amount}^1 \text{ of species A}}{\text{Total amount of all species}} \times 100$$

*Relative frequency.* A quantitative descriptor, expressed as a percent, of the relative distribution of individuals of a species in an area; it is calculated by

$$\frac{\text{Frequency of species A}}{\text{Total frequency of all species}} \times 100$$

*Relief.* The change in elevation of a land surface between two points; collectively, the configuration of the earth's surface, including such features as hills and valleys.

---

<sup>1</sup> The "amount" of a species may be based on percent areal cover, basal area, or height.



*Reproductive adaptation.* A feature of the reproductive mechanism of a species that results in it being better fitted to its environment (e.g., ability for seed germination under water).

*Respiration.* The sum total of metabolic processes associated with conversion of stored (chemical) energy into kinetic (physical) energy for use by an organism.

*Rhizosphere.* The zone of soil in which interactions between living plant roots and microorganisms occur.

*Root zone.* The portion of a soil profile in which plant roots occur.

*Routine wetland determination.* A type of wetland determination in which office data and/or relatively simple, rapidly applied onsite methods are employed to determine whether or not an area is a wetland. Most wetland determinations are of this type, which usually does not require collection of quantitative data.

*Sample plot.* An area of land used for measuring or observing existing conditions.

*Sapling/shrub.* A layer of vegetation composed of woody plants <3.0 in. in diameter at breast height but greater than 3.2 ft in height, exclusive of woody vines.

*Saturated soil conditions.* A condition in which all easily drained voids (pores) between soil particles in the root zone are temporarily or permanently filled with water to the soil surface at pressures greater than atmospheric.

*Soil.* Unconsolidated mineral and organic material that supports, or is capable of supporting, plants, and which has recognizable properties due to the integrated effect of climate and living matter acting upon parent material, as conditioned by relief over time.

*Soil horizon.* A layer of soil or soil material approximately parallel to the land surface and differing from adjacent genetically related layers in physical, chemical, and biological properties or characteristics (e.g., color, structure, texture, etc.).

*Soil matrix.* The portion of a given soil having the dominant color. In most cases, the matrix will be the portion of the soil having more than 50 percent of the same color.

*Soil permeability.* The ease with which gases, liquids, or plant roots penetrate or pass through a layer of soil.

*Soil phase.* A subdivision of a soil series having features (e.g., slope, surface texture, and stoniness) that affect the use and management of the soil, but

which do not vary sufficiently to differentiate it as a separate series. These are usually the basic mapping units on detailed soil maps produced by the Soil Conservation Service.

*Soil pore.* An area within soil occupied by either air or water, resulting from the arrangement of individual soil particles or peds.

*Soil profile.* A vertical section of a soil through all its horizons and extending into the parent material.

*Soil series.* A group of soils having horizons similar in differentiating characteristics and arrangement in the soil profile, except for texture of the surface horizon.

*Soil structure.* The combination or arrangement of primary soil particles into secondary particles, units, or peds.

*Soil surface.* The upper limits of the soil profile. For mineral soils, this is the upper limit of the highest (A1) mineral horizon. For organic soils, it is the upper limit of undecomposed, dead organic matter.

*Soil texture.* The relative proportions of the various sizes of particles in a soil.

*Somewhat poorly drained.* Soils that are wet near enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless artificial drainage is provided. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, wet conditions high in the profile, additions of water through seepage, or a combination of these conditions.

*Stilted roots.* Aerial roots arising from stems (e.g., trunk and branches), presumably providing plant support (e.g., *Rhizophora mangle*).

*Stooling.* A form of asexual reproduction in which new shoots are produced at the base of senescing stems, often resulting in a multitrunk growth habit.

*Stratigraphy.* Features of geology dealing with the origin, composition, distribution, and succession of geologic strata (layers).

*Substrate.* The base or substance on which an attached species is growing.

*Surface water.* Water present above the substrate or soil surface.

*Tidal.* A situation in which the water level periodically fluctuates due to the action of lunar and solar forces upon the rotating earth.

*Topography.* The configuration of a surface, including its relief and the position of its natural and man-made features.

*Transect.* As used herein, a line on the ground along which observations are made at some interval.

*Transition zone.* The area in which a change from wetlands to nonwetlands occurs. The transition zone may be narrow or broad.

*Transpiration.* The process in plants by which water vapor is released into the gaseous environment, primarily through stomata.

*Tree.* A woody plant >3.0 in. in diameter at breast height, regardless of height (exclusive of woody vines).

*Typical.* That which normally, usually, or commonly occurs.

*Typically adapted.* A term that refers to a species being normally or commonly suited to a given set of environmental conditions, due to some feature of its morphology, physiology, or reproduction.

*Unconsolidated parent material.* Material from which a soil develops, usually formed by weathering of rock or placement in an area by natural forces (e.g., water, wind, or gravity).

*Under normal circumstances.* As used in the definition of wetlands, this term refers to situations in which the vegetation has not been substantially altered by man's activities.

*Uniform vegetation.* As used herein, a situation in which the same group of dominant species generally occurs throughout a given area.

*Upland.* As used herein, any area that does not qualify as a wetland because the associated hydrologic regime is not sufficiently wet to elicit development of vegetation, soils, and/or hydrologic characteristics associated with wetlands. Such areas occurring within floodplains are more appropriately termed nonwetlands.

*Value (soil color).* The relative lightness or intensity of color, approximately a function of the square root of the total amount of light reflected from a surface; one of the three variables of color.

*Vegetation.* The sum total of macrophytes that occupy a given area.

*Vegetation layer.* A subunit of a plant community in which all component species exhibit the same growth form (e.g., trees, saplings/shrubs, herbs).

*Very long duration (flooding).* A duration class in which the length of a single inundation event is greater than 1 month.

*Very poorly drained.* Soils that are wet to the surface most of the time. These soils are wet enough to prevent the growth of important crops (except rice) unless artificially drained.

*Watermark.* A line on a tree or other upright structure that represents the maximum static water level reached during an inundation event.

*Water table.* The upper surface of ground water or that level below which the soil is saturated with water. It is at least 6 in. thick and persists in the soil for more than a few weeks.

*Wetlands.* Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

*Wetland boundary.* The point on the ground at which a shift from wetlands to nonwetlands or aquatic habitats occurs. These boundaries usually follow contours.

*Wetland determination.* The process or procedure by which an area is adjudged a wetland or nonwetland.

*Wetland hydrology.* The sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation.

*Wetland plant association.* Any grouping of plant species that recurs wherever certain wetland conditions occur.

*Wetland soil.* A soil that has characteristics developed in a reducing atmosphere, which exists when periods of prolonged soil saturation result in anaerobic conditions. Hydric soils that are sufficiently wet to support hydrophytic vegetation are wetland soils.

*Wetland vegetation.* The sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. As used herein, hydrophytic vegetation occurring in areas that also have hydric soils and wetland hydrology may be properly referred to as wetland vegetation.

*Woody vine.* See liana.

*Xerophytic.* A plant species that is typically adapted for life in conditions where a lack of water is a limiting factor for growth and/or reproduction. These species are capable of growth in extremely dry conditions as a result of morphological, physiological, and/or reproductive adaptations.

# Appendix B

## Blank and Example Data Forms

---

USER NOTES: The following field data form ("Data Form, Routine Wetland Determination, 1987 COE Wetlands Delineation Manual") dated 3/92 is the HQUSACE-approved replacement for Data Form 1 given in the 1987 Manual. (HQUSACE, 6 Mar 92)





DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: \_\_\_\_\_ Application Number: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 State: \_\_\_\_\_ County: \_\_\_\_\_ Legal Description: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_  
 Date: \_\_\_\_\_ Plot No.: \_\_\_\_\_ Section: \_\_\_\_\_

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1.		7.	
2.		8.	
3.		9.	
<u>Saplings/shrubs</u>		<u>Woody vines</u>	
4.		10.	
5.		11.	
6.		12.	

% of species that are OBL, FACW, and/or FAC: \_\_\_\_\_. Other indicators: \_\_\_\_\_.  
 Hydrophytic vegetation: Yes \_\_\_\_ No \_\_\_\_\_. Basis: \_\_\_\_\_.

Soil  
 Series and phase: \_\_\_\_\_ On hydric soils list? Yes \_\_\_\_; No \_\_\_\_.  
 Mottled: Yes \_\_\_\_; No \_\_\_\_\_. Mottle color: \_\_\_\_\_; Matrix color: \_\_\_\_\_.  
 Gleyed: Yes \_\_\_\_ No \_\_\_\_ Other indicators: \_\_\_\_\_.  
 Hydric soils: Yes \_\_\_\_ No \_\_\_\_; Basis: \_\_\_\_\_.

Hydrology  
 Inundated: Yes \_\_\_\_; No \_\_\_\_\_. Depth of standing water: \_\_\_\_\_.  
 Saturated soils: Yes \_\_\_\_; No \_\_\_\_\_. Depth to saturated soil: \_\_\_\_\_.  
 Other indicators: \_\_\_\_\_.  
 Wetland hydrology: Yes \_\_\_\_; No \_\_\_\_\_. Basis: \_\_\_\_\_.  
 Atypical situation: Yes \_\_\_\_; No \_\_\_\_\_.  
Normal Circumstances? Yes \_\_\_\_ No \_\_\_\_\_.  
Wetland Determination: Wetland \_\_\_\_\_; Nonwetland \_\_\_\_\_.

Comments:

Determined by: \_\_\_\_\_



## DATA FORM 2

## VEGETATION-COMPREHENSIVE DETERMINATION

Applicant Name: \_\_\_\_\_ Application No.: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Location: \_\_\_\_\_ Plot #: \_\_\_\_\_ Date: \_\_\_\_\_ Determined By: \_\_\_\_\_

VEGETATION LAYER

<u>TREES</u>	<u>BASAL AREA</u>	<u>TOTAL BASAL AREA</u>	<u>RANK</u>	<u>HERBS</u>	<u>MIDPOINT OF % COVER CLASS</u>	<u>RANK</u>
1				1		
2				2		
3				3		
4				4		
5				5		
6				6		
7				7		
8				8		
9				9		
10				10		

<u>SAPLINGS/SHRUBS</u>	<u>MIDPOINT OF HEIGHT CLASS</u>	<u>TOTAL HEIGHT CLASS</u>	<u>RANK</u>	<u>WOODY VINES</u>	<u>NUMBER OF STEMS</u>	<u>RANK</u>
1				1		
2				2		
3				3		
4				4		
5				5		
6				6		
7				7		
8				8		
9				9		
10				10		

DATA FORM 3  
ATYPICAL SITUATIONS

Applicant Name: \_\_\_\_\_ Application Number: \_\_\_\_\_ Project Name: \_\_\_\_\_  
Location: \_\_\_\_\_ Plot Number: \_\_\_\_\_ Date: \_\_\_\_\_

A. VEGETATION:

1. Type of Alteration: \_\_\_\_\_  
\_\_\_\_\_
2. Effect on Vegetation: \_\_\_\_\_  
\_\_\_\_\_
3. Previous Vegetation: \_\_\_\_\_  
(Attach documentation) \_\_\_\_\_
4. Hydrophytic Vegetation? Yes \_\_\_\_\_ No \_\_\_\_\_

B. SOILS:

1. Type of Alteration: \_\_\_\_\_  
\_\_\_\_\_
2. Effect on Soils: \_\_\_\_\_  
\_\_\_\_\_
3. Previous Soils: \_\_\_\_\_  
(Attach documentation) \_\_\_\_\_
4. Hydric Soils? Yes \_\_\_\_\_ No \_\_\_\_\_

C. HYDROLOGY:

1. Type of Alteration: \_\_\_\_\_  
\_\_\_\_\_
2. Effect on Hydrology: \_\_\_\_\_  
\_\_\_\_\_
3. Previous Hydrology: \_\_\_\_\_  
(Attach documentation) \_\_\_\_\_
4. Wetland Hydrology? Yes \_\_\_\_\_ No \_\_\_\_\_

Characterized By: \_\_\_\_\_

DATA FORM 1  
WETLAND DETERMINATION

Applicant Name: John Doe Application Number: R-85-1421 Project Name: Zena Agricultural Land  
 State: LA County: Choctaw Legal Description: \_\_\_\_\_ Township: 7N Range: 2E  
 Date: 10/08/85 Plot No.: 1-1 Section: 32

Vegetation [list the three dominant species in each vegetation layer (5 if only 1 or 2 layers)]. Indicate species with observed morphological or known physiological adaptations with an asterisk.

<u>Species</u>	<u>Indicator Status</u>	<u>Species</u>	<u>Indicator Status</u>
<u>Trees</u>		<u>Herbs</u>	
1. <i>Quercus lyrata</i>	OBL	7. <i>Polygonum hydropiperoides</i>	OBL
2. <i>Carya aquatica</i>	OBL	8. <i>Boehmeria cylindrica</i>	FACW+
3. <i>Gleditsia aquatica</i>	OBL	9. <i>Brunnichia cirrhosa</i>	--
<u>Saplings/shurbs</u>		<u>Woody vines</u>	
4. <i>Forestiera acuminata</i>	OBL	10. <i>Toxicodendron radicans</i>	FAC
5. <i>Planera aquatica</i>	OBL	11. --	--
6. --	--	12. --	--

% of species that are OBL, FACW, and/or FAC: 100%. Other indicators: --.  
 Hydrophytic vegetation: Yes X No \_\_\_\_\_. Basis: 50% of dominants are OBL, FACW, and/or FAC on plant list.

Soil  
 Series and phase: Sharkey, frequently flooded On hydric soils list? Yes X; No \_\_\_\_\_.  
 Mottled: Yes X; No \_\_\_\_\_. Mottle color: 5YR4/6; Matrix color: 10YR4/1.  
 Gleyed: Yes \_\_\_\_ No X. Other indicators: \_\_\_\_\_.  
 Hydric soils: Yes X No \_\_\_\_\_. Basis: On hydric soil list and matrix color.

Hydrology  
 Inundated: Yes \_\_\_\_; No X. Depth of standing water: \_\_\_\_\_.  
 Saturated soils: Yes X; No \_\_\_\_\_. Depth to saturated soil: 6".  
 Other indicators: Drift lines and sediment deposits present on trees.  
 Wetland hydrology: Yes X; No \_\_\_\_\_. Basis: Saturated soils.  
 Atypical situation: Yes \_\_\_\_; No X.

Normal Circumstances?: Yes X No \_\_\_\_\_.  
Wetland Determination: Wetland X; Nonwetland \_\_\_\_\_.

Comments: No rain reported from area in previous two weeks.  
 Determined by: Zelda Schmill (Signed)

## DATA FORM 2

## VEGETATION-COMPREHENSIVE DETERMINATION

Applicant Name: John Doe Application No.: R-85-1421 Project Name: Zena Agricultural Land  
 Location: LA (Choctaw Parish) Plot #: 1-1 Date: 10/08/85 Determined By: Zelda Schmill

VEGETATION LAYER

<u>TREES</u>	<u>BASAL AREA</u> <u>(in<sup>2</sup>)</u>	<u>TOTAL</u> <u>BASAL</u> <u>AREA</u>	<u>RANK</u>	<u>HERBS</u>	<u>MIDPOINT OF</u> <u>% COVER CLASS</u>	<u>RANK</u>
1 <i>Quercus lyrata</i>	465	1,145	1	1 <i>Boehmeria cylindrica</i>	37.5	2
2 <i>Quercus lyrata</i>	680			2 <i>Polygonum hydropiperoides</i>	62.5	1
3 <i>Carya aquatica</i>	85	243	3	3 <i>Brunnichia ovata</i>	37.5	3
4 <i>Carya aquatica</i>	120			4 <i>Gleditsia aquatica (seedling)</i>	2.5	
5 <i>Carya aquatica</i>	38			5 <i>Eclipta alba</i>	2.5	
6 <i>Gleditsia aquatica</i>	235	253	2	6		
7 <i>Gleditsia aquatica</i>	18			7		
8 <i>Diospyros virginiana</i>	46	46		8		
9				9		
10				10		
<u>SAPLINGS/SHRUBS</u>	<u>MIDPOINT</u> <u>OF</u> <u>HEIGHT</u> <u>CLASS</u>	<u>TOTAL</u> <u>HEIGHT</u> <u>CLASS</u>	<u>RANK</u>	<u>WOODY VINES</u>	<u>NUMBER OF</u> <u>STEMS</u>	<u>RANK</u>
1 <i>Forestiera acuminata</i>	4.5	13.0	1	1 <i>Toxicodendron radicans</i>	35	1
2 <i>Forestiera acuminata</i>	4.5			2 (only woody vine present)		
3 <i>Forestiera acuminata</i>	1.5			3		
4 <i>Forestiera acuminata</i>	2.5			4		
5 <i>Planera aquatica</i>	4.5	8.0	2	5		
6 <i>Planera aquatica</i>	3.5			6		
7 <i>Carya aquatica</i>	1.5	1.5		7		
8				8		
9				9		
10				10		

DATA FORM 3  
ATYPICAL SITUATIONS

Applicant Name: Wetland Developers, Inc. Application Number: R-85-12 Project Name: Big Canal  
Location: Joshua Co., MT Plot Number: 2 Date: 10/08/85

A. VEGETATION:

1. Type of Alteration: Vegetation totally removed or covered by placement of fill from canal (1984)
2. Effect on Vegetation: None remaining
3. Previous Vegetation: Carex nebrascensis - Juncus effusus freshwater (Attach documentation) marsh (based on contiguous plant communities and aerial photography predating fill)
4. Hydrophytic Vegetation? Yes X No

B. SOILS:

1. Type of Alteration: Original soil covered by 4 feet of fill material excavated from canal
2. Effect on Soils: Original soil buried in 1984
3. Previous Soils: Original soil examined at 10 inches below (Attach documentation) original soil surface. Soil gleyed (color notation 5Y2/0)
4. Hydric Soils? Yes X No

C. HYDROLOGY:

1. Type of Alteration: 4 feet of fill material placed on original surface
2. Effect on Hydrology: Area no longer is inundated
3. Previous Hydrology: Examination of color IR photography taken on 6/5/84 (Attach documentation) showed the area to be inundated. Gaging station data from gage 2 miles upstream indicated the area has been inundated for as much as 3 months of the growing season during 8 of the past 12 years
4. Wetland Hydrology? Yes X No

Characterized By: Joe Zook

# Appendix C

## Vegetation

---

1. This appendix contains three sections. ~~Section 1 is a subset of the regional list of plants that occur in wetlands, but includes only those species having an indicator status of OBL, FACW, or FAC. Section 2 is a list of plants that commonly occur in wetlands of a given region. Since many geographic areas of Section 404 responsibility include portions of two or more plant list regions, users will often need more than one regional list; thus, Sections 1 and 2 will be published separately from the remainder of the manual. Users will be furnished all appropriate regional lists.~~

USER NOTES: CE-supplied plant lists are obsolete and have been superseded by the May 1988 version of the ["National List of Plant Species that Occur in Wetlands"](#) published by the U.S. Fish and Wildlife Service and available on the World Wide Web. (HQUSACE, 27 Aug 91)

2. Section 3, which is presented herein, describes morphological, physiological, and reproductive adaptations that can be observed or are known to occur in plant species that are typically adapted for life in anaerobic soil conditions.

### **Section 3 - Morphological, Physiological, and Reproductive Adaptations of Plant Species for Occurrence in Areas Having Anaerobic Soil Conditions**

#### **Morphological adaptations**

3. Many plant species have morphological adaptations for occurrence in wetlands. These structural modifications most often provide the plant with increased buoyancy or support. In some cases (e.g., adventitious roots), the adaptation may facilitate the uptake of nutrients and/or gases (particularly oxygen). However, not all species occurring in areas having anaerobic soil condi-

tions exhibit morphological adaptations for such conditions. The following is a list of morphological adaptations that a species occurring in areas having anaerobic soil conditions may possess (a partial list of species with such adaptations is presented in Table C1):

**Table C1**  
**Partial List of Species with Known Morphological Adaptations for Occurrence in Wetlands<sup>1</sup>**

Species	Common Name	Adaptation
<i>Acer negundo</i>	Box elder	Adventitious roots
<i>Acer rubrum</i>	Red maple	Hypertrophied lenticels
<i>Acer saccharinum</i>	Silver maple	Hypertrophied lenticels; adventitious roots (juvenile plants)
<i>Alisma</i> spp.	Water plantain	Polymorphic leaves
<i>Alternanthera philoxeroides</i>	Alligatorweed	Adventitious roots; inflated, floating stems
<i>Avicennia nitida</i>	Black mangrove	Pneumatophores; hypertrophied lenticels
<i>Brasenia schreberi</i>	Watershield	Inflated, floating leaves
<i>Caladium mariscoides</i>	Twig rush	Inflated stems
<i>Cyperus</i> spp. (most species)	Flat sedge	Inflated stems and leaves
<i>Eleocharis</i> spp. (most species)	Spikerush	Inflated stems and leaves
<i>Forestiera accuminata</i>	Swamp privet	Multi-trunk, stooling
<i>Fraxinus pennsylvanica</i>	Green ash	Buttressed trunks; adventitious roots
<i>Gleditsia aquatica</i>	Water locust	Hypertrophied lenticels
<i>Juncus</i> spp.	Rush	Inflated stems and leaves
<i>Limnobium spongia</i>	Frogbit	Inflated, floating leaves
<i>Ludwigia</i> spp.	Waterprimrose	Adventitious roots; inflated floating stems
<i>Menyanthes trifoliata</i>	Buckbean	Inflated stems (rhizome)
<i>Myrica gale</i>	Sweetgale	Hypertrophied lenticels
<i>Nelumbo</i> spp.	Lotus	Floating leaves
<i>Nuphar</i> spp.	Cowlily	Floating leaves
<i>Nymphaea</i> spp.	Waterlily	Floating leaves
<i>Nyssa aquatica</i>	Water tupelo	Buttressed trunks; pneumatophores; adventitious roots
<i>Nyssa ogechee</i>	Ogechee tupelo	Buttressed trunks; multi-trunk; stooling
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Swamp blackgum	Buttressed trunks
<i>Platanus occidentalis</i>	Sycamore	Adventitious roots
<i>Populus deltoides</i>	Cottonwood	Adventitious roots
<i>Quercus laurifolia</i>	Laurel oak	Shallow root system
<i>Quercus palustris</i>	Pin oak	Adventitious roots
<i>Rhizophora mangle</i>	Red mangrove	Pneumatophores
<i>Sagittaria</i> spp.	Arrowhead	Polymorphic leaves
<i>Salix</i> spp.	Willow	Hypertrophied lenticels; adventitious roots; oxygen pathway to roots
<i>Scirpus</i> spp.	Bulrush	Inflated stems and leaves
<i>Spartina alterniflora</i>	Smooth cordgrass	Oxygen pathway to roots
<i>Taxodium distichum</i>	Bald cypress	Buttressed trunks; pneumatophores

<sup>1</sup> Many other species exhibit one or more morphological adaptations for occurrence in wetlands. However, not all individuals of a species will exhibit these adaptations under field conditions, and individuals occurring in uplands characteristically may not exhibit them.



- a. *Buttressed tree trunks.* Tree species (e.g., *Taxodium distichum*) may develop enlarged trunks (Figure C1) in response to frequent inundation. This adaptation is a strong indicator of hydrophytic vegetation in non-tropical forested areas.
- b. *Pneumatophores.* These modified roots may serve as respiratory organs in species subjected to frequent inundation or soil saturation. Cypress knees (Figure C2) are a classic example, but other species (e.g., *Nyssa aquatica*, *Rhizophora mangle*) may also develop pneumatophores.



Figure C1. Buttressed tree trunk (bald cypress)



Figure C2. Pneumatophores (bald cypress)

- c. *Adventitious roots.* Sometimes referred to as "water roots," adventitious roots occur on plant stems in positions where roots normally are not found. Small fibrous roots protruding from the base of trees (e.g., *Salix nigra*) or roots on stems of herbaceous plants and tree seedlings in positions immediately above the soil surface (e.g., *Ludwigia* spp.) occur in response to inundation or soil saturation (Figure C3). These usually develop during periods of sufficiently prolonged soil saturation to destroy most of the root system. *CAUTION: Not all adventitious roots develop as a result of inundation or soil saturation. For example, aerial roots on woody vines are not normally produced as a response to inundation or soil saturation.*



Figure C3. Adventitious roots

- d. *Shallow root systems.* When soils are inundated or saturated for long periods during the growing season, anaerobic conditions develop in the zone of root growth. Most species with deep root systems cannot survive in such conditions. Most species capable of growth during periods when soils are oxygenated only near the surface have shallow root systems. In forested wetlands,

windthrown trees (Figure C4) are often indicative of shallow root systems.

e. *Inflated leaves, stems, or roots.* Many hydrophytic species, particularly herbs (e.g., *Limnobium spongia*, *Ludwigia* spp.) have or develop spongy (aerenchymous) tissues in leaves, stems, and/or roots that provide buoyancy or support and serve as a reservoir or passageway for oxygen needed for metabolic processes. An example of inflated leaves is shown in Figure C5.

f. *Polymorphic leaves.* Some herbaceous species produce different types of leaves, depending on the water level at the time of leaf formation. For example, *Alisma* spp. produce strap-shaped leaves when totally submerged, but produce broader, floating leaves when plants are emergent. **CAUTION:** Many upland species also produce polymorphic leaves.

g. *Floating leaves.* Some species (e.g., *Nymphaea* spp.) produce leaves that are uniquely adapted for floating on a water surface (Figure C6). These leaves have stomata primarily on the upper surface and a thick waxy cuticle that restricts water penetration. The presence of species with floating leaves is strongly indicative of hydrophytic vegetation.

h. *Floating stems.* A number of species (e.g., *Alternanthera philoxeroides*) produce matted stems that have large internal air spaces when occurring in inun-



Figure C4. Wind-thrown tree with shallow root system



Figure C5. Inflated leaves

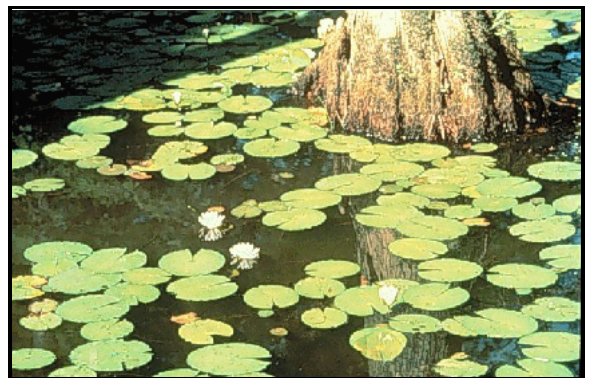


Figure C6. Floating leaves



dated areas. Such species root in shallow water and grow across the water surface into deeper areas. Species with floating stems often produce adventitious roots at leaf nodes.

- i. *Hypertrophied lenticels*. Some plant species (e.g., *Gleditsia aquatica*) produce enlarged lenticels on the stem in response to prolonged inundation or soil saturation. These are thought to increase oxygen uptake through the stem during such periods.



Figure C7. Multitrunk plant

- k. *Multitrunks or stooling*. Some woody hydrophytes characteristically produce several trunks of different ages (Figure C7) or produce new stems arising from the base of a senescing individual (e.g., *Forestiera acuminata*, *Nyssa ogechee*) in response to inundation.
- l. *Oxygen pathway to roots*. Some species (e.g., *Spartina alterniflora*) have a specialized cellular arrangement that facilitates diffusion of gaseous oxygen from leaves and stems to the root system.

### Physiological adaptations

4. Most, if not all, hydrophytic species are thought to possess physiological adaptations for occurrence in areas that have prolonged periods of anaerobic soil conditions. However, relatively few species have actually been proven to possess such adaptations, primarily due to the limited research that has been conducted. Nevertheless, several types of physiological adaptations known to occur in hydrophytic species are discussed below, and a list of species having one or more of these adaptations is presented in Table C2. *NOTE: Since it is impossible to detect these adaptations in the field, use of this indicator will be limited to observing the species in the field and checking the list in Table C2 to determine whether the species is known to have a physiological adaptation for occurrence in areas having anaerobic soil conditions.*

**Table C2  
Species Exhibiting Physiological Adaptations for Occurrence in  
Wetlands**

<b>Species</b>	<b>Physiological Adaptation</b>
<i>Alnus incana</i>	Increased levels of nitrate reductase; malate accumulation
<i>Alnus rubra</i>	Increased levels of nitrate reductase
<i>Baccharis viminea</i>	Ability for root growth in low oxygen tensions
<i>Betula pubescens</i>	Oxidizes the rhizosphere; malate accumulation
<i>Carex arenaria</i>	Malate accumulation
<i>Carex flacca</i>	Absence of ADH activity
<i>Carex lasiocarpa</i>	Malate accumulation
<i>Deschampsia cespitosa</i>	Absence of ADH activity
<i>Filipendula ulmaria</i>	Absence of ADH activity
<i>Fraxinus pennsylvanica</i>	Oxidizes the rhizosphere
<i>Glyceria maxima</i>	Malate accumulation; absence of ADH activity
<i>Juncus effusus</i>	Ability for root growth in low oxygen tensions; absence of ADH activity
<i>Larix laricina</i>	Slight increases in metabolic rates; increased levels of nitrate reductase
<i>Lobelia dortmanna</i>	Oxidizes the rhizosphere
<i>Lythrum salicaria</i>	Absence of ADH activity
<i>Molinia caerulea</i>	Oxidizes the rhizosphere
<i>Myrica gale</i>	Oxidizes the rhizosphere
<i>Nuphar lutea</i>	Organic acid production
<i>Nyssa aquatica</i>	Oxidizes the rhizosphere
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Oxidizes the rhizosphere; malate accumulation
<i>Phalaris arundinacea</i>	Absence of ADH activity; ability for root growth in low oxygen tensions
<i>Phragmites australis</i>	Malate accumulation
<i>Pinus contorta</i>	Slight increases in metabolic rates; increased levels of nitrate reductase
<i>Polygonum amphibium</i>	Absence of ADH activity
<i>Potentilla anserina</i>	Absence of ADH activity; ability for root growth in low oxygen tensions
<i>Ranunculus flammula</i>	Malate accumulation; absence of ADH activity
<i>Salix cinerea</i>	Malate accumulation
<i>Salix fragilis</i>	Oxidizes the rhizosphere
<i>Salix lasiolepis</i>	Ability for root growth in low oxygen tensions
<i>Scirpus maritimus</i>	Ability for root growth in low oxygen tensions
<i>Senecio vulgaris</i>	Slight increases in metabolic rates
<i>Spartina alterniflora</i>	Oxidizes the rhizosphere
<i>Trifolia subterraneum</i>	Low ADH activity
<i>Typha angustifolia</i>	Ability for root growth in low oxygen tensions

- a. *Accumulation of malate.* Malate, a nontoxic metabolite, accumulates in roots of many hydrophytic species (e.g., *Glyceria maxima*, *Nyssa sylvatica* var. *biflora*). Nonwetland species concentrate ethanol, a toxic by-product of anaerobic respiration, when growing in anaerobic soil conditions. Under such conditions, many hydrophytic species produce high concentrations of malate and unchanged concentrations of ethanol, thereby avoiding accumulation of toxic materials. Thus, species having the ability to concentrate malate instead of ethanol in the root system under anaerobic soil conditions are adapted for life in such conditions, while species that concentrate ethanol are poorly adapted for life in anaerobic soil conditions.
- b. *Increased levels of nitrate reductase.* Nitrate reductase is an enzyme involved in conversion of nitrate nitrogen to nitrite nitrogen, an intermediate step in ammonium production. Ammonium ions can accept electrons as a replacement for gaseous oxygen in some species, thereby allowing continued functioning of metabolic processes under low soil oxygen conditions. Species that produce high levels of nitrate reductase (e.g., *Larix laricina*) are adapted for life in anaerobic soil conditions.
- c. *Slight increases in metabolic rates.* Anaerobic soil conditions effect short-term increases in metabolic rates in most species. However, the rate of metabolism often increases only slightly in wetland species, while metabolic rates increase significantly in nonwetland species. Species exhibiting only slight increases in metabolic rates (e.g., *Larix laricina*, *Senecio vulgaris*) are adapted for life in anaerobic soil conditions.
- d. *Rhizosphere oxidation.* Some hydrophytic species (e.g., *Nyssa sylvatica*, *Myrica gale*) are capable of transferring gaseous oxygen from the root system into soil pores immediately surrounding the roots. This adaptation prevents root deterioration and maintains the rates of water and nutrient absorption under anaerobic soil conditions.
- e. *Ability for root growth in low oxygen tensions.* Some species (e.g., *Typha angustifolia*, *Juncus effusus*) have the ability to maintain root growth under soil oxygen concentrations as low as 0.5 percent. Although prolonged (>1 year) exposure to soil oxygen concentrations lower than 0.5 percent generally results in the death of most individuals, this adaptation enables some species to survive extended periods of anaerobic soil conditions.
- f. *Absence of alcohol dehydrogenase (ADH) activity.* ADH is an enzyme associated with increased ethanol production. When the enzyme is not functioning, ethanol production does not increase significantly. Some hydrophytic species (e.g., *Potentilla anserina*, *Polygonum amphibium*) show only slight increases in ADH activity under anaerobic soil conditions. Therefore, ethanol production occurs at a slower rate in species that have low concentrations of ADH.

## Reproductive adaptations

5. Some plant species have reproductive features that enable them to become established and grow in saturated soil conditions. The following have been identified in the technical literature as reproductive adaptations that occur in hydrophytic species:

- a. *Prolonged seed viability.* Some plant species produce seeds that may remain viable for 20 years or more. Exposure of these seeds to atmospheric oxygen usually triggers germination. Thus, species (e.g., *Taxodium distichum*) that grow in very wet areas may produce seeds that germinate only during infrequent periods when the soil is dewatered. *NOTE: Many upland species also have prolonged seed viability, but the trigger mechanism for germination is not exposure to atmospheric oxygen.*
- b. *Seed germination under low oxygen concentrations.* Seeds of some hydrophytic species germinate when submerged. This enables germination during periods of early-spring inundation, which may provide resulting seedlings a competitive advantage over species whose seeds germinate only when exposed to atmospheric oxygen.
- c. *Flood-tolerant seedlings.* Seedlings of some hydrophytic species (e.g., *Fraxinus pennsylvanica*) can survive moderate periods of total or partial inundation. Seedlings of these species have a competitive advantage over seedlings of flood-intolerant species.

# Appendix D

## Hydric Soils

---

1. This appendix consists of two sections. Section 1 describes the basic procedure for digging a soil pit and examining for hydric soil indicators. ~~Section 2 is a list of hydric soils of the United States.~~

### Section I - Procedures for Digging a Soil Pit and Examining for Hydric Soil Indicators

#### Digging a soil pit

2. Apply the following procedure: Circumscribe a 1-ft-diam area, preferably with a tile spade (sharpshooter). Extend the blade vertically downward, cut all roots to the depth of the blade, and lift the soil from the hole. This should provide approximately 16 inches of the soil profile for examination. *NOTE: Observations are usually made immediately below the A-horizon or 10 in. (whichever is shallower).* In many cases, a soil auger or probe can be used instead of a spade. If so, remove successive cores until 16 inches of the soil profile have been removed. Place successive cores in the same sequence as removed from the hole. *NOTE: An auger or probe cannot be effectively used when the soil profile is loose, rocky, or contains a large volume of water (e.g., peraquic moisture regime).*

#### Examining the soil

3. Examine the soil for hydric soils indicators (paragraphs 44 and/or 45 of main text (for sandy soils)). *NOTE: It may not be necessary to conduct a classical characterization (e.g., texture, structure, etc.) of the soil.* Consider the hydric soil indicators in the following sequence (*NOTE: The soil examination can be terminated when a positive hydric soil indicator is found*):

### Nonsandy soils.

- a. Determine whether an organic soil is present (see paragraph 44 of the main text). If so, the soil is hydric.
- b. Determine whether the soil has a histic epipedon (see paragraph 44 of the main text). Record the thickness of the histic epipedon on Data Form 1.
- c. Determine whether sulfidic materials are present by smelling the soil. The presence of a "rotten egg" odor is indicative of hydrogen sulfide, which forms only under extreme reducing conditions associated with prolonged inundation/soil saturation.
- d. Determine whether the soil has an aquic or peraquic moisture regime (see paragraph 44 of the main text). If so, the soil is hydric.
- e. Conduct a ferrous iron test. A colorimetric field test kit has been developed for this purpose. A reducing soil environment is present when the soil extract turns pink upon addition of  $\alpha, \alpha'$ -dipyridyl.
- f. Determine the color(s) of the matrix and any mottles that may be present. Soil color is characterized by three features: hue, value, and chroma. Hue refers to the soil color in relation to red, yellow, blue, etc. Value refers to the lightness of the hue. Chroma refers to the strength of the color (or departure from a neutral of the same lightness). Soil colors are determined by use of a Munsell Color Book (Munsell Color 1975).<sup>1</sup> Each Munsell Color Book has color charts of different hues, ranging from 10R to 5Y. Each page of hue has color chips that show values and chromas. Values are shown in columns down the page from as low as 0 to as much as 8, and chromas are shown in rows across the page from as low as 0 to as much as 8. In writing Munsell color notations, the sequence is always hue, value, and chroma (e.g., 10YR 5/2). To determine soil color, place a small portion of soil<sup>2</sup> in the openings behind the color page and match the soil color to the appropriate color chip. *NOTE: Match the soil to the nearest color chip.* Record on DATA FORM 1 the hue, value, and chroma of the best matching color chip. *CAUTION: Never place soil on the face or front of the color page because this might smear the color chips.* Mineral hydric soils usually have one of the following color features immediately below the A-horizon or 10 inches (whichever is shallower):

- (1) Gleyed soil.

---

<sup>1</sup> See references at the end of the main text.

<sup>2</sup> The soil must be moistened if dry at the time of examination.



Determine whether the soil is gleyed. If the matrix color best fits a color chip found on the gley page of the Munsell soil color charts, the soil is gleyed. This indicates prolonged soil saturation, and the soil is highly reduced.

(2) Nongleyed soil.

- (a) Matrix chroma of 2 or less in mottled soils.<sup>1</sup>
- (b) Matrix chroma of 1 or less in unmottled soils.<sup>1</sup>
- (c) Gray mottles within 10 in. of the soil surface in dark (black) mineral soils (e.g., Mollisols) that do not have characteristics of (a) or (b) above.

Soils having the above color characteristics are normally saturated for significant duration during the growing season. However, hydric soils with significant coloration due to the nature of the parent material (e.g., red soils of the Red River Valley) may not exhibit chromas within the range indicated above. In such cases, this indicator cannot be used.

- g. Determine whether the mapped soil series or phase is on the national list of hydric soils (Section 2). *CAUTION: It will often be necessary to compare the profile description of the soil with that of the soil series or phase indicated on the soil map to verify that the soil was correctly mapped. This is especially true when the soil survey indicates the presence of inclusions or when the soil is mapped as an association of two or more soil series.*
- h. Look for iron and manganese concretions. Look for small (>0.08-in.) aggregates within 3 in. of the soil surface. These are usually black or dark brown and reflect prolonged saturation near the soil surface.

**Sandy soils.**

Look for one of the following indicators in sandy soils:

- a. A layer of organic material above the mineral surface or high organic matter content in the surface horizon (see paragraph 45a of the main text). This is evidenced by a darker color of the surface layer due to organic matter interspersed among or adhering to the sand particles. This is not observed in upland soils due to associated aerobic conditions.
- b. Streaking of subsurface horizons (see paragraph 45b of the main text). Look for dark vertical streaks in subsurface horizons. These streaks

---

<sup>1</sup> The soil must be moistened if dry at the time of examination.

represent organic matter being moved downward in the profile. When soil is rubbed between the fingers, the organic matter will leave a dark stain on the fingers.

- c. Organic pans (see paragraph 45c of the main text). This is evidenced by a thin layer of hardened soil at a depth of 12 to 30 inches below the mineral surface.

## Section 2 - Hydric Soils of the United States

4. The list of hydric soils of the United States (~~Table D1~~) was developed by the National Technical Committee for Hydric Soils (NTCHS), a panel consisting of representatives of the Soil Conservation Service (SCS), Fish and Wildlife Service, Environmental Protection Agency, Corps of Engineers, Auburn University, University of Maryland, and Louisiana State University. Keith Young of SCS was committee chairman.

5. The NTCHS developed the following definition of hydric soils:

~~A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (U.S. Department of Agriculture (USDA) Soil Conservation Service 1985, as amended by the NTCHS in December 1986).~~

USER NOTES: The hydric soil definition, criteria, and hydric soil list (Table D1) published in the 1987 Corps Manual are obsolete. Current [hydric soil definition, criteria, and lists](#) are available over the World Wide Web from the U.S.D.A. Natural Resources Conservation Service (NRCS). (HQUSACE, 27 Aug 91, 6 Mar 92)

### Criteria for hydric soils

6. Based on the above definition, the NTCHS developed the following criteria for hydric soils, and all soils appearing on the list will meet at least one criterion:

- a. ~~All Histosols<sup>1</sup> except Folists;~~
- b. ~~Soils in Aquic suborders, Aquic subgroups, Albolls suborder, Salorthids great group, or Pell great groups of Vertisols that are:~~

---

<sup>1</sup> Soil taxa conform to USDA-SCS (1975).

- (1) Somewhat poorly drained and have water table less than 0.5 ft from the surface for a significant period (usually a week or more) during the growing season, or
- (2) Poorly drained or very poorly drained and have either:
  - (a) A water table at less than 1.0 ft from the surface for a significant period (usually a week or more) during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within 20 inches; or
  - (b) A water table at less than 1.5 ft from the surface for a significant period (usually a week or more) during the growing season if permeability is less than 6.0 in/hr in any layer within 20 inches; or
- c. Soils that are ponded for long duration or very long duration during part of the growing season; or
- d. Soils that are frequently flooded for long duration or very long duration during the growing season.

7. The hydric soils list was formulated by applying the above criteria to soil properties documented in USDA-SCS (1975) and the SCS Soil Interpretation Records (SOI-5).

### Use of the list

8. The list of hydric soils of the United States (Table D1) is arranged alphabetically by soil series. Unless otherwise specified, all phases of a listed soil series are hydric. In some cases, only those phases of a soil series that are ponded, frequently flooded, or otherwise designated as wet are hydric. Such phases are denoted in Table D1 by the following symbols in parentheses after the series name:

~~F~~—flooded

~~FF~~—frequently flooded

~~P~~—ponded

~~W~~—wet

~~D~~—depressional

9. Drained phases of some soil series retain their hydric properties even after drainage. Such phases are identified in Table D1 by the symbol "DR" in parentheses following the soil series name. In such cases, both the drained and un-

~~drained phases of the soil series are hydric.~~ *CAUTION: Be sure that the profile description of the mapping unit conforms to that of the sampled soil. Also, designation of a soil series or phase as hydric does not necessarily mean that the area is a wetland. An area having a hydric soil is a wetland only if positive indicators of hydrophytic vegetation and wetland hydrology are also present.*

# REPORT DOCUMENTATION PAGE

*Form Approved*  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

<b>1. AGENCY USE ONLY (Leave blank)</b>	<b>2. REPORT DATE</b> January 1987	<b>3. REPORT TYPE AND DATES COVERED</b> Final report	
<b>4. TITLE AND SUBTITLE</b> Corps of Engineers Wetlands Delineation Manual			<b>5. FUNDING NUMBERS</b>
<b>6. AUTHOR(S)</b> Environmental Laboratory			
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> U.S. Army Engineer Waterways Experiment Station 3909 Halls Ferry Road, Vicksburg, MS 39180-6199			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> Technical Report Y-87-1
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> U.S. Army Corps of Engineers Washington, DC 20314-1000			<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b>
<b>11. SUPPLEMENTARY NOTES</b> Available from National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.			
<b>12a. DISTRIBUTION/AVAILABILITY STATEMENT</b> Approved for public release; distribution is unlimited.			<b>12b. DISTRIBUTION CODE</b>
<b>13. ABSTRACT (Maximum 200 words)</b>  <p>This document presents approaches and methods for identifying and delineating wetlands for purposes of Section 404 of the Clean Water Act. It is designed to assist users in making wetland determinations using a multiparameter approach. Except where noted in the manual, this approach requires positive evidence of hydrophytic vegetation, hydric soils, and wetland hydrology for a determination that an area is a wetland. The multiparameter approach provides a logical, easily defensible, and technical basis for wetland determinations. Technical guidelines are presented for wetlands, deepwater aquatic habitats, and nonwetlands (uplands).</p> <p>Hydrophytic vegetation, hydric soils, and wetland hydrology are also characterized, and wetland indicators of each parameter are listed.</p> <p>Methods for applying the multiparameter approach are described. Separate sections are devoted to preliminary data gathering and analysis, method selection, routine determinations, comprehensive determinations, atypical situations, and problem areas. Three levels of routine determinations are described, thereby affording significant flexibility in method selection.</p> <p style="text-align: right;">(Continued)</p>			
<b>14. SUBJECT TERMS</b> Delineation                      Methods                      Vegetation Hydrology                      Plant communities              Wetlands Manual                              Soil			<b>15. NUMBER OF PAGES</b> 169
			<b>16. PRICE CODE</b>
<b>17. SECURITY CLASSIFICATION OF REPORT</b> UNCLASSIFIED	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> UNCLASSIFIED	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b>	<b>20. LIMITATION OF ABSTRACT</b>

**13. (Concluded).**

Four appendices provide supporting information. Appendix A is a glossary of technical terms used in the manual. Appendix B contains data forms for use with the various methods. Appendix C, developed by a Federal inter-agency panel, contains a list of all plant species known to occur in wetlands of the region. Each species has been assigned an indicator status that describes its estimated probability of occurring in wetlands of the region. Morphological, physiological, and reproductive adaptations that enable a plant species to occur in wetlands are also described, along with a listing of some species having such adaptations. Appendix D describes the procedure for examining the soil for indicators of hydric soil conditions, and includes a national list of hydric soils developed by the National Technical Committee for Hydric Soils.



## MEMO

**TO** Town Council

**FROM** Shelia Booth, AICP, CPS, Contracted Planner

**THROUGH** James Shockey, AICP, Community Development Director

**DATE** September 3, 2024

**RE** PUBLIC HEARING: Preliminary Plat – 185 Vasquez Road/The Landing (PLN24-005) and Resolution No. 2174, Series 2024

**Property Owner:** Gondola Townhomes, LLC

**Applicant:** Michael Dire, Design Practice Inc.

**Location:** Northwest corner of Vasquez Road and Lions Gate Drive.

**Legal Description:** A parcel of land being part of the Northwest Quarter (NW1/4) of Section 33, Township 1 South, Range 75 West of the 6<sup>th</sup> Principal Meridian, Town of Winter Park and County of Grand, State of Colorado. Also being Lot 2, Cullen Minor Plat according to the plat thereof recorded August 23, 2023, under Reception No. 2023-005301.

**Zoning:**  
D-C (Destination Center)

**Authority:**  
Pursuant to § 5-B-3 of the Winter Park Unified Development Code (the "UDC"), the Planning Commission shall review and recommend or approve applications as shown in Table 5-B-3, Development Review Procedures Summary Table.

**Applicable Provisions of the Unified Development Code (UDC):**  
UDC § 5-D-2 Classifications, C. Major Subdivision. Such subdivision is a subdivision containing five or more lots. Proposed major subdivisions shall require preliminary plat and final plat filing, processing, and approval in accordance with Sec. 5-D-4, Preliminary Plat and Sec. 5-D-5, Final Plat.

**Preliminary Plat Procedure & Approval Criteria:**  
UDC § 5-D-4(E)(7) Town Council Action. After proper public notice, the Town Council shall:

- a. Receive a written recommendation from the Planning Commission regarding the preliminary plat;
- b. Hold a public hearing prior to taking action on the preliminary plat; and
- c. By majority vote, approve, approve with conditions, or deny the preliminary plat by resolution, as outlined in Sec. 5-A-2(C), Procedures.

UDC § 5-D-4-F.: Approval Criteria. The preliminary plat shall be evaluated and may be approved in accordance with the following criteria:

1. Comprehensive Plan. Conformance with the goals, objectives, and policies of the Comprehensive Plan;
2. This UDC. Conformance with the standards of this UDC;
3. State Statutes. Conformance with any applicable Colorado state statutes;

4. Water Supply. The subdivider has provided evidence that provision has been made for a water supply that is sufficient in terms of quantity, quality, and dependability for the type of subdivision proposed;
5. Sewage System. The subdivider has provided evidence that provision has been made for a public sewage system and, if other methods of sewage disposal are proposed, adequate evidence that such system shall comply with State and local laws and regulations;
6. Natural Resources. The subdivider has provided evidence to show that all areas of the proposed subdivision, which may involve soil or topographical conditions presenting hazards or requiring special precautions, as well as the protection of natural resources and unique landforms, have been identified and the proposed uses of these areas are compatible with such conditions;
7. Drainage. The subdivider has provided adequate drainage improvements;
8. Historical or Cultural Resources. Significant cultural, archeologic, natural, and historical resources, and unique landforms have been protected; and
9. Public Services. Necessary services, including fire and police protection, recreation, utilities, open space, and transportation systems are available to serve the proposed subdivision.

**§ 5-B-8 Public Notice Requirements:**

This application has had proper public notification pursuant to § 5-B-8 of the UDC. A Newspaper Publication (PUB) was published in the Middle Park Times on August 14, 2024, providing notification of the hearing and requesting comments. A Surrounding Property Owners Mailing (ML) was sent to property owners within 300' of the property on August 9, 2024. A Property Posting (PO) was also posted on August 12, 2024.

As of August 28, 2024, staff has received one comment expressing specific concerns with the development. The letter can be found as an attachment to this report.

**Project Overview:**

The proposed project is classified as "Single Family Attached Dwelling/Townhouse" land use and consists of four (4) three-story townhome buildings, arranged as two buildings facing the parallel street sides (Lions Gate Drive & Vasquez Road) and two facing the curve of Vasquez Creek along the western rear property. A connecting 26-foot fire lane runs through the middle of the site providing an alley-like access for circulation, garage access and site parking. The project is located immediately west of Town Hall and is anticipated to establish desired residential density to activate the downtown corridor following the D-C zoning district, 2020 Downtown Master Plan, and 2019 Imagine Winter Park Comprehensive Plan strategic goals.

The project's unit breakdown consists of 18 total units provided by Building's A (5 units/12,203 GFA), B (5 units/11,894 GFA), C (4 units/9,202 GFA), and D (4 units/9,806 GFA), each having a combination of 4 or 5-bedrooms and a tuck-under garage for a total of 43,105 GFA.

**Variances:**

For the Major Site Plan application (PLN23-095), JVA noted the development requires a variance for stormwater retention, per Section(s) 6.2.5.X and 8.1 of the Town's Standard's and Specifications for Design and Construction. The applicant submitted a variance request on July 2, 2024, with the 2<sup>nd</sup> Review but will need to be resubmitted following all the requirements in Chapter 8 of the Standards and include an engineer's stamp.

- Prior to final approval of the major site plan, plat and construction plans, the applicant shall submit and receive approval of a variance request for stormwater retention, per Section(s)



6.2.5.X and 8.1 of the Town's Standard's and Specifications for Design and Construction meeting all the requirements of Chapter 8, Town's Standards and Specification.

For the Major Site Plan application (PLN23-095), CPS planning staff noted the development requires a variance for deficiencies of landscape plantings within the perimeter landscape bufferyards, per UDC § 3-1-2-C-3. The applicant submitted a variance request on July 2, 2024, indicating the maximum plantings they can provide based on the unusual site geometry and boarding 30-foot riparian buffer which excludes new plantings in the setback. Additionally, the applicant has enhanced the site with a public realm sculpture amenity located within the project's open space between Buildings A & D. Planning accepted the variance justifications on July 17, 2024, with the project's 3<sup>rd</sup> Review.

**Density:**

Satisfactory. The maximum density per D-C zoning is 28. The project proposes 22 Du/Ac.

**Access:**

Satisfactory. Access to the subdivision will be provided by a paved private roadway (Landing Lane) which connects at the northeast property corner with the intersection of Lions Gate Drive and Cooper Creek Way and connects at the southeast property corner to Vasquez Road. The northern access will be a fully constructed intersection; however, the project's property line divides the southern portion of the paving within the project's Preliminary Plat and Site Plan within a 15-foot Access and Utility Easement (Rec. No. 2023-05300), and the northern paving within the adjacent 15-foot town right-of-way.

During the project's review, it was determined that the Downtown Master Plan indicates the Town's intent for a future roundabout at Lion's Gate Drive and Vasquez Road which may remove residential sidewalks and decrease front yard areas facing the corner. The applicant has provided a plat note on Preliminary Plat (Note 17) indicating this condition for future lot owners.

**Transit:**

Satisfactory: The Downtown Master Plan indicates future transit facilities planned on the south side of Vasquez Road, east of Lions Gate Drive, closer to Main Street/Highway 40. These improvements are outside of the project's scope. No additional transit infrastructure is required for this project.

**Pedestrian Access:**

Satisfactory. Existing curb and sidewalks which are part of Lions Gate Drive and Vasquez Road rights-of-way, immediate adjacent and outside of the project's property line, will remain for pedestrian circulation. Proposed units that face these streets will connect private sidewalks to the street sidewalks.

**Parks, Trails, and Open Space**

Satisfactory. The Downtown Master Plan indicates a ski transit stop on the south side of Vasquez Road, east of Lions Gate Drive with connecting pedestrian trail southward. These improvements are outside of the project's scope. The applicant will be required to comply with Section 4-B-3, Land Dedication.

**Construction Plans:** ([View Construction Plans here.](#))

Not Satisfactory. The applicant resubmitted the Construction Plans for the proposed development (current date 2024-08-12) including stormwater management, erosion control, demo plan, overall grading and grading details, utility plan and profiles, construction details, and parking plan. The

review agencies have not had the opportunity to review the plans and are required to submit comments by August 28, 2024.

- Applicant shall address all outstanding comments from review agencies for the construction plans dated July 29, 2024 prior to final approval of construction documents by the Town.
- Revise sheet C-6.0 in the construction plans to indicate the design outcome of the project's transformer condition and provide accurate parking counts.

**Erosion Control / Drainage Plan / Drainage Report:**

Partially satisfactory. The Erosion Control Plan, Grading Plan and Drainage Report have been reviewed and found compliant with UDC § 3-F-3.

As stated above under "Variance", the applicant requested an Administrative Variance from the requirement of installing on-site detention of stormwater events with the intent to discharge on-site storm flows into Vasquez Creek. The Town Engineer is anticipated to accept the request.

- Prior to final approval of the site plan, plat and construction plans, JVA shall approve the variance request, waiving the requirement for stormwater retention, per Section(s) 6.2.5.X and 8.1 of the Town's Standard's and Specifications for Design and Construction.

**Snow Storage:**

Satisfactory. The Site Plan and Snow Storage Table have been reviewed for compliance with the UDC § 3-H-5(A), Snow Storage, and is found to be compliant. Based on impervious surface data, a minimum area of 25% (3,822 SF) is required. The proposed snow storage provided is 25% (3,822 SF) and is adequate to meet the needs of new and existing paving areas onsite. The proposed snow storage locations are appropriate throughout the site adjacent to parking and within gravel area next to unit driveways.

**5% Land Dedication:**

Satisfactory: Section 4-B-3 of the UDC requires either the dedication, reservation or conveyance of areas suitable for public purposes such as parks, flood channels, scenic areas and greenbelts of five percent (5%) of the total area of the subdivision, or a payment in lieu of such dedication. Since there is no land that the Town desires for parks and open space, a fee in lieu shall be paid to the Town in accordance with § 4-B-6, Fee-in-Lieu.

**School Impact Fee:**

Satisfactory: Dedication of a school site was not deemed reasonably necessary for this project; therefore, it is subject to a fee-in-lieu of dedication. Section 4-B-6 of the UDC states the payment of cash by the applicant is subject to the land calculations rates of Table 4-B-3, School Land Dedication Calculations. Resolution 2050, Series 2023 set the price per unit. The school impact fees shall be payable prior to final plat recordation.

**Development Improvements Agreement (DIA):**

Not Satisfactory: The [Development Improvement Agreement](#) and the [Engineers' Estimate of Probable Cost \(EEOPC\)](#) were submitted and are currently under review. The DIA and EEOPC shall include improvements (water, sewer, roadway, landscaping, drainage/erosion control, etc.) associated with the proposed project guaranteed (120%). The DIA shall be approved prior to site disturbance.

**Review Agency Comments:** (View agency comment letters here.)

- **U.S. Army Corps of Engineers**  
On March 18, 2024, Ashley Emery, Northwest Colorado Branch, Albuquerque District, noted that the initial footprint (sidewalks) of the project intersected with potential waters of the United States. The applicant has revised the initial design to remove the sidewalks from this area. No additional comments were received from the Army Corps with subsequent resubmittal documents.
- **CDOT**  
On July 8, 2024, Brian Killian, Region 3 Access Program Manager stated CDOT has no comments regarding this application.
- **Comcast**  
On July 9, 2024, Chad Slagle, Manager 1 of Construction – Colorado Mountains stated Comcast does not have additional comments for the application.
- **Colorado Parks and Wildlife**  
On July 11, 2024, Clayton McCall, District Wildlife manager submitted a letter providing guidance on wetland and riparian habitat, moose, black bears, avian species, fencing, non-native plants and weeds, lighting and noise, and human-wildlife conflicts.
- **East Grand Fire Protection District No. 4**  
On March 14, 2024, Assistant Fire Chief/Fire Marshal, Dennis Soles, provided a letter stating suggestions for compliance.
  - Applicant shall address to EGFPD's satisfaction, all comments in the March 14, 2024, letter.
- **Grand County Water and Sanitation District #1 (GCWSD)**  
On July 23, 2024, Cooper Karsh, Senior Engineer at JVA representing the District indicated a need for updated, legible notes on the preliminary plat. The construction plans should be modified to show a requirement to cap the abandoned sewer line, additional profiles for the proposed water main, and inclusion of gate valves at specific locations. They also indicated they were agreeable to the separation encroachment between the main power line and sanitary sewer line.
  - Applicant shall address to GCWSD's satisfaction, all comments in the July 23, 2024, letter.
- **JVA**  
On July 23, 2024, Cooper Karsh, Senior Engineer at JVA identified the following issues: 1) a need to revised the grading to better utilize existing storm inlets, 2) a need for an agreement with the Town to address snow shoveling for private sidewalks in the Town right-of-way, 3) an updated EEOPC and 4) updated construction plans addressing sawcuts in Vasquez and Lions Gate.
  - Applicant shall address to JVA's satisfaction, all comments in the July 23, 2024, letter.

- **Mountain Parks Electric, Inc.**

On July 18, 2024, Jean Johnston, Right of Way Specialist, stated a requirement for a variance from GCWSD to address utility and sewer separation, a pending transformer screening standard that will be applied to the development, and documentation of a plat easement.

➤ Applicant shall address to MPEI's satisfaction, all comments in the July 18, 2024, email.

- **Xcel Energy**

On August 14, 2024, Julie Gittins, Design Planner, stated Xcel has not comments since the development will not utilize gas service.

As previously stated, there are outstanding comments from review agencies. Updated documents were distributed for referral agency review on August 12<sup>th</sup> with comments due on August 28<sup>th</sup>. Review requests were sent to the following agencies, but comments have not yet been received.

- East Grand School District
- Grand County Assessor
- Lumen

**Planning Commission Action:**

The Planning Commission recommended approval, with the following conditions, at its regular meeting on August 27, 2024.

1. Prior to final approval of the major site plan, plat and construction plans, JVA shall approve the variance for stormwater retention, per Section(s) 6.2.5.X and 8.1 of the Town's Standard's and Specifications for Design and Construction.
2. Applicant shall address all outstanding comments from review agencies for the construction plans dated July 29, 2024, prior to final approval of construction documents by the Town.
3. Revise sheet C-6.0 in the construction plans to indicate the design outcome of the project's transformer condition and provide accurate parking counts.
4. The applicant shall address to the Town's satisfaction, the redline changes dated August 22, 2024, on the landscape plan, site plan and preliminary plat.
5. Applicant shall address to EGFPD's satisfaction, all comments in the March 14, 2024, letter.
6. Applicant shall address to GCWSD's satisfaction, all comments in the July 23, 2024, letter.
7. Applicant shall address to JVA's satisfaction, all comments in the July 23, 2024, letter.
8. Applicant shall address to MPEI's satisfaction, all comments in the July 18, 2024, email.
9. Add the following note to the site plan, preliminary plat and in the homeowner's association documents: No hot tubs are allowed on the first floor for Buildings A and D adjacent to Lions Gate Road and Vasquez Road.
10. Add the following note to the preliminary plat and the homeowner's association documents: No improvements are allowed within the 30-foot Water Quality and Riparian Buffer including benches, trails or landscaping.

**Staff Recommendation:**

Staff finds the applicant has submitted all required materials within the timeframe required and all other materials comply with the conditions of § 5-D-4 of the UDC and conform to all applicable policies and regulations of the UDC. Staff therefore recommends the Town Council adopt Resolution No. 2175, a resolution of the Town of Winter Park, Colorado approving a preliminary plat for property known as The Landing – Townhomes subject to the following conditions:

1. Prior to final approval of the major site plan, plat and construction plans, JVA shall approve the variance for stormwater retention, per Section(s) 6.2.5.X and 8.1 of the Town's Standard's and Specifications for Design and Construction.
2. Applicant shall address all outstanding comments from review agencies for the construction plans dated July 29, 2024, prior to final approval of construction documents by the Town.
3. Revise sheet C-6.0 in the construction plans to indicate the design outcome of the project's transformer condition and provide accurate parking counts.
4. The applicant shall address to the Town's satisfaction, the redline changes dated August 22, 2024, on the landscape plan, site plan and preliminary plat.
5. Applicant shall address to EGFPD's satisfaction, all comments in the March 14, 2024, letter.
6. Applicant shall address to GCWSD's satisfaction, all comments in the July 23, 2024, letter.
7. Applicant shall address to JVA's satisfaction, all comments in the July 23, 2024, letter.
8. Applicant shall address to MPEI's satisfaction, all comments in the July 18, 2024, email.
9. Add the following note to the site plan, preliminary plat and in the homeowner's association documents: No hot tubs are allowed on the first floor for Buildings A and D adjacent to Lions Gate Road and Vasquez Road.
10. Add the following note to the preliminary plat and the homeowner's association documents: No improvements are allowed within the 30-foot Water Quality and Riparian Buffer including benches, trails or landscaping.

**Sample Motion for Approval:**

I move to approve Resolution No. 2174, Series 2024, a Resolution of the Town Council of the Town of Winter Park approving the Preliminary Plat for The Landing – Townhomes as it was determined the application is in conformance with § 5-D-4 of the UDC with the conditions outlined in the staff recommendation.

**Sample Motion for Denial:**

I move to deny Resolution No. 2174, Series 2024 and the Preliminary Plat for The Landing – Townhomes as it was determined the application is NOT in conformance with § 5-D-4 of the UDC ***[insert explanation supported by the evidence here]***.

TOWN OF WINTER PARK  
RESOLUTION NO. 2174  
SERIES OF 2024

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF WINTER  
PARK APPROVING THE PRELIMINARY PLAT FOR 185 VASQUEZ ROAD,  
THE LANDING TOWNHOMES – LOT 2, CULLEN MINOR PLAT

WHEREAS, the Gondola Townhomes, LLC ("Applicant") is the current owner of certain real property legally described in Exhibit A (the "Property");

WHEREAS, on February 12, 2024, Applicant filed an application for approval of a Preliminary Plat for the Property, known as The Landing Townhomes (the "Preliminary Plat");

WHEREAS, after a properly-noticed public meeting on August 27, 2024, the Planning Commission recommended approval of the Preliminary Plat;

WHEREAS, the Town staff has reviewed the Preliminary Plat and conditionally recommends approval to the Town Council;

WHEREAS, at a properly-noticed public meeting on September 3, 2024, the Town Council considered the Preliminary Plat; and

WHEREAS, after considering the recommendation from the Planning Commission and Town staff, and any public comment, the Town Council finds and determines as provided below.

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Winter Park, Colorado as follows:

1. Findings. The Town Council hereby finds and determines that the Preliminary Plat meets all of the applicable criteria set forth in Title 7, the Unified Development Code (the "UDC").
2. Decision. Based on the foregoing findings, the Town Council hereby approves the Preliminary Plat for The Landing Townhomes, subject to the following conditions:
  - a. Prior to final approval of the major site plan, plat and construction plans, JVA shall approve the variance for stormwater retention, per Section(s) 6.2.5.X and 8.1 of the Town's Standard's and Specifications for Design and Construction.
  - b. Applicant shall address all outstanding comments from review agencies for the construction plans dated July 29, 2024, prior to final approval of construction documents by the Town.
  - c. Applicant shall revise sheet C-6.0 in the construction plans to indicate the design outcome of the project's transformer condition and provide accurate parking counts.
  - d. Applicant shall address to the Town's satisfaction, the redline changes dated August 22, 2024, on the landscape plan, site plan and preliminary plat.
  - e. Applicant shall address to East Grand Fire Protection District No. 4's satisfaction, all comments in the March 14, 2024, letter.

- f. Applicant shall address to Grand County Water and Sanitation District #1's satisfaction, all comments in the July 23, 2024, letter.
- g. Applicant shall address to JVA's satisfaction, all comments in the July 23, 2024, letter.
- h. Applicant shall address to Mountain Parks Electric, Inc.'s satisfaction, all comments in the July 18, 2024, email.
- i. Applicant shall add the following note to the site plan, Preliminary Plat and in the homeowner's association documents: No hot tubs are allowed on the first floor for Buildings A and D adjacent to Lions Gate Road and Vasquez Road.
- j. Applicant shall add the following note to the Preliminary Plat and the homeowner's association documents: No improvements are allowed within the 30-foot water quality and riparian buffer including benches, trails or landscaping.

PASSED, ADOPTED AND APPROVED this 3<sup>rd</sup> day of September 2024.

TOWN OF WINTER PARK

---

Nick Kutrumbos, Mayor

ATTEST:

---

Danielle Jardee, Town Clerk

**EXHIBIT A  
LEGAL DESCRIPTION**

**Lot 2, Cullen Minor Plat, Recorded August 23, 2023  
under Reception No. 2023-005301,  
County of Grand,  
State of Colorado**





P.O. Box 3327  
50 Vasquez Road, Winter Park, CO, 80482  
Phone: 970-726-8081 Fax: 970-726-8084  
wpgov.com

## Land Use Review Application Form

### Contact Information

*Property Owner*

Gondola Townhomes, LLC

*Representative (i.e., the point of contact)*

Michael Dire

*Company*

Gondola Townhomes, LLC

*Company*

Design Practice Inc

*Phone #*

303-915-7203

*Email Address*

jessetruman@gmail.com

*Phone #*

303-561-3000

*Email Address*

mdire@designpracticedenver.com

*Billing Contact (where invoices should be directed)*

Jesse Truman

*Company*

Gondola Townhomes, LLC

*Phone #*

303-915-7203

*Email Address*

jessetruman@gmail.com

*Mailing Address*

9557 Paradise Lane

*City*

Broomfield

*State*

CO

*Zip*

80020

### Site Description

*Site Address*

185 Vasquez Road, Winter Park, CO

*Parcel Identification Number(s) (PIN)*

158733236001

*Existing Zone Classification*

D-C

*Site Area (acres and sq. ft.)*

1.247 acres / 54,313 sf

# Project Description

Project Name

The Landing Townhomes

Brief description of the proposed project

19 for sale townhomes - units will consist of a 2 car tuck-under garage with ground floor entries. Level 2 will be general living spaces and Level 3 will be the bedroom level.

## Required Documents

For an application to be considered complete and for Planning Division staff to begin review and schedule any applicable public hearings, this Land Use Review Application Form must be fully completed and all required attachments included. Staff will review the application for completeness and notify the representative and/or owner whether the application has been deemed complete.


## Certifications

### REPRESENTATIVE CERTIFICATION

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative

Date

Michael Dine 

10/06/2023

### OWNER CERTIFICATION

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I authorize the representative listed on this application, if any, to communicate directly with Town officials and to submit documentation and information regarding this application on my behalf.

Owner

Date

Jesse Truman 

10.06.2023

In addition to the base fees the applicant is required to pay the cost of any referral agency reviews, public notices, hearings, and record keeping as outlined within § 5-B-6, Application Fees, in the UDC.

# DESIGN PRACTICE INC

## **Major Site Planning Application Project Narrative**

Provided is a written narrative for a proposed development at 185 Vasquez on the intersection of Vasquez Rd and Lions Gate Dr. The lot is Zoned D-C and currently consists of approximately 54,313 SF 1.25 acres. The lot is adjacent to a single-family home on the north and several multifamily units on the southwest side. The proposal calls for a 19 unit for sale, townhome project. Units would consist of a tucked under 2 car garages and ground floor entry area. Level 2 would be a general living space and level 3 would be the bedroom level.

**Project Name:** The Landings

**Project Address:** 185 Vasquez Road

### **Owner**

Jesse Truman  
Gondola Townhomes, LLC  
9557 Paradise Lane  
Broomfield, CO 80020  
Phone: 303-915-7203  
Email: [jessetruman@gmail.com](mailto:jessetruman@gmail.com)

### **Architect / Applicant**

Michael Dire  
Design Practice Inc  
2842 W 44<sup>th</sup> Ave  
Denver, CO 80211  
Phone: 303-561-3000  
Email: [mdire@designpracticedenver.com](mailto:mdire@designpracticedenver.com)

### **Civil Engineer**

Chad Fabre, PE  
Fabre Engineering Inc  
2063 Pinon Place  
Erie, CO 80516  
Phone: 720-903-0048  
Email: [cfabre@fabreeng.com](mailto:cfabre@fabreeng.com)

### **Surveyor**

Richard Gabriel  
Power Surveying Company Inc.  
6911 Broadway  
Denver, CO 80221  
Phone: 303-702-1617  
Email: [rgabriel@powersurveying.com](mailto:rgabriel@powersurveying.com)



**Legal Description**

A parcel of land being part of the Northwest Quarter (NW 1/4) of Section 33, Township 1 South, Range 75 West of the 6<sup>th</sup> Principal Meridian, Town of Winter Park and County of Grand, State of Colorado.

Lot 2, Cullen Minor Plat according to the plat thereof Recorded August 23, under Reception No. 2023-005301, County of Grand, State of Colorado. Containing 54,313 square feet or 1.247 acres more or less.

**Zone District**

D-C Destination Center

- Allowable Density – Single Family Attached – 28/Units per acre
- Max Height – 55 ft
- Building Coverage – 85% max
- Off Street Parking - 2 spaces per 2 or more bedroom units

**Zone District**

54, 313 SF

1.25 Acres

**Project Description**

Proposed Uses: Residential / Multi-Family

Number of Dwelling Units: 19

Number of Buildings: 4

Number of Stories: 3

Number of Bedrooms: 4-5

Total Gross square footage of enclosed space: 54,532 SF

Number of off-street parking spaces: 42

**Building Unit Breakdown**

Building 'A' - (5) Townhouses – (2) Type '1' units, (3) Type '2' units

Building 'B' - (6) Townhouses – (2) Type '1' units, (4) Type '2' units

Building 'C' - (4) Townhouses – (2) Type '1' units, (2) Type '2' units

Building 'D' - (4) Townhouses – (2) Type '1' units, (2) Type '2' units

Unit Type '1':

- Total Living Conditioned – 2429 SF
- Exterior Balconies/Patio – 406 SF
- 2-car Tuck under Garage – 433 SF

Unit Type '2':

- Total Living Conditioned – 2436 SF
- Exterior Balconies/Patio – 384 SF
- 2-car Tuck under Garage – 440 SF

**Materials:**

The siding material palette to be used on the project includes vertical composite T&G siding, fiber cement board and batten siding, stucco and natural stone veneer. Exposed laminated wood beams, Timber columns. Fiber Cement Trim around windows and doors. Aluminum clad wood windows. Painted steel balcony railings. Roofing material is to be a 30 year dimensional shingle product.

Refer to the material board Exhibit included with the Site Planning drawing package.

Respectfully,

A handwritten signature in blue ink, appearing to read "MD", is centered on a light blue rectangular background.

Michael Dire, AIA, LEED AP  
DESIGN PRACTICE, INC

# PRELIMINARY PLAT THE LANDING - TOWNHOMES

A PARCEL OF LAND BEING A PART OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 33, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF WINTER PARK AND COUNTY OF GRAND, STATE OF COLORADO  
SHEET 1 OF 2

**DEDICATION CERTIFICATE:**

KNOW ALL MEN BY THESE PRESENTS: THAT GONDOLA TOWNHOMES, LLC A LIMITED LIABILITY COMPANY IS THE OWNER OF THAT REAL PROPERTY SITUATE IN THE TOWN OF WINTER PARK, GRAND COUNTY, COLORADO, MORE FULLY DESCRIBED AS FOLLOWS:

LOT 2, CULLEN MINOR PLAT ACCORDING TO THE PLAT THEREOF RECORDED AUGUST 23, 2023 UNDER RECEPTION NO. 2023-005301

THAT IT HAS CAUSED SAID REAL PROPERTY TO BE LAID OUT AND SURVEYED AS THE LANDING - TOWNHOMES, AND DOES HEREBY DEDICATE AND SET APART ALL THE STREETS, ALLEYS AND OTHER PUBLIC WAYS AND PLACES SHOWN ON THE ACCOMPANYING PLAT FOR THE USE OF THE PUBLIC FOREVER, AND DOES HEREBY GRANT TO THE TOWN OF WINTER PARK USE OF THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE INDICATED AS EASEMENTS ON THE ACCOMPANYING PLAT AS PERMANENT PUBLIC EASEMENTS.

IN WITNESS WHEREOF, GONDOLA TOWNHOMES, LLC, A COLORADO LIMITED LIABILITY COMPANY HAS CAUSED ITS NAME TO BE HEREUNDER SUBSCRIBED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

GONDOLA TOWNHOMES, LLC, A COLORADO LIMITED LIABILITY COMPANY

BY: \_\_\_\_\_, AS

STATE OF \_\_\_\_\_ )  
  ) SS  
COUNTY OF \_\_\_\_\_ )

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, BY \_\_\_\_\_, OF GONDOLA TOWNHOMES, LLC, A COLORADO LIMITED LIABILITY COMPANY.

WITNESS MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

**ESTOPPEL CERTIFICATE:**

WE, GONDOLA TOWNHOMES, LLC, A COLORADO LIMITED LIABILITY COMPANY, THE OWNER OF THE PROPERTY INCLUDED IN THE LANDING - TOWNHOMES, CERTIFY THAT THIS FINAL PLAT AND THE SUBDIVISION IMPROVEMENT AGREEMENT TO BE EXECUTED IN CONNECTION WITH THIS FINAL PLAT, IF REQUIRED, EMBODY THE ENTIRE AGREEMENT BETWEEN THE OWNER OF SAID PROPERTY AND THE TOWN OF WINTER PARK WITH REGARD TO THE SUBDIVISION OF SAID PROPERTY, AND THAT THE OWNER IS NOT RELYING UPON ANY OTHER REPRESENTATIONS, WARRANTIES, UNDERSTANDINGS, OR AGREEMENTS IN CONNECTION WITH ANY MATTER ENCOMPASSED BY THIS PLAT OR THE SUBDIVISION IMPROVEMENT AGREEMENT IF REQUIRED, EXCEPT AS SET FORTH ON THIS PLAT OR IN SAID SUBDIVISION IMPROVEMENT AGREEMENT.

GONDOLA TOWNHOMES, LLC, A COLORADO LIMITED LIABILITY COMPANY

BY: \_\_\_\_\_, AS

**CERTIFICATE OF LIEN HOLDER/DEED OF TRUST HOLDER:**

THE UNDERSIGNED HEREBY CERTIFIES THAT IT IS A LAWFUL LIENHOLDER/DEED OF TRUST HOLDER AS TO THE REAL PROPERTY DESCRIBED IN THIS FINAL PLAT, DOES HEREBY CERTIFY THAT IT ACCEPTS THE CONDITIONS AND RESTRICTIONS SET FORTH IN THIS FINAL PLAT, AND DOES HEREBY SUBORDINATE ITS INTERESTS IN THE PROPERTY DESCRIBED IN THIS FINAL PLAT TO THE FEE SIMPLE DEDICATIONS AND GRANTS OF EASEMENTS (IF ANY) HEREBY PROVIDED TO THE TOWN OF WINTER PARK.

GONDOLA TOWNHOMES, LLC, A LIMITED LIABILITY COMPANY

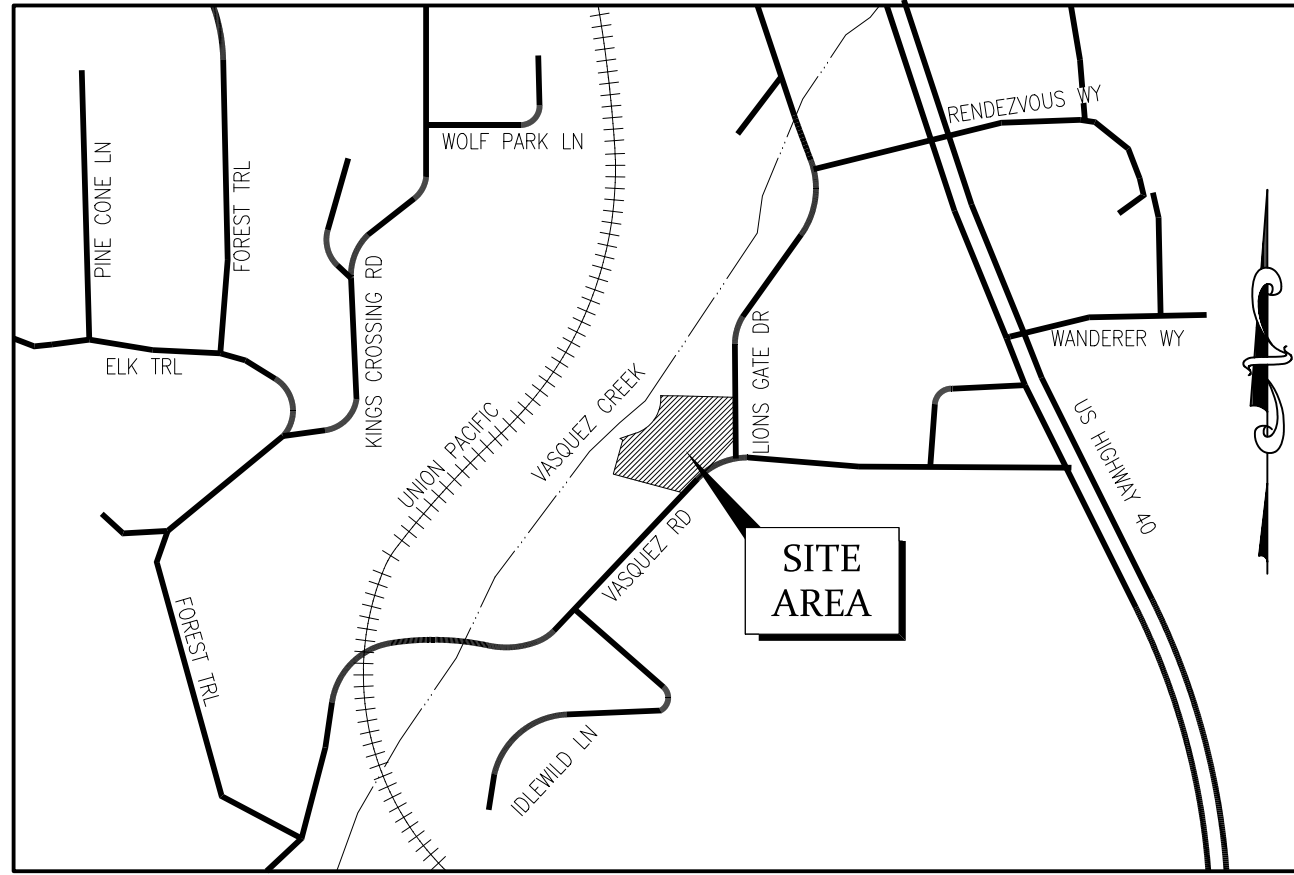
BY: \_\_\_\_\_, AS

STATE OF \_\_\_\_\_ )  
  ) SS  
COUNTY OF \_\_\_\_\_ )

THE FOREGOING CERTIFICATE OF LIENHOLDER/DEED OF TRUST HOLDER WAS ACKNOWLEDGED BEFORE ME THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, BY \_\_\_\_\_, AS.

WITNESS MY HAND AND SEAL:

\_\_\_\_\_  
NOTARY PUBLIC  
MY COMMISSION EXPIRES: \_\_\_\_\_



VICINITY MAP  
SCALE 1"=500'

SUBDIVIDER: GONDOLA TOWNHOMES, LLC  
                  9557 PARADISE LN.  
                  BROOMFIELD, CO 80020  
LAND SURVEYOR: POWER SURVEYING COMPANY, INC.  
                  6911 BROADWAY  
                  DENVER, CO 80221  
                  (303)-702-1617

DESIGNER/ENGINEER: FABRE ENGINEERING INC.  
                              2063 PINON PL.  
                              ERIE, CO 80516  
                              (720)-903-0048

**PLANNER'S CERTIFICATE:**

I, \_\_\_\_\_, BEING A QUALIFIED PROFESSIONAL ENGINEER OR PLANNER, CERTIFY THAT THIS PLAT OF THE LANDING - TOWNHOMES HAS BEEN ENGINEERED, DESIGNED AND PLANNED IN ACCORDANCE WITH ALL APPLICABLE DESIGN STANDARDS AND OTHER REQUIREMENTS OF THE TOWN OF WINTER PARK SUBDIVISION REGULATIONS.

**MAYOR'S CERTIFICATE:**

APPROVED AND ALL PUBLIC DEDICATIONS ACCEPTED THIS DAY OF \_\_\_\_\_, 20\_\_\_\_, BY THE TOWN COUNCIL OF THE TOWN OF WINTER PARK SITUATED IN GRAND COUNTY, COLORADO. ACCEPTANCE OF THIS PLATTED SUBDIVISION BY THE TOWN OF WINTER PARK DOES NOT CONSTITUTE AN ACCEPTANCE OF THE ROADS AND RIGHTS-OF-WAY REFLECTED HEREON FOR MAINTENANCE BY SAID TOWN, UNTIL SUCH ROADS AND RIGHTS OF WAY MEET TOWN SPECIFICATIONS AND ARE SPECIFICALLY ACCEPTED FOR MAINTENANCE BY RESOLUTION OF THE TOWN COUNCIL, THE MAINTENANCE, CONSTRUCTION, AND ALL OTHER MATTERS PERTAINING TO OR AFFECTING SAID ROADS AND RIGHTS-OF-WAY ARE THE SOLE RESPONSIBILITY OF THE OWNERS OF THE LAND EMBRACED WITHIN THE SUBDIVISION. THIS APPROVAL DOES NOT GUARANTEE THAT THE SIZE OR SOIL CONDITIONS OF ANY LOT SHOWN HEREON ARE SUCH THAT A BUILDING PERMIT MAY BE ISSUED.

\_\_\_\_\_  
NICK KUTRUMBOS, MAYOR

ATTEST:

\_\_\_\_\_  
DANIELLE JARDEE, TOWN CLERK

**PLANNING COMMISSION CERTIFICATE:**

APPROVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_ BY THE TOWN OF WINTER PARK PLANNING COMMISSION, WINTER PARK, COLORADO.

\_\_\_\_\_  
DAVID BARKER, CHAIRPERSON

**OUTLOT TABLE**

NAME	AREA	OWNERSHIP	MAINTENANCE
OUTLOT A	±9,108	H.O.A.	H.O.A.
OUTLOT B	±23,197	H.O.A.	H.O.A.

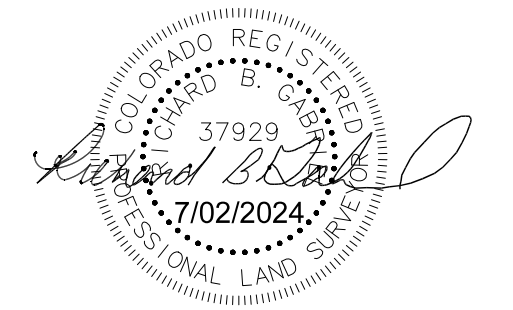
**NOTES:**

1. THE FOLLOWING IS A PARTIAL LIST OF DOCUMENTS UTILIZED IN THE PREPARATION OF THIS SURVEY:
  - A. GRAND COUNTY RECORDS, SECOND AMENDED FINAL PLAT, LOT 1, TEVERBAUGH-HEATON MINOR SUBDIVISION AND CULLEN SUBDIVISION EXEMPTION, RECEPTION NO. 2002-13714.
  - B. AMENDED FINAL PLAT LOTS 1 AND 2, TEVERBAUGH-HEATON MINOR SUBDIVISION, RECEPTION NO. 2001012302.
  - C. GRAND COUNTY SURVEYOR RECORDS, UNTITLED RAILROAD MAP.
2. POWER SURVEYING COMPANY, INC. RELIED UPON TITLE COMMITMENT FROM OLD REPUBLIC NATIONAL TITLE COMPANY ORDER NO. J60018033 WITH AN EFFECTIVE DATE OF SEPTEMBER 1, 2023 AT 2:47 P.M. FOR THE LEGAL DESCRIPTION, RIGHTS OF WAY AND EASEMENTS.
3. BASIS OF BEARINGS: THE SOUTHEASTERLY LINE OF LOT 2, CULLEN MINOR PLAT IS ASSUMED TO BEAR SOUTH 41°45'47" WEST, A DISTANCE OF 125.01 FEET BETWEEN A FOUND #5 REBAR WITH 1.75" SQUARE COLLAR AT THE SOUTHWESTERLY END, AND A FOUND 1.5" ILLEGIBLE ALUMINUM CAP AT THE NORTHEASTERLY END AS MEASURED AND SHOWN HEREON.
4. SUBJECT PROPERTY IS CURRENTLY ZONED TOWN OF WINTER PARK "DESTINATION CENTER / D-C".
5. WET LANDS DELINEATION FLAGS WERE FOUND ON THE SUBJECT PROPERTY AND ARE SHOWN HEREON AND PER THE WET LAND DELINEATION REPORT FOR 185 VAXQUEZ DATED JULY 18, 2023 FROM APPLIED ECHOHYDRO PROVIDED BY THE CLIENT.
6. IMPROVEMENTS EXIST IN THE SUBJECT PROPERTY WHICH ARE NOT DEPICTED HEREIN PER TOWN OF WINTER PARK REQUEST.
7. FLOODPLAIN INFORMATION DEPICTED HEREIN WAS OBTAINED FROM FLOOD INSURANCE RATE MAP (FIRM) NO. 08046C0991C, EFFECTIVE DATE OF 01-02-2008, TOGETHER WITH THE ACCOMPANYING FIRMETTE.
8. NOTICE: ACCORDING TO COLORADO LAW, YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF CERTIFICATION SHOWN HEREON.
9. PROJECT BENCHMARK: NGS BENCHMARK "N 139" IS A BENCHMARK DISK IN A CONCRETE POST LOCATED 51' WEST OF THE CENTERLINE OF U.S. HIGHWAY 40, 98' EAST OF THE CENTERLINE OF THE RAILROAD TRACKS, STAMPED "N 139 1934" PUBLISHED NAVD 88 ELEVATION = 8438.43 U.S. SURVEY FEET
  - A) SITE BENCHMARK #1 - A FOUND 2" ALUMINUM CAP STAMPED PLS 11415 FOUND AT THE NORTHEASTERLY CORNER OF OUTLOT B - NAVD88 ELEVATION IS 8814.78.
  - B) SITE BENCHMARK #2 - FOUND 1.5" ALUMINUM CAP STAMPED PLS 31942 LOCATED AT THE MOST SOUTHEASTERLY CORNER OF OUTLOT B - NAVD88 ELEVATION IS 8822.01.
10. DRY UTILITY EASEMENTS ("DUE") ARE HEREBY DEDICATED TO THE TOWN OF WINTER PARK AS SHOWN HEREON FOR THE INSTALLATION, MAINTENANCE, AND REPLACEMENT OF ELECTRIC, GAS, TELEVISION CABLE, TELECOMMUNICATIONS FACILITIES AND ALL SIMILAR PURPOSES. NO STRUCTURE SHALL BE PLACED OR CONSTRUCTED WITHIN ANY DUE EXCEPT AS NECESSARY FOR UTILITY OPERATIONS WHEN EXPLICITLY APPROVED BY THE TOWN.
11. TO ALLOW FOR ADEQUATE SNOW REMOVAL, NO STRUCTURE, INCLUDING UTILITY FACILITIES, SHALL BE PLACED WITHIN FIVE FEET OF A PUBLIC ROW UNLESS SPECIFICALLY EXEMPTED BY THE TOWN.
12. THE SUBJECT PROPERTY IS SUBJECT TO AN ENCROACHMENT LICENSE RECORDED AT REC. NO. \_\_\_\_\_ REQUIRING MAINTENANCE AND SNOW REMOVAL FOR THE CONCRETE WALKS WITHIN THE VASQUEZ ROAD RIGHT OF WAY AS SHOWN HEREON.
13. THE 15 FOOT WIDE STRIP OF LAND ALONG THE NORTH LINE OF THIS SUBDIVISION WAS LISTED ON LOT 2, CULLEN MINOR PLAT ACCORDING TO THE PLAT THEREOF RECORDED AUGUST 23, 2023 UNDER RECEPTION NO. 2023-005301 AS A 15.00 FOOT STRIP. WINTER PARK AND IS SHOWN AS BOOK 89 PAGE 140. BOOK 89 PAGE 140 IS NOT THE CORRECT DOCUMENT FOR THIS RIGHT OF WAY DEDICATION. THE ASSESSOR OFFICE WAS CONSULTED IN THIS MATTER AND THEY STATED THEY DO NOT KEEP TRACK OF THOSE DOCUMENTS. THIS SURVEYOR IS UNABLE TO DETERMINE WHAT RIGHTS THE PUBLIC HAS IN AND TOO THIS RIGHT OF WAY.
14. ON SITE ELECTRIC UTILITY EASEMENTS ARE HEREBY DEDICATED BY THIS PLAT IN THE LOCATIONS SHOWN HEREON AND ARE ESTABLISHED FOR INGRESS TO AND EGRESS FROM, THE INSTALLATION, REPAIR, REPLACEMENT, OPERATION AND MAINTENANCE OF PUBLIC UTILITIES, INCLUDING ELECTRIC LINES AND EQUIPMENT. NO PART OF A STRUCTURE (INCLUDING DECKS, OVERHANGS, FOOTERS, ETC) SHALL BE ALLOWED IN THE UTILITY EASEMENT OR CLOSER THAN TEN FEET (10') FROM ANY PRIMARY VOLTAGE POWER LINES OR WITHIN TEN FEET (10') AROUND ANY ABOVE GROUND EQUIPMENT. NO GAS LINE WILL BE PERMITTED CLOSER THAN FIVE FEET (5') TO ANY PRIMARY VOLTAGE LINES OR EQUIPMENT. NOTWITHSTANDING THE FOREGOING, UNDERGROUND COMMUNICATION FACILITIES SHALL NOT BE ALLOWED CLOSER THAN ONE FOOT (1') TO ANY POWER LINES AND ABOVE GROUND COMMUNICATION FACILITIES SHALL NOT BE CLOSER THAN TWO FEET (2') TO ANY ABOVE GROUND ELECTRIC FACILITIES. NO GRADE CHANGES (FILL OR CUT) IN EXCESS OF SIX INCHES (6") ARE PERMITTED IN THE UTILITY EASEMENT WITHOUT PRIOR WRITTEN AUTHORIZATION FROM MOUNTAIN PARKS ELECTRIC, INC. NO TREES OR BOULDERS MAY BE PLANTED OR PLACED WITHIN FIVE FEET (5') OF ANY POWER LINE OR ELECTRIC EQUIPMENT. ALL EQUIPMENT WILL HAVE A MINIMUM OF TEN FEET (10') OF CLEARANCE IN FRONT OF ANY OPENINGS OR EQUIPMENT DOORS.
15. ALL MULTI-USE BUILDINGS WITHIN THIS SUBDIVISION THAT HAVE ELECTRIC METERS ON ONE UNIT (GANG METERING) WILL BE INSTALLED UNDER A PERMANENT STRUCTURAL ELEMENT THAT PROTECTS THE METERS AND WILL HAVE A PERPETUAL NON-EXCLUSIVE UTILITY EASEMENT FOR THE PURPOSE OF CONSTRUCTING AND OPERATING THE ELECTRIC SUPPLY FOR DISTRIBUTION. ALL WIRES AND OTHER FACILITIES SUCH AS CONDUIT, SWITCHES AND METER BOXES BUT NOT INDIVIDUAL METERS, INSTALLED ON THE ABOVE-DESCRIBED LANDS SHALL BE THE PROPERTY OF THE LANDINGS TOWNHOMES HOA. ALL METERS SHALL BE THE PROPERTY OF MOUNTAIN PARKS ELECTRIC, INC.
16. INDIVIDUAL WATER, SEWER, AND FIRE SUPPRESSION LINES/SERVICE WILL BE REQUIRED FOR EACH TOWNHOME.
17. THIS PLAT IS SUBJECT TO THE 2020 WINTER PARK/DOWNTOWN MASTER PLAN [DESIGN GUIDELINES, 3.2.4 STREETScape DESIGN; CONFLUENCE DISTRICT], AS A REFERENCE DOCUMENT FOR FUTURE OWNERS. THE DOWNTOWN MASTER PLAN INDICATES THE TOWN'S INTENT FOR A FUTURE ROUNDABOUT AT VASQUEZ ROAD AND LION'S GATE DRIVE WHEREBY RESIDENTS OF THIS PROJECT MAY LOSE USE OF FRONT YARD AREAS AND SIDEWALKS.
18. THE LANDING TOWNHOMES HOA WILL BE RESPONSIBLE FOR CLEARING AND MAINTAINING THE WALKS INDIVIDUAL TOWNHOMES WITHIN THE RIGHT-OF-WAY.

**SURVEYOR'S CERTIFICATION:**

I, RICHARD B. GABRIEL, A DULY REGISTERED LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT OF THE LANDING - TOWNHOMES TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE BY ME OR UNDER MY DIRECTION, AND THAT SAID PLAT COMPLIES WITH THE REQUIREMENTS OF TITLE 38, ARTICLE 51, COLORADO REVISED STATUTES, AND THAT THE MONUMENTS REQUIRED BY SAID STATUTE AND BY THE TOWN OF WINTER PARK SUBDIVISION REGULATIONS HAVE BEEN PLACED ON THE GROUND. THIS PLAT IS A TRUE AND ACCURATE REPRESENTATION OF SAID SURVEY.

RICHARD B. GABRIEL, COLORADO P.L.S. #37929  
ON BEHALF OF POWER SURVEYING COMPANY, INC.



**SHEET INDEX:**

- SHEET 1 - COVER SHEET, CERTIFICATES, AND NOTES  
SHEET 2 - PRELIMINARY PLAT MAP



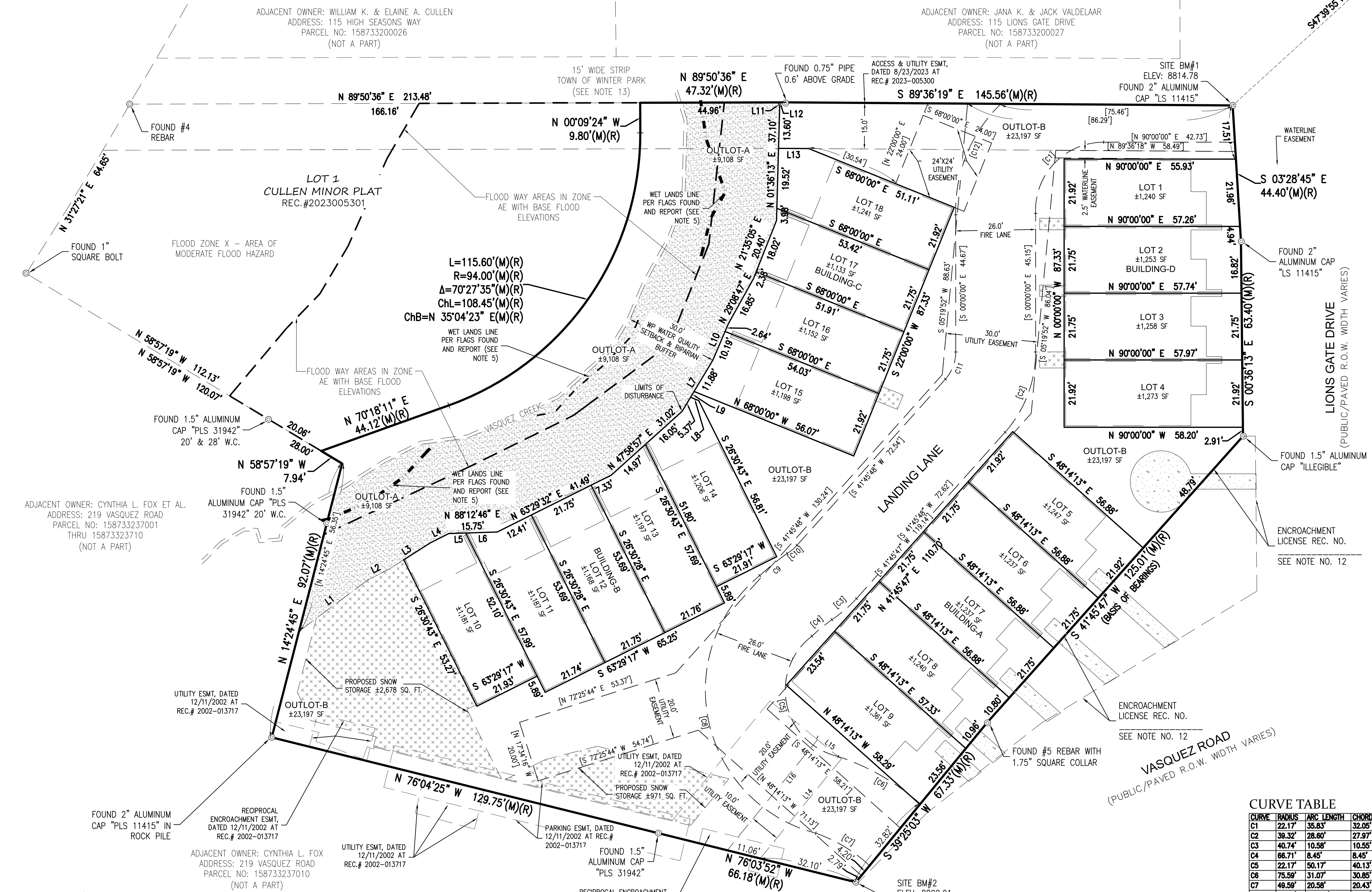
TYPE OF SUBMITTAL:	PRELIMINARY PLAT
PREPARATION DATE:	JANUARY 5, 2024
REVISION DATE:	MAY 1, 2024
REVISION DATE:	JULY 2, 2024
DRAWN BY: JRY	REVIEWED BY: RBG
JOB NO. 23-174	DWG: 23-174 PP.dwg
SHEET 1 OF 2	

# PRELIMINARY PLAT THE LANDING - TOWNHOMES

A PARCEL OF LAND BEING A PART OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 33, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PRINCIPAL MERIDIAN, CITY OF WINTER PARK AND COUNTY OF GRAND, STATE OF COLORADO

SHEET 2 OF 2

C-N 1/16TH SECTION 33  
FOUND 2-1/2" DIAMETER  
BRASS CAP SET IN  
CONCRETE STAMPED: T15  
R75W N 1/16TH C-C S33,  
2022 PLS 34592



### LEGEND - SYMBOLS - ABBREVIATIONS

- ⊙ SET REBAR & PLASTIC CAP, MARKED "PLS 37929" TYPICAL, UNLESS NOTED OTHERWISE
- ⊙ FOUND MONUMENT, AS NOTED

- WET LANDS LINE PER FLAGS
- FLOOD WAY AREAS IN ZONE AE WITH BASE FLOOD ELEVATIONS
- BOUNDARY
- PROPOSED LOT LINES
- EXISTING LOT LINES
- EASEMENT AS NOTED
- PROPOSED BUILDING

- ESMT EASEMENT
- INV INVERT
- REC.# RECEPTION #
- SF SQUARE FEET
- PG PAGE
- BK BOOK
- W.C. WITNESS CORNER
- ChL CHORD LENGTH
- ChB CHORD BEARING
- Δ DELTA ANGLE
- R RADIUS
- L LENGTH
- (M) MEASURED DIMENSION
- (R) RECORD DIMENSION

- Lot Area Encumbered by a 30' WP Water Quality Setback and Riparian Buffer
- Proposed Concrete Walk
- Proposed Snow Storage Area

ADJACENT OWNER: CYNTHIA L. FOX ET AL.  
ADDRESS: 219 VASQUEZ ROAD  
PARCEL NO: 158733237001  
THRU 158733237110  
(NOT A PART)

ADJACENT OWNER: CYNTHIA L. FOX  
ADDRESS: 219 VASQUEZ ROAD  
PARCEL NO: 158733237010  
(NOT A PART)

SECOND AMENDED FINAL PLAT LOT 1,  
TEVERBAUGH-HEATON MINOR SUBDIVISION  
& CULLEN SUBDIVISION EXEMPTION  
REC.#2002013714

#### LINE TABLE

LINE	BEARING	DISTANCE
L1	N 53°20'18" E	28.01'
L2	N 82°40'00" E	6.09'
L3	N 57°24'57" E	15.71'
L4	N 63°16'43" E	6.68'
L5	N 88°12'46" E	5.48'
L6	N 88°12'46" E	10.27'
L7	N 31°01'17" E	18.44'
L8	S 68°00'00" E	2.88'
L9	N 31°01'17" E	2.19'
L10	N 22°59'13" E	12.83'
L11	N 18°04'23" W	1.46'
L12	S 89°50'36" W	2.36'
L13	S 89°36'19" E	9.81'
L14	N 39°11'56" E	41.77'
L15	N 50°48'04" W	10.00'
L16	S 39°11'56" W	48.48'

#### CURVE TABLE

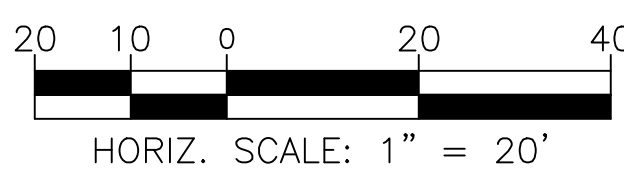
CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	22.17	35.83	32.05	S 43°42'10" W	92°35'41"
C2	38.32	28.60	27.97	S 20°50'09" W	41°40'18"
C3	40.74	10.58	10.58	S 49°25'56" W	143°30'6"
C4	66.71	8.45	8.45	N 50°28'28" E	71°5'40"
C5	22.17	50.17	40.13	N 12°21'49" W	128°40'13"
C6	75.59	31.07	30.85	N 60°00'45" W	23°33'05"
C7	49.59	20.58	20.43	S 58°53'38" E	23°46'34"
C8	48.17	106.01	85.88	S 12°15'54" E	128°05'46"
C9	92.71	11.44	11.43	N 51°04'45" E	7°04'04"
C10	14.74	4.22	4.20	N 50°15'45" E	182°31'8"
C11	13.32	9.67	9.46	N 20°48'11" E	41°36'22"
C12	48.17	40.17	39.01	N 22°07'38" E	47°46'29"

### LAND USE TABLE

PERCENTAGE OF TOTAL SUBDIVISION:

- 41% PLATTED LOTS
- 59% OPEN SPACE

	SQUARE FEET	ACRES
LOT AVERAGE:	±1,223	±0.028
LOT SIZE RANGE:	±1,133 - 1,361	±0.026 - 0.031
TOTAL LOT AREA:	±22,009	±0.505
TOTAL OUTLOT:	±32,305	±0.742
SUBDIVISION TOTAL AREA:	±54,314	±1.247



**POWER**  
Surveying Company, Inc.  
Established 1948  
PH. 303-702-1617  
FAX. 303-702-1488  
WWW.POWERSURVEYING.COM

TYPE OF SUBMITTAL:	PRELIMINARY PLAT
PREPARATION DATE:	JANUARY 5, 2024
REVISION DATE:	MAY 1, 2024
REVISION DATE:	JULY 2, 2024
DRAWN BY: JRY	REVIEWED BY: RBG
JOB NO. 23-174	DWG: 23-174 PP.dwg



# THE LANDING - TOWNHOMES MAJOR SITE PLAN

A PARCEL OF LAND BEING A PART OF THE NORTHWEST QUARTER (NW 1/4) OF  
SECTION 33, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PRINCIPAL MERIDIAN,  
TOWN OF WINTER PARK, COUNTY OF GRAND, STATE OF COLORADO

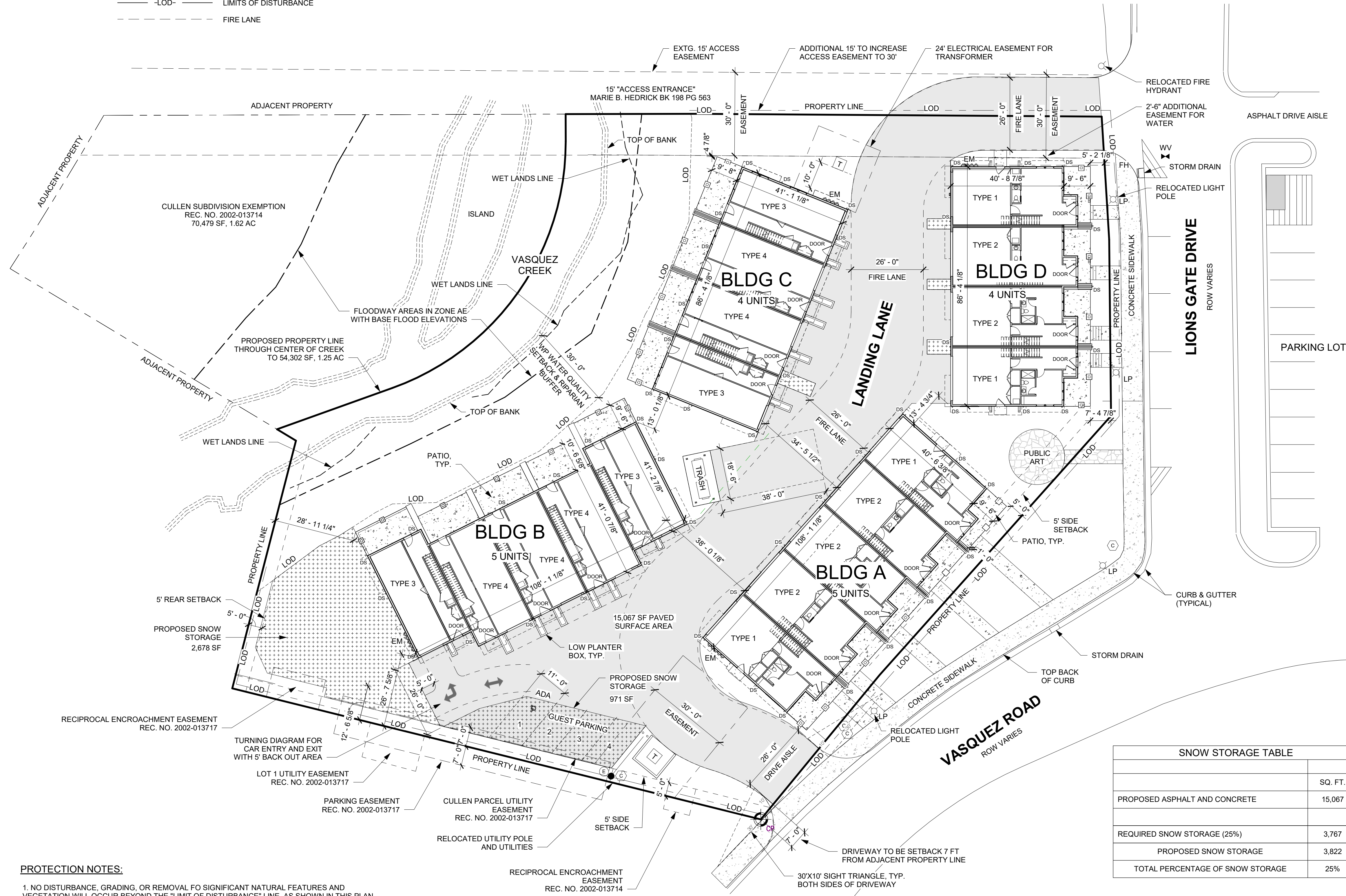
185 VASQUEZ ROAD

### HATCH LEGEND

- EXISTING CONCRETE
- PROPOSED CONCRETE/ASPHALT PAVING
- PROPOSED CONCRETE
- PROPOSED STONE STEPS / WALKWAY
- PROPOSED SNOW STORAGE

### LINE LEGEND

- PROPERTY LINE
- REQUIRED BUILDING SETBACK
- EASEMENT
- LOD- LIMITS OF DISTURBANCE
- FIRE LANE



### BUILDING UNIT CALCULATIONS

BLDG A - UNIT TYPE '1' - AREA CALCS		BLDG A - UNIT TYPE '2' - AREA CALCS	
LEVEL 1:	FINISHED 469 SF	LEVEL 1:	FINISHED 476 SF
	GARAGE 451 SF		GARAGE 459 SF
	PATIO 142 SF		PATIO 164 SF
LEVEL 2:	FINISHED 997 SF	LEVEL 2:	FINISHED 960 SF
	DECKS 103 SF		DECKS 95 SF
LEVEL 3:	FINISHED 1010 SF	LEVEL 3:	FINISHED 981 SF
	DECKS 73 SF		DECKS 54 SF
<b>TOTAL BLDG A - TYPE '1' UNITS = 2</b>	<b>GROSS FINISHED 2,476 SF X 2 = 4952 SF</b>	<b>TOTAL BLDG A - TYPE '2' UNITS = 3</b>	<b>GROSS FINISHED 2,417 SF X 3 = 7251 SF</b>
	DECKS/PATIO 318 SF X 2 = 636 SF		DECKS/PATIO 313 SF X 3 = 939 SF
	GARAGE 451 SF X 2 = 902 SF		GARAGE 459 SF X 3 = 1377 SF
BLDG B - UNIT TYPE '3' - AREA CALCS		BLDG B - UNIT TYPE '4' - AREA CALCS	
LEVEL 1:	FINISHED 337 SF	LEVEL 1:	FINISHED 335 SF
	GARAGE 543 SF		GARAGE 557 SF
	PATIO 193 SF		PATIO 206 SF
LEVEL 2:	FINISHED 1014 SF	LEVEL 2:	FINISHED 978 SF
	DECKS 156 SF		DECKS 163 SF
LEVEL 3:	FINISHED 1019 SF	LEVEL 3:	FINISHED 1001 SF
	DECKS 69 SF		DECKS 52 SF
<b>TOTAL BLDG B - TYPE '3' UNITS = 2</b>	<b>GROSS FINISHED 2,476 SF X 2 = 4952 SF</b>	<b>TOTAL BLDG B - TYPE '4' UNITS = 3</b>	<b>GROSS FINISHED 2,314 SF X 3 = 6942 SF</b>
	DECKS/PATIO 318 SF X 2 = 636 SF		DECKS/PATIO 421 SF X 3 = 1263 SF
	GARAGE 543 SF X 2 = 1086 SF		GARAGE 557 SF X 3 = 1671 SF
BLDG C - UNIT TYPE '3' - AREA CALCS		BLDG C - UNIT TYPE '4' - AREA CALCS	
LEVEL 1:	FINISHED 335 SF	LEVEL 1:	FINISHED 335 SF
	GARAGE 541 SF		GARAGE 557 SF
	PATIO 196 SF		PATIO 189 SF
LEVEL 2:	FINISHED 989 SF	LEVEL 2:	FINISHED 962 SF
	DECKS 157 SF		DECKS 149 SF
LEVEL 3:	FINISHED 1004 SF	LEVEL 3:	FINISHED 976 SF
	DECKS 65 SF		DECKS 54 SF
<b>TOTAL BLDG C - TYPE '3' UNITS = 2</b>	<b>GROSS FINISHED 2,328 SF X 2 = 4656 SF</b>	<b>TOTAL BLDG C - TYPE '4' UNITS = 2</b>	<b>GROSS FINISHED 2,273 SF X 2 = 4546 SF</b>
	DECKS/PATIO 418 SF X 2 = 836 SF		DECKS/PATIO 392 SF X 2 = 784 SF
	GARAGE 541 SF X 2 = 1082 SF		GARAGE 557 SF X 2 = 1114 SF
BLDG D - UNIT TYPE '1' - AREA CALCS		BLDG D - UNIT TYPE '2' - AREA CALCS	
LEVEL 1:	FINISHED 467 SF	LEVEL 1:	FINISHED 473 SF
	GARAGE 458 SF		GARAGE 466 SF
	PATIO 142 SF		PATIO 136 SF
LEVEL 2:	FINISHED 999 SF	LEVEL 2:	FINISHED 964 SF
	DECKS 103 SF		DECKS 95 SF
LEVEL 3:	FINISHED 1014 SF	LEVEL 3:	FINISHED 986 SF
	DECKS 73 SF		DECKS 54 SF
<b>TOTAL BLDG D - TYPE '1' UNITS = 2</b>	<b>GROSS FINISHED 2,480 SF X 2 = 4960 SF</b>	<b>TOTAL BLDG D - TYPE '2' UNITS = 2</b>	<b>GROSS FINISHED 2,423 SF X 2 = 4846 SF</b>
	DECKS/PATIO 318 SF X 2 = 636 SF		DECKS/PATIO 285 SF X 2 = 570 SF
	GARAGE 458 SF X 2 = 916 SF		GARAGE 466 SF X 2 = 932 SF
<b>TOTAL UNITS = 18</b>	<b>GROSS FINISHED AREA = 43,105 SF</b>		
	DECK AREA = 6,300 SF		
	GARAGE AREA = 9,078 SF		

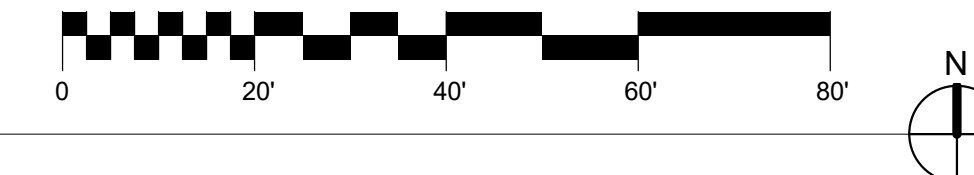
### BUILDING COVERAGE RATIO TABLE

	SQ. FT.	ACRES	% OF SITE
TOTAL PARCEL SIZE	54,313	1.25	100.00%
EXISTING IMPERVIOUS AREA			
EXISTING GRAVEL PAVING	9,225	0.21	17%
EXISTING CONCRETE	290	0.01	1%
EXISTING BUILDINGS	5,124	0.12	9%
TOTAL TOTAL EXISTING IMPERVIOUS AREA	14,639	0.34	27%
EXISTING IMPERVIOUS AREA TO BE REMOVED			
EXISTING BUILDINGS TO BE REMOVED	5,124	0.12	9%
TOTAL IMPERVIOUS AREA TO BE REMOVED	9,515	0.22	18%
PROPOSED IMPERVIOUS AREA			
PROPOSED BUILDINGS	19,690	0.45	36%
PROPOSED ASPHALT PAVING	15,067	0.35	28%
PROPOSED CONCRETE SIDEWALK	301	0.01	0.01%
PROPOSED CONCRETE - PUBLIC ART	314	0.01	0.01%
TOTAL PROPOSED IMPERVIOUS AREA	35,208	0.81	65%

### SNOW STORAGE TABLE

	SQ. FT.
PROPOSED ASPHALT AND CONCRETE	15,067
REQUIRED SNOW STORAGE (25%)	3,767
PROPOSED SNOW STORAGE	3,822
TOTAL PERCENTAGE OF SNOW STORAGE	25%

Graphic Scale: 1 inch = 20 feet



### PROTECTION NOTES:

- NO DISTURBANCE, GRADING, OR REMOVAL OF SIGNIFICANT NATURAL FEATURES AND VEGETATION WILL OCCUR BEYOND THE "LIMIT OF DISTURBANCE" LINE, AS SHOWN IN THIS PLAN.
- THE "LIMIT OF DISTURBANCE" LINE SHALL BE DELINEATED PRIOR TO CONSTRUCTION WITH FLAGS, ROPING, FOUR FOOT (4) TALL ORANGE CONSTRUCTION FENCING, OR OTHER ACCEPTABLE MEANS.

1 SITE PLAN  
1" = 20'-0"



DESIGN PRACTICE INC  
2842 W 44th  
Denver CO 80211  
www.designpracticedenver.com  
info@designpracticedenver.com  
PHONE\_303 561 3000

THE LANDING TOWNHOMES  
185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
Checked By: DP

ZONING  
SUBMITTAL

ISSUE DATE

08/12/2024

SITE PLAN







# THE LANDING - TOWNHOMES

## MAJOR SITE PLAN

A PARCEL OF LAND BEING A PART OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 33, TOWNSHIP 1 SOUTH, RANGE 75 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF WINTER PARK, COUNTY OF GRAND, STATE OF COLORADO

185 VASQUEZ ROAD

### LANDSCAPE PLANT LIST

#### ORNAMENTAL TREES

ITEM	COMMON NAME	BOTANICAL NAME	MATURE HEIGHT	MATURE WIDTH	SUN/SHADE	SIZE AND CONDITION	QTY
ASPS	QUAKING ASPEN	POPULUS TREMULOIDES	20'-50'	20'-30'	SUN	1" CAL., B&B	38
ASPL	QUAKING ASPEN	POPULUS TREMULOIDES	20'-50'	20'-30'	SUN	2" CAL., B&B	3

#### EVERGREEN TREES

ITEM	COMMON NAME	BOTANICAL NAME	MATURE HEIGHT	MATURE WIDTH	SUN/SHADE	SIZE AND CONDITION	QTY
BRPL	BRISTLECONE PINE	PINUS ARISTATA	20'-40'	10'-20'	SUN/PART SHADE	6' HT. B&B	3
LPP	LODGEPOLE PINE	PINUS CONTORTA LATIFOLIA	50'-70'	10'-15'	SUN	6' HT. B&B	12
EMS	ENGLEMANN SPRUCE	PICEA ENGELMANNII	40'-60'	20'-30'	SUN	6' HT. B&B	1

#### DECIDUOUS SHRUBS

ITEM	COMMON NAME	BOTANICAL NAME	MATURE HEIGHT	MATURE WIDTH	SUN/SHADE	SIZE AND CONDITION	QTY
MOSS	MOUNTAIN SNOWBERRY	SYMPHORICARPOS OREOPHILUS	2'-4'	2'-4'	SUN/PART SHADE	1 GAL CONT	44
ICR	ICEBERG ROSE	ROSA ICEBERG	2-3'	18"-24"	SUN	5 GAL CONT	23
ALC	ALPINE CURRANT	RIBES ALPINUM	3-6'	3'-6"	SUN/PART SHADE	5 GAL CONT	5

#### EVERGREEN SHRUBS

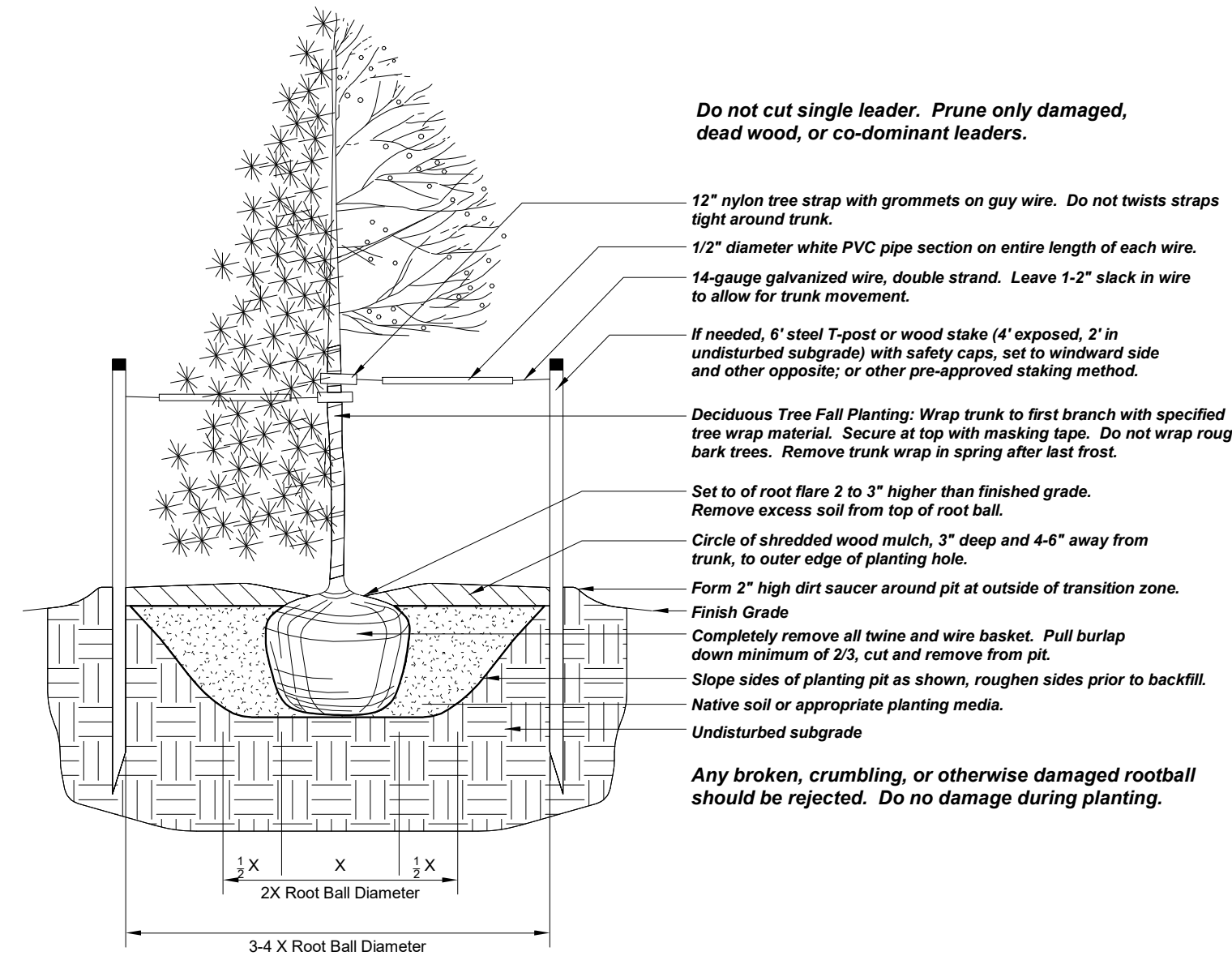
ITEM	COMMON NAME	BOTANICAL NAME	MATURE HEIGHT	MATURE WIDTH	SUN/SHADE	SIZE AND CONDITION	QTY
CMJ	COMMON JUNIPER	JUNIPERUS COMMUNIS	1-3'	3'-6"	SUN	5 GAL	26

#### ORNAMENTAL GRASSES

ITEM	COMMON NAME	BOTANICAL NAME	MATURE HEIGHT	MATURE WIDTH	SUN/SHADE	SIZE AND CONDITION	QTY
BAM	BLONDE AMBITION GAMMA GRASS	BOUTELLOUA GRACILLIS 'BLONDE AMBITION'	2-3'	20"-30"	SUN	1 GAL CONT	26

#### PERENNIALS

ITEM	COMMON NAME	BOTANICAL NAME	MATURE HEIGHT	MATURE WIDTH	SUN/SHADE	SIZE AND CONDITION	QTY
MOY	MOONSHINE YARROW	ACHILLEA 'MOONSHINE'	24-30"	18"-24"	SUN	4" POT/24" O.C.	23
AJS	AUTUMN JOY STONECROP	SEDUM 'AUTUMN JOY'	18-24"	12"-18"	SUN	4" POT/24" O.C.	14



Trees planted upon park land, public property, or within the Public Right of Way (PRW) are subject to the following restrictions:

- An approved planting permit from the Office of the City Forester (OCF), regardless of approved plans, is required prior to planting.
- Administrative citations up to \$999 shall be issued for trees planted without an OCF issued permit.
- Only tree species approved by or listed on the OCF's approved street tree list shall be planted in the PRW.
- For a list of prohibited or suspended PRW trees, contact or visit the OCF website.
- If overhead utility wires exist in the PRW, only ornamental or trees maturing at 20 (twenty) feet maximum height shall be planted.
- Trees shall be centered in tree lawns and/or planting areas.
- Trees shall not be planted in tree lawns less than five feet wide unless authorized by the OCF.
- Where sidewalks are not present, trees shall be located as designated by Office of the City Forester.
- Planting in corner triangle formed by the first 30 (thirty) feet along the PRW in each direction from the corner is not permitted.
- Planting within 10 (ten) feet of alleys, driveways, or fire hydrants is not permitted.
- Planting within 20 (twenty) feet of stop signs is not permitted.
- Planting within 25 (twenty-five) feet of street lights is not permitted.
- Planting within five feet of water meters or pits is not permitted.
- Large shade trees shall be spaced 35 (thirty-five) feet o.c. and ornamental trees 25 (twenty-five) feet o.c. or as designated by OCF.
- Trees shall be pruned to maintain a clearance of 13'-6" over streets and alleys and 6'-6" over remaining portions of PRW, including sidewalk.

Prior to digging, the Utility Notification Center of Colorado shall be contacted at 811 to locate underground utilities.

TREE PLANTING DETAIL - NOT TO SCALE

LANDSCAPE AREA		
ITEM	REQUIRED	PROVIDED
TOTAL AREA: 54,313 SF		
DISTURBED LANDSCAPED AREA: 6,356 SF		
1 TREE / 1,500 SF (6,356 / 1,500)	5 TREES	4 DEC. + 1 EVG. TREES
5 SHRUBS / 1,500 SF (6,356 / 1,500 x 25)	25 SHRUBS	20 DEC. + 5 EVG. SHRUBS

#### LANDSCAPE BUFFER

PROPERTY LINE	# PLANTS REQUIRED	# PLANTS PROVIDED
SOUTH - 196 LF TYPE B	(4 DEC. TREES / 100 LF) = 8 DEC TREES	4 DEC. TREES
	(4 EVG. TREES / 100 LF) = 8 EVG TREES	5 EVG. TREES
	SHRUBS - 20	25 SHRUBS
WEST - 92 LF TYPE B	(4 DEC. TREES / 100 LF) = 4 DEC TREES	0 DEC. TREES
	(4 EVG. TREES / 100 LF) = 4 EVG TREES	4 EVG. TREES
	SHRUBS - 10	10 SHRUBS
NORTHWEST - 170 LF VASQUEZ CREEK TYPE B	(4 DEC. TREES / 100 LF) = 8 DEC TREES	8 DEC. TREES
	(4 EVG. TREES / 100 LF) = 8 EVG TREES	1 EVG. TREES
	SHRUBS - 20	26 SHRUBS
NORTH - 193 LF TYPE B	(4 DEC. TREES / 100 LF) = 8 DEC TREES	8 DEC. TREES
	(4 EVG. TREES / 100 LF) = 8 EVG TREES	1 EVG. TREES
	SHRUBS - 20	27 SHRUBS
EAST - 93 LF TYPE B	(4 DEC. TREES / 100 LF) = 4 DEC TREES	8 DEC. TREES
	(4 EVG. TREES / 100 LF) = 4 EVG TREES	3 EVG. TREES
	SHRUBS - 10	24 SHRUBS
SOUTHEAST - 192 LF TYPE B	(4 DEC. TREES / 100 LF) = 8 DEC TREES	10 DEC. TREES
	(4 EVG. TREES / 100 LF) = 8 EVG TREES	3 EVG. TREES
	SHRUBS - 20	25 SHRUBS

### GENERAL LANDSCAPE NOTES

- ALL PLANTING BED AREAS SHALL BE MULCHED WITH 1-1/2" GRAY ROSE MULTI-COLORED RIVER ROCK, AT A DEPTH OF 3". INSTALLED OVER PERMEABLE WEED BARRIER FABRIC. DO NOT INSTALL EDGING BETWEEN WOOD MULCH AND ROCK MULCH AREAS.
- SOD EDGER SHALL BE 14 GAUGE ROLLED TOP STEEL EDGING (DARK GREEN COLOR) IN THE LOCATIONS SHOWN ON THE PLANS. EDGER IS NOT REQUIRED WHERE SOD ABUTS CONCRETE.
- ALL AREAS TO BE LANDSCAPED SHALL HAVE ORGANIC AMENDMENTS THOROUGHLY INCORPORATED INTO THE SOIL AT A RATE OF 5 CUBIC YARDS PER 1,000 SQUARE FEET, AND TILLED TO A DEPTH OF 6 INCHES.
- ALL SOD AREAS, BED AREAS, AND LANDSCAPE AREAS SHALL BE FINE GRADED PRIOR TO INSTALLATION OF NEW PLANT MATERIAL. ROCKS, WOOD, AND ANY MATERIAL LARGER THAN 1" IN DIAMETER SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO SODDING AND PLANTING NEW MATERIALS.
- EXISTING TURF, SHRUBS, TREES, AND PLANT MATERIAL TO BE REMOVED SHALL BE FULLY REMOVED FROM THE SITE, INCLUDING ALL ROOTS.
- ALL LANDSCAPED AREAS SHALL BE WATERED BY A FULLY AUTOMATIC UNDERGROUND IRRIGATION SYSTEM.
- SOD AREAS SHALL BE ZONED SEPARATELY THAN BEDS, AND SHALL BE IRRIGATED VIA POP-UP SPRAY HEADS PROVIDING FULL (HEAD TO HEAD) COVERAGE. HEADS SHALL BE COMMERCIAL GRADE WITH REPLACEABLE NOZZLES, PRESSURE REGULATORS, AND CHECK VALVES.
- BED AREAS SHALL BE ZONED SEPARATELY THAN SOD AREAS, AND SHALL BE IRRIGATED BY INDIVIDUAL DRIP EMITTERS TO EACH PLANT. DRIP COMPONENTS SHALL BE COMMERCIAL GRADE RAIN-BIRD OR EQUAL POINT SOURCE EMITTERS, WITH ALL PLANTS RECEIVING IRRIGATION.



DESIGN PRACTICE INC.  
2842 W 44th  
Denver CO 80211  
www.designpracticedenver.com  
info@designpracticedenver.com  
PHONE\_303 561 3000

THE LANDING TOWNHOMES  
185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
Checked By: DP

ZONING  
SUBMITTAL

ISSUE DATE  
08/12/2024

LANDSCAPE  
PLANT LIST



**HATCH LEGEND**

- EXISTING CONCRETE
- PROPOSED CONCRETE/ASPHALT DRIVEWAY PAVING
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STONE STEPS / WALKWAY
- PROPOSED PROPOSED AREA FOR TREE REMOVAL

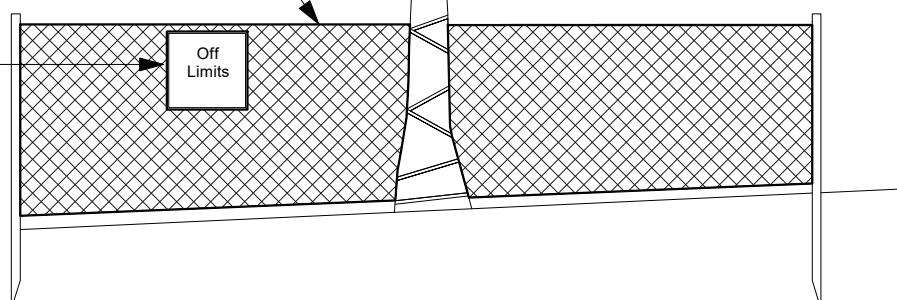
**TREE PROTECTION ZONE**  
 The area inside a perimeter established at the Critical Root Zone (CRZ). The CRZ is equal to the dripline, furthest extent of tree canopy, or is equal to one foot radially from the tree for every one inch of trunk diameter at breast height (DBH = 4.5' above soil line), or whichever is greater.



**TREE PROTECTION**

Denotes perimeter of Tree Protection Zone (TPZ)  
 Tree protection zone must be in place prior to commencement of work. Digging, grubbing, excavating, trenching, changing of grade, or other actions that may potentially impact the rooting environment is strictly prohibited.

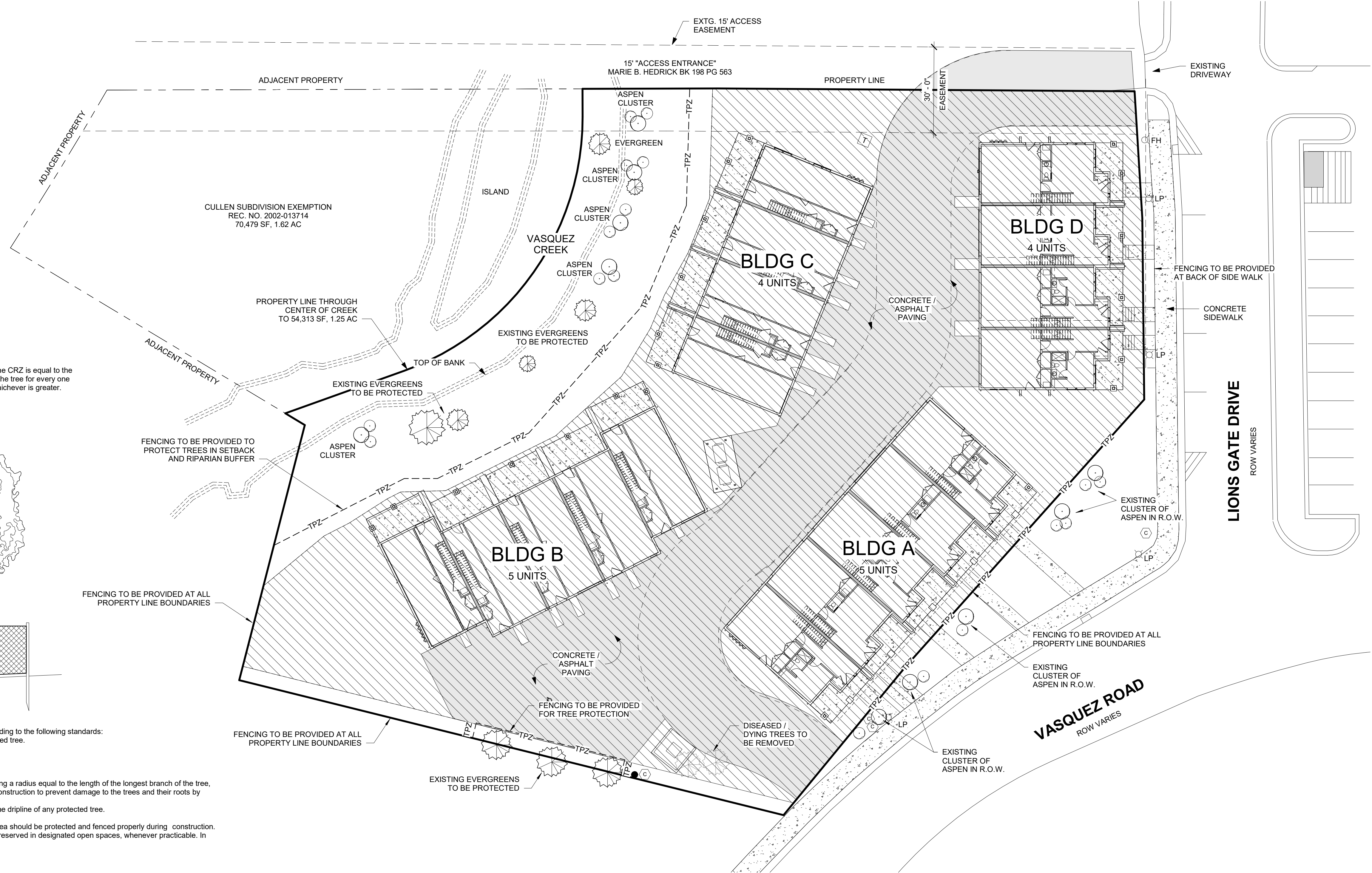
Sign posted "Off Limits"



**NOTES**

- A. Protected Individual Trees. The following trees are protected and shall be preserved and maintained according to the following standards:
  1. For trees over four inches (4") in caliper, the protected root zone shall extend to the drip line of the selected tree.
  2. Any tree that is shown on an approved landscape plan that is necessary to meet:
    - a. The planting requirements of this UDC; or
    - b. A condition of approval of the development to which the landscape plan applies.
- B. Protected Root Zone (Dripline) Requirements.
  1. The dripline is the cylinder extending from grade level down to a depth of ten feet (10') below grade, having a radius equal to the length of the longest branch of the tree, with the center of the cylinder located at the center of the tree trunk. This dripline shall be barricaded during construction to prevent damage to the trees and their roots by construction equipment or soil compaction. The barricades shall be posted "Off Limits."
  2. No cutting or filling, storage of building materials or debris, or disposal of wastes shall take place within the dripline of any protected tree.
  3. No impervious paving shall be placed within the dripline of any protected tree.
- C. Protection During Construction. All existing trees and vegetation outside of the site specific construction area should be protected and fenced properly during construction.
- D. Protection of Stands of Trees. Development shall be designed so that existing stands of native trees are preserved in designated open spaces, whenever practicable. In general, alternative development options are available to facilitate such designs.

**TREE PROTECTION DETAIL - NOT TO SCALE**



1 TREE PROTECTION PLAN  
 1" = 20'-0"

**THE LANDING TOWNHOMES**  
 185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
 Checked By: DP

ZONING  
 SUBMITTAL

ISSUE DATE  
 08/12/2024

TREE  
 PROTECTION  
 PLAN





**DESIGN PRACTICE INC**  
 2842 W 44th  
 Denver CO 80211  
 www.designpracticedenver.com  
 info@designpracticedenver.com  
 PHONE\_303 561 3000

**THE LANDING TOWNHOMES**  
 185 VASQUEZ RD, WINTER PARK, CO 80482

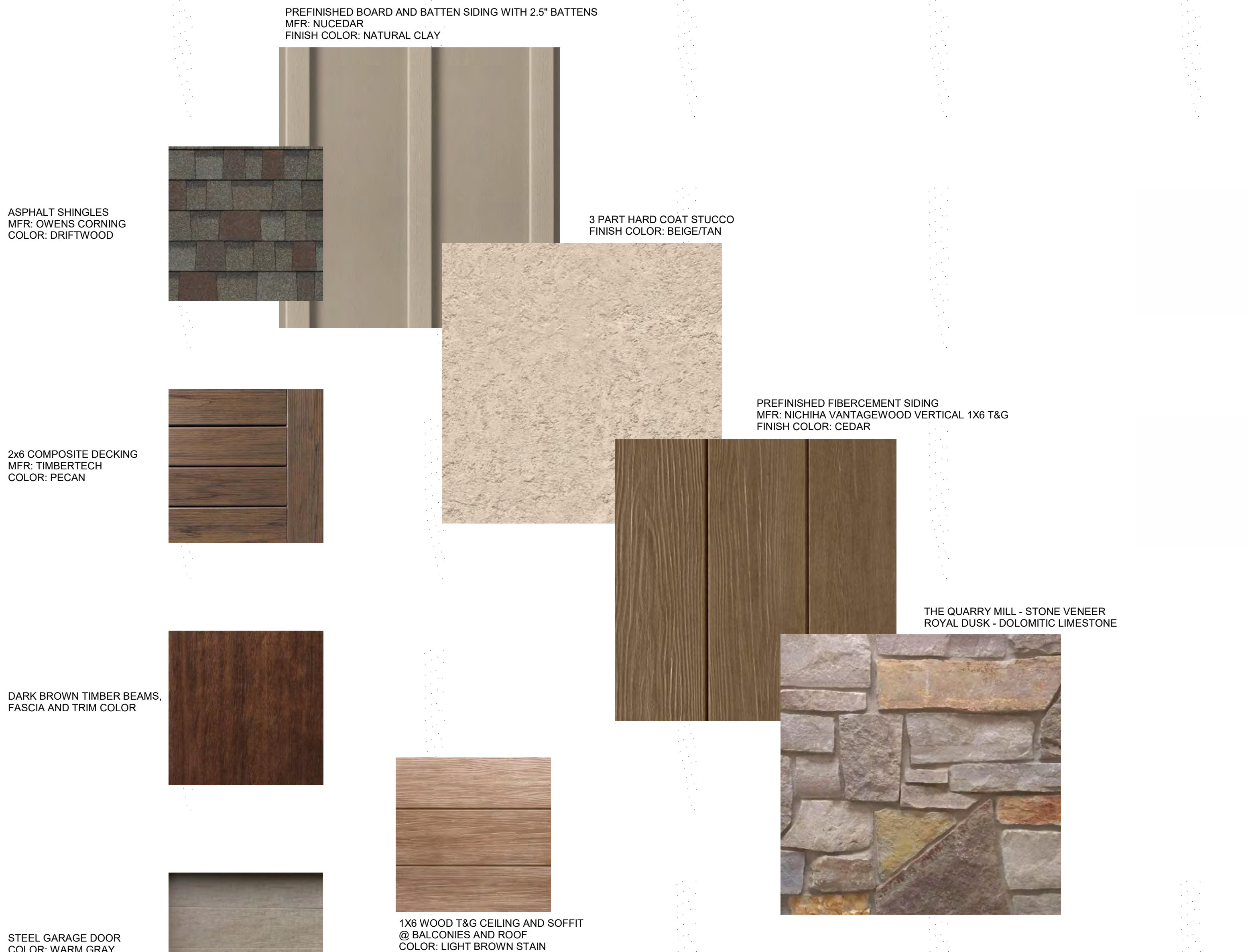
No.	Desc.	Date

Drawn By: MD  
 Checked By: DP

**ZONING SUBMITTAL**

**ISSUE DATE**  
 08/12/2024

**BLDG A ELEVATIONS**

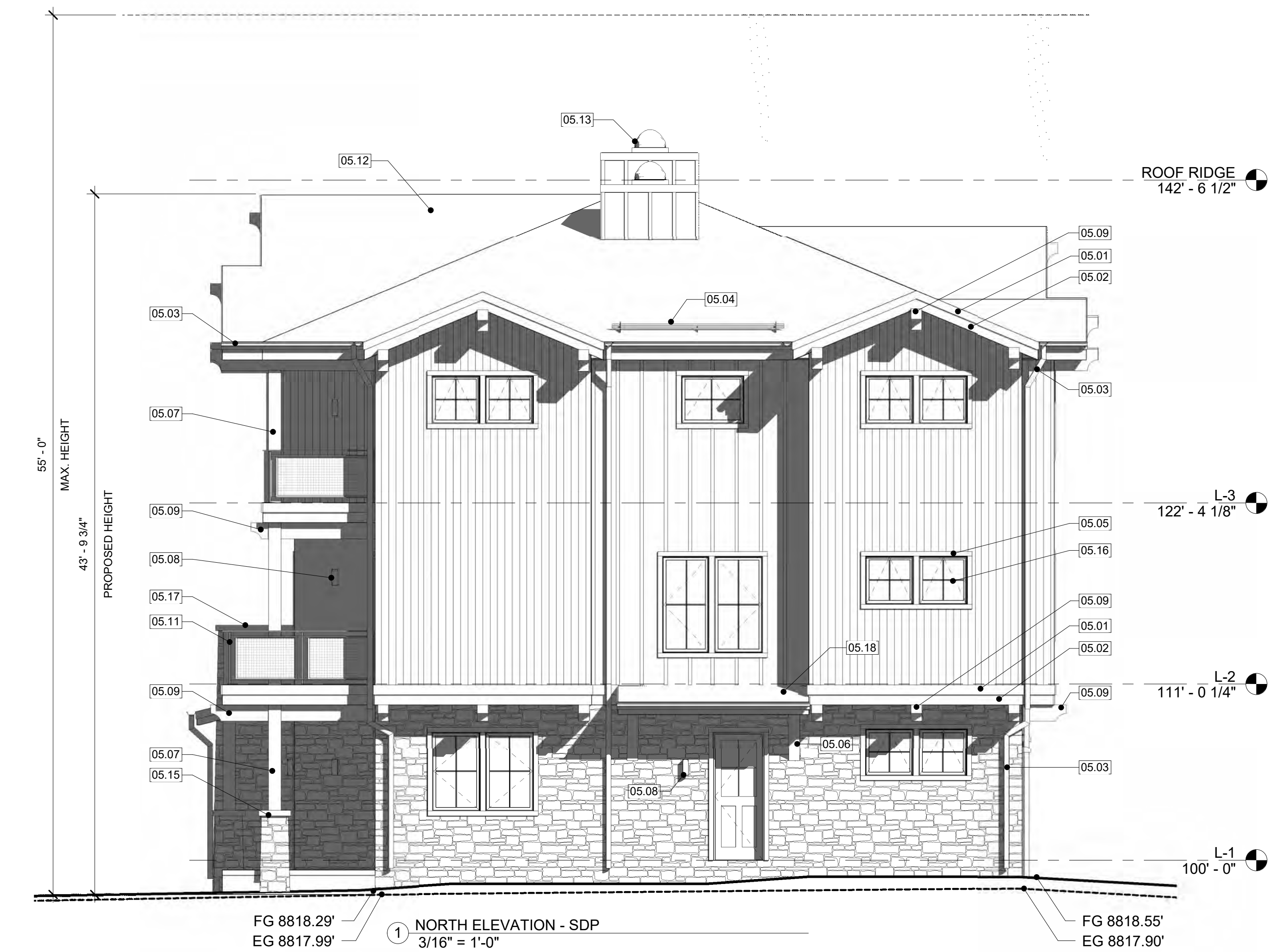
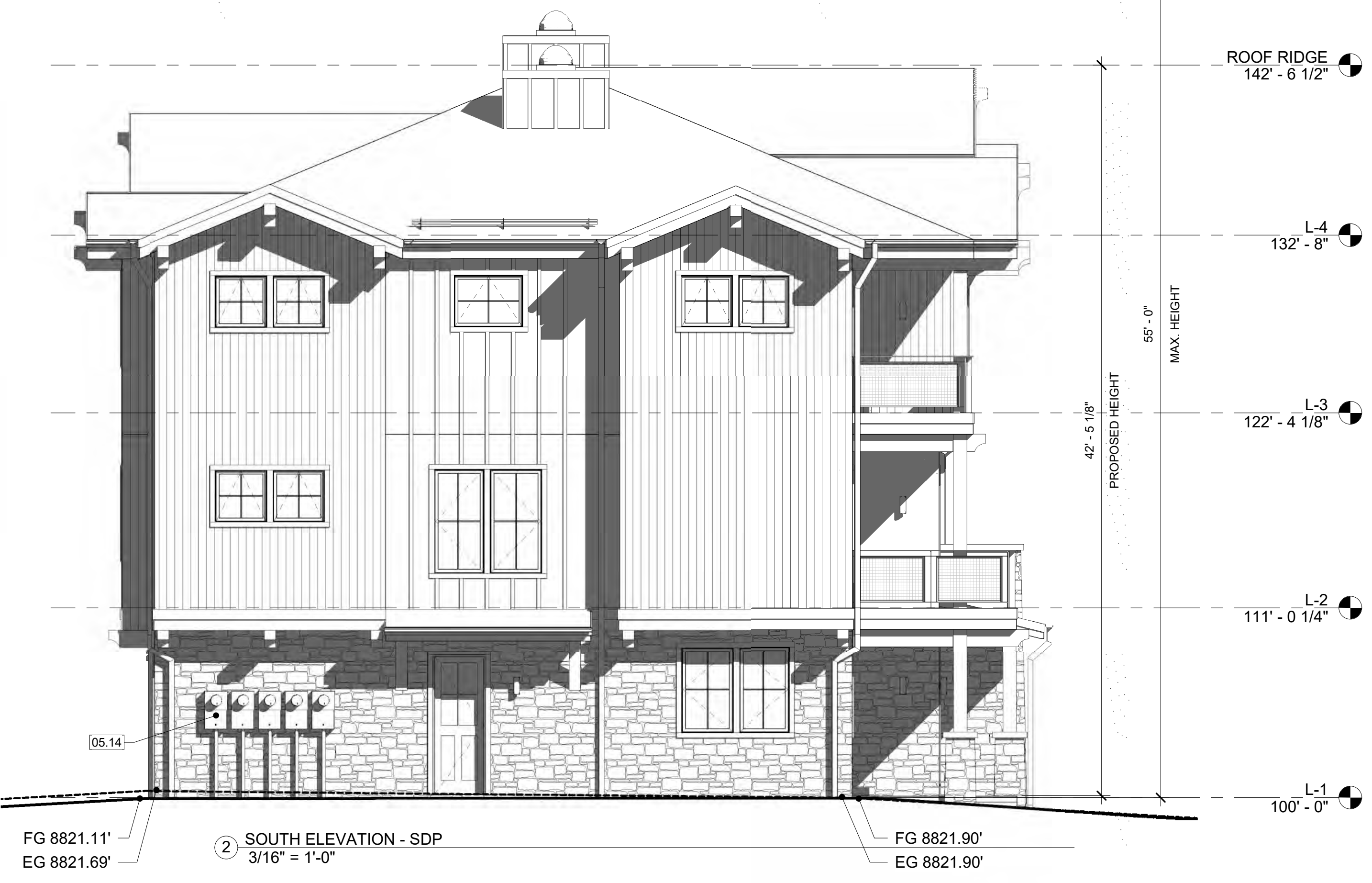
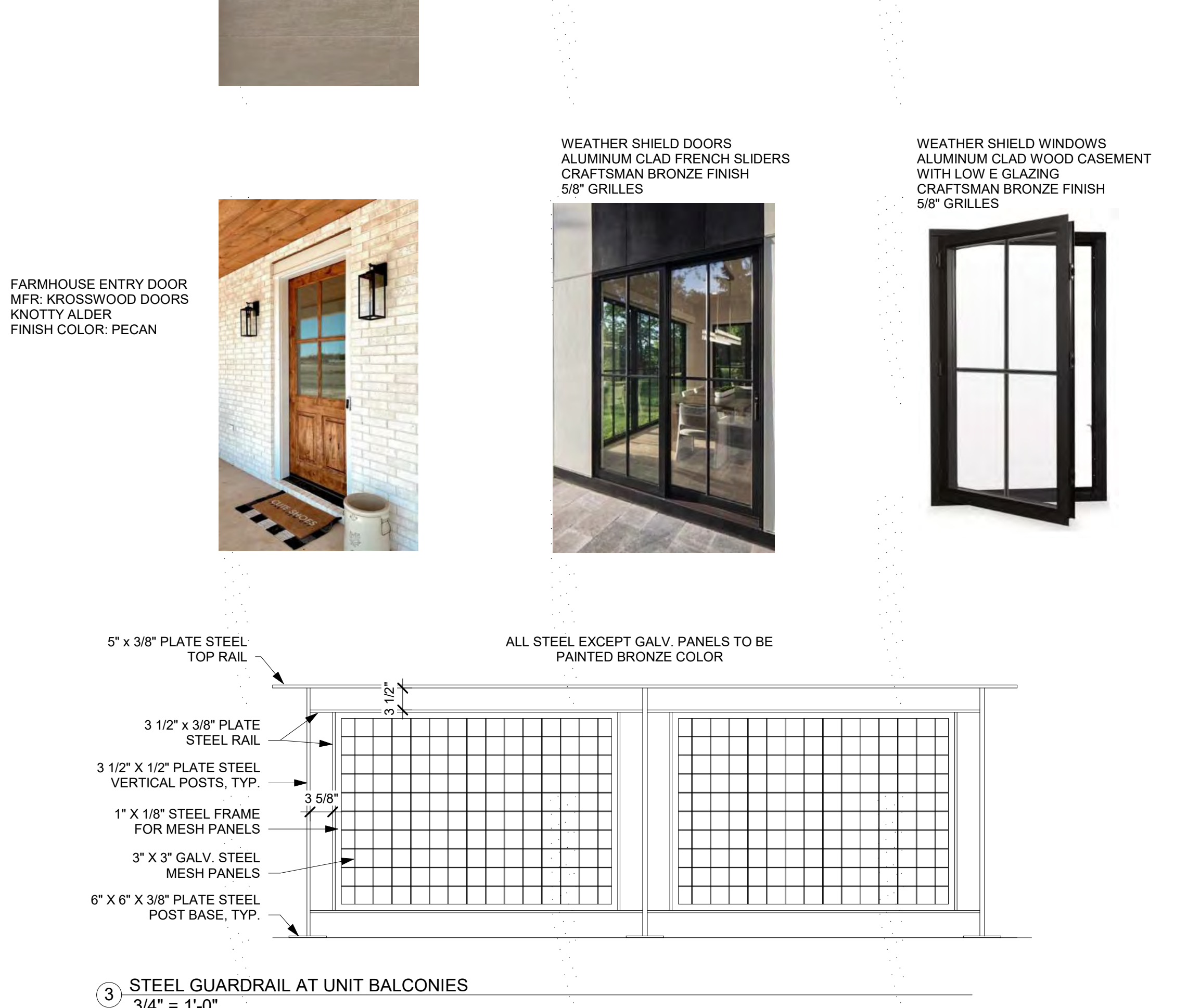


**EXTERIOR MATERIALS LEGEND**

	PREFINISHED FIBERCEMENT 1X6 T&G VERTICAL SIDING COLOR: CEDAR
	3 PART HARD COAT STUCCO COLOR: BEIGE / TAN
	PREFINISHED FIBERCEMENT BOARD AND BATTEN SIDING WITH 2.5" VERTICAL BATTENS COLOR: NATURAL CLAY
	STONE VENEER MFR: THE QUARRY MILL TYPE: ROYAL DUSK

**KEYNOTE LEGEND**

Key Value	Keynote Text
05.01	1X8 PREFINISHED FIBERCEMENT FASCIA, TYP.
05.02	1X12 PREFINISHED FIBERCEMENT FASCIA, TYP.
05.03	PREFINISHED METAL GUTTER AND DOWNSPOUTS
05.04	SNOW FENCE
05.05	PREFINISHED FIBERCEMENT TRIM, TYP.
05.06	TIMBER BRACKET, STD.
05.07	10X10 TIMBER COLUMN, TYP.
05.08	EXTERIOR WALL SCONCE, TYP.
05.09	TIMBER BEAM, TYP.
05.11	STEEL GUARDRAIL WITH STEEL MESH PANEL, PTD.
05.12	ASPHALT ROOF SHINGLES, TYP.
05.13	SOLATUBE SKYLIGHT, TYP.
05.14	ELECTRIC METER
05.15	STONE VENEER BASE WITH STONE CAP
05.16	ALUMINUM CLAD WOOD WINDOWS WITH GRILLES
05.17	STONE CAP
05.18	ENTRY ROOF WITH ASPHALT SHINGLES
05.19	ALUMINUM CLAD WOOD SLIDER WITH GRILLES
05.20	TIMBER HEADER OVER GARAGE DOORS, TYP.
05.21	STEEL GARAGE DOOR, PTD.
05.22	GARAGE LIGHT, TYP.







**DESIGN PRACTICE INC**  
 Architecture  
 2842 W 44th  
 Denver CO 80211  
 www.designpracticedenver.com  
 info@designpracticedenver.com  
 PHONE\_303 561 3000

**THE LANDING TOWNHOMES**  
 185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
 Checked By: DP

ZONING  
 SUBMITTAL

ISSUE DATE  
 08/12/2024

BLDG A - 3D  
 RENDERINGS

8



④ BLDG A - 3D View 4



③ BLDG A - 3D View 3



② BLDG A - 3D View 2



① BLDG A - 3D View 1





DESIGN PRACTICE INC  
 Architecture  
 DESIGN PRACTICE INC  
 2842 W 44th  
 Denver CO 80211  
 www.designpracticedenver.com  
 info@designpracticedenver.com  
 PHONE\_303 561 3000

**THE LANDING TOWNHOMES**

185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
 Checked By: DP

ZONING  
 SUBMITTAL

ISSUE DATE  
 07/02/2024

BLDG B - 3D  
 RENDERINGS





**DESIGN PRACTICE INC**  
 2842 W 44th  
 Denver CO 80211  
 www.designpracticedenver.com  
 info@designpracticedenver.com  
 PHONE 303 561 3000

**THE LANDING TOWNHOMES**  
 185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
 Checked By: DP

**ZONING SUBMITTAL**

**ISSUE DATE**  
 07/02/2024

**BLDG C - 3D RENDERINGS**



④ BLDG C - 3D View 4



③ BLDG C - 3D View 3



② BLDG C - 3D View 2



① BLDG C - 3D View 1





**DESIGN PRACTICE INC**  
 Architecture  
 2842 W 44th  
 Denver CO 80211  
 www.designpracticedenver.com  
 info@designpracticedenver.com  
 PHONE\_303 561 3000



② SITE - 3D View 2



① SITE - 3D View 1

**THE LANDING TOWNHOMES**  
 185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
 Checked By: DP

ZONING  
 SUBMITTAL

ISSUE DATE  
 07/02/2024

SITE - 3D  
 RENDERINGS





DESIGN PRACTICE INC  
Architecture

**DESIGN PRACTICE INC**  
2842 W 44th  
Denver CO 80211  
www.designpracticedenver.com  
info@designpracticedenver.com  
PHONE\_303 561 3000

**THE LANDING TOWNHOMES**

185 VASQUEZ RD, WINTER PARK, CO 80482

No.	Desc.	Date

Drawn By: MD  
Checked By: DP

ZONING  
SUBMITTAL

ISSUE DATE  
07/02/2024

BLDG D - 3D  
RENDERINGS















**Jack and Jana Vandelaar**  
115 Lions Gate Dr  
Winter Park, CO 80482  
305-394-2269

8/21/24

**Town of Winter Park**  
Planning Commission  
Town Council

Dear Members,

We have been homeowners in Grand County, CO, for 25 years, and have owned our property on Lions Gate Dr for nearly 20 years. We are writing to express our concerns regarding "The Landing Townhomes," a development by Gondola Townhomes, LLC, under Case numbers PLN24-005 (Preliminary Plat) and PLN23-195 (Major Site Plan). The proposed development is located at 185 Vasquez Road, Winter Park, CO.

Our property is adjacent to this development, located on Lions Gate Drive. As the only property directly next to this development, we believe we will be more directly affected by this project than anyone else in the area.

The proposed development will negatively impact us in two significant ways if approved as depicted on the plats: a potential loss of value to our house and an increase in traffic within 5 feet of our main house. Clearly, this would cause substantial disruption to our daily lives.

**Our concerns are as follows:**

1. **Inaccuracies in the Traffic Study:** The traffic study of past usage contains several false assumptions. It claims that the existing seven units (four units in the larger house, and three units in the triplex) generate an average of "54 Daily Trips," implying that each *existing* unit used the driveway 6-7 times per day.

Please note, over the past twenty years, most of these very small units were occupied by a single person. (Average occupancy verified by the previous property owners.) So this study, stating each existing unit would use the driveway 6-7 times per day, must be incorrect. More reasonably, a complex of 7 units, with one tenant in each, would actually generate, at MOST, 21-28 total movements daily, which is on average 3-4 times a day for each unit. (Again, we're being generous. This would actually be a high average of usage for the past twenty years. Most people do not come and go 6-7 times a day up here in Grand County.)

The more recent study, based on 19 units, apparently used the same inaccurate average from above, and estimates approximately "138 Average Daily Trips." This suggests that each new unit would use the driveway an average of 7.26 times per day, which is similar

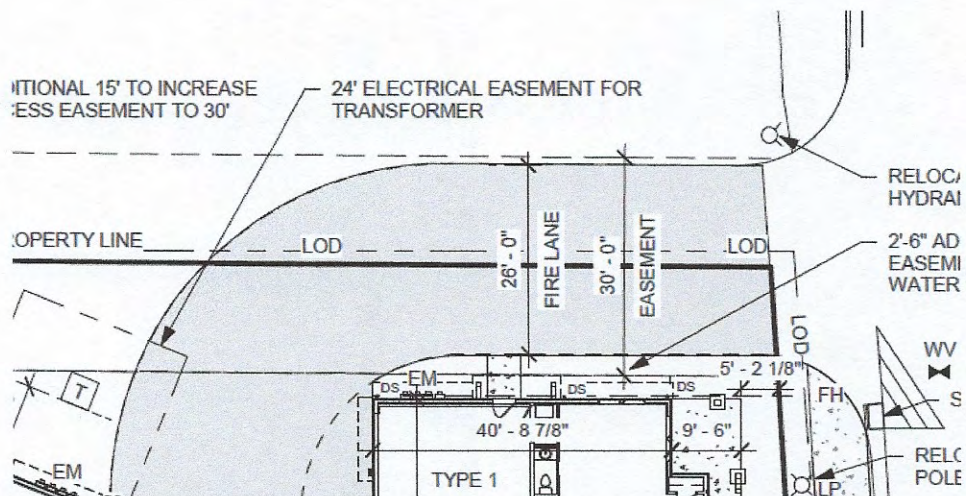


to the earlier, inaccurate calculation. And, please note, this estimate does not consider that the newer, larger units could easily house **multiple** drivers per unit, significantly increasing driveway usage.

Even with only 1-2 drivers per new unit, (using the existing calculation) the 600% increase in traffic would already massively impact our property, disrupting our lives around the clock. But, the percentage of the increase would be even higher than the study's calculation due to the potential for more drivers per unit.

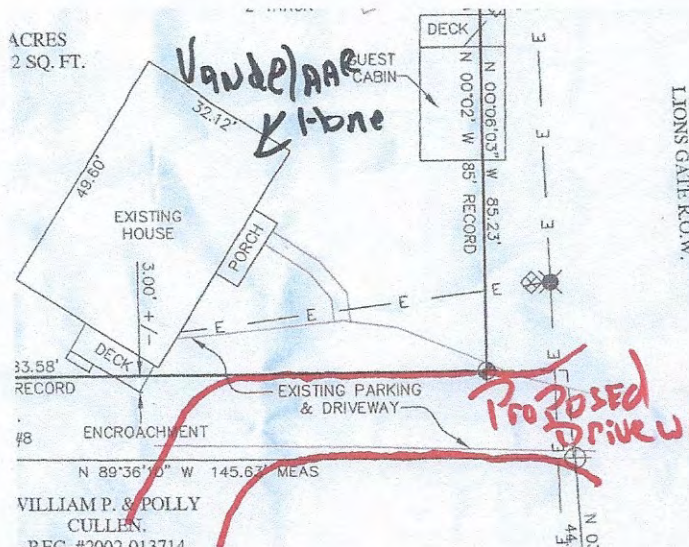
2. **Proposed Driveway Width:** The proposed plat shows a 30-foot wide “full-movement driveway to Lions Gate Drive,” with one side designated as entry and the other as exit. **The entry side is within 5 feet of the edge of our main house.** We have been informed by the developer that the town requires this 30-foot driveway.

## Landings Townhomes Proposed Plat





## Vandelaar Existing Plat



Although a 15-foot easement was recorded in 1941 for a possible roadway into the property, the Town of Winter Park now owns the easement. We believe that the new development should not use this easement to meet its own requirements. If the Town of Winter Park permits this, it effectively gives the shared property's use to someone else, at a massively unbalanced benefit.

As quoted by Norm Larkins, a highly respected Real Estate Attorney here in Grand County, the easement should be vacated and returned to the original owners, per the following legal precedent:

The following is legally binding:

As a public road, street or highway, the vacation or abandonment of the 15-foot strip and title thereto is prescribed by e.B.S. 143-2-301, et seq. More specifically, §43-2-303(1)(c) provides as follows

"(c) if any roadway has been established as a municipal street at any time, such street shall not be vacated by any method other than an ordinance approved by the governing body of the municipality."

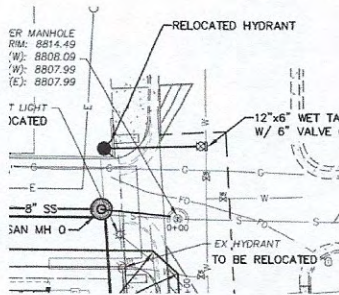
In this regard,  
g;43-2-302(1)(a) is explicit:

"43-2-301. Vesting of title upon vacation. (1) . . . whenever any roadway has been . . . conveyed to or acquired by a county or incorporated town or city . . . for use as a roadway, and thereafter is vacated, title to the lands included within such roadway . . . shall vest, subject to the same encumbrances, liens, limitations, restrictions, and estates as the land to which it accrues, as follows

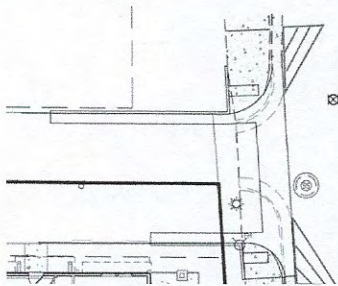
(a) in the event that a roadway which constitutes the exterior boundary of a subdivision or other tract of land is vacated, title to said roadway shall vest in the owners of the land abutting the vacated roadway to the same extent that the land included within the roadway, at the time the roadway was acquired for public use, was a part of the subdivided land or was a part of the adjacent land.



3. **Relocation of Fire Hydrant:** The existing fire hydrant is in front of the developer's property, but the proposal seeks to move it in front of our property, which we strongly oppose.



4. **Curb-** They propose a 6" curb along my property which interferes with my ability to park a vehicle.



**Our Proposal:**

To mitigate these undue and unreasonable impacts, we propose the following:

1. Vacate 7.5 feet of the existing easement on the side adjacent to our property.
2. Allow us to build a 12-foot private driveway from Lions Gate Dr, using part of the 7.5 feet and some of our land, to access our property.
3. Permit us to construct a fence along the south edge of the new driveway to maintain our privacy and mitigate the increased traffic (again, at the very least 600% increase) from interfering with our daily lives.

Sincerely,  
Jack and Jana Vandelaar

8/21/24



TOWN OF WINTER PARK  
RESOLUTION NO. 2175  
SERIES OF 2024

A RESOLUTION APPROVING A DEVELOPMENT IMPROVEMENTS AGREEMENT  
STANDARD FORM FOR THE LANDINGS TOWNHOMES

WHEREAS, Gondola Townhomes, LLC is the current owner of certain real property described in the Agreement (herein known as the "Property");

WHEREAS, Gondola Townhomes, LLC is required to complete certain improvements associated with the development known as The Landings Townhomes (the "Development");

WHEREAS, the Town staff has reviewed the attached Development Improvements Agreement (DIA) and recommends conditional approval to the Town Council; and

WHEREAS, Section 9-1-3 of the Winter Park Town Code requires the Town Council approve DIAs by resolution.

NOW THEREFORE, BE IT RESOLVED by the Town Council of the Town of Winter Park, Colorado as follows:

1. Findings. The Town Council hereby finds and determines that the attached Development Improvements Agreement Standard Form and Exhibits (attached hereto as Exhibit A) meet all of the applicable criteria set forth in Title 9 of the Winter Park Town Code.
2. Decision. Based on the foregoing findings, the Town Council hereby approves the Development Improvements Agreement, subject to the following conditions, all of which shall be satisfied prior to beginning site improvements:
  - a. Applicant shall provide surety to the Town.
  - b. Applicant shall receive approved stamped construction plans and site plan from the Town.

APPROVED AND PASSED this 3<sup>rd</sup> day of September 2024 by a vote of \_\_\_\_\_ to \_\_\_\_\_.

TOWN OF WINTER PARK

\_\_\_\_\_  
Nick Kutrumbos, Mayor

ATTEST:

\_\_\_\_\_  
Danielle Jardee, Town Clerk

## DEVELOPMENT IMPROVEMENTS AGREEMENT

THIS DEVELOPMENT IMPROVEMENTS AGREEMENT ("Agreement") is made and entered into this 3rd day of September, 2024, by and between the TOWN OF WINTER PARK, a Colorado municipal corporation having an address of P.O. Box 3327, 50 Vasquez Road, Winter Park, Colorado 80482 (the "Town"), and Gondola Townhomes, LLC, a Colorado limited liability company, having an address of 9557 Paradise Lane, Broomfield, CO 80020 ("Developer") (collectively the "Parties").

**WHEREAS**, Developer is the owner of certain real property located in the Town, more particularly described in **Exhibit A** attached hereto and incorporated herein by reference (the "Property");

**WHEREAS**, the Town has approved Developer's development plan for the Property, which is attached hereto as **Exhibit B**, and incorporated herein by reference; and

**WHEREAS**, the Town's approval of the Developer's proposed development on the Property is contingent upon the express condition that all duties created by this Agreement are faithfully performed by Developer.

**NOW, THEREFORE**, for and in consideration of the mutual promises and covenants contained herein, the sufficiency of which is mutually acknowledged, the Parties hereto agree as follows:

1. Purpose. The purpose of this Agreement is to set forth the terms, conditions and fees to be paid by Developer in connection with the improvements for development of the Property. All conditions in this Agreement are in addition to any requirements of the Winter Park Town Code, state statutes and other Town ordinances, and are not intended to supersede any requirements contained therein.

2. Public Improvements. Developer agrees to complete or pay for, as described herein, the public improvements set forth in **Exhibit C**, attached hereto and incorporated herein by this reference ("Public Improvements") subject to this Agreement and in accordance with the approved development plan.

3. Construction.

a. All Public Improvements shall be installed and completed at the expense of Developer and dedicated or conveyed to the Town upon the Town's acceptance thereof or dedicated or conveyed and accepted by an agency, association, or district as required by law or as acceptable to the Town. The estimated cost of the Public Improvements is set forth in **Exhibit C**.

b. The Town may make reasonable engineering observations at Developer's expense. Observation, acquiescence in or approval by any inspector shall not constitute the approval by the Town of any portion of such Public Improvements.

c. Developer shall provide all necessary engineering designs, surveys, field surveys and incidental services related to the construction of the Public Improvements at its

sole cost and expense, including reproducible "as-built" drawings certified accurate by a professional engineer registered in the State of Colorado.

4. Completion and Preliminary Acceptance. Except as otherwise provided above, the obligations of Developer in Section 3 hereof shall be performed within \_\_\_\_\_ years. A certificate of occupancy shall not be issued until such obligations have been satisfied unless expressly agreed to otherwise. Proper application to the Town for preliminary acceptance of Public Improvements shall be made by Developer in advance. Upon completion of construction of the Public Improvements, the Town or a Town-accepted agency, association, or district shall inspect the Public Improvements and certify with specificity their conformity or lack thereof to the Town's specifications. Developer shall make all corrections necessary to bring the Public Improvements into conformity with the Town's specifications. Upon determination by the Town that the Public Improvements conform with all of the Town's specifications, the Town shall preliminarily accept the Public Improvements and the two-year warranty period set forth in Section 5, below, shall commence.

5. Warranty. Upon preliminary acceptance of the Public Improvements by the Town, Developer shall warrant any and all Public Improvements for a period of two (2) years from the date the Town grants preliminary acceptance of the Public Improvements. Developer shall be responsible for scheduling the necessary inspections for preliminary acceptance. Specifically, but not by way of limitation, Developer shall warrant that all Public Improvements are free of defects in materials or workmanship for a period of two (2) years, as stated above. Developer shall be responsible, at Developer's cost to maintain all Public Improvements until such improvements are finally accepted and conveyed by the Town. The Town or a Town-accepted agency, association, or district will accept for maintenance all Public Improvements after the warranty period has expired, provided all warranty work has been completed. The Town shall accept for snow removal purposes only all dedicated public streets after preliminary acceptance has been granted in writing by the Town.

6. Final Acceptance of Public Improvements. Upon completion of the two (2) year warranty period set forth in Section 5, above, the Town shall inspect the Public Improvements and certify with specificity their conformity or lack thereof to the Town's specifications. Developer shall make all corrections necessary to bring the Public Improvements into conformity with the Town's specifications. Upon determination by the Town that the Public Improvements conform with all of the Town's specifications, the Town shall accept the Public Improvements. Developer shall convey the Public Improvements to the Town by bill of sale or warranty deed as determined acceptable by the Town in its sole judgment. Upon conveyance of the Public Improvements Developer shall warrant that the title conveyed is marketable and its transfer rightful.

7. Ownership. All Public Improvements shall be conveyed to the Town upon final acceptance.

8. Performance Guarantee.

a. To secure the construction and installation of the Public Improvements, Developer shall furnish the Town, at Developer's expense and prior to commencement of construction, cash or an irrevocable letter (or letters) of credit in which the Town is designated as beneficiary in an amount equal to one hundred and twenty percent (120%) of the total Estimated Costs of development (the "Performance Guarantee").

b. The Performance Guarantee shall be in a form approved by the Town in its sole discretion.

c. The purpose of the Estimated Costs is solely to determine the amount of security. No representations are made as to the accuracy of these estimates, and Developer agrees to pay all costs of the Public Improvements for which it is legally obligated, regardless of the Estimated Costs.

d. The Estimated Costs may increase in the future. Accordingly, the Town reserves the right to review and adjust the Estimated Costs at the time a building permit is issued and annually if the Public Improvements have not been completed. Adjustments shall be made according to changes in the Construction Costs Index as published by the Engineering News Record. If the Town adjusts the Estimated Costs, the Town shall give written notice to Developer. Developer shall, within thirty (30) days after receipt of said written notice, provide the Town with a new or amended Performance Guarantee in the amount of the adjusted Estimated Costs. If Developer fails to provide a new or amended Performance Guarantee, the Town may exercise the remedies provided for in Section 12 hereof; provided, however, that prior to increasing the amount of the Performance Guarantee, the Town shall give credit to Developer for all Public Improvements which have actually been completed and accepted, so that the amount of the Performance Guarantee relates to the cost of required Public Improvements not yet constructed.

e. If the Public Improvements are not constructed or completed within the period of time specified by Section 4 hereof, the Town may draw on the Performance Guarantee to complete the Public Improvements. If the Performance Guarantee is to expire within fourteen (14) calendar days and Developer has not yet provided a satisfactory replacement, the Town may draw on the Performance Guarantee and either hold such funds as security for performance of this Agreement or spend such funds to finish the Public Improvements or correct problems with the Public Improvements as the Town deems appropriate.

f. Upon preliminary acceptance, the Performance Guarantee shall be reduced to the amount of twenty percent (20%) of the total actual cost of construction and installation of such phase of Public Improvements. The reduced Performance Guarantee shall be held by the Town until expiration of the two (2) year warranty period.

9. Land Dedication; Fee in Lieu. To the extent it does not conflict with this Agreement, land dedications and fees-in-lieu shall be provided as stated in Winter Park Town Code. In the case of a conflict between the Winter Park Town Code and this Agreement, the terms of this Agreement shall apply.

10. Nuisance Conditions. Developer shall prevent the existence of any nuisances by way of its construction activities, as nuisances are defined by the Winter Park Town Code. If the Town determines that a nuisance exists, Developer shall be subject to the provisions of the Winter Park Town Code regarding the abatement of nuisances and the cost assessed therefor. If the nuisance is not abated or an abatement plan is not submitted to the satisfaction of the Town, the Town may, upon thirty (30) days' notice under this Agreement, draw upon the Performance Guarantee to pay the cost of abating the nuisance, including any expenses and penalties incurred under the Winter Park

Town Code. The Town may exercise this right in addition to, or in lieu of, the withholding of permits or certificates of occupancy. The decision to draw on the Performance Guarantee shall be within the sole discretion of the Town.

11. Indemnification.

a. Developer hereby agrees to indemnify and hold harmless the Town, its officers, employees, agents or servants from any and all suits, actions and claims of every nature and description caused by, arising from or on account of any act or omission of Developer, or of any other person or entity for whose act or omission Developer is liable, with respect to construction of the Public Improvements; and Developer shall pay any and all judgments rendered against the Town as the result of any suit, action or claim within the scope of the indemnification provision contained in the prior clause, together with all reasonable expenses and attorney fees incurred by the Town in defending any such suit, action or claim.

b. Developer shall pay all property taxes on the Property dedicated to the Town accrued as of the date of dedication, and shall indemnify and hold harmless the Town for any property tax liability.

12. Breach.

a. If Developer breaches this Agreement, the Town may take such action as permitted or authorized by law, this Agreement or the ordinances of the Town, as the Town deems necessary to protect the public health, safety and welfare. The remedies include, but are not limited to:

i. The refusal to issue any building permit or certificate of occupancy;

ii. The revocation of any building permit previously issued under which construction directly related to such building permit has not commenced, except a building permit previously issued to a third party;

iii. A demand that the security given for the completion of the public improvements be paid or honored; and

iv. Any other remedy available at law or in equity.

b. Unless necessary to protect the immediate health, safety and welfare of the Town, or to protect the interest of the Town with regard to security given for the completion of the public improvements, the Town shall provide Developer thirty (30) days' written notice of its intent to take any action under this Section, during which Developer may cure the breach and prevent further action by the Town.

c. The rights and remedies of the Town under this Agreement are in addition to any other rights and remedies provided by law. The expiration of this Agreement shall in no way limit the Town's legal or equitable remedies, or the period in which such remedies may be asserted, for Public Improvement work negligently or defectively performed.

d. Should this Agreement become the subject of litigation to resolve a claim of breach by Developer and a court of competent jurisdiction determines that Developer was in breach of this Agreement, Developer shall pay the attorney fees, expenses and court costs of the Town.

13. Waiver. In executing this Agreement, Developer waives all objections it may have concerning defects, if any, in the formalities whereby it is executed, or concerning the power of the Town to impose conditions on Developer as set forth herein, and concerning the procedure, substance and form of the resolution adopting this Agreement. Developer expressly agrees that the Town cannot be legally bound by the representations of any of its officers or agents or their designees, except in accordance with the Winter Park Town Code and the laws of the State of Colorado.

14. Modification. This Agreement shall not be modified, except by subsequent written agreement of the parties hereto.

15. Integration; Annexation Agreement. This Agreement and any attached exhibits constitute the entire agreement between Developer and the Town.

16. Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, successors and assigns.

17. Severability. If any provision of this Agreement is determined to be void by any court of competent jurisdiction, such determination shall not affect any other provision hereof, and all of the other provisions shall remain in full force and effect. It is the intention of the parties hereto that if any provision of this Agreement is capable of two constructions, one of which would render the provision void, and the other which would render the provision valid, then the provision shall have the meaning which renders it valid.

18. Governing Law and Venue. This Agreement shall be governed by the laws of the State of Colorado, and any legal action concerning the provisions hereof shall be brought in Grand County, Colorado.

19. Assignment. There shall be no transfer or assignment of any of the rights or obligations of Developer under this Agreement without the prior written approval of the Town, which may be withheld in the Town's sole discretion; except that this Agreement and Developer's rights hereunder may be assigned by Developer in whole, but not in part, to a company wholly owned by Developer. In the event of an assignment as permitted herein, the assignee shall assume full responsibility for fulfilling the remaining obligations of Developer under this Agreement, and shall execute an acknowledgement of this responsibility in the Town's favor. Failure of the assignee to execute such an acknowledgement shall result in Developer being jointly and severally liable with the assignee for the remaining obligations under this Agreement.

20. Recordation. This Agreement shall be recorded in the real estate records of Grand County and shall be a covenant running with the Property.

21. Title and Authority. Developer expressly warrants and represents to the Town that, together with the undersigned individuals, that the undersigned individuals have full power and





**EXHIBIT A**

**LEGAL DESCRIPTION**

**Lot 2, Cullen Minor Plat, Recorded August 23, 2023  
under Reception No. 2023-005301,  
County of Grand,  
State of Colorado**

**EXHIBIT B**  
**DEVELOPMENT PLAN**

**To be added prior to recording**



**EXHIBIT C**  
**PUBLIC IMPROVEMENTS**

EXHIBIT C  
PUBLIC IMPROVEMENTS

	IMPROVEMENT	QTY	UNIT	UNIT COST	TOTAL COST	COMPLETION DATE
Roads	Subgrade Construction (clearing, cut/fill, grading)	54313	sf	\$ 0.75	\$ 40,734.75	Summer 2025
	Subsurfacing (sub-base, base) 6" thick	15527	sf	\$ 2.50	\$ 38,817.50	Summer 2025
	Paving (pavement, shoulder gravel) 5" thick	15527	sf	\$ 8.00	\$ 124,216.00	Summer 2025
	Curb/Gutter	320	lf	\$ 18.00	\$ 5,760.00	Summer 2025
	Sidewalks	588	sf	\$ 16.00	\$ 9,408.00	Summer 2025
	Street Name Signs	2	ea	\$ 500.00	\$ 1,000.00	Summer 2025
	Street Lights/Signs/Traffic Control Devices	NA				
	Snow Storage	NA				
	Parking	Subgrade Construction ___" thick	incl above			
Surfacing ___"thick		incl above				
Paving ___"thick		incl above				
Curb/Gutter		incl above				
Sidewalks		incl above				
Lighting		4	ea	\$ 3,500.00	\$ 14,000.00	Summer 2025
Striping		95	lf	\$ 15.00	\$ 1,425.00	Summer 2025
Snow Storage		4845	sf	\$ 3.75	\$ 18,168.75	Summer 2025
Pathways		Grading/Drainage	NA			
	Surfacing ___"thick	NA				
	Signs	NA				
Drainage	Culverts	2	ea	\$ 5,000.00	\$ 10,000.00	Fall 2024
	Storm Drains	330	lf	\$ 12.00	\$ 3,960.00	Fall 2024
	Detention Facilities (Water Quality Devices)	2	ea	\$ 7,200.00	\$ 14,400.00	Summer 2025
	Erosion Control	54313	sf	\$ 0.50	\$ 27,156.50	Summer 2025
Landscape	Re-vegetation	1	ls	\$ 75,000.00	\$ 75,000.00	Fall 2025
	Landscape Material (itemize on sheet below)	TBD				
Utilities	Water Mains	365	lf	\$ 26.00	\$ 9,490.00	Fall 2024
	Hydrants	1	ea	\$ 8,500.00	\$ 8,500.00	Fall 2024
	Taps	19	ea	\$ 350.00	\$ 6,650.00	Fall 2024
	Manholes	4	ea	\$ 10,000.00	\$ 40,000.00	Fall 2024
	Sewer Mains	365	lf	\$ 22.00	\$ 8,030.00	Fall 2024
	Electric	1	ea	\$ 25,000.00	\$ 25,000.00	Fall 2024
	Gas	TBD				
	Other Utilities	NA				
Misc.	Fire Mitigation	NA				
	Fuels Modification	NA				
	Defensible Space	NA				
	Wetlands Mitigation	NA				
Clean-up	Site Clean-up	54313	sf	\$ 0.25	\$ 13,578.25	Summer 2025
	<b>SUBTOTAL OF COSTS</b>				<b>\$ 495,294.75</b>	
	<b>TOTAL (Subtotal x 1.20)</b>				<b>\$ 594,353.70</b>	



## MEMO

**TO** Mayor and City Council  
**FROM** Keith Riesberg, Town Manager  
**CC**  
**DATE** August 29, 2024  
**RE** Accept petitions for creation of Urban Renewal Authority and set hearing

### **Background**

The Town of Winter Park has explored the formation of an Urban Renewal Authority (URA) to assist with financing of public infrastructure and amenities associated with development and redevelopment projects. As required by the Colorado Urban Renewal Law, the Town has received petitions signed by Winter Park registered voters who support formation of a URA.

Town Council is now in receipt of the petitions for the creation of URA and should set a public hearing to further consider the proposed formation. Staff has prepared a notice to be published setting the public hearing at the September 17, 2024, Town Council meeting.

### **Analysis**

At the August 20, 2024, Town Council meeting the Council passed a resolution to initiate the actions for the formation of URA. The Colorado Urban Renewal Law requires that a petition from registered voters of the Town of Winter Park be submitted calling for the formation of the URA. Petitions have been received and reviewed by the Town Clerk, and the Town Clerk has verified the petitions contain more than 25 valid signatures, which is the number of registered voter signatures needed to move forward with the URA formation.

Because the Town has received the required petitions, the Town Council should now accept the petitions and set the date for the public hearing required for the formation of the URA. Staff has prepared a public notice for the hearing to be held on September 17 at 5:30 pm. This will be in conjunction with the regular Town Council meeting.



**Recommendation**

Staff recommends the Town Council accept the petitions calling for the creation of an Urban Renewal Authority and set a public hearing for September 17, 2024, at 5:30 p.m., to consider the matter further. Should the Town Council wish to authorize these actions, the following motion should be made:

I move to accept the petitions for the creation of an Urban Renewal Authority and to set a public hearing on the creation of an Urban Renewal Authority for September 17, 2024, at 5:30 pm.

In the event the recommendation to accept the petitions for the creation of an Urban Renewal Authority is not approved, Town staff will request guidance and direction from the Town Council on actions to be taken.

Should you have any questions or need additional information regarding this matter, please contact me.